

# HAMPSHIRE COLLEGE CLIMATE ACTION PLAN April 20, 2012

*Draft – Pending Public Review*



**H A M P S H I R E C O L L E G E**

## ***Table of Contents***

<b>Vision</b>	<b>1</b>
<b>Executive Summary</b>	<b>3</b>
<b>Imperatives, Focus Areas, Strategies, and Initiatives</b>	<b>6</b>
<i>Imperative: Educate to Impact</i>	6
Focus Area: Curriculum	7
Focus Area: Research & Applied Exploration	9
Focus Area: Cocurriculum & Community Outreach	10
<i>Imperative: Climate Neutrality – Interim Goal (all areas but scope 3 transportation)</i>	12
Focus Area: Energy Generation & Use	12
Focus Area: Operational Emissions	17
<i>Imperative: Climate Neutrality</i>	20
<b>Strategies for Success</b>	<b>22</b>
<b>Organizational Structures and Stakeholders</b>	<b>23</b>
<b>Financial Considerations</b>	<b>24</b>
<b>Offsets Statement</b>	<b>26</b>
<b>Baseline Snapshot <i>Campus</i></b>	<b>27</b>
<i>Emissions</i>	27
<b>Organizational Boundaries</b>	<b>30</b>
<b>Acknowledgements</b>	<b>31</b>
<b>Appendix A: Education</b>	<b>32</b>
<b>Appendix B: Green Purchasing Policies</b>	<b>36</b>
<b>Appendix C: Forest Offsets</b>	<b>37</b>
<b>Appendix D: Organizational Boundaries</b>	<b>41</b>

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## Vision

The science is clear. To prevent dangerous anthropogenic interference with the climate system<sup>1</sup> we must reduce global emissions of greenhouse gases by 80% by mid-century at the latest. The developed world, as the major source and beneficiary of the last century's carbon emissions must lead the way. We agree with the American College & University Presidents' Climate Commitment that college and universities "must exercise leadership in their communities and throughout society by modeling ways to minimize global warming emissions, and by providing the knowledge and the educated graduates to achieve climate neutrality." We believe that climate change presents institutions of higher education, as providers of inspiration and example, with important opportunities to help create an ethical and secure society.

Hampshire College can equip its graduates with the tools necessary to arrest climate change impacts through the critical and systemic changes that will need to be made in our societies. The College is uniquely positioned to provide these tools; Hampshire helped to pioneer the concepts of multicultural and interdisciplinary curricula. Our worldview encompasses ecological well-being, social justice, and intergenerational equity, and the curricula of our five interdisciplinary schools address these priorities through fluid and evolving conversations. In recent years, leaders in sustainability education have organized around the key principle that Hampshire's curriculum was founded on: questions and issues are best examined from multiple perspectives and with a commitment to equity.

Our students and faculty are therefore distinctly suited to address issues of sustainable development in the classroom and in the field. As a small liberal-arts college with high expectations but limited means, our curricular commitments and capacity for innovation will urge us to foster creative, affordable, and equitable solutions to the challenge of sustainability across all five of our interdisciplinary schools. The Hampshire College Climate Action Plan attempts to set guideposts along the path to achieving these goals.

Hampshire's broad vision for sustainability and sustainability education is built upon the strengths of the College—the institution will culture innovative sustainable technologies and appropriate designs; foster holistic systems thinking; develop skills in students that will allow them to build and thrive in sustainable economies; model farm and food programming; focus on the social impacts of sustainability; and use our applied learning environment to impact the local, regional, and global community.

Tracking and eliminating the greenhouse gas emissions related to our operations will further demonstrate our public commitment to combatting climate change. The College is poised to develop a new plan for the physical development of the campus, and that plan will provide an important opportunity to build many of the ideas that we have laid out in this Climate Action Plan into the design of the campus. As we move down the path toward climate neutrality, we will integrate our emissions mitigation tactics into the educational experience of our students. Through this unified commitment to education and action, we believe that Hampshire College will reduce long-term energy costs; neutralize its greenhouse gas emissions; attract exciting new faculty, students, and funding; and provide meaningful support to the surrounding communities.

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<sup>1</sup> UNFCCC 2002. Framework Convention.

In support of this vision Hampshire College will:

1. Provide each student with an education that nurtures sustainable values such as active citizenship, intergenerational equity, and social justice and develops skills that will allow our alumni to be leaders in sustainable societies;
2. Become climate neutral by 2022, with the exception of non-fleet transportation, such as study abroad air travel and faculty and staff commuting; and
3. Eliminate or offset the remaining transportation emissions by 2032.

A handwritten signature in black ink, appearing to read "Jonathan Lash". The signature is fluid and cursive, with a large initial "J" and a stylized "L".

Jonathan Lash  
*President, Hampshire College*

## Executive Summary

In an effort to mitigate and adapt to climate change impacts and to educate tomorrow's leaders in ways that promote sustainable development, nearly 700 colleges have signed the American College and University President's Climate Commitment (ACUPCC). The ACUPCC commits colleges and universities to develop a comprehensive plan to achieve climate neutrality, to integrate sustainability into the curriculum, and to initiate two or more tangible actions to reduce greenhouse gas emissions while the Climate Action Plan is developed. In 2008, Hampshire College signed the ACUPCC, signifying both its deepened support in the struggle against climate change and its continued commitment to its core mission, to "prepare students to understand and participate responsibly in a complex world."

The Hampshire College Climate Action Plan lays out the commitments Hampshire is making under the ACUPCC, and its plan to achieve them; over the coming years, this plan will necessarily evolve in response to outcomes and needs.

The Climate Action Plan commits Hampshire College to:

1. Provide each student with an education that nurtures sustainable values such as active citizenship, intergenerational equity, and social justice and develops skills that will allow our alumni to be leaders in sustainable societies;
2. Become climate neutral by 2022, with the exception of non-fleet transportation, such as study abroad air travel and faculty and staff commuting; and
3. Eliminate or offset the remaining transportation emissions by 2032.

We believe these goals are bold yet achievable. Before the College adopted these commitments, Hampshire had already made considerable progress toward these goals. Relative to 2004 levels, Hampshire has already reduced 1,350 MTCO<sub>2</sub>e—a 16% gross reduction, and the equivalent of taking more than 260 passenger vehicles off the road.

As Hampshire looks forward and faces the challenges posed by accelerating climate change, we take pride in our approach to education, which has strong interdisciplinary roots and focuses on social and environmental justice. A Hampshire education equips students with the tools required to thrive in a changing world and to tackle climate change, among other complex problems.

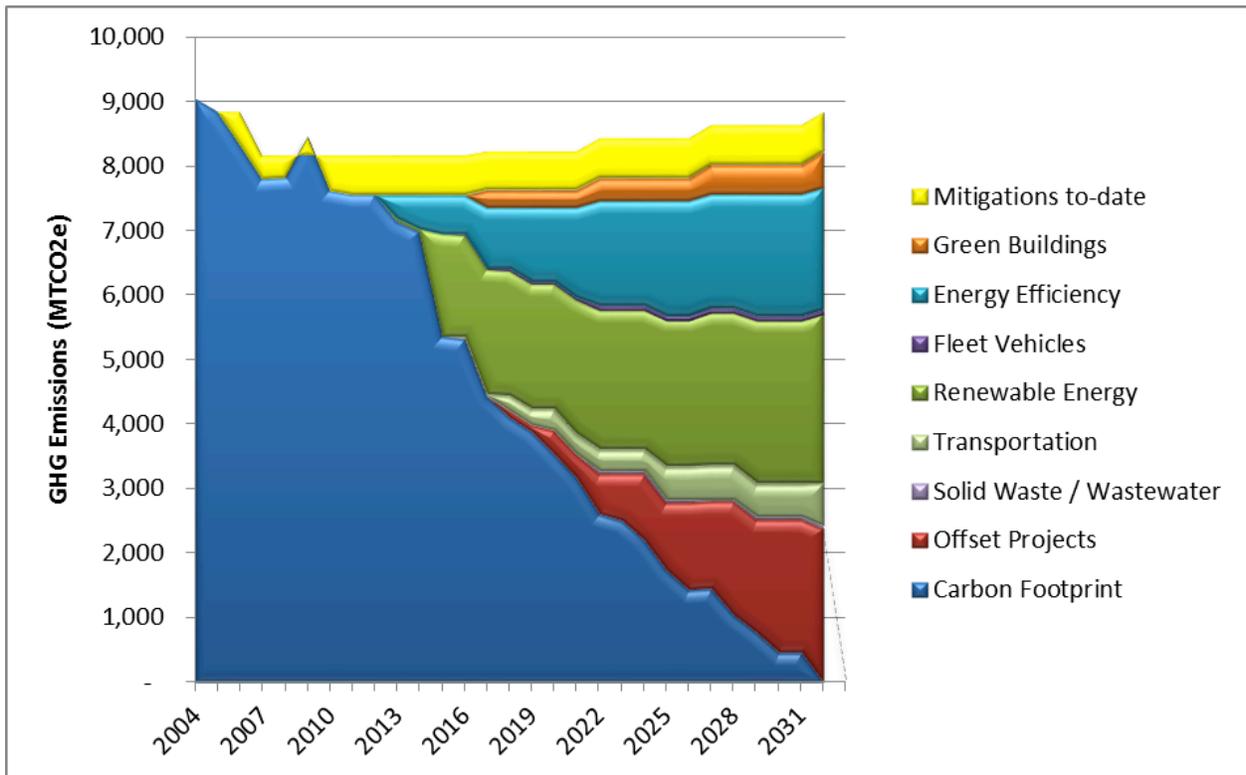
This document lays out plans to build upon our educational foundations to better prepare our graduates for the challenges of a warming world. We adopt tactics that will allow for flexibility, (e.g., through faculty development projects and grants); that will foster collaboration among diverse constituents (e.g. through a virtual sustainability solution); and that provide special support for student ideas and projects (e.g. through grants, community opportunities, and sustainable living options).

In order to practice what we teach, we have a very aggressive plan for the College to achieve carbon neutrality in its operations. Our carbon neutrality plan consists of the following tactics:

1. High Performance Buildings: All future buildings will be built to a “best in class” energy standard.
2. Building Renovation and Energy Retrofits: Hampshire will renovate key existing buildings at the rate of at least one building every four years, and with the goal of improving functionality of the buildings and significantly reducing both energy and water use. In addition, the College will pursue energy efficiency opportunities in buildings that are not slated for major renovations within the next 15 years. The combined effort is expected to reduce energy consumption by 40% in existing buildings.
3. Renewable Energy: Hampshire will further explore the best ways to utilize campus resources—especially land—for renewable energy generation, and will explore opportunities to participate in local and regional renewable energy projects. The most promising opportunities appear to be solar photovoltaics on College lands and buildings; participation in local wind power development through a power purchase agreement; utilization of biomass for heating; and geothermal heatpumps (supplied with renewable electricity).
4. Solid Waste Elimination: Solid waste will be reduced by 95% below 2008 levels. Tactics will rely on increased diversion rates through a simplified commingle process, increased awareness efforts, expanded recycling programs, and composting; and increased diversion rates through both purchasing and event policies.
5. Other opportunity areas include campus landscaping, College vehicles, transportation, commuting and wastewater. This plan touches on tactics in all of these areas.

Expected impacts of each of the approaches outlined in this plan are represented in Figure 1 on the following page. Assumptions about future growth can be found in the *Baselines* section.

**Figure 1**



*In the figure above, each emissions “wedge” represents an amount of Hampshire’s overall greenhouse gas emissions that the College expects to neutralize through the tactic associated with that particular wedge.*

## Imperatives, Focus Areas, Strategies, and Initiatives

Hampshire College has a bold vision for the future: the College will mitigate the negative impacts of its greenhouse gas emissions, solid waste, and wastewater, and will focus on the positive impacts of its education, community engagement, and applied explorations. In order to realize this vision, the College has set imperatives:

- A. A Hampshire education must deliver innovative interdisciplinary research and innovation and provide our students with the tools and values necessary to positively impact the world through their lives and livelihoods;
- B. Hampshire College must lead by example—by eliminating all gross sources of emissions by 2022, with the exception of Scope 3 emissions related to transportation, which are the most difficult to account for and to control; and
- C. By 2032 Hampshire College operations must be climate neutral.

This section introduces, defines, and unpacks each of our imperatives; assigns guiding strategies for success under each imperative; and details our initial tactics to deliver on our strategies.

### ***Imperative: Educate to Impact***

Our most meaningful opportunity to contribute solutions to the complex problem of global warming is through the educational experience we offer inside and out of the classroom. We can prepare our graduates to have a positive impact for the rest of their lives through technological advances, policy development and advocacy, scientific research, and personal action. Through our curricula; research and applied exploration opportunities; cocurricular activities; and community outreach opportunities, Hampshire provides many avenues to learn the values required for sustainable development, and the skills our alumni will need to build and thrive in socially just societies and sustainable economies. Below, we have developed a list of strategies to deliver on this imperative:

<b>Educate to Impact: Strategies</b>	
<b>Focus Area</b>	<b>Strategy</b>
Cross-Cutting	Build connections across initiatives.
Curriculum	Integrate sustainability into the experience of all students.
	Offer opportunities for deep exploration in sustainable topics.
	Provide coursework opportunities to participate in fulfillment of our Climate Action Plan.
Research & Applied Exploration	Provide tools and resources for applied exploration.
	Fund implementation of student projects.
	Increase communication and collaboration among students, faculty, staff, alumni, and community members.
Cocurriculum & Community Outreach	Fund and convene symposia, conferences, speakers, and events.
	Establish mechanisms for student groups to participate in plan implementation.
	Update campus and surrounding communities regarding climate commitments and progress.
	Develop emissions reduction and offset projects that support and enhance the community.

## **Focus Area: Curriculum**

The Hampshire College curriculum is uniquely suited to address climate change education. The College was founded on an interdisciplinary approach to learning based on the idea that issues are best examined through a multiplicity of lenses.

Students design their own program of study and learn to become active creators of knowledge, as distinct from passive consumers of information. Through experiential learning opportunities across campus—whether in the Center for Design’s fabrication facilities, developing activists’ strategies for social justice, or on their hands and knees at the College Farm Center—students apply their education to practical problems and gain marketable skills for sustainable economies.

The need for sustainable development is perhaps one of the most multidisciplinary of modern issues, requiring an understanding of the complex interrelations between disparate disciplines as well as the creative solutions to the problems involved. Many courses at Hampshire nurture such processes, and a full list of sustainability courses offered during the 2011-2012 academic year is available in *Appendix A*.

In order to facilitate a nuanced understanding of sustainability issues, coursework focused on or related to sustainable topics has steadily increased in each of Hampshire’s five interdisciplinary schools since 2004. The percentage of the curriculum occupied by sustainability courses nearly doubled from 9% in 2004 to 16% in 2011.

Across Hampshire’s five interdisciplinary schools during the 2011-2012 academic year, Hampshire offered 75 courses that explored the environmental, social, and/or economic dimensions of sustainability. Of the schools’ various curricula, sustainability courses represented approximately 50% in Natural Science; 20% in Critical Social Inquiry; 10% in Cognitive Sciences; 5% in Interdisciplinary Arts; and 3% in Humanities, Arts, and Cultural Studies.

Hampshire recognizes the underrepresentation of sustainability in the arts, humanities, and cognitive sciences, and has designed its programming to support engagement across the five academic schools. For example, the faculty development grant that will be offered this summer will award funding to interdisciplinary teams to develop crosscutting coursework on energy, water, or cities.

We are also presented with the opportunity to bolster our strengths, and as such we will continue to develop broad and deep explorations in sustainable fields, to support the development of our faculty and staff, to encourage information-sharing and interdisciplinary collaboration, to provide opportunities for students to engage in the Climate Action Planning and Implementation processes, and to integrate sustainability into Campus Engaged Learning Activities.

The table on the following page outlines the steps we pledge to take to continue integration of sustainability into the curriculum:

<b>Curriculum: Initiatives</b>			
<b>Initiative</b>	<b>Description</b>	<b>Date</b>	<b>Progress/Next Steps</b>
Track Sustainability Courses	Adopt course descriptors for sustainability-focused and sustainability-related coursework. Track course offerings and impact.	In progress	Adopted the Five College Sustainability Studies Certificate Program descriptors in 2012.
Faculty Development Grants	Provide funding for course, program, and professional development.	Summer 2012	Offered this summer for interdisciplinary teams developing crosscutting courses on energy, water, or cities.
Sustainability Certificate Program	Provide opportunities for deep explorations in sustainable topics through the Five College Sustainability Certificate Program.	Fall 2012	Proposal submitted in 2010. Seminar series hosted in 2011, Certificate rolls out fall 2012.
Curriculum Development Project	Foster collaboration through exchange: Host quarterly strategy sessions among faculty to grow and share sustainable pedagogies to develop new courses, integrate sustainable lenses into existing coursework, and share resources.	Fall 2012	Received a \$50,000 exploration grant in 2012 to fund interdisciplinary teaching and research linkages through the lenses of sustainable agriculture and climate change.
Climate Action Plan Review Course	Provide a yearly course offering for students to review the Climate Action Plan, learn about our commitments and implementation strategies, evaluate our progress, and make recommendations for modification	Spring 2013	Convene visioning session and course development team.
Campus Climate Micro-grants	Establish micro-grant program to fund ideas that support carbon reduction.	2014	Develop funding proposal.
CEL-1 Opportunities	Encourage sustainability projects for the mandatory first year Campus Engaged Learning Activity (CEL-1).	Ongoing	Ongoing

*Key Curricular Opportunities:*

**1. Curricular Connection to Climate Action Plan Implementation**

Hampshire has a long history of grassroots, student-initiated, and student-managed projects, programs, and initiatives. The applied experience focus of the curriculum provides key opportunities to develop components of the Climate Action Plan via student learning opportunities. Some examples of these opportunities include:

- Campus Carbon Management Course
- Meadow Management Plan developed as an interdisciplinary Ecology and Architecture project
- South Amherst Affordable Housing and Walkable Services Vision developed through a course or student-designed project
- Local Foods – Research toward provision of a greater percentage of local sustainable foods for campus and local communities.

**2. Five College Collaboration**

Initiatives, such as the Five College Sustainability Certification Program, pool resources to provide opportunities that could not otherwise exist. Using the Certificate Program as an extended example, Five College collaboration strengthens partnerships among scholars by creating and maintaining a searchable inventory of research interests and facilities on the five

campuses; expands opportunities for faculty development; and provides students access to coursework at the other campuses.

### 3. The Farm Center

Students use the farm to investigate the intellectual, political, and scientific issues surrounding food production and its connections to sustainable development. The farm provides a summer semester program that focuses on the ecological and social systems in which food operates.

#### Focus Area: Research & Applied Exploration

As a small liberal arts college with high expectations but limited means, Hampshire College seeks to foster creative, affordable, and equitable solutions to the challenges of sustainability. This approach guides the efforts of the Climate Action Plan, from enhancements to the physical plant to curricular design, but nowhere else is the ideology and prevalent and meaningful as it is to our research and applied exploration initiatives.

Hampshire College’s faculty and students are active contributors in environmental and sustainable research, entrepreneurship, applied exploration, social programs, and artistic endeavors. Numerous sites on campus are dedicated to applications of classroom theory, including the Center for Design, which offers opportunities in applied design and entrepreneurial learning; the Farm Center, which offers practical outlets in the natural sciences; and the Creativity Center, which fosters research collaboration across multidisciplinary fields. *Appendix A* contains a list of select research and explorations.

The following table outlines the steps we intend to take to continue development of applied applications of sustainability education:

<b>Research &amp; Applied Exploration: Initiatives</b>			
<b>Initiative</b>	<b>Description</b>	<b>Date</b>	<b>Progress/Next Steps</b>
Sustainability Solution Collaborative	Link and strengthen Holyoke outreach, the Center for Design, and the Creativity Center through programming and funding.	Summer 2012	Convene visioning session with key stakeholders.
Research Development Project	Foster collaboration through exchange: Host quarterly strategy sessions among faculty to identify research collaboration and funding opportunities.	Fall 2012	Received a \$50,000 exploration grant in 2012 to fund interdisciplinary teaching and research linkages through the lenses of sustainable agriculture and climate change.
Social Cost of Carbon Research	Establish research focused on quantifying and documenting the social cost of carbon emissions.	Fall 2012	Convene visioning team and seek funding source.
Campus Climate Micro-grants	Provide funding for applied sustainability projects. The College already maintains several funds, including the Timothy Harkness Fund for Innovation, the Social Venture Fund, and the Samuel Morris Sustainability Endowment Fund.	Achieved	Seek additional moneys or earmark current funds for campus sustainability solutions and regional offset programs.

## *Key Research & Applied Exploration Opportunities:*

### **1. Center for Design**

The Center for Design offers students the opportunity to understand and address critical environmental, social, and economic issues through applied design and entrepreneurial learning and practice. Through courses and independent study, hands-on design and fabrication facilities, and a network of collaborators including on-campus constituents; alumni; and local, regional and international communities, Hampshire supports student development of solutions to real-world issues with the goal of making the campus and local communities more resilient, supportive, and sustainable.

### **2. The Farm Center**

From testing sustainable methods of farming to researching pest management, animal behavior, or food microbiology, the Farm Center provides ample facilities for praxis.

### **3. Creativity Center**

In 2011, with the help of a \$500,000 gift, Hampshire established the Creativity Center to foster imaginative thinking and interdisciplinary collaboration. As per Hampshire's tradition of pedagogical innovation, and to affirm the central role of creativity at the College, the Center helps students, faculty, staff, and alumni connect in physical and intellectual settings designed to spark creativity and social change. The Center provides speakers, technology, fabrication facilities, community, innovative coursework, and opportunities to turn the Division III project into an enterprise after Hampshire.

## **Focus Area: Cocurriculum & Community Outreach**

Hampshire has strong cocurricular foundations and community ties, and we intend to build on them to support the objectives of the Climate Action Plan.

Cocurricular initiatives include: New Leaf, Hampshire's student sustainability group, which educates the community on environmental issues, institutes policy changes, and implements a variety of student projects; Mixed Nuts, a student-run food co-op; the Enfield Solar Greenhouse, a communal living endeavor focused on sustainability and access to local food; Transition Hampshire, which works to make Hampshire more environmentally, socially, and economically resilient; and the Community Gardens Group, which maintains and develops open garden spaces on campus.

Community connections are also at the core of the College. In 1958, when the presidents of the other three colleges and UMass Amherst gathered to propose the idea for Hampshire College, community was one of the most common words they used. "[The] College," they wrote, "will be designed to operate as part of a larger intellectual community;" "[it will] demonstrate what can be gained by taking advantage of opportunities for cooperation."

Because many of the initiatives in this CAP involve deep changes in campus culture and practice, they can only be successful with broadly based buy-in from many campus constituencies. This document will act as a basis for outreach to the five academic schools, various staff groups, and the students at large. Feedback from these constituencies will be

incorporated into the next iteration of this document, after which it will be regularly reviewed by all stakeholders to insure that it becomes and remains a relevant, effective, and living document.

The following table outlines the steps we intend to take to continue integration of sustainability into cocurricular and community outreach initiatives:

<b>Cocurriculum &amp; Community Outreach: Initiatives</b>			
<b>Initiative</b>	<b>Description</b>	<b>Date</b>	<b>Progress/Next Steps</b>
Biannual Progress Report	Report progress toward climate neutrality twice every year. Creates community understanding, promotes transparency, and ensures Plan modification as necessary.	Fall 2012	Develop information portal.
Peer to Peer Sustainability Education	Provide opportunities for P2P education, and empower students with the necessary resources to become effective educators.	Fall 2012 (pilot)	Pilot study to begin in 2012.
Monthly Sustainability Faculty Lectures	Sustainability lectures, discussions and debate: regular, informal, and diverse discussions on sustainability to promote interdisciplinary research, community discussion, and discovery.	2013	Proposed.
Student Carbon Debt Project	Develop educational campaign spot-lighting the carbon cost of educating students and a goal of students eliminating a portion of that debt during their college career.	2013	Initial conceptual visioning underway.
Local Offsets	Achieve carbon offsets through local community projects involving or led by students.	2022	Program assessment and design.
Local Offset Project Grants	Establish a grant for student-proposed offsets.	2022	Proposal development based on above findings.
Five College Collaboration	Connect projects and events to and share knowledge with the Five College Consortium.	Ongoing	Blue Sky Initiative discussions underway.
Hampedia	Utilize the college Wiki to collaborate on projects and share information. The inherently collaborative nature of a Wiki encourages users to participate in an ongoing process of creation.	Ongoing	All active student groups and projects are already active on the site.
Farm Center	Offers Garden Summer Camp, CSA, and Five College Food, Farm, and Sustainability Institute.	Ongoing	Food, Farm, and Sustainability Institute opens in June.

*Key Cocurricular and Community Outreach Opportunities:*

**1. The Farm Center**

The Farm Center provides community resources through its community-supported agriculture program, which provides local vegetables to its 200 shareholders, and through its educational opportunities, such as the Garden Summer Camp for local 6- to 10-year-olds; a program to teach single teen mothers where their food comes from through the Holyoke Care Center; and a Five College Food, Farm, and Sustainability Institute.

## 2. Five College Collaboration

Pooling the resources of the Five College Consortium for events like the proposed yearly regional conference will enable deep discussion of issues of relevance to local communities, and provide tools for sustainable development as Hampshire approaches its climate neutrality imperative.

## 3. City of Holyoke

Hampshire has developed a deep connection with communities in the City of Holyoke. The College will explore ways to strengthen this connection with a focus on sustainable urban development including such topic areas as: transportation, energy, healthcare, education, and food.

### ***Imperative: Climate Neutrality – Interim Goal (all areas but scope 3 transportation)***

By 2022, Hampshire seeks to achieve climate neutrality for all scope 1 and 2 emissions, as well as those scope 3 emissions not derived from transportation. Scope 1 emissions are those directly under the College’s control, such as fuel consumed in campus buildings and fleet vehicles, refrigerants and landscaping. Scope 2 emissions are offsite emissions that result from activities directly under the College’s control - emissions associated with electricity purchased by the College. Scope 3 covers emissions over which the College has less direct control, such as emissions from student and employee commuting and travel, solid waste and wastewater.

In FY2011, scope 1 and 2 emissions were down 21% relative to FY2004. Hampshire is proud of this accomplishment, but we also recognize that that was the easiest 21%. It gets harder from here, and we have significantly further to go. We do not think that our neutrality target will prove easy, and we have not figured out all the details yet. Our preliminary roadmap is divided into two Areas of Focus: *Energy Generation & Use* and *Operational Emissions*. The strategies for each area are outlined in the table below:

<b>Strategies for an Climate Neutrality</b>	
<b>Focus Area</b>	<b>Strategy</b>
Energy Generation & Use Curriculum	Expand conservation efforts.
	Increase operational efficiency.
	Transition to renewable portfolio.
Operational Emissions	Eliminate solid waste.
	Eliminate wastewater.
	Reduce fleet vehicle consumption.

### **Focus Area: Energy Generation & Use**

Hampshire College’s largest opportunity for emissions reductions lies within its energy use. Through a holistic consideration of the campus landscape, Hampshire can make behavioral changes; frame new building projects, renovations, and retrofits to position energy use as a priority; and transition to a portfolio of renewable resources.

The table on the following page outlines the implementation roadmap for these initiatives:

<b>Energy Generation and Use: Initiatives</b>			
<b>Initiative</b>	<b>Description</b>	<b>Date</b>	<b>Progress/Next Steps</b>
Build Smart: High Performance Buildings	Apply four key principles for new built space: (1) A careful planning process, (2) A “best in class” standard with regard to energy use, (3) Student involvement in every phase of new building processes, and (4) Inclusion of a renewable energy supply sufficient to meet the new building’s energy needs.	Fall 2012	Develop plan for major renovation to: (1) reduce consumption to: (1) reduce consumption on the order of 30-40% based on current consumption, (2) improve infrastructure, and (3) be fiscally responsible.
Renewable Energy: Solar Photovoltaic	Hampshire will have to dedicate several acres for solar photovoltaic (PV) installations.	2022	Identifying locations, establishing installation standards.
Renewable Energy: Wind	Long-term PPA with a local or regional wind project. In 2022, Hampshire could begin purchasing the RECs associated with this power.	2022	Initial investigations underway.
Renewable Energy: Biomass & Geothermal	Prime candidates for renewable heating strategies are currently identified as biomass and geothermal heat pumps.	2022	Under investigation.
Offsets	Tactic to be applied only as necessary – current plan requires limited offsets for this category.	2022	View Offsets section of this plan.
Energy Retrofits	20% reductions across campus.  Focus on buildings not targeted for major renovation.  High level review identified seven key opportunity areas: (1) lighting retrofits, (2) lighting controls, (3) low flow plumbing, (4) building envelope, (5) building seal/ weatherization, (6) pipe insulation, and (7) HVAC control improvements.  Additional opportunity areas include: (1) window replacement, (2) roof replacement, and (3) heating and cooling system replacement.	Ongoing	Develop retro-commissioning plan for later-term renovations based on building renovation priority list. Establish annual investment fund.
Energy Conservation – Education, Awareness and Training	Apply integrated conservation programs using education, awareness and evaluating building operation procedures.	Ongoing	Program development.

## **Build Smart: High Performance Buildings**

### *New Buildings*

The Hampshire campus will grow over the next twenty years. Conditioned building space is likely to expand by 10-15% in that time period. Designing and constructing buildings to minimize energy use will thus be a key component of the College’s carbon reduction strategy. Hampshire will apply the following principles to any new buildings or additions to be added to the campus:

1. Buildings will only be built after a thoughtful planning process that seeks to:
  - a. Optimize the use of existing space before building additional space,
  - b. Make the most efficient use of any new space that is built, and
  - c. Evaluate the impact of new buildings on the College's overall carbon emissions.
2. Hampshire will strive to build new buildings to a "best in class" standard with regard to energy use. This standard will place particular focus on building envelopes, user and operator controls, and right-sized mechanicals. This process will:
  - a. Follow an integrative design process that sets aggressive energy budgets and manages the process to those energy budgets just as projects are managed to a financial budget; and
  - b. Be driven by a commissioning agent or sustainability consultant to be hired at the outset of each project to represent the College. The agent or consultant will be charged with and empowered to achieve the performance standards necessary to achieve "best in class" status.
3. New building projects will involve students in a meaningful way in every phase of the project from planning through design, construction and commissioning.
4. New building projects will include a renewable energy supply sufficient to meet all of the building's energy needs. To the extent possible, the renewable energy supply will be integrated into the building itself or mounted on the building.

#### Greening Existing Buildings

Based on the age and energy use of campus buildings, we believe that we can invest in the College in a way that will (1) improve infrastructure, (2) reduce greenhouse gas emissions, and (3) be fiscally responsible, with most projects paying for the capital investment through energy savings.

At the end of this decade, most major buildings on campus (some 640,000 of 810,000 square feet) will concurrently reach their 50th operational year. Hampshire therefore faces a significant deferred maintenance burden that will require several major building renovations over the next 10-20 years. In some cases it may be in the best interest of the College to replace certain buildings with new facilities.

Comprehensive building renovation projects will provide an opportunity for much deeper energy savings than can typically be achieved through conventional energy retrofits. However, achieving aggressive energy reduction targets will require definition and implementation of an approach to renovation projects that is specifically targeted to achieve very high energy

performance. The approach defined should follow the same outline as the process described above in the *Build Smart* section.

For the purposes of our preliminary planning process, we have assumed that the following buildings will be renovated in the next 20 years, and that in the renovation process Hampshire will aim to reduce energy consumption on the order of 50% relative to current consumption:

- Robert Crown Center
- Harold F. Johnson Library
- Cole Science Center
- Franklin Patterson Hall
- Merrill House
- Greenwich House

We estimate that an incremental energy efficiency investment of \$2-3 M (not including the Robert Crown Center project currently in planning) integrated into the renovation of these buildings would produce attractive returns. Additional funds will be required to support the necessary renewable energy installations to get these buildings to net zero energy.

We have estimated the reductions from this aggressive approach to energy efficiency in our buildings at 1,581 MTCO<sub>2</sub>e or 21% of 2011 campus greenhouse gas emissions.

### **Energy Retrofits**

The buildings targeted above for comprehensive renovations account for 42% of campus building square footage. The remaining 470,000 gsf of building space will need to be reviewed thoroughly for energy retrofit opportunities. Hampshire has recently completed a deferred maintenance assessment that indicates that over 40% of the College's deferred maintenance burden resides in systems that affect energy use, such as building envelope, HVAC, lighting, and plumbing systems. Given the magnitude of deferred maintenance on the campus, Hampshire will be best served by putting together an integrated energy efficiency and deferred maintenance program that addresses the remainder of the campus.

The integrated energy efficiency and deferred maintenance program will:

1. Define buildings targeted for major renovations over the next 10 years and remove them from the energy retrofit/deferred maintenance program;
2. Prepare preliminary budgets for the program based on deferred maintenance database and estimated energy efficiency opportunity;
3. Develop a high-level, multi-year plan for implementation;
4. Set energy targets as a key performance metric for the program manager;
5. Conduct retrocommissioning of key buildings;

6. Implement a balanced mix of energy efficiency and deferred maintenance projects such that relatively quick paybacks on energy efficiency measures combine with longer payback measures that address critical deferred maintenance issues; and
7. Monitor building energy performance to ensure achievement and maintenance of energy reductions.

We have estimated that the energy efficiency and deferred maintenance program outlined above can reduce energy use in the buildings addressed by 20% or more, yielding emissions reductions of 674 MTCO<sub>2</sub>e.

### Renewable Energy

The following sections explore options for Hampshire’s transition to a renewable energy portfolio. The principles outlined in the table above will guide our renewable plan, no matter which sources are selected for implementation.

<b>Principles Guiding All Renewable Energy Initiatives</b>
RECs will be sold in the early years of purchase agreements as necessary to make the projects economically viable.
Projects must enhance the community and preference will be given first to energy generated on-site and then to energy generated nearby.
Projects can be accomplished through partnerships.
Fuel source must be sustainable.

Over the last 20 years, Hampshire has converted significant portions of the campus from electric heat to natural gas heat. At current gas prices, these conversions are saving the College hundreds of thousands of dollars annually in utility costs. If Hampshire were to continue with the natural gas conversions, there would be still more savings to be had. However, given the significant environmental concerns with regard to natural gas sourcing, and provided the College’s aggressive carbon neutrality goals, Hampshire must look beyond natural gas to renewable heat sources.

#### Solar Photovoltaic

Solar Photovoltaic (PV) presents a significant opportunity to Hampshire due to one of the College’s great assets: its land. To achieve the goal of climate neutrality for scope 1 and scope 2 emissions by 2022, Hampshire will have to dedicate several acres to solar PV installations. Hampshire has a significant amount of open space that could be utilized for this purpose. However, exploratory work still needs to be done to identify the right parcels of land for PV installations, to set standards for the installation, and to get community buy-in on use of the selected plots for this purpose. Further investigation will focus on technologies and approaches that allow for ongoing use of the land.

Several other obstacles will need to be worked through to get a significant PV installation on campus, including state net metering limits and considerable financial constraints.

## Wind

It is likely that the College will not build sufficient solar PV capacity to meet its entire electric load, and Hampshire will have to supplement its electricity supply with an additional renewable source. Although the College is unlikely to build a significant wind installation on its campus, Hampshire intends to investigate opportunities to participate in regional wind developments. Projects should be local (within New England or New York) and the College should be able to play a key enabling role. Ideally, Hampshire would enter into a long-term PPA with a wind power provider. Hampshire may not purchase the RECs associated with this power in the short term, but will begin doing so by 2022. Initial investigations indicate that procurement of wind power will be a viable option for the College, although under current market conditions there will likely be a premium for wind. Nonetheless, under the right market conditions, a long-term wind PPA can serve as a good financial hedge against future energy cost increases, and play an integral role in reaching Hampshire's climate neutrality goals.

## Biomass and Geothermal

Our plans for climate neutrality require significant focus on campus heating systems. Currently, the campus is heated by a mix of distributed natural gas boiler systems and electric resistance heat. For the purposes of the Plan, we have divided the campus into four districts:

- Central (Cole Science Center, Johnson Library, Crown Center)
- Southwest (Merrill, Dakin and Franklin Patterson Halls)
- Southeast (Prescott, Arts District, Lemelson)
- Northwest (Enfield, Emily Dickinson Hall, Greenwich)

Heating strategies will be developed for each district. The primary renewable candidates are ground source (geothermal) heat pumps and biomass. The current plan is based on conversion of most or all of these districts to primarily geothermal heat sources. However, installing a wood chip or other biomass boiler to provide heat to one or more of the districts remains an option for consideration as we move forward with implementation of this plan.

Although the geothermal conversions *per se* are not a renewable energy source (they still require electric energy from an outside source), coupling geothermal heat pumps with a renewable electric supply will be a very important and impactful tactic for achieving climate neutrality.

Biomass projects will require significant attention to fuel sourcing to ensure that the fuel is harvested from local/regional sources and is done so in a sustainable fashion. Also, biomass boilers will represent a significant operational complication.

## **Focus Area: Operational Emissions**

While the emissions footprints of the operational components of Scopes 1 and 3 of the campus footprint, or fleet and liquid fuel, solid waste and water waste, is tiny compared to the building energy related footprints, any comprehensive carbon neutrality plan must address these areas. Hampshire's strategy will always be to first reduce consumption, then implement alternative practices, and finally rely on carbon offsets only after other options are exhausted. In many cases the solutions in these areas could also result in other positive returns to the campus environment such as increased staff efficiency or community engagement opportunities.

## Solid Waste Elimination

Zero solid waste—the diversion of 95% of all non-hazardous waste from landfills or incinerators—is a bold, but realistic aspiration for Hampshire. The College will achieve this goal through waste diversion strategies, including programmatic shifts, implementation of a managed system, education, awareness and culture change; and aversion strategies, including policy and purchasing shifts as well as shifts in practices that result in reduced paper, plastic bottle, and single-use bag waste.

Zero solid waste is possible in campus operational and programming spaces, but student housing will be a challenge. Hampshire will move toward zero solid waste through a shift from source separation to commingle recycling, which will reduce management and infrastructure costs. The College will also invest in behavior change and engagement student interns. The following initiatives outline the comprehensive approach Hampshire will take toward zero solid waste:

<b>Solid Waste Elimination: Initiatives</b>			
<b>Initiative</b>	<b>Description</b>	<b>Date</b>	<b>Progress/Next Steps</b>
Increased diversion through commingle recycling	Transition to commingle recycling (separate commodities not sorted by users). Commingle recycling will simplify the process, as well as reduce staffing and infrastructure requirements. Awareness and engagement efforts will support increased diversion.	2013	Develop transition plan.
Assess document reproduction technology	Review efficacy and use of networked copiers, scanners, and printers to reduce office paper consumption, reduce printing costs, energy consumption, and toner usage.	2013	Program in place. Need to inventory technology.
Reduce waste through event policies	Develop guidelines for hosting large campus events that reduces waste (water stations over bottled water) and would expand the success of composting and recycling.	2013	Convene stakeholder group.
Reduce waste through increased composting	Expand overall composting program participation across campus through education.	2014	Composting service provided throughout the campus. Develop revamped awareness campaign.
Reduce waste through purchasing policies	Adopt purchasing policies that: 1) Reduce packaging related to shipments; 2) Require vendor compliance with campus solid waste approach; and 3) Include diversion mandates for all non-hazardous waste.	2015	Policy assessment and development.
Reduce food packaging waste	Reduce pre- and post-consumer packaging waste by 5%.	2015	Develop approach with food service provider.
Zero Solid Waste Plan	Develop complete plan to achieve zero solid waste by 2022.	2015	Begin planning process in 2014.
Reduce waste through campus policies	Transition campus to bottled water and single-use bag free. Install water filling stations and develop dispensing station plan for events. Phase out bottled water and department water filling.	2016	Assess community perceptions and drivers; implement appropriate filling stations.

## Wastewater Elimination

Although wastewater accounts for a marginal percentage of Hampshire’s emissions inventory, it is an essential component of a comprehensive plan for climate neutrality. Hampshire’s wastewater strategy will focus on consumption reduction and development of on-site treatment options to enable reuse of campus wastewater. Successful conservation measures will be implemented through awareness tactics on campus. Campus water users play a critical role—not just because their actions can reduce their personal water use, but also because they can identify and report any infrastructural issues to Facilities and Grounds, and even develop solutions to further reduce water use. The same efficiency measures that we will apply in regard to energy will also be applied to water. Plumbing fixtures will be upgraded as part of major renovations. Finally, the possibility of on-site treatment through a bio remediation technology will be investigated. A feasibility study will lay the groundwork for a pilot that may expand to include the entire campus, allowing effluent to support agricultural programs.

The following table outlines the tactics we will use to eliminate our wastewater:

<b>Wastewater Elimination: Initiatives</b>			
<b>Initiative</b>	<b>Description</b>	<b>Date</b>	<b>Progress/Next Steps</b>
Engagement	Reduce consumption 5% through awareness.	2014	Develop implementation plan.
Renovation Efficiency	Reduce water consumption by 5% through two major building renovations.	2022	Not started.
Offsets	Due to building renewal schedule, reduction target will not be met until after 2022, therefore offsets will be required to meet the 2022 goal, and will be reduced as efficiency measures are implemented.	2022	See offset scope in that section of this plan.
On-site treatment	Transition one-quarter of campus to on-site bio treatment. Effluent to be used agriculturally.	2022	Develop project scope.
	Based on smaller scale project efficacy, transition entire campus to on-site bio treatment.	2030	Evaluate pilot project success.
Appliance Efficiency	Transition all appliances for 30% water-use reduction as part of all major renovations.	2035	Develop appliance standards.

### Fleet Vehicles & Liquid Fuels

Fuel consumption in Hampshire vehicles is responsible about 4% of campus greenhouse gas emissions. Much of the reductions in this area will be possible through implementation of operational changes that will not only reduce fuel consumption, but result in increased staff efficiency; these efforts in turn allow for streamlined equipment requirements that will result in additional fuel efficiencies. Efforts include:

#### *Operational Efficiencies*

- A. Meadow Management Plan: Hampshire expends significant energy and staff time maintaining several acres of manicured lawns on the campus. The Meadow Management Plan will significantly reduce the amount of mowed lawn by transitioning these spaces to managed meadow. Campus aesthetics must not be disregarded in this transition. Parts of the campus should remain as mowed lawn, but portions of the campus can be

aesthetically enhanced with meadows in a manner that aligns with the look of the campus, and with Hampshire’s identity.

- B. Move Facilities and Grounds Department: Staff trips back and forth from Facilities and Grounds on Bay Road to the campus contribute significantly to fleet vehicle fuel consumption. Moving the site of the Facilities and Grounds Department onto the campus will reduce fuel use and improve responsiveness and staff efficacy.

*Alternative Fuels/Fuel Efficiency*

- C. Where practical, the campus will transition fleet vehicles to alternative fuels, most likely electric vehicles charged via solar powered charging stations.
- D. Where alternative fuel options are not available, the College will evaluate all new vehicle purchases carefully and will establish procurement policies that will require that the College to purchase fuel-efficient vehicles in the smallest size needed to perform the task.

We will mitigate these emissions through the tactics outlined in the table below:

<b>Fleet Vehicles &amp; Liquid Fuels: Initiatives</b>			
<b>Initiative</b>	<b>Description</b>	<b>Date</b>	<b>Progress/Next Steps</b>
Meadow Management Plan	Develop a Meadow Management Plan to transition 85% of mowed landscape to managed meadow in order to create habitat for local flora and fauna, reduce emissions, create educational opportunities, and achieve significant staffing savings.	2014	Develop process for public input. Consider student project to manage process and plan development.
Move Facilities and Grounds Department	Develop a new home for Facilities and Grounds on the campus proper to reduce round-trip emissions, reduce vehicle requirements, increase staffing efficiency, and free up valuable agricultural space.	2020	Assess feasibility as part of master planning process.
Fleet Vehicle Right Sizing & Alternative Fueled Vehicles	In conjunction with relocation of Facilities, resize vehicle needs. Transition entire vehicle fleet to electric, alternate fuels or high efficiency vehicles as appropriate technology is available.	On-going; completed by 2022	Assess current inventory. Stage transition with heavy vehicles last where possible.
Offsets	Available technology (and emissions reductions possibilities) will determine the required offsets. See Offset Criteria.	2022	See offset scope in that section of this plan.

***Imperative: Climate Neutrality***

Emissions associated with Scope 3 transportation are particularly difficult for Hampshire to monitor and regulate. These sources have been decoupled from the more immediate emissions target in 2022 with a longer-term carbon neutrality target of 2032. We anticipate that Scope 3 Transportation emissions will require the largest carbon offset commitment.

Hampshire will set a target to reduce and mitigate 100% of these emissions by 2032. Mitigation shall occur through carbon offsets according to the criteria described in the *Offsets* section of this document.

Hampshire shall employ the following tactics to mitigate transportation emissions:

<b>Scope 3 Transportation: Initiatives</b>			
<b>Initiative</b>	<b>Description</b>	<b>Date</b>	<b>Progress/Next Steps</b>
Transportation Decision-making	Support increased shuttle, Zip-Car, car-pool participation through awareness and communication programs.	2013	Expand education campaign.
Awareness and Education	Support best practices in business travel through educational portal outlining cost/benefit of airline, railroad, bus, car travel.	2014	Develop project scope – possible student project.
Video Conferencing Capability	Develop accessible video conferencing portals, including hardware, software, training and facility scheduling capability.  While this is not anticipated to reduce emissions significantly, it is important to provide a viable alternative while supporting the college community with an added resource.	2015	Assess capacity requirements, develop project scope.
Affordable Faculty/Staff Housing and Walkable Services	Develop affordable faculty staff housing options and walkable services as part of the South Amherst community development. Leadership opportunity includes guiding this project to net-zero energy.	On-going; completed by 2032	Initial Vision Development – Possible Student Project.
Anticipated Increased Airline Efficiency	It is anticipated that some reductions will be possible due to increased fuel efficiency or alternative fuel switching in the airline industry.	2032	No Hampshire action other than tracking the airline industry actions.
Bicycle Infrastructure For Commuters	Expand bicycle commuting participation through sheltered bicycle racks and developing commuter shower facilities as part of major renovations.	On-going	Assess capacity requirements.
Five College Bike Sharing Collaborative	Develop a Five College fee-based bicycle sharing collaborative with stations on the campuses and in the surrounding towns.	TBD	Develop proposal for Five College Collaborative.

## Strategies for Success

The process of developing any Climate Action Plan can be informative and enlightening, and yet the result of the significant expended effort is that most plans end up on shelves, rarely (if ever) referenced. The goal of Hampshire’s Climate Action Plan is to create a roadmap that is used and is thus dynamic—responding to the constantly changing landscape. To ensure this dynamism, Hampshire must foster ownership among all stakeholders. The Plan will achieve the most buy-in if it simultaneously enhances Hampshire’s core mission, and thus we must provide opportunities that utilize Hampshire’s unique strengths. This section outlines strategies for success that understand the College’s strengths and weaknesses, and are geared toward engagement of the campus community.

<b>Strategies for Success</b>			
<b>Initiative</b>	<b>Description</b>	<b>Date</b>	<b>Progress/Next Steps</b>
Marketing and Communications	A comprehensive Marketing and Communications Plan promotes the commitment, points to opportunities for community participation and celebrates progress.	2012	Outline metrics, responsibilities, and needs for both internal and external Marketing and Communications Plan.
Recognition Program	Recognition is a critical tool for keeping stakeholders engaged. This dovetails into a Marketing and Communications Plan strategy to celebrate both individual and institutional accomplishments.	2013	Assess current recognition programs for possible expansion, program development.
Staff Evaluations	Integrate sustainability support criteria into staff evaluations.	2013	Identify opportunities of current evaluation process.
Sustainability Literacy and Continuing Education for Staff Members	Developing basic sustainability literacy training accessible by all members of the community.	2013	Possible student project.
	Identifying and providing resources for training and continuing education for key implementers in facilities, academic and administrative departments.	2014	Seek funding sources for Continuing Education fund.
Policies and Guidelines	Select policies that raise the visibility of campus efforts, guide decision-making and maximize returns on investments. Examples of policies include: Green Building for renovations and new builds, and requiring vendors to support the Imperatives outlined in this document.	TBD	Establish priorities, engage appropriate stakeholder.
Dedicated Staffing Support and Organizational Roles	Some dedicated staffing is imperative to connect and guide the tactics of this plan. This is discussed further in the organizational structures section of this document.	TBD	Develop and fund staff support tactics.

## Organizational Structures and Stakeholders

A diverse group of stakeholders and institutional structures will be responsible for the successful implementation of the Hampshire Climate Action Plan.

- The Environmental Committee: Charged with engagement of the community in environmental and sustainability issues from campus to global scales, and with increasing accessibility to low-impact living options both on and off campus.
- The Senior Executive Team (Monday Group): The senior decision makers for the College will provide the Plan's strategic direction.
- Staff: Play the critical role of all the day-to-day management of the campus. Staff are at the frontlines of the operational success, and provide non-traditional learning opportunities and programming for students.
- Students: The core campus legacy, students are the key stakeholders that provide the drive for evolution and advancement of the campus programs for the present and the future. Students also influence the operational success of the College through their actions.
- Academic Schools: Responsible for curriculum development and course lineups within the represented disciplines, and so will play a key role in implementation of the curricular dimensions of the CAP.
- Vendor Partners: Support the campus' academic and operational goals through the services they provide.

While all campus stakeholders play different roles in the successful implementation of sustainability programs, it is also important to consider that some additional staff support are critical to the success of this plan. These include: staffing and faculty support focused on connecting stakeholders to advance the academic program and operational goals; campus energy management support; and campus resource conservation engagement support (possible student positions). The efforts of these staff result in cost avoidance and savings opportunities and support the College's overarching mission. There are several different scenarios by which these positions can be configured and achieved it is most important to focus on the need for individuals whose role is to support the campus community in achieving the goals outlined in this plan.

### Core Recommendation

Both as a practical matter to achieve progress, and also as an important symbol of the College's commitment to sustainability as a defining dimension of a Hampshire education, it is recommended that the College create an Office of Sustainability consisting of two new positions, a high level Sustainability Director and a full time coordinator to assist him/her. The director would oversee implementation of this plan and the coordinator would support these programs and serve as a resource for faculty, staff, and students working on sustainability initiatives.

## Financial Considerations

We recognize that this plan represents a financial commitment that would appear to be beyond the means of the College. The challenge is large, but we firmly believe the goals set forth in this document must be a priority. The College will need to utilize available subsidies and incentives for renewables; the recently established sustainability revolving loan fund; endowment funds; and the institution's fundraising capacity.

For the proposed renewable energy projects to be financially viable in the short term, we will need to utilize subsidies and incentives, such as the sale of the renewable energy credits generated by the projects. In the long term, the funds generated from the short-term sale of RECs will allow us to purchase or retain our own credits, thus reducing our own carbon footprint.

Financing for energy efficiency projects will be supported by the recently established Hampshire College Sustainability Revolving Fund (HCSRF), which the College has pledged to build to \$400,000. The fund is structured to provide loans for campus improvement projects that improve efficiency and resource conservation, and also structured to build capital over time, which will allow for funding of increasingly ambitious projects. The fund also serves as a pathway for increased student, faculty, and staff involvement in sustainability projects on campus.

Endowment funds will be reserved for energy projects that can provide attractive returns on investment via energy savings. Hampshire will consider projects that offer a 7-year or better payback for this source of funding. Likely, the endowment will prove an important financial component for the energy components of renovation projects. In order to ensure success, mechanisms to document savings and repayment of the endowment must be developed.

For the building renovation, biomass, and geothermal projects proposed in the Plan, significant additional capital resources will be required. Several million dollars of additional fundraising will be necessary to support these objectives.

Alternatives to at least one action considered in this plan must be explored. The considered several megawatts of solar photovoltaic (PV) panels built on college-owned land pose financial challenges the College cannot undertake at this time. The PV would represent a physical asset valued in the tens of millions of dollars and an encumbrance to several acres of college lands. Though an independent party may own the equipment, a power purchase agreement or operating lease would be treated as a financial liability, which would constrain Hampshire's debt capacity. Since the College cannot further constrain its debt capacity for this purpose at this time, we must continue our investigation of other options that would not burden the College in this manner. Proposed options include joint renewables projects with the other colleges in the Five College Consortium and the Town of Amherst.

Finally, we acknowledge that this plan is not achievable in today's economic and political environment, but we believe that these environments are untenable and that a logical political evolution will support renewable energy and other sustainable development in the future. This plan will adapt to those necessary, though yet undefined policy changes.

## Tracking Progress, Measurement, and Reporting

The Hampshire College Carbon Emissions Inventory will be updated annually by the Hampshire College Facilities and Grounds Department with support from the Environmental Committee, using the Clean Air Cool Planet Calculator. The inventory will continue to track Scopes 1 and 2 emissions, as well as Scope 3 solid waste, wastewater, and transportation emissions. The carbon emissions related to purchased products and the supply chain will not be actively tracked, but a limited list of products will be selected to be included in the 2014 inventory. The Climate Action Plan will be updated every other year by the Environmental Committee.

Progress reports will be developed by the Committee (or their designee) and released to the public twice annually. By 2014, we will have established a comprehensive dashboard, which will display an easily understood set of “vital signs” indicators, and provide a more detailed way of understanding progress as well as ways to engage in the process. The community will also receive informal updates through the engagement platform being developed by the Committee.

<b>Tracking Progress, Measurement, and Reporting</b>			
<b>Initiative</b>	<b>Description</b>	<b>Date</b>	<b>Progress/Next Steps</b>
Climate Adaptation	A climate adaptation supplement to this plan.	Fall 2012	To be developed as a course project.
Inventory	Annual public inventory	2013 – annually	N/A
Tracking	Tracking dashboard	2014	N/A
Plan Updates	Biannual updates to the plan strategies and tactics.	2014 – biannually	N/A
Progress Reports	Twice annual reports to the public	February and August	Develop report template.

## Offsets Statement

Carbon offsets and/or purchases of Renewable Energy Credits are often necessary to achieve carbon neutrality, since some emissions associated with the institution’s activities may be beyond the College’s control. We believe carbon neutrality should be achieved primarily through emissions reductions; offsets should be a last resort. To the extent that Hampshire needs offsets to achieve carbon neutrality, we intend to generate offsets through direct participation and investment in projects that reduce carbon emissions in our local communities, such as energy efficiency upgrades or protection of natural areas in Holyoke.

Hampshire faculty, staff, and students can help generate emissions reductions through carbon mitigation activities in the community. Performing home energy audits, weatherization, and lighting upgrades provide a viable way to reduce local energy use in a way that is particularly beneficial to low-income or low-mobility community members. Hampshire would not only reduce carbon, but also provide vital community service and education. Students would be given valuable service experience and values. Care should be taken to avoid double-counting of any generated offsets.

We may develop marketable offsets through the creation of a formal Forest Management Plan for Hampshire’s woodlands. The College will work with an offset provider to develop a strategy that ensures enhanced and continued carbon uptake by Hampshire’s forests. Marketable offsets could be sold for a designated period of time to help cover the administrative costs of establishing the program, but then eventually retired to offset Hampshire’s emissions. In the event that offsets must be purchased from a broker, the following criteria will be applied:

- Offsets must be verified by a third-party evaluator, and
- Offsets must support new project development in the region.

In the near term, the College will investigate and pursue three types of offset tactics, explored in the following chart:

<b>Offsets: Initiatives</b>			
<b>Initiative</b>	<b>Description</b>	<b>Date</b>	<b>Progress/Next Steps</b>
Local Community Activity	Support emissions reductions in surrounding communities (e.g., Holyoke) through programs that support energy efficiency, education, and sustainable innovation.	2015	Program Development
Forest Management	Investigate the possibility of creating valid market forest offsets through improved management practices on campus woodlands.  Read more in <i>Appendix C</i> .	Assessment - 2016  Forest Management Plan - 2018	Assessment of current forest stock, develop management plan.
Renewable Energy Generation Program	Support new renewable energy generation capacity by leveraging financial investments and partnerships. RECs will be decoupled and sold for years 1-5 (or up to 2022) to offset project costs or support campus emissions reduction projects. RECs will be retired in 2022.	First capacity implemented in 2017.  Installations by 2022.	Under investigation

## Baseline Snapshot

### Campus

Hampshire College is a small, liberal arts college in Amherst, Massachusetts—a humid continental climate prone to severe winter storms and hot, humid summers. Between 2004 and 2011, the size of the student body grew from almost 1,250 to 1,450. Total built space also grew; in 2009, Hampshire received its first LEED Gold certification for the 6,700 square foot addition to the Jerome Liebling Center for Film, Photography, and Video.

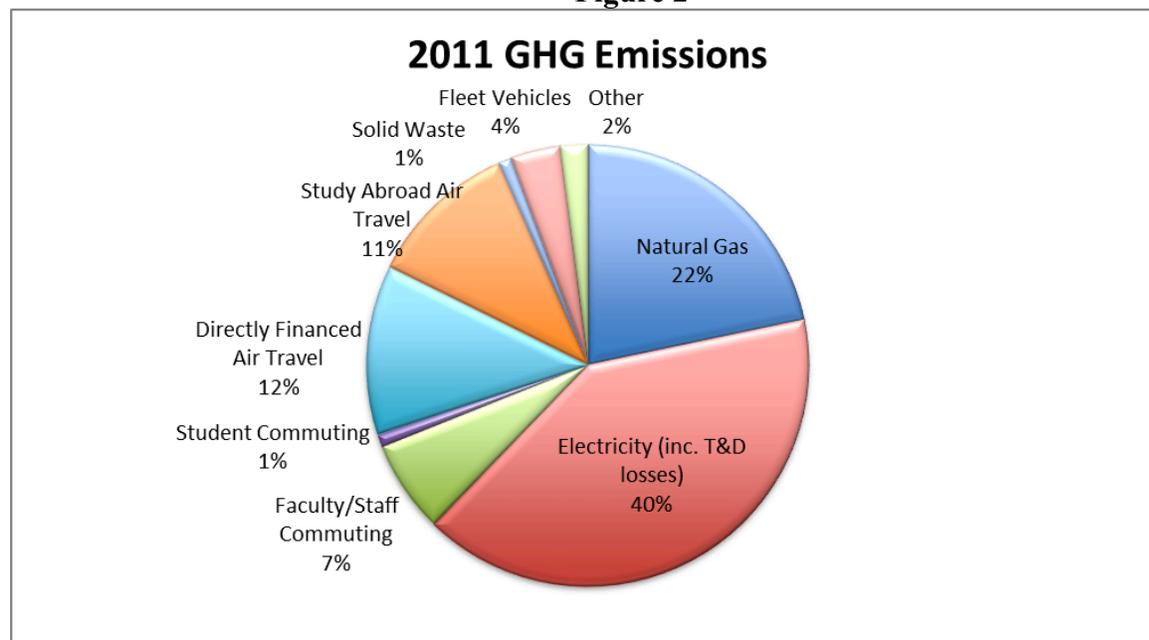
The campus' 58 buildings add up to nearly 810,000 square feet. 640,000 square feet (79%) of which was constructed between 1970 and 1975. In many cases the equipment in the buildings from the early 1970s is original, and has outlived its useful life. There is a considerable deferred maintenance backlog, as these buildings are often inefficient.

Over the next 20 years, Hampshire may consider building an additional 100,000 square feet, increasing the total size of the built space to greater than 900,000 square feet.

### Emissions

Hampshire's FY 2011 emissions<sup>2</sup> totaled 7,528 metric tons of carbon dioxide equivalency (MTCO<sub>2</sub>e).

Figure 2



As indicated in Figure 2 above, over 60% of the College's emissions were attributable to energy use in campus facilities. Another 31% is attributable to College-related travel and commuting.

Since 2004, Hampshire College's total greenhouse gas emissions have steadily decreased, with one exception in 2009. In that year documented faculty, staff, and student air travel increased by

<sup>2</sup> Carbon inventory data provided by Sightlines, LLC

52%. That increase alone accounted for 11% of the College's 2009 emissions. Air travel returned to levels consistent with previous years in 2010. It's not clear whether the 2009 numbers are due to an accounting error or some other anomaly.

### **Scope 1 Emissions**

The College's Scope 1 emissions—those directly owned or controlled by Hampshire—have also steadily decreased since 2004. These emissions are attributable to natural gas heating and cogeneration; the College's gasoline and diesel fleets; and fugitive emissions sources, particularly chlorodifluoromethane (HCFC-22).

In 2011, the College used 8,500 MMBtu less natural gas than it had in 2004, resulting in a 450 MTCO<sub>2</sub>e reduction. College fleet vehicle emissions have fluctuated in recent years in relation to amount of gasoline and diesel consumed, and are responsible only for negligible emissions reductions. In 2007, Hampshire began accounting for fugitive emissions from HCFC-22—an accounting improvement since 2004—though one that slightly masks the positive impacts of the College's reductions in natural gas use.

### **Scope 2 Emissions**

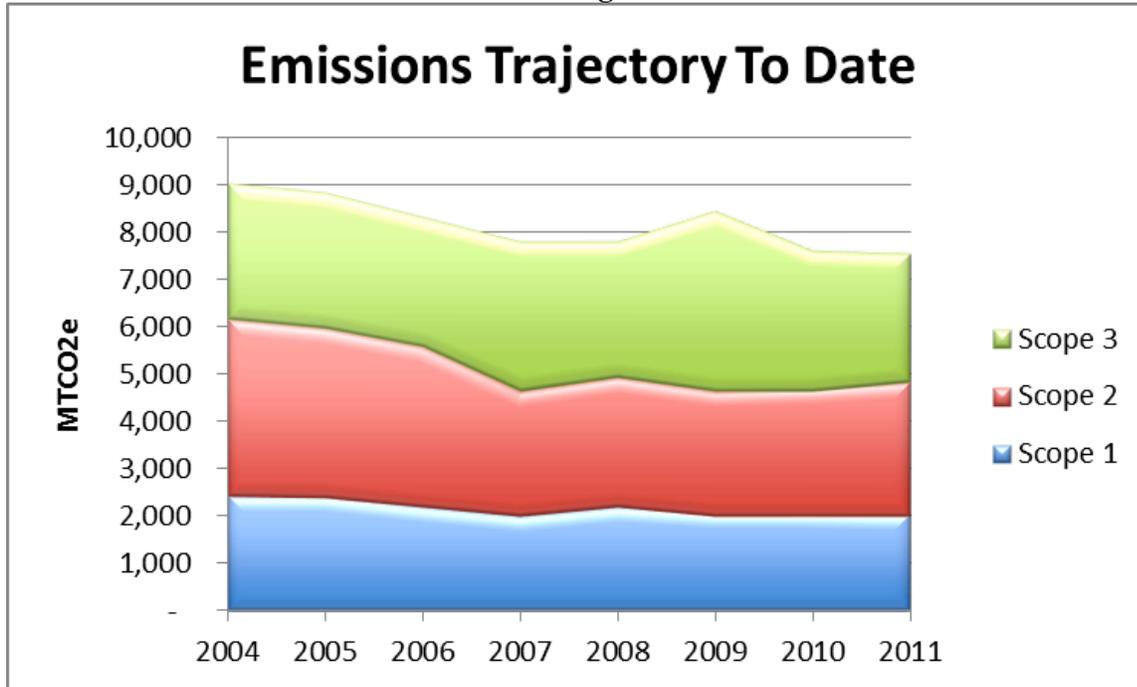
Scope 2 emissions are those that are directly attributable to campus energy consumption but occur off site and outside of the College's ownership and control. Purchased electricity is Hampshire's only source of Scope 2 emissions. The College's Scope 2 usage and emissions were reduced by 25% in 2011 relative to 2004 levels, as seen in the chart above.

### **Scope 3 Emissions**

Hampshire's Scope 3 emissions — those neither owned nor operated by the institution, but directly financed by Hampshire or the result of an encouraged or required behavior — derive from a variety of sources including: faculty, staff, and student commuting; faculty, staff, and study abroad air travel; landfill waste; wastewater; and paper. These emissions have remained relatively consistent, with the exception of the spike related to air travel described at the beginning of this section.

See Figure 3 on the following page to view Hampshire's Scopes 1, 2, and 3 emissions over time.

Figure 3



The figure above, depicts Hampshire's Scope 1, 2, and 3 greenhouse gas emissions.

## **Organizational Boundaries**

At Hampshire College, we wish to lead by example, so we feel that our responsibility to account for and mitigate emissions is bounded only by pragmatism; all campus activities and activities of campus constituents while they are at Hampshire are accounted for, unless these activities can reasonably be considered beyond the long-term control of the institution (eg. global education experiences; cases where a student lives in student-obtained off-campus housing). All campus-owned spaces, including those developed on leased lands, and all campus-owned lands, including those developed by partners of the institution, must meet the strict requirements of Hampshire's Greenhouse Gas Tracking and Reporting Policy, outlined in detail in *Appendix D*.

Emissions from scopes 1, 2, and 3 are included in the campus inventory in accordance with the recommendations provided by the American College and University President's Climate Commitment. The remainder of the supply chain will be considered, and approaches to reducing impacts associated with supply chain will be included, where feasible, but the associated emissions will not be calculated at this time due to the impracticability of measuring them.

## Acknowledgements

*This plan was developed by the Hampshire College Environmental Committee in collaboration with GreenerU, Inc.:*

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The baseline inventory data used in this plan was obtained from the 2009 Sightlines LLC *Go-Green Measurement & Analysis and Strategy Report* and the Sightlines LCC FY2011 Facilities MB&A Presentation to Hampshire College. These reports use the Clean Air Cool Planet calculator, which was also used for scenario building in this plan.

## Appendix A: Education

### Curriculum

#### *Select Course Descriptions*

*The following select course is an example of a sustainability-focused course. The course educates students about both sustainability theories, in its broad survey of ideologies, and engages them in practical applications through our climate commitments to the ACUPCC.*

NS-0276-1 (School of Natural Science)

#### **Elements of Sustainability**

Hampshire College is in the middle of implementing the Plan mandated by the American College & University Presidents' Climate Commitment. It includes improved recycling efforts, energy sparing retrofits for campus facilities, and the installation of a modest solar electric facility. Many other exciting projects are in the wings awaiting evaluation and funding. There are still many approaches to determining a proper course of action. The viewpoints of LCA, "the ecological footprint," and "Natural Capitalism" each provide a standard against which to measure any particular program of change or development. The Sightlines campus carbon assessment is the tool being used to evaluate the impact of these projects. In this course we will employ several case studies to examine these issues. Emphasis will be placed on understanding underlying scientific principles, evaluating evidence available from the technical and scientific literature, and developing innovative approaches and solutions."

*The following course is also sustainability-focused, but integrates sustainability into the humanities. The course instills sustainable values, and develops skills that will allow alumni to thrive in sustainable economies, namely the latest in sustainable design practices and 3<sup>rd</sup> party verification systems.*

HACU-0206-1 (School of Humanities, Arts, and Cultural Studies)

#### **Crafting a Sustainable Design Lens**

This course is for designers who want to develop their own lens on what it means to make things in a sustainable manner. The course features deep reading into classic texts that influence designers. It examines tools designers are using to measure sustainability including the LEED rating systems, Cradle to Cradle, and the Living Building Challenge. It will feature critical analysis so that students can craft their own attitude as a springboard for action. Students will propose a design response to be explored in a studio setting. Designs may explore objects, systems, processes, the built environment, information delivery and behavior modification. Output may range from objects, print or digital materials, video, and models, to installations and full-scale designs. Students from a variety of disciplines are encouraged to attend including art, architecture, and landscape studies, real estate, business, engineering, film, as well as lighting, clothing, graphic and industrial design.

***List of Courses Identified as Sustainability-Focused Offered in the 2011-2012 Year***

HACU-0206-1 DR Crafting a Sustainable Design Lens (ADM) Caryn Brause  
NS-0122/0322-1 DR Sustainable Landscaping Practicum (PBC, ADM) Lawrence Winship  
HACU-0245-1 DR The American Transcendentalists (CHL) Alan Hodder  
HACU-0294-1 PR Urban Space and Nature: Recent Environmentalist Approaches to Urban Design – Ipek Rohloff  
CSI-0254-1 War, Resources, and Sustainability – Michael Klare  
NS-0385-1 Sustainability Seminar – Frederick Wirth  
CSI-0220-1 DR Buddhism and Environment (PCSJ) Sue Darlington  
CSI-0259-1 Environmental Justice on Native American Land  
NS-0145-1 DR Earth and Life Through Time (PBS) Steven Roof  
NS-0366-1 PR Environmental Chemistry – Dulasiri Amarasiriwardena  
NS-0269-1 Geomorphology – Steven Roof

***Core Divisions***

*Environmental Sustainability*

NS-0207-1 Ecology Charlene D’Avanzo  
NS-0294-1 Sustainable Agriculture and Organic Farming - Brian Schultz  
NS-0155-1 Earth Science Frontiers and Environmental Issues - S. Roof  
NS-0207-1 General Introduction to Ecology - B. Schultz  
SS-0273-1 Readings in Environmental History: Classics and Cases - D. Newbury  
NS-0107-1 Sustainable Living - L. Winship  
NS-0150-1 Agriculture, Ecology, and Society - B. Schultz  
NS-0256-1 Soil Science - J. Tor  
NS-0184-1 Topics in Renewable Energy - R. Moreira  
NS-0106-1 Earth Resources - S. Roof

*Sustainable Economy and Politics*

CSI-0254-1 War, Resources and Sustainability - M. Klare  
SS-0125-1 This Land is your Land - R. Rakoff  
SS-0285-1 Environment and Social Justice - S. Darlington; S. Levin  
CSI-0147-1 DR Land Stories, Land Rights (PCSJ) Sue Darlington  
SS-0285-1 Food, Health & Law - J. Hamilton  
SS-0222-1 Rethinking the Population Problem - E. Hartmann; K. Johnson  
SS-0207-1 Environmental Economics and Policy - S. Warner

*Sustainable Society and Culture*

CSI-0151-1 DR Culture, Religion, and Environmentalism (PCSJ) Sue Darlington  
IA-0247-1 Renewable Energy, Art and Design - C. Twitchell  
NS-0232-1 Water and Life in the American Southwest - L. Winship  
NS-138T-1 Environmental Science in the Movies - C. D’Avanzo  
NS-195T-1 FY, DR Pollution and Our Environment - Dulasiri Amarasiriwardena  
SS-0241-1 Constructing the Appropriate City: Competing Urban Visions - M. Breitbart  
NS-0276-1 Elements of Sustainability - Frederick Wirth  
NS-0132-1 DR Environmental History of New England (PBS) Charlene D’Avanzo  
NS-0268-1 Introduction to Geographic Information Systems and Natural Resource Management - S. Roof

***Elective Divisions***

*Agriculture and Food Systems*

NS-0259-1 Contemporary Issues in International Nutrition - F. Giahi  
 CSI-0223-1 Who's Your Farmer? Exploring How Race, Gender, and Sexuality Intersect with Agriculture – Rachel Rybaczuk  
 NS-0136-1 Local Food Systems - L. Winship  
 NS-0150-1 Ecology, Agriculture, and Society - B. Schultz  
 NS-0239-1 Agriculture, Food, and Health - E. Conlisk; N. Hanson  
 NS-0381-1 Terrestrial Ecology - B. Schultz  
 NS-0114-1 Chemicals in Your Food - N. Lowry  
*Energy, Climate, and Water*  
 NS-0351/0151-1 Tree Rings and Climate Change – Lawrence Winship  
 NS-0163-1 Biomass Energy - L. Winship  
 NS-0229-1 Forest Ecology - L. Winship  
 NS-0157/0357-1 DR Sustainable Water Resources Design (PBS) Christina Cianfrani  
 NS-0184-1 Topics in Renewable Energy - R. Moreira  
 NS-0255-1 Watershed Hydrology - C. Cianfrani  
 NS-0292-1 Stream Ecology - C. Cianfrani  
 NS-0211-1 Climate Change: Exploring the Science and Solutions - R. Deconto  
*Culture, History, and Representation*  
 SS-0273-1 Readings in Environmental History: Classics and Cases - D. Newbury  
 SS-0314-1 Environment and Community - S. Darlington  
*Politics and Policy*  
 NS-0352-1 Ecological Applications Science Seminar - C. D'Avanzo  
 NS-0215-1 The Politics, Geography and Management of New England Natural Areas - P. Westover  
*Green Infrastructure, Design, and Technology*  
 NS-0385-1 Sustainability Seminar – Frederick Wirth  
 IA-0237-1 Appropriate Technology in the Developing World - D. Cohn  
 NS-0181-1 Sustainable Technology - F. Wirth  
 SS-0241-1 Constructing the Appropriate City: Competing Urban Visions - M. Breitbart  
 NS-0157-1 Sustainable Water Resources Design - C. Cianfrani  
 IA-0222-1 Design for the Greater Good I - D. Cohn; C. Twitchell  
***List of Courses Identified as Sustainability-Related Offered in the 2011-2012 Year***  
 HACU-0213-1 DR Art and Landscape (ADM) Karen Koehler  
 CSI-0210-1 DR Introduction to Economics (PCSJ) Helen Scharber  
 HACU-0309-1 Advanced Design + Media Lab: Art, Architecture, and Environment (IP) Thomas Long  
 IA-0245-1 DR Seminar in Messaging for Social Change (PCSJ) George Gathigi195T  
 NS-0270-1 PR Evolutionary Ecology – Charles Ross  
 CSI-0107-1 DR Oil Spill Economics & Politics (PCSJ) Helen Scharber  
 CSI-0187-1 DR China Rising: Reorienting the 21st Century  
 CSI-0277-1 PR Socially Engaged Buddhism – Sue Darlington  
 CS-0109-1 DR Cognition and Society - Karen Danna  
 CS-0216-1 DR Animal Behavior Theory – Mark Feinstein, Sarah Partan  
 CS-0261-1 Animals, Robots, and Applied Design – Donna Cohn, Sarah Partan  
 CS-0250-1 Animal Robot Field Tests – Sarah Partan  
 CS-0304-1 Advanced Animal Behavior Field Methods – Sarah Partan

## Research and Applied Explorations

### *Select Sustainability Research and Applied Explorations*

In 2012, the College was awarded a \$50,000 exploration grant from the Luce Foundation's Luce Initiative on Asian Studies and the Environment (LIASE) to convene an interdisciplinary group of Hampshire faculty to explore multiple teaching and research linkages that will build stronger curricular bridges between East Asian studies and the natural sciences through the lens of food production, sustainable agriculture and climate change.

In 2012, the College received the final portion of an anonymous grant totaling \$433,612 to support Hampshire's environmental and sustainability programs, \$75,000 of which has been used to set up a green revolving fund administered by a campus environment committee that includes students. In addition to creating the green revolving fund, the College joined three other dozen other higher education institutions participating in a "Billion Dollar Green Challenge" to finance energy efficiency upgrades. The challenge, coordinated by the Cambridge-based nonprofit Sustainable Endowments Institute and launched in October 2011, calls for schools to invest a total of \$1 billion in revolving funds to pay for small and large projects designed to reduce energy use on campuses.

In 2010, the College was awarded \$534,000 from the Department of Energy for the renovation and revitalization of the Charles and Polly Longworth Arts Village, including the installation of a solar canopy.

The recently completed project produces 47MWh of renewable power annually, and serves as a project site for students and faculty investigating the latest clean energy technologies and the real-time decrease in the campus's carbon footprint.

Associate Professor of Earth and Environmental Science Steve Roof's teaching and research focus on environmental issues such as climate change, pollution, and land conservation. He and his students travel frequently to Death Valley and the Southwest for climate change field research. Professor Roof also coordinates an NSF-funded research program for undergraduate students called "The Svalbard REU: Holocene and Modern Climate Change in the High Arctic." He received this 5-year, \$924,974 research grant in 2007.

Two grants from the Massachusetts Society for the Promotion of Agriculture and Newman's Own Foundation, totaling \$45,000, have enabled Hampshire's Farm Center to acquire small, state-of-the-art equipment for dairy products including butter, cheese, yogurt, and farm-bottled milk. Hampshire students learn local food production techniques, and run trials of various methods or culture in order to find products most suited to local farmers' goals and resources.

## **Appendix B: Green Purchasing Policies**

Policies available at: <http://www.hampshire.edu/offices/11889.htm>

### **Paper Purchasing Policy**

Effective on July 1, 2003, Hampshire College began purchasing 100% post-consumer content, 100% processed chlorine-free recycled paper. This paper is used campus-wide on all convenience copiers and office printers whenever possible. Colored paper and paper of other sizes will be purchased as a 30% or higher post-consumer waste, 100% processed chlorine-free paper.

Certain “formal” items, such as college stationery and documents of the board of trustees, will continue to be printed on the paper we currently use for those, in order to preserve consistency in the College’s external identity.

### **Energy Efficient Washers and Dryers**

In June of 2003, front-load washing machines were installed, which reduced water consumption from 14 gallons per load to 7 gallons. Cycle times were shortened and spin cycle enhanced so clothes were much dryer. All dryers were converted to gas.

### **Copiers/Printers/Fax Machines**

Throughout the current contract term, copiers were configured with printing and faxing capabilities, eliminating the need for stand-alone faxes and printers in most locations. Machines are set for double-sided copying, and if color is an option, settings are defaulted to black and white. Future machines must be Energy Star compliant.

### **Furnishings**

Whenever feasible, Hampshire will purchase, beyond code requirements, furniture manufactured with sustainable wood, from local manufacturers, or with recycled content, and treated with water-based lacquers.

### **Office Supplies**

Hampshire is currently partnered with Staples and purchasing primarily from Stapleslink; the Staples main page has a quick link to eco-friendly products.

### **Purchasing and Purchase Orders**

A purchase card was introduced to staff to simplify the purchasing process. Most functions of the card are handled electronically. Fewer purchase orders are printed. No purchase orders are mailed unless this is requested by the vendor. Fewer invoices are received by the College, resulting in fewer checks being printed and mailed.

## Appendix C: Forest Offsets

A carbon offset is a reduction in greenhouse gas emissions used to compensate for emissions from other activities. Offsets can be traded between institutions or sold in voluntary and compliance markets. Offsets can be attractive because in some cases the cost of directly reducing internal emissions is higher than purchasing an offset from an external source. There are however some drawbacks to offsetting emissions. First, the current offset markets are still emerging, voluntary, and unregulated, making it difficult to assess the value of an offset or easily participate in a market. Secondly, offsetting is generally considered less preferable to direct reductions as it can perpetuate business-as-usual behavior instead of institutional transition to a low-carbon profile<sup>3</sup>. Therefore, it is important to outline a strategy for assessing and applying offsets that is clear to stakeholders and consistent with Hampshire's institutional values and strategies around carbon management.

### Protocols & Standards

To help navigate the complexities of the offset market, various standards have been developed for evaluating projects<sup>4</sup>. These protocols aim to define the types of projects that qualify as an offset and to ensure the quality of offsets in terms of some specific criteria that are important for achieving the desired climate impacts.

### Key Concepts

Some of the most important concepts from the ACUPCC Offset Protocol are discussed below:

- **Additionality:** Offsets are only considered legitimate if the project creates additional carbon reductions that would not have occurred without the investment into the project. Proof of additionality usually requires comparing the emissions profile of the project to some business-as-usual case; if the same emissions occur in the absence of offset action, then the offset is not additional.
- **Permanence:** The reductions generated by the offset should last as long as the offset emissions would remain in the atmosphere, typically 100-150 years.
- **Verified:** Offsets should be verified by a third-party auditor, outside of the project owner or developer, to provide quantifiable evidence for the success of the project.

### Types of Projects

Forests remove greenhouse gasses from the atmosphere and sequester the carbon in their biomass for the lifetime of the forest, however deforestation increases the net atmospheric concentration of greenhouse gasses. Various types of projects can take advantage of this

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<sup>3</sup> Clean Air-Cool Planet, "Getting to Zero: Defining Corporate Climate Neutrality"  
<http://www.cleanair-coolplanet.org/documents/zero.pdf>.

<sup>4</sup> AUPCC, "Investing in Carbon Offsets: Guidelines for ACUPCC Institutions"  
<http://www.presidentsclimatecommitment.org/resources/guidance-documents/offset-protocol>.

sequestration to create valid carbon offsets. Four general categories of forest offset projects are common<sup>5</sup>:

- **Reforestation:** These projects restore forest cover to an area that has been deforested for some time.
- **Afforestation:** This type of project establishes forest in previously unforested areas.
- **Conservation/Avoided Conversion:** Involves projects that prevent forest clearing.
- **Improved Forest Management:** These projects cover activities aimed at maintaining or enhancing carbon sequestration of currently forested lands.

## Limitations

Forest sequestration projects face a number of challenges meeting the requirements for valid offsets. The criteria for permanence and additionality are particularly difficult to assure in any forest offset. Though these can be challenging, it may still be worth pursuing a forest offset project, as described in the ACUPCC offset protocol:

“While it is difficult to imagine how these project types could satisfy the permanence, measurability, verification, and additionally issue, it may be possible. Evaluating these issues and developing creative solutions is a great contribution that ACUPCC signatories, with their research capabilities, can make while providing an opportunity for the institution to further their education and understanding of climate change and sustainability.”<sup>6</sup>

Ensuring the long-term biological sequestration is risky given that a forest could be destroyed through either intentional future action (sale or future clearing) or unintended disturbance (fire or insect infestation). A conservation easement helps play a role in ensuring permanence, but it cannot be considered sufficient alone since it does not account for unintended destruction. Different protocols outline a minimum length of conservation required to claim a valid offset, typically 40 to 100 years. Some offset standards include mechanisms such as buffers of unused offsets that could be claimed to replace any losses or insurance that would provide equivalent offsets to cover reversals.

In the case of existing forests, verifying additionality is difficult. Generally, claiming an offset for an existing forest in the absence of any action would not be valid, since there is no net carbon reduction due to the actions of the institution. However in some cases, placing existing forests under a permanent conservation easement would count as an avoided conversion project. In other protocols, avoided conversion projects are never considered additional or qualifying for valid offsets. Improved Forest Management is often easier to claim as additional for existing forest,

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<sup>5</sup> World Resources Institute, “Forests for Carbon: Exploring Forest Carbon Offsets in the U.S. South” <http://www.wri.org/publication/forests-for-carbon>.

<sup>6</sup> AUPCC, “Investing in Carbon Offsets: Guidelines for ACUPCC Institutions”, p. 43

provided a change in management practices with the intention of improving sequestration can be shown.

## **Process**

Before considering establishment of formal credits under one of the existing offset protocols, it would be important to get a basic idea of the amount of sequestration and the potential value of the offset. Both can be easily determined based on the area, general forest type, and current market value of forest offsets.

The next step in a formal process would be to have the forest assessed by a third-party auditor. This would involve a more detailed determination of the sequestration potential based on the actual age and species structure of the forest and on a detailed geospatial definition of the project boundaries. It may be good to work with one of the existing standards agencies outlined in the ACUPCC or WRI report at this point. They would be able to provide guidance on the types of audits required to qualify for their programs and describe the requirements for a valid offset program.

After a baseline verification, the offset project would begin. Depending on the protocol chosen, this could require establishment of conservation easements for the land (of a length determined by the standard chosen) or the adoption of a new management strategy for the land based on the definition of an improved forest management project under the selected protocol.

Once the offsets were established, they could be sold in one of the voluntary or regulatory markets or retained by the College and retired to offset their greenhouse gas emissions.

## **Recommendations**

Though the additionality requirements of forest offset are important to market transactions, they may not be appropriate when considering campus climate action. The inability to claim existing forest as a formal offset provides no incentive for continued conservation of the land. But removal of the forest would result in a net increase in the College's greenhouse gas emissions. For this reason and for the potential educational benefits of the exercise, Hampshire will proceed to assess the amount of carbon that is being sequestered in the College's forested lands. The value of sequestration will not be subtracted from the College's net emissions (as would an offset), but will be noted in future campus carbon inventories. It will also be noted that the carbon sequestration value would have to be added to net emissions if the forest was removed.

As part of this assessment, the College will evaluate the potential to enhance the carbon sequestration value of campus lands by altering forest management practices. The extent to which the College alters its forest management practices to enhance carbon sequestration, those additional benefits will be treated as an offset.

The decision to pursue formal verification could be made taking into account the potential costs of improved forest management or the acceptability of conservation easements to the College community.

Optionally, if the formal offsetting process were pursued, a decision could be made to sell the offsets for a set number of years to help finance the forest management and administrative costs of the process and a future date for the retirement of the offsets established as part of determining the reduction targets or carbon neutrality date in the Climate Action Plan.

## Appendix D: Organizational Boundaries

### Hampshires's Boundaries for Greenhouse Gas Tracking and Reporting

#### I. Gases

As per the standards of the Greenhouse Gas Protocol, the most widely used accounting tool for emissions management, Hampshire tracks and publicly reports all greenhouse gases accounted for in the Kyoto Protocol (1997), an international treaty aimed at prevention of “dangerous anthropogenic interference with the climate system” through stabilization of atmospheric greenhouse gas concentrations.

These gases are: carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulphur hexafluoride (SF<sub>6</sub>).

#### II. Global Warming Potentials

Since each of these gases has a variant relative ability to trap heat within the atmosphere, Hampshire follows the lead set by the Intergovernmental Panel on Climate Change in standardizing the global warming potential (GWP) of each gas relative to carbon dioxide over a 100 year time horizon. For example, since methane is 25 times more potent than carbon dioxide[1], one unit of methane receives a GWP of 25, while one unit of carbon dioxide receives a GWP of one.

As per the American College and University Presidents' Climate Commitment, Hampshire calculates the emissions of each gas separately, and aggregates them in units of carbon dioxide equivalency (CO<sub>2</sub>e) on the basis of each gas' global warming potential (GWP).

#### III. Scopes

The GHG protocol defines three levels of emissions scopes to standardize responsibility for emissions and increase transparency in reporting.

Scope 1 emissions are from sources directly owned or controlled by the institution, such as on-campus stationary combustion of fossil fuels; mobile combustion of fossil fuels by fleet vehicles; and fugitive emissions, such as leakage of HFCs from refrigerators and air conditioners.

Scope 2 emissions are indirect (not owned or controlled by the institution), but result from on-campus activities. Scope 2 emissions only refer to those associated with the consumption of purchased electricity, heat, or steam.

Scope 3 emissions are all other indirect emissions sources, and are categorized separately because they are more difficult to account for and regulate. These sources include air travel paid for by or through the institution; transport activities in vehicles not controlled by the institution (such as faculty, staff, or student commute); waste disposal; outsourced activities; et al.

#### IV. Defining Responsibility

Hampshire will track, report, and make efforts to reduce all emissions sources within its control and emissions from activities that are required of campus constituents by institutional activities that can be reliably accounted and cannot be reasonably considered beyond the long-term control of the institution (eg. global education experiences). All campus-owned spaces, including those developed on leased lands, and all campus-owned lands, including those developed by partners of the institution, must meet the strict requirements of this policy.

Therefore, consistent with ACUPCC standards, Hampshire will account for all emissions from Scopes 1 and 2, as well as those Scope 3 emissions associated with air travel paid for by the institution and those associated with daily commuting to Hampshire. These are the indirect emissions that we can reasonably say upon this writing are necessitated by the institution, can be reliably tracked, and are within the long-term control of the institution.

For instance, air travel required for faculty to present at a distant conference is a necessary means of travel, the associated emissions can be reliably accounted for, and Hampshire can influence faculty purchases through policies. While the faculty member is away, however, Hampshire does not have the means to influence their decisions, and cannot ensure that all sources of emissions are both required and accounted for; a cab ride to the conference center would not be necessary if less-intensive forms of transportation were available, such as public transit, and the associated emissions could not be dependably tracked by faculty members.

In order to illustrate our deep commitment to our civic responsibility, we will continue to explore further sources of Scope 3 emissions that fall into our responsibility, as well as the additional ways in which we might mitigate unreliable sources of emissions, such as faculty and staff training. We will also seek to understand the ways in which Hampshire might use its influence to guide our partners to sustainable development, or only choose partnerships that will meet our strict standards.

#### V. Institution-owned Forests

Under investigation. See the language in *Appendix C: Forest Offsets*. This section should be updated in the 2014 Climate Action Plan to reflect the latest thinking.

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**H A M P S H I R E C O L L E G E**

*2012 Hampshire College  
Climate Action Plan  
Pending Public Review*