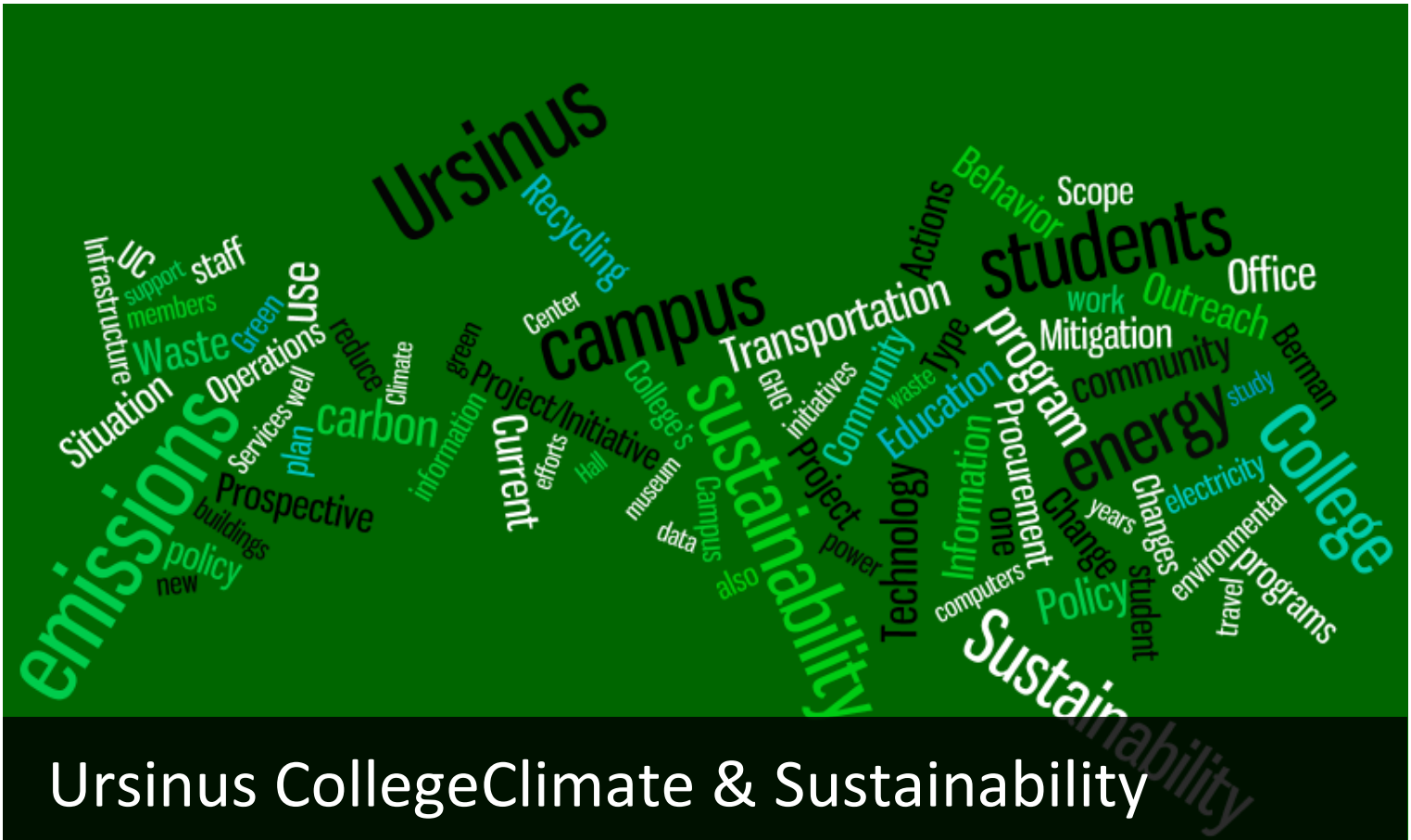


Ursinus CollegeClimate & Sustainability Action Plan

Office of Sustainability

K. Shannon Spencer, Campus Sustainability Planner

Ursinus College is located in southeastern Pennsylvania, near Philadelphia. This is its first Climate and Sustainability Action Plan. This plan is organized by administrative units on the campus in order to facilitate the implementation and accessibility of the plan to those who will ultimately be making decisions and taking actions that affect sustainability and our greenhouse gas emissions in various areas of the College. –June 2013

Ursinus College – Office of Sustainability
601 E. Main Street, Collegeville, PA 19426
610-409-3000

Acknowledgements:

This plan is meant to guide the College's steps as we work toward our long-term goal of climate neutrality. I would like to thank all of my many collaborators from offices and departments across the College who helped craft this document. Without their input and feedback, this document would be far less accurate, robust and useful. I hope that it is, and will continue to be all of those things. I would like to thank to my editors: Facilities Director Andrew Feick, Professor Richard Wallace and Professor Leah Joseph, for the many hours they spent reading, re-reading, providing comments, advising, and being a cheering section. Finally, I would like to thank President Bobby Fong for his support of the American College and University Presidents' Climate Commitment.

Table of Contents

Letter from the President

URSINUS COLLEGE
OFFICE OF THE PRESIDENT

601 East Main Street, Collegeville, PA 19426
phone 610.409.3587 fax 610.409.3642

31 May 2013

Dear Members of the Ursinus College Community,

When President John Strassburger signed the American College and University Presidents' Climate Commitment in 2007, Ursinus College pledged to work toward the long-term goal of attaining climate neutrality. Six years later, we have taken many steps toward that goal, including:

- implementing energy saving strategies across the campus;
- setting LEED Silver equivalent as a baseline for all new construction;
- undertaking energy assessments to assist in long-term planning for our heating plant;
- developing a baseline inventory of our campus greenhouse gas (GHG) emissions by source;
- incorporating climate change and sustainability topics into our curricular, outreach and campus educational programs;
- instituting sustainability events and programming in multiple departments and academic areas.

Our latest cooperative effort is the compilation of this Climate and Sustainability Action Plan, the product of the Office of Sustainability staff working with faculty and staff across the campus. These sections are tailored to the needs of departments, offices, and programs and are intended to be useful long-term planning tools.

I introduce this plan as a roadmap for continuing our work toward sustainability. It calls on all members of the Ursinus community to work cooperatively to conserve energy and resources, to minimize our environmental footprint in all aspects of campus operations development, and to promote an awareness of the responsibility we each have as stewards of the environment.

Ursinus endeavors to provide a transformative education for our students. We must also strive to be transformative in the world in which our students will live their lives. By focusing efforts on campus to raise awareness and adopt changes that will reduce our impact on our natural world, we are demonstrating to our students yet another way in which transformation can happen – at the institutional and community level.

Go, Bears!

Bobby Fong
President

Executive Summary

Back to Table of Contents

Ursinus College signed the American College and University Presidents' Climate Commitment (ACUPCC) in 2007. (See Appendix A for the text of the ACUPCC.) This action committed the College to writing a Climate Action Plan to achieve the reduction of greenhouse gas (GHG) emissions to levels approaching zero as soon as possible, inventorying the College's greenhouse gas emissions every other year, and making the action plan, inventories, and periodic updates publicly available. A Climate Action Plan is a document that helps guide a college toward meeting its mission in the context of achieving GHG neutrality.

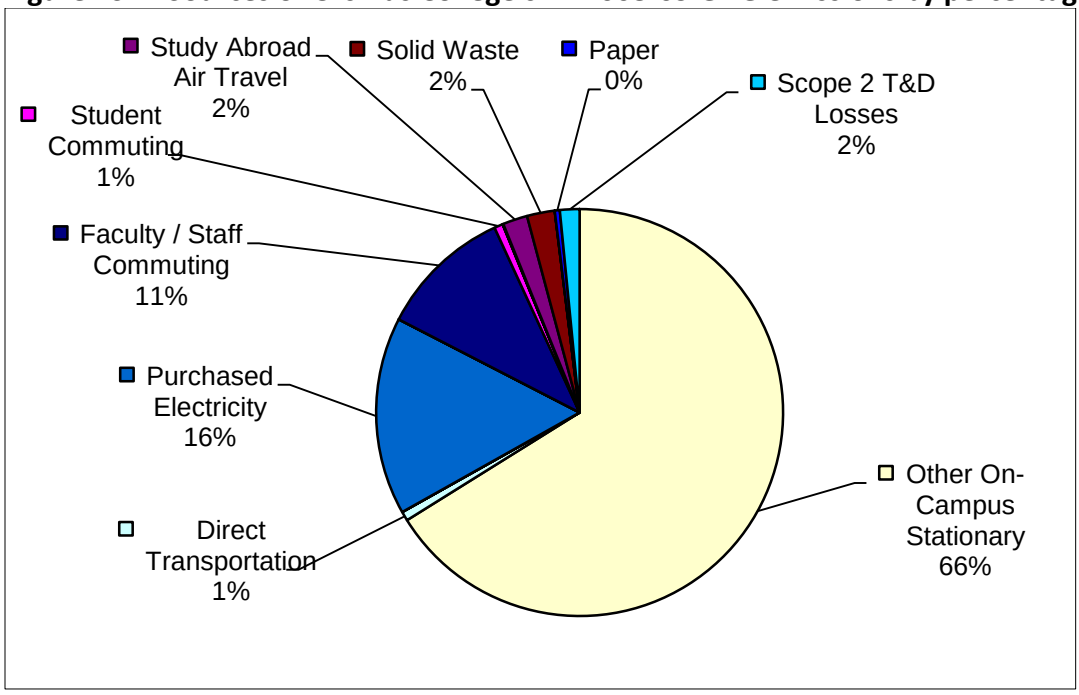
The Ursinus College Climate and Sustainability Action Plan (CSAP) and the programming that is in place to implement it share these goals and foster their development. It is also in line with the College's mission, to "nurture a sense of community by empowering the intellect, awakening moral sensitivity and challenging students to improve society" while also seeking to "enable students to become independent, responsible and thoughtful individuals. With guidance from the CSAP, the Ursinus College Office of Sustainability provides students with opportunities to get involved at multiple levels, from participating in a dorm energy competition, to acting independently on self-designed projects centered on lowering the College's carbon footprint, to integrating sustainability principles into the College and surrounding community. Our CSAP, and the related sustainability programs, encourage students and other community members and in finding long-term solutions to the problems associated with climate change and its impacts as well as to be thoughtful about their impacts on their community and the earth, their ability to influence and encourage others to participate in sustainable behavior.

In effect the process of becoming GHG neutral will be achieved through a variety of efforts, each requiring varying degrees of financial, time and staffing commitments. The CSAP is written to accommodate changing institutional priorities and capacities: flexibility in implementing the plan has been written into the document.

The chart on the following page provides a visual presentation of our main sources of GHG emissions.

Ursinus College's 2010 quantified GHG emissions (our most recent data) are the equivalent of approximately 12,000 metric tons (eCO2). Approximately 45% of that amount is sourced from purchased electricity and another 46% is sourced from On-Campus Stationary generation and on campus transportation (facilities). The remaining 9% is from transportation-related and smaller emissions sources.

Figure ES-1: Sources of Ursinus College's FY 2008-09 GHG emissions by percentage.



(Source: the "S_Annual" spreadsheet in the CA-CP Calculator)

In order to address GHG emissions, such as those detailed above, the ACUPCC requires that signatories develop an institutional action plan for becoming climate neutral, which will include:

- A target date for achieving climate neutrality as soon as possible.
- Interim targets for goals and actions that will lead to climate neutrality.
- Actions to make climate neutrality and sustainability a part of the curriculum and other educational experience for all students.
- Actions to expand research or other efforts necessary to achieve climate neutrality.
- Mechanisms for tracking progress on goals and actions.

College-wide Goals

Our primary goals and actions that address the ACUPCC's requirements, along with some examples of possible strategies for reaching those goals, are as follows:

Goal 1: Reduce (and eventually eliminate) the College's greenhouse gas emissions per square foot of campus building space. Reduction Targets: 25% by 2030; 50% by 2040; 75% by 2050 and 100% by 2060.

- **Strategy**: Increase performance of current boiler system. One option for this is to perform a study to determine the cost of moving the boilers to a summer shut down status and installing building boilers to supply hot water in off season; investigate financing options for the plan. Assuming that there is an acceptable ROI and payback period, switch boilers that supply heat and hot water to the entire main campus to summer shut down mode. Install building boilers/furnaces to handle summer heating/hot water requirements. This would lead to about a 35% decrease in emissions from the central heating plant. This is equivalent to a savings of 1,943.2 $MTeCO_2$[1].
- **Strategy**: Increase the amount of alternative energy used on campus to provide electricity. Enter into a Power Purchase Agreement with a solar energy provider to have them provide at least 10% of our current electrical usage. This would reduce our GHG emissions by approximately 509 MTeCO2.

Goal 2: Reduce (and eventually eliminate) the College's greenhouse gas emissions related to transportation. Reduction Targets: : 25% by 2030; 50% by 2040; 75% by 2050 and 100% by 2060.

- **Strategy**: Change behavior of campus community members such that we increase our carpool rate from 0% to 2 % by 2025; to 5% by 2035; to 7% by 2045; and to 10% by 2060.

[1] MTeCO2 is the standard measurement for carbon emissions.

- **Strategy**: Decrease the percentage of students who bring a car to campus to 70% by 2025; to 60% by 2035; to 50% by 2045; and to 40% by 2060. This will likely require the College to institute behavior change programs that influence transportation usage by all UC community members (see OS section for description)

Goal 3: Increase student participation in sustainability and/or climate related outreach programs or projects to 25% by 2020; 50% by 2030; 75% by 2040. Develop the UC academic, recreational and residential programming so that sustainability is central to the Ursinus experience for all UC community members. As part of this, ensure that every UC community member is aware of climate change, its potential consequences, and on-campus actions and efforts to mitigate and address its impacts.

Behavior change programs are ideally designed to educate community members in a way that will create long-term changes in the way people think about and act within their community. Our carbon footprint at Ursinus College is impacted by the behavior of individuals as well as the institution as a whole. We intend to help reduce the carbon footprint of both. However, we cannot expect individuals or institutions to change without education about the whys and hows of reducing our GHG emitting behaviors. And, sometimes, we need more than just information – we need incentives and hands-on learning experiences to make that change stick. This is the rationale behind the behavior change programs that we intend to institute at Ursinus. We will be working on programs that will affect energy consumption, resource usage, waste, and transportation.

- **Strategy**: Raise awareness of sustainability on campus through events, information dissemination, and outreach.
- **Strategy**: Incorporate the concept of sustainability into the Ursinus College mission statement.
- **Strategy**: Work with faculty on campus to incorporate sustainability into their existing courses through projects, research, etc.
- **Strategy**: Create a Sustainability Committee with representatives from the student body (one rep from each of the four classes of students), the faculty, the

staff and the administration. This committee will report to the president of the college.

- **Strategy**: Green Certification. This certification program will be designed to act as an incentive for all members of the UC community. There will be different certifications for different groups and individuals. For example, a Green Teaching Certification for faculty who adhere to a checklist of course-greening activities: reducing paper, saving energy, encouraging student interest; a Green Office Certification for offices that adhere to a checklist of green activities; a Green Dorm Certification for residence halls that achieve a targeted reduction in electricity consumption, etc.

Goal 4: Develop and promote a climate and/or sustainability-related research program at the College for students and faculty.

- **Strategy**: Create a student research fund (e.g., $500) for students to use to design emission reduction projects that would benefit the college.

Goal 5: Develop a strong working relationship with the Collegeville Borough Council and the Main Street Manager to work on sustainability issues that involve both the college and the borough. Collaborate on projects to the benefit of all parties.

- **Strategy**: Collaborate with representatives of the Collegeville Borough, the Collegeville Economic Development Commission, and the Collegeville Main Street Program with the goal of greening the Collegeville community. This ties into existing infrastructure and programming, such as the Perkiomen Trail; the Perkiomen Creek; the Pedestrian Safety Committee; Hunsberger Woods, the Collegeville Park; and the newly formed Collegeville Farmers' Market. A collaboration of this type provides a bridge between the community and the college, uniting them in a common mission and promoting a positive and on-going working relationship.
- **Strategy**: Collaborate with representatives from local school districts and non-profit NGOs on projects that aim to educate the community about sustainability.

The tables below detail the carbon emission targets that the College will have based on the current goals of the CSAP (as of 2013). The 2010 baseline data does not include transportation-related emissions and therefore will need to be amended as we obtain more accurate data.

Table ES-1: Carbon emission targets that Ursinus College will have based on the current goals of the CSAP (as of 2013)

	Year	MT CO2e
Baseline	2010	12,027*
25% Decrease from 2010 baseline	2020	9,020
50% Decrease	2030	6,014
75% Decrease	2040	3,007
Carbon Neutral	2060	0

*This number does not accurately reflect UC's transportation-related (Scope 3) emissions. Calculations for future years will need to be amended as we obtain more accurate data.

The College has already taken steps toward meeting our goals, particularly where they related to student achievement and economic savings seen from energy efficiencies. The table below lays out some of the progress we have made toward some of the goals that are laid out in this plan.

There are, of course, hurdles that we will have to cross on our way to our success. These hurdles fall into three primary categories: financial constraints, user behavior, and institutional constraints (legal agreements, policies, etc.). These are discussed further in the "Going Neutral" section of the Campus Emissions chapter of this document.

We currently have scores of sustainability-related efforts, including academic courses, student groups, College programs (e.g., the Ursinus Organic Farm), on and off-campus sustainability-related events (such as Sustainability Week, Earth Week, speakers, movies, organic dinners in Wismer, the Perkiomen Creek stream cleanup, and many more), and, not least, the efforts of our Facilities Services Department to upgrade our lighting, thermostats, insulation, grounds maintenance to sustainability standards, saving the college in both expenditures and emissions. (See Appendix B for a map of the Ursinus Campus.) These are all examples of successes we have already achieved. They represent a great deal of time and effort on the part of many campus staff and students, and should be taken as a sign of the importance this effort plays to many campus constituencies. We have a long way to go, but we have made a great start.

Table ES-2: Ursinus College strategies for attaining our goal of reducing our GHG emissions by 25% by 2020.

Goal	Strategy	To Date
Goal: **Reduce (and eventually eliminate) the College's greenhouse gas emissions per square foot of campus building space.**	Conservation within existing buildings.	Our Facilities Services staff work to maintain our current heat plant so that it runs efficiently. We have instituted many energy-saving approaches to handling our systems, including HVAC upgrades, insulation and other weather-proofing measures, thermostat changes, and many more.
Goal: **Reduce (and eventually eliminate) the College's greenhouse gas emissions per square foot of campus building space.**	Education & Behavior change.	We have instituted the Ursinus College Office of Sustainability and are working to increase awareness of sustainability principles. We have also installed a real-time energy monitor that will allow staff to better educate users of their energy usage.
Goal: **Reduce (and eventually eliminate) the College's greenhouse gas emissions per square foot of campus building space.**	More efficient on-campus production & distribution of energy	We are currently conducting a feasibility study of the benefits of shutting down our heat plant during the summer. This is projected to reduce our annual emissions by 35%.
Goal**: Increase student participation in sustainability and/or climate related outreach programs or projects.**	Increase opportunities for student leadership around sustainability issues.	In 2011, the Office of Sustainability created a new sustainability leadership program for students on campus. These students each have a project that they champion to the other students, including organizing events and getting students involved in volunteer efforts.

Glossary of Terms

Back to Table of Contents

AASHE: Association for the Advancement of Sustainability in Higher Education.

ACUPCC: American College & University Presidents' Climate Commitment. This organization, affiliated with Second Nature, created the PCC.

CACP: Clean Air-Cool Planet. This is an organization that created and updates the Campus Carbon Calculator that UC uses to calculate our greenhouse gases.

CCC: Campus Carbon Calculator. This is an Excel-based program, created by CACP, that UC uses to track and account for greenhouse gas emissions.

CO2: Carbon Dioxide. This is one of the primary gases that environmentally-minded organizations seek to lower, as an increase in it's atmospheric concentration is believed to have negative impacts on global temperatures.

CAP: Climate Action Plan. This is another name for this type of document, but one which does not include sustainability measures as part of the plan.

CSAP: Climate and Sustainability Action Plan. This document describes how our institution intends to address and mitigate their greenhouse gas emissions and meet sustainability goals.

Emissions: Gases that are produced from the creation of energy.

EPA: Environmental Protection Agency. The Federal agency that is tasked with environmental oversight.

FY: Fiscal Year.

GHG: Greenhouse Gases. These are a variety of gases that are created on Earth's surface and subsequently rise up into the atmosphere, where the increase in their concentrations interfere with the chemical makeup of the atmosphere, causing the lower levels of Earth's atmosphere to heat up. These gases are primarily: Carbon dioxide equivalents (eCO_2), methane (CH_4), and nitrous oxide (N_2O).

HVAC: Heating, Ventilation, and Air Conditioning

IPCC: Intergovernmental Panel on Climate Change.

kW: Kilowatt. A kilowatt is a measure of 1,000 watts of energy.

kWh: Kilowatt Hour. A kWh measures a unit of energy, equal to 3,600,000 joules (3.6 MJ). It can also be described as the amount of energy that would be transferred at a constant rate of one kilowatt for one hour. Power companies use kWh to determine the amount of energy used by a business (or home) for billing purposes.

LEED: Leadership in Energy & Environmental Design. This is a "green" building certification system that promotes the construction/retrofit of buildings to established standards of energy sustainability and environmental friendliness, for both the building as a unit and for the surrounding environment. (USGBC 2011)

MT: Metric Ton.

MTeCO2: Metric Ton of equivalent carbon dioxide emissions. This is the standard measurement for GHG emissions.

REC: Renewable Energy Certificates. These are tradable certificates (similar to stocks) that are non-tangible, and represent proof that one megawatt hour (MWh) of electricity was generated by an approved renewable energy source. These are valid in the U.S.

USGBC: U.S. Green Building Council. This is a nonprofit organization founded in 1993 to promote sustainable, environmentally friendly building design. It created the LEED certification process.

Section 1: Introduction

Back to Table of Contents

Background Information

Ursinus College is a small liberal arts college located approximately 28 miles northwest of Philadelphia, Pennsylvania. Founded in 1869, Ursinus College now extends over 170 acres, has approximately 1,750 students and an endowment of approximately $100,000,000. (Ursinus College 2010)

Ursinus College seeks, in its mission, to "nurture a sense of community by empowering the intellect, awakening moral sensitivity and challenging students to improve society" while also seeking to "enable students to become independent, responsible and thoughtful individuals." Sustainability programming shares these goals and fosters their development. Ursinus College's Office of Sustainability provides students with opportunities to act independently on self-designed projects centered on sustainability and the community, making them accountable to their peers, the UCGreen Sustainability Fellows program, and their own personal goals. We plan to do this, in part, by increasing the presence of sustainability on campus – as a recognizable concept/goal, a social learning process, and set of practices –and making our programs more transparent and accessible to a broader campus audience. Our sustainability programs encourage students and other community members to be thoughtful about their impacts on their community and the earth, their ability to influence and encourage others to participate in sustainable actions, and long-term solutions to the problems associated with climate change and its impacts. Student achievement in various forms, such as involvement in research, hands-on activities, service-related initiates, is actively supported. Appendix C contains a history of our sustainability and environmental initiatives at Ursinus.

The Presidents' Climate Commitment and UC

With international agreement that both "warming of the climate system is unequivocal" and that this warming is "very likely due to…anthropogenic greenhouse concentrations," climate

change now has become one of the most pressing global issues in the twenty-first century (IPCC, 2007). The looming threat of climate change is both global (e.g. ocean warming, temperature extremes, changing sea levels, and alterations in wind and water patterns) and local (IPCC, 2007). In a summary offered by the Union of Concerned Scientists (UCS), projections are that Pennsylvania will feel a multitude of negative effects resulting from global warming; this is due to the state's economy being largely based on land use for agriculture and tourism. By the next century, Pennsylvania is projected to experience an average temperature increase of 4°F (Union of Concerned Scientists 2008). This temperature increase, and accompanying declining snowfall, is projected to most significantly affect Pennsylvania's agricultural and dairy industries (UCS, 2008). These changes will likely have significant impacts on the state and justify attention from academic communities, which at their heart are educating the state's and country's future leaders who will have to address these issues.

In 2006 the American College and University Presidents' Climate Commitment (ACUPCC) was created by a group of college and university presidents and their representatives, the American Association for Sustainability in Higher Education (AASHE), and ecoAmerica at the 2006 AASHE conference. Another group, Second Nature, has since joined in the effort to support the ACUPCC. The ACUPCC is, in effect, a challenge to institutions of higher learning across the country to commit to lowering their greenhouse gas emissions and to set an example for the coming generations of students. In response to this challenge to reduce their GHG emissions, presidents of institutions of higher learning across the United States have adopted the (ACUPCC); there are now over 650 signatory colleges and universities. President John Strassburger signed the commitment in 2007 on behalf of the Ursinus community, becoming one of the early signatory schools. By signing, President Strassburger committed the college to developing and implementing a plan to achieve climate neutrality as quickly as possible.

To honor this commitment, the **Ursinus College Climate and Sustainability Action Plan** has been created. Our ultimate goal is to achieve climate neutrality by 2060. To achieve this goal, we will focus on the four main action areas outlined in the Presidents' Climate Commitment: Mitigation; Education; Research; and Outreach. To ultimately bring Ursinus College to a state where it has achieved climate or carbon neutrality by mid-century the College will have to utilize a combination of efforts: cease and/or reduce activities which cause the emission of GHGs; create sinks for GHGs; and purchase carbon offsets matching the amount of carbon dioxide equivalent being emitted. Below there are examples of the types of strategies we might use in each of the four areas:

1) Implement Mitigation Strategies: These strategies fall into a variety of categories, some of which are listed below.
   - Heating: This is one of the two categories, along with electrical use and cooling, that comprises the majority of our GHG emissions.
   - Electrical Energy & Cooling: This is one of the two categories, along with heating, that comprises the majority of our GHG emissions.
   - Transportation: Also referred to as Scope 3 emissions, transportation includes commuting, business travel and travel for school-related events, such as athletics. We have limited information on our Scope 3 emissions at this point.
   - Waste Reduction: This includes composting, recycling, hazardous waste disposal, construction waste disposal, etc.
   - Buildings, Construction & Maintenance: This category includes all of the campus' buildings.
   - Grounds: This category comprises the maintenance and planning for the campus' grounds.
   - Behavior Change Programs: These are programs designed to encourage all UC community members to lower their carbon footprint in a measurable way.
2) Promote Educational Strategies: These strategies will vary based on target audience and who is educating. Strategies include:
   - Curricular changes
   - On-campus education through a variety of avenues
   - Student interface programs such as EcoReps (an environmental representative in each residence unit who will make sustainability education, initiatives, and materials more accessible to students via peer-to-peer interactions).
3) Encourage/Facilitate Research on Climate Change: Strategies in the realm are more limited due size limitations. However they might involve:
   - Establishing a research support center that would function as a hub for grant-writing support, communication, and information about research within the UC community.
4) Foster Outreach Programs in our Broader Community: These strategies might include:
   - Working to make our climate change/sustainability related programming more readily available to local community members.
   - Working with local elected officials and community leaders in Collegeville (our host town) to promote climate change awareness and create programs that would be open to the public.

Greenhouse Gas Inventory

To date, we have conducted and submitted two GHG inventories for and to the ACUPCC. They were completed for fiscal years 2007-2008 and 2009-2010. The inventory for FY10-11 will be completed shortly. These documents inventory our GHG emissions in the form of CO_2 equivalents (eCO_2).

For the purposes of accounting for emissions, the GHG Protocol (a widely used accounting international tool for understanding, quantifying and managing GHGs) suggests using a concept called scopes. (GHG Protocol Initiative 2011) Scopes delineate emissions by type, which helps with structuring decisions about how to address any individual emission while also helping institutions avoid double counting emissions (or strategies to address them). In this approach, ownership or control over emissions is the main factor in determining whether an institution is responsible for addressing them. The three levels are: 1) full ownership or control of the emission source; 2) use of a non-owned/controlled emission source where the use is directly linked to on-campus energy consumption (i.e., purchased energy); 3) use of a non-owned/controlled emission source where the use is associated with the institution (i.e., commuting, study abroad travel, business travel). (Clean Air-Cool Planet 2010) The table below defines the three scopes and gives on campus examples of each.

Although the Clean Air-Cool Planet calculator does not have the capability to calculate most complex Scope 3 emissions, this action plan will still address the Scope 3 emissions proposed by the ACUPCC as well as other associated Scope 3 emission problems that will be further discussed below. While it is sometimes difficult to regulate or influence some types of Scope 3 emissions, the action plan makes suggestions on reducing some types of Scope 3 emissions that are believed to be able to be reduced through college initiatives.

Table 1-1: Greenhouse Gas emissions types, or "scopes", by definition and examples.

	Definition	On Campus Examples
Scope 1	Emissions directly resulting from sources owned or controlled by the institution.	• On-Campus Stationary Sources Emissions from all on-campus fuel combustion (non vehicular) • Direct Transportation Sources - emissions from all fuel used in the institution's fleet • Refrigerants • Agriculture - N_2O emissions from fertilizer use
Scope 2	Indirect emissions from sources that are neither owned nor controlled by the institution, and which are directly linked to on-campus energy consumption	• Purchased electricity • Purchased steam • Purchased chilled water
Scope 3	All other indirect emissions associated with the activities of the institution, but produced by sources not owned or controlled by the institution	Schools are only required to report on: • Air travel paid for by the institution (business travel) • Travel influenced or encouraged by the institution (study abroad travel, daily commuting to and from work (not travel over breaks) Schools are not required to report on: • Solid waste • Upstream emissions

(Clean Air-Cool Planet 2010) (American College and University Presidents' Climate Commitment n.d.)

Where We Are Now: Current Sustainability Measures

Ursinus College has been undertaking measures to increase our sustainability for several years. Much of this has been done with a mind toward saving the college money by decreasing our electricity usage. However, we have also successfully incorporated sustainability into a broad range of areas, from boilers and steam distribution system maintenance to the transformation of sustainability ideas into physical form, such as the Organic Farm and the naturalized stormwater basin. We have a list of many of our initiatives, programs, policies and practices in Appendix D.

Prior to the writing of this plan, programs sprouted across the curriculum. We have courses at Ursinus in eleven disciplines that have sustainability as part of the subject matter covered. We have students involved in sustainability initiatives across multiple departments (academic and non-academic). Appendix E contains a list of our academic courses, offered by eleven academic departments, that are related to sustainability.

CSAP: Guiding Principles and Assumptions

The Ursinus College Climate Action and Sustainability Plan is organized in a way to make it more accessible to the end users of the plan, namely, all members of the Ursinus College community. The CSAP is structured around the physical layout of the campus. There are sections for each major type of building or department/program that affects day-to-day life here at the College. These sections are, in order of their appearance in this document:

1. Administration
2. Academic Affairs
3. Student Affairs
4. Facilities Services Department
5. Special Use Buildings

Each section has multiple chapters, most include the administrative units that fall within that section. The exception to this is the three special use buildings on campus: The Bakes Center (Athletics), the Kaleidoscope Theater, and the Berman Museum of Art. Within each of these chapters, actions are organized by the following structure:

a. Policy
b. Operations
c. Procurement
d. Information Technology Changes
e. Behavior Change & Education
f. Transportation
g. Community Outreach
h. Infrastructure

We also had a number of assumptions as we moved forward with writing the plan:

1. **Community Buy-In**: In order for the plan to succeed we needed buy-in from the community. Thus, we have engaged the leaders in each administrative area in the process of developing the plan and its recommended actions.
2. **Time Frame**: We have included prospective actions that can be accomplished immediately, in the mid-range of time, and long term. The plan itself has a distant goal for attaining climate neutrality, which is a necessary approach. Therefore we have included some long-term prospective actions; however, in order to continue moving toward our goal and to engage the community in the process, we also include near-term goals. The time periods that the plan is designed around are:
    a. Immediate: 1-4 years out (2013-2016)
    b. Mid-Range: 5-19 years out (2017-2031)
    c. Long-Range: 20-47 years out (2032-2060)
3. **Measurable Outcomes**: Though not all of the important prospective actions are measureable, when it is possible, impacts associated with the actions should be measured. Measurable impacts may fall into any number of categories, such as: economic return on investment, energy reductions and related emissions reductions, impacts on education and productivity, and the college's visibility.

Section 2: Campus Emissions

Back to Table of Contents

This is Ursinus College's GHG inventory report for FY 2007-08 and FY 2008-09. It includes data from FY 2000 through FY 2010, along with projections to 2025. We used Clean Air-Cool Planet's Campus Carbon Calculator (Version 6.6) to calculate our emissions and track our data. This data was collected by one of our students and reviewed by staff and faculty in the Facilities Services Department, Environmental Studies Department and Office of Sustainability.

Between FY 2000 and FY 2010, Ursinus increased its student body by approximately 500 students (a 37% increase) and increased its building area by 350,000 square feet (a 42% increase). GHG emissions fluctuated between FY 2000 and FY 2010, experiencing increases of up to 20% and a decrease of 4%. Since switching from oil to natural gas as our primary heating fuel, our GHG emissions have reflected increases of between one and 3% over FY 2000 emissions and one year that indicated a 4% drop from that level of emissions. The years with lower emissions are in part a result of sustainability measures adopted by our Facilities Services Department, and weather also plays a large part. Keeping our emissions under control, though not technically a "success" is nevertheless a substantial achievement, given the growth of our campus.

Ursinus staff members have been working on lowering our GHG emissions without the guidance of a climate action plan. The College currently employs a staff member who is tasked with writing the College's Climate and Sustainability Action Plan, which will outline a course toward net zero greenhouse gas emissions.

Campus Emissions - Chapter 2.1: Greenhouse Gas Inventory Report

Back to Table of Contents

The goal of this section of the CSAP is to provide accurate and easy-to-understand information to the Ursinus community about the College's greenhouse gas emissions. The information along with our carbon calculator in this chapter is also filed with the ACUPCC.

2.1: Greenhouse Gas Inventory – Methods

Clean Air Cool Planet's Greenhouse Gas Inventory Calculator version 6.6 was used to calculate Ursinus College's carbon footprint. The calculator is one of several created for the purpose of developing a strategic plan to reduce greenhouse gas emissions with the ultimate goal of achieving carbon neutrality (see http://www.cleanair-coolplanet.org/ for more information).

To determine an institution's carbon footprint, the calculator demands past data (dating back to 1990 if possible, in order to track trends) and present data pertaining to institutional demographics, purchased electricity, on campus stationary sources of emissions, transportation, agriculture, solid waste, refrigeration/chemicals, and emissions offsets. There are several areas of potential emissions, including an on campus steam plant, incinerated waste, coal, and animal agriculture, that do not apply to the operations of Ursinus College and are therefore excluded from the inventory.

It is important to acknowledge that while the CA-CP carbon calculator covers most major aspects of greenhouse gas emissions, it falls short in some areas. For example, there is no section that takes into account the emissions associated with transporting food and food supplies to Ursinus for dining. However, despite its imperfections, the calculator continues to be a critical step towards developing plans for emissions reduction and eventual carbon neutrality.

In order to calculate emissions more accurately and avoid having years for which data reflected no emissions, the CACP spreadsheet data for back years was populated with data that shows approximations of items such as building square footage and recycled paper content, for those years (1990-2004). For commuting data, the following assumptions were made in lieu of hard data:

- 100% of faculty and staff commute;
- there is no carpooling;
- eight 15-mile one-way trips are made per week (this accounts for part time employees as well as faculty who work from home);
- staff commute 49 weeks per year; and faculty commute 40 weeks per year, to account for summer research in other locations, vacation time, sabbaticals, etc.
- Students who live off campus (10%) were assumed to make ten 5-mile, one-way trips per week, for 32 weeks per year.
- Also, study abroad data for all years except FY 2009 are estimates based in part of FY 2009 data and in part on an internal report on the study abroad program. Data for study abroad travel will be updated for FY 2007 through present in future reports.

The current data reflects a more accurate picture of the College's emissions. However, there are still areas where we have imperfect information. Most notably is our Scope 3 transportation emissions. We do not include any information on faculty or staff travel, other than commuting, due to difficulties in collecting this data. We also do not currently include information on the travel emissions related to sports team travel. These are areas that we will be addressing in our next iteration of the GHG inventory for the ACUPCC reporting requirements. Additionally, we do not currently have data on solid waste-related emissions. This, too, will be added to subsequent reports.

In FY 2009, the College purchased offsets for 100 students. Students purchased 10 of these offsets (and claimed those offsets) and the College claimed the remainder of those offsets. These offsets were calculated using the following process:

a) Offsets: (750 lbs. CO2e offset per unit + 1200 lbs CO2e Offset per unit) x 90 (number of units we're claiming) = 175,500 lbs CO2e =>79.6 MT eCO2

b) Wind Power: 585 kWh wind power per unit x 90 (number of units we're claiming) = 52,650 kWh/(6,952 kWh/MT eCO2) = 7.6 MT eCO2

c) Combined: 79.6 + 7.6 = 87.2 MT eCO2

The emissions data in this report is presented first in an overview format, and then by the three scopes that the ACUPCC uses for reporting data (see Table 1-1 in the Introduction to the CSAP).

2.1: Greenhouse Gas Inventory – Overview

Ursinus College's current quantified GHG emissions are the equivalent of approximately 8,900 metric tons (eCO2). Approximately 65% is sourced from on-campus stationary generation and on campus transportation (Scope 1); 15% of that amount is sourced from purchased electricity (Scope 2); and another 15% is related to commuting and study abroad travel (Scope 3). The remaining 5% is from waste and T&D losses. The table directly below was imported from Ursinus College's GHG Inventory calculator. It shows CO2, CH4, N20 as well as eCO2 numbers for the 2008-09 fiscal year.

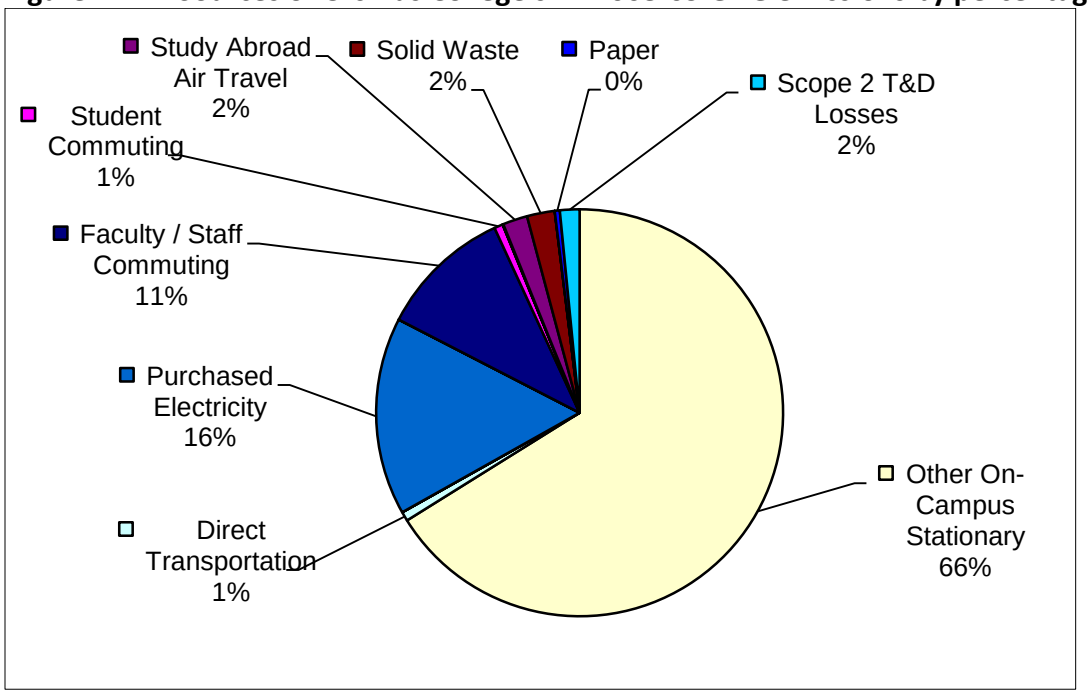
Table 2.1-1: Summary of GHG emissions for FY 2008-09.

MODULE	Summary					
WORKSHEET	Overview of Annual Emissions					
UNIVERSITY	Ursinus College					
Select Year -->	FY 2008-09	Energy Consumption	CO_2	CH_4	N_2O	eCO_2
		MMBtu	kg	kg	kg	Metric Tons
Scope 1	Co-gen Electricity	-	-	-	-	-
	Co-gen Steam	-	-	-	-	-
	Other On-Campus Stationary	98,376.6	5,851,493.4	665.4	25.0	5,875.6
	Direct Transportation	930.7	64,346.4	12.0	4.2	65.9
	Refrigerants & Chemicals	-	-	-	-	-
	Agriculture	-	-	-	-	-
Scope 2	Purchased Electricity	103,248.1	1,120,639.8	10.6	921.7	1,395.6
	Purchased Steam / Chilled Water	-	-	-	-	-
Scope 3	Faculty / Staff Commuting	13,054.0	915,354.6	183.1	63.0	938.7
	Student Commuting	854.7	59,930.6	12.0	4.1	61.5
	Directly Financed Air Travel	-	-	-	-	-
	Other Directly Financed Travel	65.7	4,758.0	0.3	0.1	4.8
	Study Abroad Air Travel	1,487.2	291,986.2	2.9	3.3	174.1
	Solid Waste	-	-	7,836.2	-	195.9
	Wastewater	-	-	-	-	-
	Paper	-	-	-	-	35.8
	Scope 2 T&D Losses	10,211.4	110,832.5	1.0	91.2	138.0
Offsets	Additional					-
	Non-Additional					(87.2)
Totals	Scope 1	99,307.3	5,915,839.8	677.3	29.2	5,941.5
	Scope 2	103,248.1	1,120,639.8	10.6	921.7	1,395.6
	Scope 3	25,673.0	1,382,862.0	8,035.5	161.7	1,548.7
	All Scopes	228,228.4	8,419,341.6	8,723.4	1,112.6	8,885.8
	All Offsets					(87.2)
					Net Emissions	8,798.6

(Source: the "S_Annual" spreadsheet in the CA-CP Calculator)

The graph below indicates a breakdown of our GHG emissions sources by percentage. This is the same information shown in the chart above, but in visual presentation format. This shows that the majority of the College's emissions are produced by our heat plant with commuting and purchased electricity being substantial contributors as well. It should be noted that commuting numbers are estimated and will need to be updated in future reports.

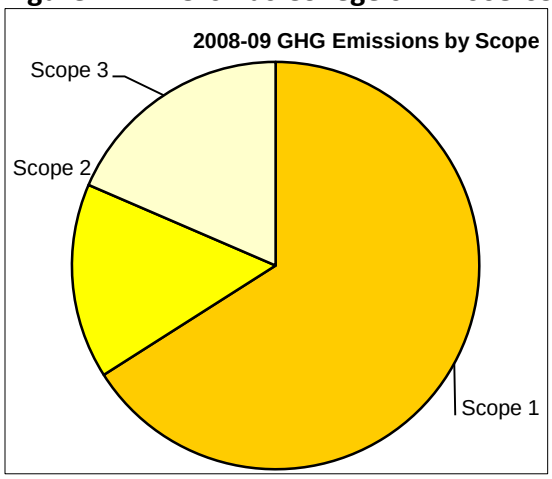
Figure 2.1-1: Sources of Ursinus College's FY 2008-09 GHG emissions by percentage.



(Source: the "S_Annual" spreadsheet in the CA-CP Calculator)

Finally, the following pie chart shows a breakdown of the College's GHG emissions by scope. This chart shows that Scope 1 emissions (those that we create on campus primarily from our heat plant) are our primary source of emissions. Our Scope 3 emissions are likely underrepresented in this data, which we hope to rectify in future iterations of our GHG inventory.

Figure 2.1-2: Ursinus College's FY 2008-09 GHG emissions by scope.



(Source: the "S_Annual" spreadsheet in the CA-CP Calculator)

Scope 1: (Heating & Cooling)

Given the available data, on-campus stationary sources of energy (i.e., heating and cooling via residual and distillate oil, natural gas, and propane) are responsible for the majority of GHG emissions – 66%. We are currently considering options for our heat plant that could reduce our emissions significantly, including shutting down our heat plant during the summer months (this would involve installation of supplemental heating and water heaters in each building). This would be a major step toward meeting our commitment to becoming carbon neutral. Our Facilities Services staff is committed to decreasing our emissions output with a mind toward economic savings as well. The two will have to go hand in hand in order for institutions to afford the shift to carbon neutrality. Our heat plant is beyond its expected life cycle, but has been well maintained and is still functioning. However, we expect that we will have to replace our heat plant in the coming 10-20 years. At that time, we hope to be able to make a substantial reduction to our emissions through a more energy efficient system.

Scope 2 (Purchased Electricity)

The production of our purchased electricity currently contributes 15% of our greenhouse gas emissions. Up until January 2011, Ursinus purchased its electricity from Exelon Corporation. Eighty percent of its electricity was nuclear, 10% was coal-generated, 5% was hydroelectric, and

5% was generated by wind and landfill gases. Nuclear power plants do not generate greenhouse gases, although their waste is extremely hazardous. This explains why electricity does not account for a large majority of Ursinus' carbon dioxide emissions. For the period of this report, coal was the only sector of the College's purchased electricity that was a significant source of carbon emissions.

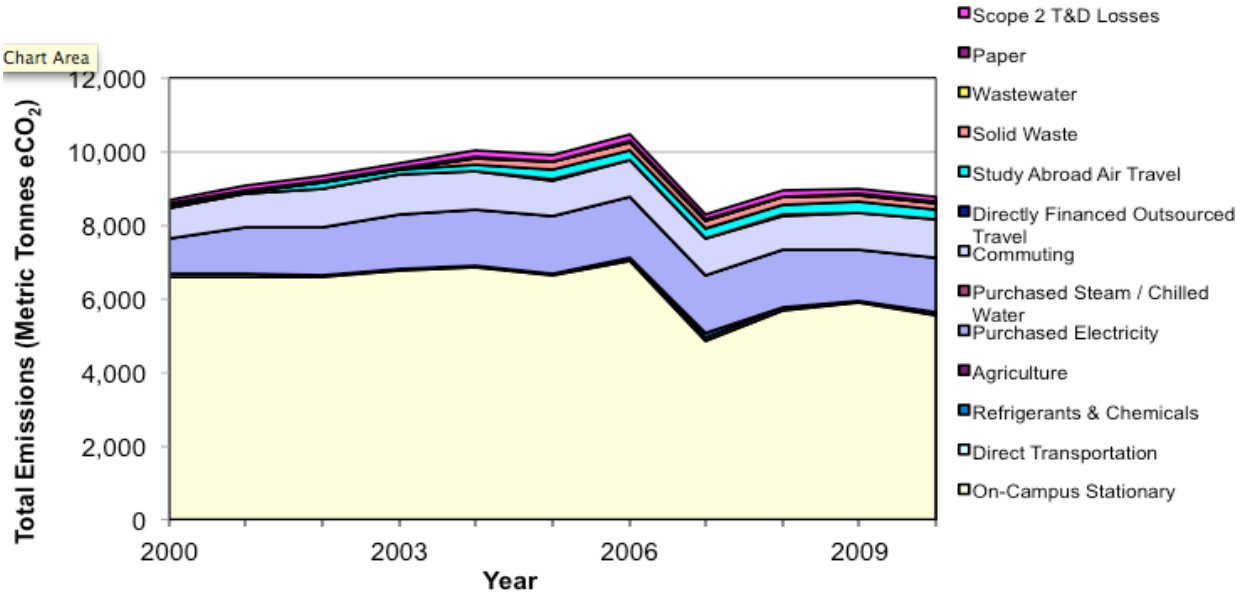
Scope 3 (Transportation)

The greenhouse gas calculator divides transportation into three main categories: 1) student commuting and study abroad travel that is paid for, by or through the College; 2) faculty and staff transportation (both commuting and transportation that is job-related); and 3) Facilities Services transportation. The Scope 3-related emissions that are accounted for in our current data set show that these factors make up 14% of our overall emissions. However, this number does not reflect our actual emissions. The data that has been collected to date is incomplete and/or estimated with regard to student and faculty/staff transportation for both commuting and job/study-related travel. Therefore the emissions shown for this area are likely lower than they are in actuality. This data will be added as it comes available. The only data that is accurate from this set is the FY 2008-09 study abroad travel miles number.

2.1: Greenhouse Gas Inventory – Trends

Ursinus began implementing sustainability projects in 2002, before we became signatories of the ACUPCC. Projects included switching from oil to natural gas as our primary heat plant fuel, retrofitting buildings with energy efficient lights, weather-proofing buildings, and coordinating our heating/cooling schedule with the building use calendar, among many others. The emissions impact of these projects can be seen in the figure below, which shows our emissions between 2000 and 2010. Our emissions have increased and decreased in the years between 2000 and 2010, however, it is worth noting that the College has increased its number of students, its building square footage, and its study abroad programming during this time period. The major fall off between FY 2006 and FY 2007, occurred as a result of the switch from using oil to natural gas for our heat plant. Our FY 2010 numbers, while not officially part of this report, do show continued decreases in our emissions.

Figure 2.1-3: Total emissions for FY 2000 through FY 2010.



(Source: G-Total Emissions worksheet in the CACP workbook)

Table 2.1-2: Emissions for FY 2000 through FY 2010 with scope data, number of students, building square footage, and percent change from FY 2000 for emissions.

Year	Number of Students	Total Building Sq. Footage	Total Scope 1	Total Scope 2	Total Scope 3	Biogenic	Total Offsets	Total Emissions	Net Emissions	Percent Change from 2000
			MT eCO_2	MT eCO_2	MT eCO_2	MT eCO_2	MT eCO_2	MT eCO_2	MT eCO_2	
2000	1,252	816,727	6,665.8	976.0	1,027.1	-	-	8,591.1	8,591.1	
2001	1,308	816,727	6,663.1	1,284.9	1,132.8	-	-	9,003.1	9,003.1	5%
2002	1,352	1,001,661	6,639.6	1,316.6	1,366.5	-	-	9,167.5	9,167.5	7%
2003	1,468	1,048,049	6,826.3	1,462.0	1,406.8	-	-	9,539.8	9,539.8	11%
2004	1,484	1,048,049	6,885.1	1,539.4	1,591.7	-	-	10,034.8	10,034.8	17%
2005	1,552	1,048,049	6,696.4	1,539.4	1,659.4	-	-	9,797.5	9,797.5	14%
2006	1,548	1,108,320	7,124.5	1,625.6	1,692.8	-	-	10,345.1	10,345.1	20%
2007	1,544	1,108,320	5,061.0	1,566.9	1,677.8	-	-	8,207.9	8,207.9	-4%
2008	1,560	1,160,464	5,766.4	1,544.1	1,624.0	0.5	-	8,836.6	8,836.6	3%
2009	1,656	1,160,464	5,941.5	1,395.6	1,667.7	1.1	(87.2)	8,885.8	8,798.6	2%
2010	1,718	1,160,464	5,622.0	1,483.4	1,675.6	1.1	-	8,683.1	8,683.1	1%

(Source: S_eCO2_Sum worksheet from CA-CP workbook)

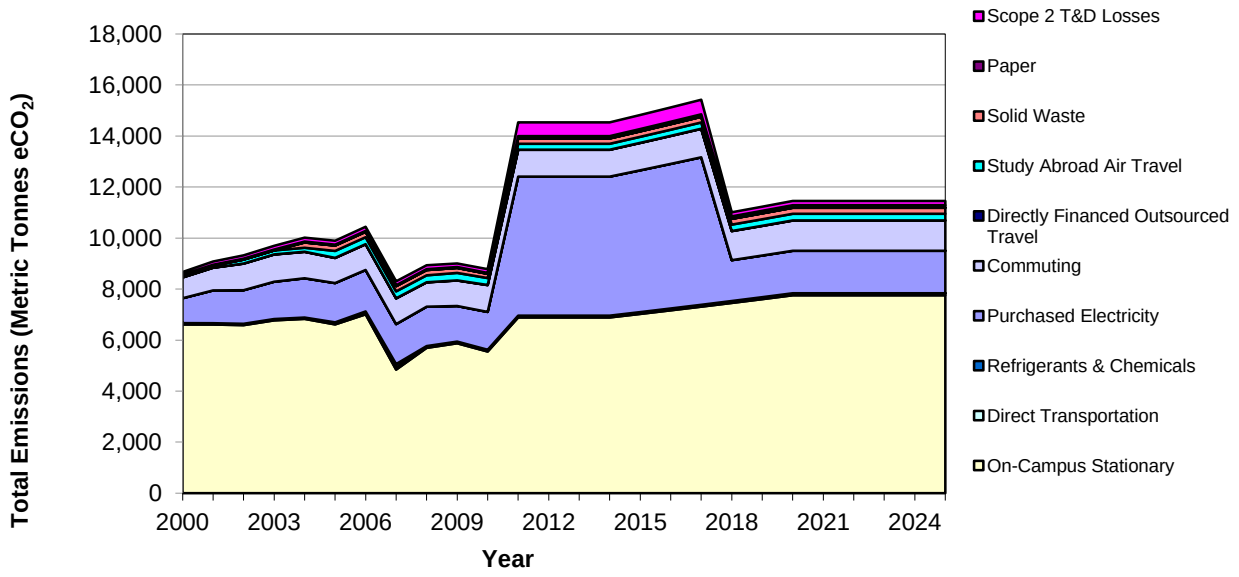
Longer term trends are more difficult to predict. The graphs below in Figures 7 and 8 show Ursinus' projected emissions, given a set of assumptions for future years. The assumptions are

based on some known variables (such as fuel mix for our electricity provider) and some unknown variables, such as growth of the College in student body and building square footage. The CA-CP calculator allows for customized trends for growth, and this was used to create the trends seen in the chart.

The sharp upswing in purchased electricity emissions in FY 2011 is tied to our current contract with Constellation Energy – a forty-two month contract. Constellation has a fuel mix that is much higher in coal (40%) as well as oil and natural gas than our past provider. This change will have a substantial impact on our carbon emissions over the next seven years (the term of our contract) as shown in the figures below. This highlights the difficulties of making decisions that have disparate effects on a school's economics and its emissions. When that contract is renewed, we hope to choose an energy company that can give us a better fuel mix that will lower our emissions. Education campaigns combined with energy reduction strategies are currently in place for addressing the Scope 2 emissions on campus.

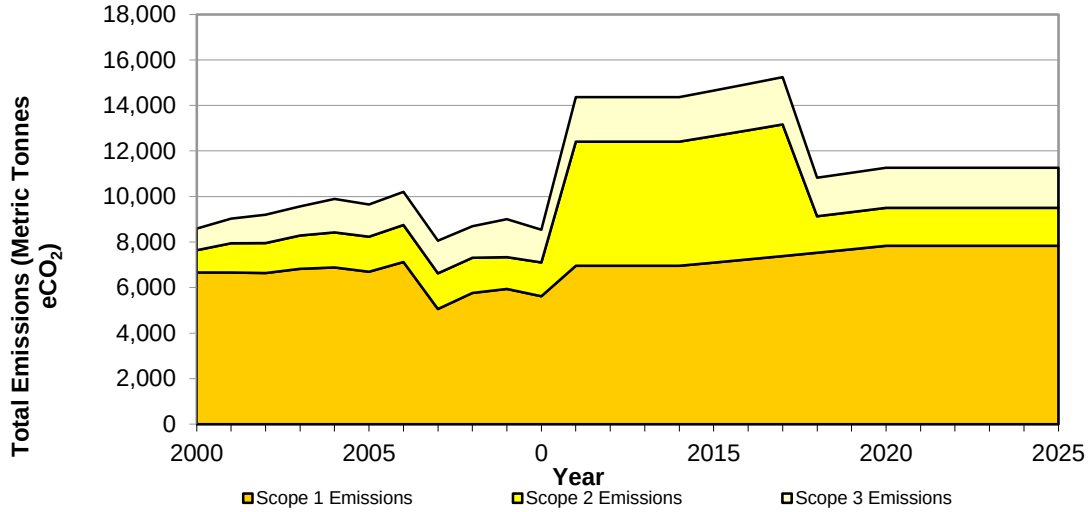
The graphs below do not reflect future projects to limit or reduce our GHG emissions. When project data is entered, it will be reflected in the chart with the lines decreasing toward zero. At this point, we have not used this calculator to assess projects. We hope to do this in the coming years.

Figure 2.1-4: Projected emissions (FY 2000 – FY 2025) based on current and projected emissions.



(from the "G-Total Emissions" spreadsheet in the CA-CP Calculator)

Figure 2.1-5: FY 2000 – FY 2025 actual and projected emissions by scope.



(Source: "G-ScopeEmissions" spreadsheet in the CA-CP Calculator)

2.1: Greenhouse Gas Inventory – Moving Forward

As we take steps to improve our data collection, particularly in Scope 3 emissions, we will see our emissions numbers rise to more accurately reflect of our real emissions. This will allow us to make informed decisions about the potential impacts of emissions reductions projects that we consider. It will also take the uncertainty out of our GHG inventory and allow us to know what our actual goals are.

The GHG inventory will now be undertaken with supervision and guidance from a member of our Office of Sustainability. We will continue to have students assisting in the process. Also, the inventory will be undertaken during the school year - after the College's Business Office has all of the numbers in place to assist with the data collection. We will be working on facilitating data collection at the source points – this will happen in coordination with employees in various departments.

Also, we expect that our Climate and Sustainability Action Plan will have been adopted before the end of FY 2012-2013, and this will give us an additional tool as we approach lowering our greenhouse gas emissions.

Table 2.1-3: Projected Carbon Emissions for Ursinus College with Implementation of the CAP

	Year	MT CO2e
Baseline	Estimated 2010	8,683*
25% Decrease from 2010 baseline	2020	6,512
50% Decrease	2030	4,341
75% Decrease	2040	2,171
Carbon Neutral	2060	0

*This number does not accurately reflect UC's Scope 3 emissions. Calculations for future years will need to be amended as we obtain more accurate data.

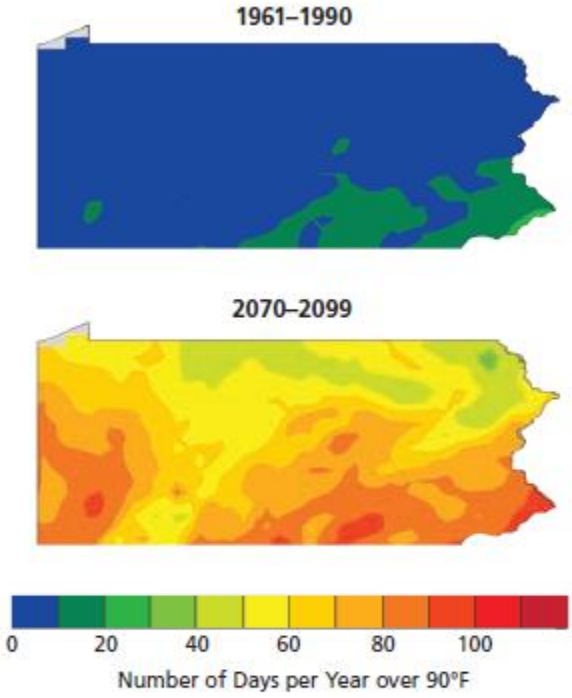
Table 2.1-4: Projected Carbon Emissions for Ursinus College without implementation of the CSAP, using an average increase in emissions of 2% (based on past three years of data for Ursinus College, which reflect the change from using heating oil to natural gas).

	Year	MT CO2e
Baseline	Estimated 2010	8,683*
Increase	2020	10,796
Increase	2030	13,161
Increase	2040	16,043
Increase	2060	23,838

*This number does not accurately reflect UC's Scope 3 emissions. Calculations for future years will need to be amended as we obtain more accurate data.

In addition to the virtues of promoting a cleaner world, educating our community and becoming carbon neutral for environmental reasons, there are clear and convincing economic reasons for pursuing carbon neutrality. The costs of energy production are increasing, and projects are that costs associated with fossil fuels will continue to increase. Costs associated with alternative energy sources are decreasing as the technology develops and markets for these products continue to grow.

Figure 1-6: Temperature rise across Pennsylvania, historical and projected. Source: (Union of Concerned Scientists 2008)



Statewide, Pennsylvania is projected to experience dramatic increases in the number of extremely hot days over the coming century, especially under the higher-emissions scenario. The greatest warming will be in the southwest and southeast regions, where daytime temperatures by late century (2070–2099) could hover over 90°F for nearly the entire summer.

2.1: Greenhouse Gas Inventory – Going Neutral

Back to Table of Contents

An overview of the actions that are recommended to take place to achieve our goals for 2025 is included in this plan. Beyond that, new technologies will develop over the years, financial tools will change substantially, and these will need to be evaluated and addressed in a revised Climate & Sustainability Action Plan.

The primary recommendations of this plan include shifting the central heating plant to a summer shutdown, engaging in a power purchase agreement for alternative electricity sourcing, energy conservation measures, the affirmation and implementation of policies that are already in place, and additional policies that will help the College attain the 25% decrease from our 2010 GHG emissions by 2020.

Table 2.1-1: Ursinus College strategies for attaining our goal of reducing our GHG emissions by 25% by 2020.

Strategy	Goal	To Date
Conservation within existing buildings	Goal: decrease emissions based on behavior and expectation by 20%. This will involve raising awareness among building users of energy usage, both heat and electrical. Gradually change behaviors and increase acceptance and buy-in of energy saving measures.	We have instituted the Ursinus College Office of Sustainability and are working to increase awareness of sustainability principles. We have also installed a real-time energy monitor that will allow staff to better educate users of their energy usage.
Sustainable construction of new buildings and major additions.	Goal: all new construction of buildings and major additions to buildings will be built to LEED silver standards or higher.	We implement this policy for all new buildings and major additions.
More efficient on-campus production & distribution of energy	Goal: decrease our emissions from our heat plant by 50%	We have conducted a feasibility study of the benefits of shutting down our heat plant during the summer. This is projected to reduce our annual emissions by 35%.
Renewable Energy	Goal: provide at least 50% of our electrical energy through solar or other renewable energy source.	We do not currently have the ability to install a solar array, however, we are open to this in the future.
Projected 2060 Emissions if no action is taken	Approximately 50% increase*	23,838

*This number is based on projected caps on student enrollment and slow expansion of square footage. It assumes that current sustainability measures will continue, and that our current 1% annual increase in emissions will continue.

Table __ shows the ACUPCC's requirements of signatory institutions in one column and in the other column, it shows the measures already taken at Ursinus, as well as those measures proposed by the UCCASP. We are currently in compliance with the PCC's requirements with the exception of the timely submission of the College's Climate Action Plan. This plan has been extant in draft form for some time, however, the College was unfortunate to lose its long-time president, John Strassburger, in 2010. The involved departments felt that waiting to publish the CAP until our incoming president, Bobby Fong, was able to review and approve the plan was not only appropriate, but would facilitate implementation of the plan.

Table 2.1-2. Comparison of the ACUPCC's requirements to Ursinus College's Climate Action & Sustainability Plan

Presidents' Climate Commitment	Ursinus College Climate Action Plan
Set up a mechanism (committee, task force, office, etc.) within 2 months to guide the process.	**Yes**. We have a committee and an Office of Sustainability.
Complete an inventory of greenhouse gas emissions within 1 year.	**Yes**. We have completed two GHG inventories. One in 2008 and one in 2010.
Create and implementing a climate neutral plan (that includes a target date and interim milestones for achieving campus climate neutrality) within 2 years.	**No**. However, we do now have our CSAP submitted to the ACUPCC. Our target goal for reaching climate neutrality is 2060.
The plan should include actions to expand research or other efforts necessary to achieve climate neutrality.	**Yes**. Ursinus is a small liberal arts college; we are able to address this through our CAP at a college-wide scale.
The plan should include actions to Integrate sustainability into the curriculum and making it part of the educational experience.	**Yes**. See section VIII. Academic Programs.
The plan should include mechanisms for tracking progress on goals and actions.	**Yes**. See section XII. Tracking Progress into the Future.
The action plan, inventory and periodic progress reports should be publicly available through AASHE	**Yes**. They are available.
Take two of the following seven immediate steps to reduce greenhouse gas emissions while the more comprehensive plan is being developed, as specified in the Commitment.	**Yes**. We have either already accomplished or have committed to four of the seven items.
1. Establish a policy that all new campus construction will be built to at least the U.S. Green Building Council's LEED Silver standard or equivalent.	**Yes**. We have done this.
2. Adopt an energy-efficient appliance purchasing policy requiring purchase of ENERGY STAR certified products in all areas for which such ratings exist.	**Yes**. We implement this policy.
3. Establish a policy of offsetting all greenhouse gas emissions generated by air travel paid for by our institution.	**No**. We are not currently able to commit to this type of policy.
4. Encourage use of and provide access to public transportation for all faculty, staff, students and visitors at our institution.	**Yes**. This is part of this plan.
5. Within one year of signing this document, begin purchasing or producing at least 15% of our institution's electricity consumption from renewable sources.	**No**. Our current electricity provider has changed and we now get only 5% from renewable resources. We will invest externally in green power after we have invested all we can internally to make our campus operate as energy efficiently as possible.
6. Establish a policy or a committee that supports climate and sustainability shareholder proposals at companies where our institution's endowment is invested.	**No**. We are not currently able to commit to this.
7. Participate in the Waste Minimization component of the national RecycleMania competition, and adopt 3 or more associated measures to reduce waste.	**Yes**. This is a prospective action in our CAP.

Obstacles to Achieving Climate Neutrality

Although we are in compliance with most of the ACUPCC requirements, there are several obstacles and constraints that will make fulfilling our commitment challenging.

A. Physical plant infrastructure, electricity and fuels

Like many campuses, Ursinus owns many old buildings that define the character and culture of the College, but use excessive energy. Old buildings, such as these, are costly to retrofit.

B. User Behavior

While about half of the College's energy use and carbon emissions are controlled by its physical infrastructure, the behavior of members of the campus community also affects energy consumption, recycling rates, and consumption of materials, such as paper and water. We plan to institute educational and engagement campaigns, however, the effectiveness of such efforts is hard to predict.

C. Institutional Constraints

Ursinus, like many small liberal arts institutions, is currently struggling with limited operating and capital budgets. This will likely be an impediment to investments in energy efficiency and GHG emission reduction programs. The limited financial flexibility will also influence the implementation of most of our programs. However, we look at this as a challenge to be met rather than an insurmountable barrier. We intend to continue the policy of creative problem solving that has characterized Ursinus' approach to dealing with sustainability issues.

We do currently have a 42-month contract with a new electric energy provider, PJM Constellation. Their energy source makeup is primarily from oil and gas rather than sustainable sources[2]. (Monitoring Analytics, LLC 2010)

A report by the Intergovernmental Panel on Climate Change found that renewable energy accounted for nearly 13% of global energy supply. (Edenhofer 2011) At Ursinus, we currently get approximately 5% of our electrical energy from renewable energy, and none of our heating energy.

[2] PJM Constellation gets approximately 5% of their electricity from water.

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Appendices

Appendix A: American College & University Presidents' Climate Commitment Text

Back to Table of Contents

We, the undersigned presidents and chancellors of colleges and universities, are deeply concerned about the unprecedented scale and speed of global warming and its potential for large-scale, adverse health, social, economic and ecological effects. We recognize the scientific consensus that global warming is real and is largely being caused by humans. We further recognize the need to reduce the global emission of greenhouse gases by 80% by mid-century at the latest, in order to avert the worst impacts of global warming and to reestablish the more stable climatic conditions that have made human progress over the last 10,000 years possible.

While we understand that there might be short-term challenges associated with this effort, we believe that there will be great short-, medium-, and long-term economic, health, social and environmental benefits, including achieving energy independence for the U.S. as quickly as possible.

We believe colleges 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. Campuses that address the climate challenge by reducing global warming emissions and by integrating sustainability into their curriculum will better serve their students and meet their social mandate to help create a thriving, ethical and civil society. These colleges and universities will be providing students with the knowledge and skills needed to address the critical, systemic challenges faced by the world in this new century and enable them to benefit from the economic opportunities that will arise as a result of solutions they develop.

We further believe that colleges and universities that exert leadership in addressing climate change will stabilize and reduce their long-term energy costs, attract excellent students and faculty, attract new sources of funding, and increase the support of alumni and local communities. Accordingly, we commit our institutions to taking the following steps in pursuit of climate neutrality.

1. Initiate the development of a comprehensive plan to achieve climate neutrality as soon as possible.

a. Within two months of signing this document, create institutional structures to guide the development and implementation of the plan.
b. Within one year of signing this document, complete a comprehensive inventory of all greenhouse gas emissions (including emissions from electricity, heating, commuting, and air travel) and update the inventory every other year thereafter.
c. Within two years of signing this document, develop an institutional action plan for becoming climate neutral, which will include:
    i. A target date for achieving climate neutrality as soon as possible.
    ii. Interim targets for goals and actions that will lead to climate neutrality.
    iii. Actions to make climate neutrality and sustainability a part of the curriculum and other educational experience for all students.
    iv. Actions to expand research or other efforts necessary to achieve climate neutrality.
    v. Mechanisms for tracking progress on goals and actions.

2. Initiate two or more of the following tangible actions to reduce greenhouse gases while the more comprehensive plan is being developed.

    a. Establish a policy that all new campus construction will be built to at least the U.S. Green Building Council's LEED Silver standard or equivalent.
    b. Adopt an energy-efficient appliance purchasing policy requiring purchase of ENERGY STAR certified products in all areas for which such ratings exist.
    c. Establish a policy of offsetting all greenhouse gas emissions generated by air travel paid for by our institution.
    d. Encourage use of and provide access to public transportation for all faculty, staff, students and visitors at our institution.
    e. Within one year of signing this document, begin purchasing or producing at least 15% of our institution's electricity consumption from renewable sources.
    f. Establish a policy or a committee that supports climate and sustainability shareholder proposals at companies where our institution's endowment is invested.
    g. Participate in the Waste Minimization component of the national RecycleMania competition, and adopt 3 or more associated measures to reduce waste.
3. Make the action plan, inventory, and periodic progress reports publicly available by submitting them to the ACUPCC Reporting System for posting and dissemination.

In recognition of the need to build support for this effort among college and university administrations across America, we will encourage other presidents to join this effort and become signatories to this commitment.

Signed,

The Signatories of the American College & University Presidents' Climate Commitment

Appendix B: Ursinus College Campus Map

Back to Table of Contents

Campus Map Legend

Academic & Administrative Locations

By Name

20 Baseball Field
3 Berman Museum of Art
5 Bomberger Hall
11 Bookstore
13 Campus Safety
1 Corson Hall
14 Facilities Services
5a Fetterolf House (Center for Continuous Learning)
15 Floy Lewis Bakes Center (including Helfferich Hall Gym)
7 Hillel House
25 Hunsberger Woods
10 Kaleidoscope Performing Arts Center
6 Myrin Library
4 Olin Hall
18 Patterson Football Field
8 Pfahler Hall
23 Practice Field (North)
17 Practice Field (South)
16 Ritter Center
19 Snell Field Hockey Field
24 Soccer and Lacrosse Field
22 Softball Field
21 Tennis Courts
9 Thomas Hall
2 Unity House
12 Wismer Center

By Number

1 Corson Hall
2 Unity House
3 Berman Museum of Art
4 Olin Hall
5 Bomberger Hall
5a Fetterolf House (Center for Continuous Learning)
6 Myrin Library
7 Hillel House
8 Pfahler Hall
9 Thomas Hall
10 Kaleidoscope Performing Arts Center
11 Bookstore
12 Wismer Center
13 Campus Safety
14 Facilities Services
15 Floy Lewis Bakes Center (including Helfferich Hall Gym)
16 Ritter Center
17 Practice Field (South)
18 Patterson Football Field
19 Snell Field Hockey Field
20 Baseball Field
21 Tennis Courts
22 Softball Field
23 Practice Field (North)
24 Soccer and Lacrosse Field
25 Hunsberger Woods

Residence Halls

By Name

C 201-203 Ninth Avenue
Z 30-32 Sixth
NN 424-426 Main
MM 444 Main
S 624 Main
P 702 Main
F 732 Main
I 777 Main Street
B 942 Main Street
A 944 Main Street
KK Barbershop (476 Main)
AA Beardwood Hall
O Brodbeck Hall
LL Clamer Hall (409 Main)
D Cloak House (811 Main)
II Commonwealth (500 Main)
M Curtis Hall
U Duryea Hall (612 Main)
G Elliott House (785 Main)
FF Fetterolf House (554 Main)
X Hobson Hall (568 Main)
E Isenberg Hall (801 Main)
HH Kelgwin Hall (513 Main)
GG Maples Hall (512 Main)
W Musser Hall (23 Sixth)
JJ New Hall
EE North Hall
R Olevian Hall
K Omwake Hall (701 Main)
BB Paisley Hall
L Reimert Hall
DD Richter Hall
Q Schaff Hall
V Schreiner Hall (600 Main)
XX Sprankle Hall
CC Stauffer Hall
Y Sturgis Hall (26 Sixth)
H Todd Hall (724 Main)
J Wicks House (716 Main)
N Wilkinson Hall
T Zwingli Hall (620 Main)

By Letter

A 944 Main Street
B 942 Main Street
C 201-203 Ninth Avenue
D Cloak House (811 Main)
E Isenberg Hall (801 Main)
F 732 Main
G Elliott House (785 Main)
H Todd Hall (724 Main)
I 777 Main Street
J Wicks House (716 Main)
K Omwake Hall (701 Main)
L Reimert Hall
M Curtis Hall
N Wilkinson Hall
O Brodbeck Hall
P 702 Main
Q Schaff Hall
R Olevian Hall
S 624 Main
T Zwingli Hall (620 Main)
U Duryea Hall (612 Main)
V Schreiner Hall (600 Main)
W Musser Hall (23 Sixth)
X Hobson Hall (568 Main)
XX Sprankle Hall
Y Sturgis Hall (26 Sixth)
Z 30-32 Sixth
AA Beardwood Hall
BB Paisley Hall
CC Stauffer Hall
DD Richter Hall
EE North Hall
FF Fetterolf House (554 Main)
GG Maples Hall (512 Main)
HH Kelgwin Hall (513 Main)
II Commonwealth (500 Main)
JJ New Hall
KK Barbershop (476 Main)
LL Clamer Hall (409 Main)
MM 444 Main
NN 424-426 Main

Appendix C: Ursinus College Sustainability History

Back to Table of Contents

The table below shows the history of sustainability programming at the College, however, it does not reflect the many programs, courses, and actions taken throughout the College which have a positive impact on our ecological footprint or our educational efforts.

History of Sustainability Programming at Ursinus College

Date	Type	Event
2000	Academic Program	The Ursinus College Environmental Studies (ENV) curriculum was established in January 2000 by a committee of Ursinus faculty interested in promoting environmental pedagogy. These faculty members all taught classes that fell within the Environmental Studies discipline. Collectively, their courses, with the addition of a new introductory class, were organized to form the ENV major and minor. The founding faculty each had full-time appointments in departments other than ENV, and contributed courses to the Environmental Studies major and minor which were cross-listed between their home departments and ENV.
2002	Faculty Hire	Richard Wallace, the first full-time faculty member in ENV, was hired to serve as director (later department chair) and build a program around the major. Dr. Wallace was the first of what is now three full-time tenure-track faculty hires in Environmental Studies since the establishment of the major. His work focuses on policy and programs that protect biological diversity and sustainable agriculture.
2002-current	Speakers	The Environmental Speaker Series was initiated. Speakers have included Wendell Berry, Francis Moore Lappé, Anna Lappé, Scott Weidensal, Stephen Schneider, and others.
2003 (sp)	Recycling	ENV 100 class researched and convinced the administration to start a recycling program on campus. After that a student committee overseen by ENV faculty, was responsible for collecting the green bins on campus. In late 2008 or 2009, it became the responsibility of Housekeeping because it had grown so large…and as such became part of the infrastructure of the college.
2002	Students	Students in the Environmental Studies Department began a student recycling committee, called UC Recycles. internship program, called Sustain UC, that enabled students to pursue projects in sustainability and recycling.
2003 (fall)	Garden	The organic garden initially conceived and planned by students/faculty.
2004??	Membership	Ursinus College became a member of Pennsylvania Environmental Resource Consortium (PERC).
2004 (spring)	Garden	The Ursinus Organic Garden was established through the efforts of a student/faculty collaboration as an initiative of the College.
2004	Faculty Hire	A second Environmental Studies faculty line was approved in 2003 and Leah

		Joseph was hired in 2004. Dr. Joseph's work focuses on climate change through analysis of deep sea sediment.
2004	Stormwater Basin	The Ursinus naturalized stormwater basin (also known as the constructed wetland) was conceived by a student as part of an ENV course. It evolved into a Summer Fellows and then an Honors project for a student. It was presented to and approved by the College administration.
2004 - current	Policy & Program	The College committed to purchasing Energy Star appliances. The Facilities Services Department has also upgraded lighting across campus, installed motion sensors in most classrooms and academic offices, conducts a light bulb exchange for CFLs, has installed variable speed drives on A/C units, uses Vending Miser programs for vending machines, manages parking lots for energy efficiency, uses green carpeting and low VOC paints, and purchased high efficiency laundry machines, among many other actions.
2005-current	Outreach	The Environmental Studies Department sponsors an annual Environmental Roundtable event with Senator John Rafferty (44th District).
2005 (summer)	Garden	The Ursinus Organic Garden had its first growing season.
2006	Student Leadership	UC Recycles was transformed into Sustain UC – a student fellowship program with students working on a variety of sustainability programs.
2007	Membership	Ursinus College became a member of the American Association for Sustainability in Higher Education (AASHE).
2007 (fall)	Stormwater Basin	Engineering and landscaping for the Naturalized Stormwater Basin was completed.
2007	Climate	President John Strassburger signed the American College and University Presidents' Climate Commitment (ACUPCC), committing the College to creating a plan to become carbon neutral.
2007	Program	The College formed a temporary Sustainability Committee.
2007	Policy	The College began implementing a policy to build new structures to LEED Silver construction standards.
2008	Move-In	The first Move-In event (recycling of cardboard primarily) was run by a student. This program grew into one supported by the Office of Sustainability.
2009 (fall)	Move-In	Move-In oversight shifted from an ENV class to sustainability staff. Students continue to help coordinate this initiative.
2007	Green Roof	A green roof project (proposed and run by a student) was installed on the roof of our largest science building. This pilot program is still functioning and has allowed our facilities staff to become more familiar with how green roofs function. This project has been used by students to conduct research.
2008	Faculty Hire	The third Environmental Studies faculty line was approved in 2006 and Patrick Hurley was hired in 2008. Dr. Hurley's work focuses on political ecology and human interactions with the natural world.
2008 (sp)	Climate	The College hosted a four-day conference-style event as part of the national Focus The Nation event about global climate change and solutions to which campus and public were invited and attended, led by ENV faculty members, but with help and support of many faculty and staff members across campus. This multi-day conference featured 21 different speakers and events around the topic of climate change.
2008 (spring)	Climate	Environmental Studies students conducted the first GHG inventory, as required by the ACUPCC. This was conducted as part of a course.
2008	Climate	President John Strassburger committed Ursinus College to hiring a Summer

(summer)		Fellow to work on the college's annual greenhouse gas inventory.
2008 (fall)	Stormwater Basin	A planting and maintenance plan for the Ursinus naturalized storm water basin (constructed wetland) was completed by a contractor and implemented by the Facilities Services Department.
2008	Bikeshare	A student cycling enthusiast worked with the College to start a student bike sharing program, called UCBikeshare.
2009	Recycling	The College began participating in the national Recyclemania contest.
2009	Climate	The College's first unofficial Climate Action Plan (CAP) was completed by students as part of the ENV Senior Seminar. This plan led to many changes being undertaken by the Facilities Service Department. It was never submitted for ratification by the College.
2009 (spring)	Hire	A part-time position of Sustainability Coordinator was created in March, 2009. Kyle Rush was appointed to this position. Environmental Studies faculty had requested a full- or part-time sustainability coordinator to act as liaison between students, faculty, and staff in promoting stewardship and leadership projects and initiatives on and off campus.
2009	Energy	Energy monitoring equipment was purchased for installation in all campus buildings.
2009	Dining	Wismer Dining Hall began its existing composting program.
2009 (fall)	Dining	Wismer Dining Hall installed a tray-less system for handling food service.
2010	LEED construction	The addition to the Berman Art Museum was built to LEED Silver standards (though not certified).
2010	Green Roof	The Berman Art Museum addition included a green roof. Though primarily an art installation, the green roof is an excellent educational tool about environmental efforts on campus.
2010 (spring)	Move-Out	The first large-scale Move-Out event was held. Move-Out was conceived as a project by students in an Environmental Studies capstone course on Waste as a Resource (now called Talking Trash) and coordinated with the SPC.
2010 (fall)		ENV capstone students complete analysis of campus landscape management, making recommendations about future changes to campus (e.g., native species enhancements, expanded edible landscaping). Recommendations incorporated within newly completed Master Tree Plan.
2010 (fall)	Staff	A part-time position of Sustainability Program Coordinator (SPC) was established to handle increasing program demands. This position was filled by Maryanne Berthel ('10). This position reported to ENV.
2010 (fall)	Staff	A part-time position of Climate Action Manager (now Campus Sustainability Planner) was established to address the commitment made to the ACUPCC. This position was/is filled by Shannon Spencer. This position reported to Facilities.
2010	Program	The UC Bikeshare program came under the umbrella of the Sustainability Program. Bikeshare provides bicycles to campus community members. The program was student run and was previously housed in ResLife.
2011 (spring)	Program	The College agreed to change the designation of the sustainability program to the Office of Sustainability (OS).
2011 (spring)	Program	The OS submitted its first combined budget. This streamlined budget items from multiple College departments, including ENV, Residence Life, and the President's budget.
2011 (spring)	Climate	2009-2010 GHG Inventory was completed. This was undertaken by a Summer Fellows student with oversight by Leah Joseph, Environmental

		Studies Department Chair, and Shannon Spencer, Climate Action Manager.
2011	Climate	A new organizational structure was approved for the Climate and Sustainability Action Plan, involving separate chapters for each administrative unit at the College, with the goal of facilitating implementation in mind.
2011 (spring)	Advertising	The first issue of the UCGreen Connection newsletter was published.
2011 (spring)	Staff	The College made a further commitment to sustainability by making the SPC position into a full time position.
2011	Staff	Facilities Services tasked one person, Mike Degler, with handling recycling. He worked with the SPC in the OS.
2011	Events	First Sustainability Week event held (to date, this has not been repeated)
2012 (spring)		Final plan and recommendations for the creation of a campus ethnobotany garden are completed. Garden installation awaiting funding.
2012 (sp)	Staffing	First SPC left the College; replacement hiring process began summer of 2012.
2012	Organizational	The OS was shifted into the Facilities Services Department. Both OS staff members now report to Andrew Feick, Director of Facilities Services.
2012 (fall)	Staff	Brandon Hoover was hired to fill SPC position.
2013	Education	The first 1-credit course for Sustainability Fellows was offered by the Office of Sustainability in conjunction with ENV.
2013 (spring)	Grounds	First online map of campus urban forest, highlighting ecosystem services and cultural values, completed by ENV student as part of independent research project.
2013 (sp)	Energy	The first Mock Energy Bills were created and distributed to residents of our Main Street houses as an educational campaign to raise awareness of energy use on campus.
2013	Climate	The Climate and Sustainability Action Plan was completed for review by President Bobby Fong.
2014	Energy	Real-time energy monitoring software expected to go online for students to use for educational purposes.

Appendix D: UC - Sustainability Initiatives List

Back to Table of Contents

Sustainability initiatives on the Ursinus College campus, by type or sector.

Sector	Sustainability Activity	Who is Responsible	Dept
Building	Energy - Reduce VFDs - various buildings; some with AHU	Facilities - Andrew Feick	Fac
Events	Initiative - Greeks Go Green	Senior Seminar Class Project	Var.
Educ.	UC Organic Farm	Office of Sustainability	OS
Building	Green Building - Berman Addition LEED silver	Facilities - Andrew Feick	Fac
Building	Green Building - Green Roof on Berman Museum	Facilities and ENV	Fac/ENV
Building	Green Building - green roof on Wismer (outside of dining area)	Facilities - Andrew Feick	Fac
Building	Policy - Green building - UC commitment that all major renovations will be built to LEEDS standards	Facilities; Administration	Fac
Educ	Education - Courses (see separate list of sustainability-related courses)	ENV faculty: Patrick Hurley, Leah Joseph, and Rich Wallace	ENV
Educ	Education - Speaking about ENV Studies topics at student/parent orientations, with dorm Ras, at alumni events	OS, ENV Faculty & staff	ENV
Educ	Education - Eco-Art - bringing sustainable artists on campus	Various Art Dept., Berman	Art
Educ	Event - Energy management competition in dorms	OS	OS
Educ	Event - Environmental Art Award	ENV faculty: Patrick Hurley, Leah Joseph, and Rich Wallace	ENV
Educ	Event - Environmental Roundtables with Senator John Rafferty	ENV	ENV
Educ	Event - Environmental Speaker Series (Anna Lappe, Frances Moore Lappe, Manny Howard, Katie Tripp, Scott Wiedensaul, Douglas Tallamy, etc.	OS and ENV faculty	ENV
Educ	Event - Focus the Nation (Climate Change Conference)	ENV: Rich Wallace, Leah Joseph	ENV
Educ	Event - Food-leftovers scraped and weighed over the course of a week (3/day).	ENV	ENV

Educ	Event - Just Food	OS	ENV
Educ	Event - Local Food Banquet	Rich Wallace, Food, Society & Envt class members	ENV
Educ	Event - Recycled Art & Presentations	ENV, Art, Psychology	ENV
Educ	Event - Tree planting on campus	Facilities & various departments	Var.
Educ	Event - Unplugged program	OS	OS
Educ	Habitat - Bat houses installed/maintained	ENV & facilities	ENV
Educ	Habitat - Bird Houses	ENV - Rich Wallace	ENV
Educ	Initiative - Student "service hours" working the garden/wetland/recycling program	UCARE	UCARE
Educ	Initiative – Sustainability Fellows	OS	OS
Educ	Initiative - EcoReps	OS	ENV
Educ	Initiative - UCEA	Student organization	Student
Educ	Organic Farm	OS - Farm Director (student)	OS
Educ	Organic Farm - Bee Keeping	OS – Farm Director (student)	OS
Educ	Organic Farm - chickens	OS – Farm Director (student)	OS
Educ	Organic Farm - Orchard	OS – Farm Director (student)	OS
Educ	Personnel - faculty and staff hired with sustainability as part of their job responsibilities	OS and various	OS
Educ	Policy - Presidents' Climate Commitment Signatory	President of College & OS	Admin
Educ	Research - Biodiesel converstion of vehicles -found Mercedes worked - VW didn't	student	ENV
Educ	Research - Faculty (see list)	various	Var.
Educ	Research - Reducing Pesticides in Agriculture	Biology: Cory Straub	Bio
Educ	Research - Climate Change Perspectives Survey	Bruce Rideout	Psych
Educ	Signage at major Sustainability initiative sites (garden, wetland, green roof)	OS & Facilities - Andrew Feick	Fac
Elec	2x Electricity Grid Emergency Response	Facilities	?
Elec	Energy - A/C - variable speed drives	Facilities - Andrew Feick	Fac
Elec	Energy - CFC Replacement Program	Facilities - Andrew Feick	FAC
Elec	Energy - efficiency - motion sensors on lights in bathrooms, offices, classrooms, dorm rooms?; AHU VFDs?; winterize A/C; lighting study in gym; flourescent & LED lights, etc	Facilities - Andrew Feick	Fac

Elec	Energy - Light bulb exchange	Facilities	Fac
Elec	Energy - Vending Miser in vending machines	Facilities - Andrew Feick	Fac
Elec	Energy - West Parking Lot - closed at times to save energy	Facilities	Fac
Elec	Policy - UC committed to replacing outdated appliances with Energy Star certified efficient models, when available	Facilities	Fac
Elec	Purchase - carpet green (Cool Carpets)	Facilities	FAC
Elec	Purchase - Energy Star - replace outdated appliances with more efficient energy star models	Facilities - Andrew Feick	Fac
Elec	Purchase - Increased Laundry Efficiency with machines that use 1/3 of energy and water	Facilities	FAC
Elec	purchase - LED lights for outdoor walking lights (last 10x longer than flourescents)	Facilities - Andrew Feick	Fac
Elec	Purchase - Printers replaced to be more efficient	Facilities	FAC
Elec	Purchase - updates in science buildings (e.g., fume hoods)	Facilities	FAC
Food	Composting - area behind New Hall	Facilities	FAC
Food	Composting - food	Dining Services	
Food	Composting - Ucompost	OS/Students - UCompost Volunteer Team and Supervisors (not currently functioning)	OS
Food	Organic Dinner	SIFE	Food
Food	Organic Dinner benefitting WWF	Greeks Go Green	Food
Food	Energy - Trayless Dining Hall (Implementation)	Dining Services, Facilities	Food
Food	Research - Trayless Dining Hall (Research Project)	Dining Services, Facilities	Fac
Food	Wismer on Wheels?	UCARE	
Grounds	Green Building - Green Roof Maintenance	Facilities and ENV	
Grounds	Habitat - Constructed Wetland	Facilities	
Grounds	Habitat - Wetland cleanup by Frat	Fraternity	
Grounds	Athletic fields dressed with compost instead of topsoil	Facilities - Andrew Feick	Fac
H&C	Energy - efficiency - boiler tune-up	Facilities - Andrew Feick	Fac

H&C	Energy - Heating - conversion of many Main St. houses to natural gas from oil over last several years (2009)	facilities	Fac
H&C	Energy - Insulation in ceilings & walls	Facilities - Andrew Feick	Fac
H&C	Energy monitoring meters w/ visual system purchased for all buildings	Facilities - Andrew Feick	Fac
H&C	Energy - Offset purchases (same as power purchase agreement?)	ENV	ENV
H&C	Energy - Thermostats - updated to electric & separate for each room to take into account windows left open	Facilities	Fac
H&C	Purchase - energy efficient windows (as needed/able)	Facilities	FAC
H&C	Purchase - Water savers: Low flow toilets/shower heads/faucets. Moving to power assist toilets	Facilities	Fac
Outreach	Event - Earth Day	UCEA/OS	ENV
Outreach	Organic Farm at Collegeville Farmers' Market	OS	OS
Outreach	Outreach - Bullfrog Creek Restoration Project (with Lower Salford Township and PWC)	ENV - Rich Wallace	ENV
Outreach	Outreach - CISPES - El Salvador water testing at mining site	Christian Rice	UCARE
Outreach	Outreach - Climate Club at Springford Elementary	Leah Joseph (a project of the Global Climate Change class)	ENV
Outreach	Outreach - DEP Air monitoring	Leah Joseph	ENV
Outreach	Outreach - Owl Banding	UCEA	ENV
Outreach	Outreach - Partnership with Farmers' Market Steering Committee	Rich Wallace - class; Foods, Society, and the Envt	ENV
Outreach	Outreach - PWC Watershed Cleanup	Leah Joseph	ENV
Outreach	Outreach - Sustainable Landscape/Senior Seminar	Patrick Hurley & Senior Seminar Students (ENV 470w)	ENV
Outreach	Outreach - OS Website	OS	OS
Transport	Coordination of bus schedules for athletic teams	Athletics Dept	Athletics
Transport	Policy - Local purchasing	Business Office	BO
Transport	Purchase - Biodiesel and electric powered vehicles for Facilities	Facilities	FAC
Transport	Purchase - Campus Safety replace with electric cart	Facilities/Campus Safety	FAC
Transport	Purchase - electric golf cart for environmental studies department and	ENV & Facilities	ENV

	OS		
Transport	Purchase - Local Food Sources	Dining Services	Food
Transport	Purchase - local purchasing (Lamp posts bought locally - Spring City; other??)	Facilities	Fac
Transport	Purchase/Lease - hybrid cars for Admissions/ administrative use	Facilities	FAC
Transport	Transport – UC Bikeshare Program	OS	OS
Transport	Transport - Philly Car Share	Student Activities Office	SAO
Transport	Transport - Ride Share Program	Student Activities Office	SAO
Transport	Transport - Shuttle Bus	Residents Life/SAO office	SAO
Transport	Transportation - drinking water tanks provide filtered tap water rather than using transported plastic or glass water bottles	Dining Services	dine
Waste	Composting - cardboard (used to recycle)	Facilities - Andrew Feick	Fac
Waste	Composting - Compostable "plastic" spoons Wismer	Dining Services	
Waste	Composting - Compostable bowls Wismer	Dining Services	
Waste	Event - Recycle team move in/move out	Sustainability Fellows/OS	OS
Waste	Event- Recyclemania	SIFE, Sig Pi	
Waste	Policy - Computer packaging more sustainable - Dell	Env; facilities	Fac
Waste	Policy - Garbage contract - renegotiated	Facilities	FAC
Waste	Policy - Inclusion of sustainability concepts within contracting (i.e., waste, housekeeping)	Business Office	BO
Waste	Policy - No More plastic bottles sold on campus (not a currently functioning initiative)	President	PRES
Waste	Purchase - green cleaning products, chemicals, etc.	Housekeeping	House
Waste	Purchase - Recycled paper - business cards	Facilities	FAC
Waste	Purchase - Recycled Paper use (30% + FSC)	Facilities	FAC
Waste	Purchase - recycled toilet paper	Housekeeping	House
Waste	Purchase - vinyl flooring over carpet (which is thrown out annually)	Facilities	FAC
Waste	Recycling - bottles & cans	Facilities	FAC
Waste	Recycling - cardboard	Facilities	Fac

Waste	Recycling - Mixed	Facilities	Fac
Waste	recycling - paper - Sig Pi		
Waste	Recycling - paper (extended to dorms)	Facilities	FAC
Waste	Recycling - Plastics 1-7	Facilities/OS	FAC/OS
Waste	Recycling - Rechargeable Batteries, Flourescent & other specialty Lamps	Facilities	Fac
Waste	Recycling - technology	Technology Services	Tech
Waste	Recycling -Newspaper		
Waste	Waste - compacter to be installed to reduce the number of wast pick-ups	Facilities?	FAC
Waste	Waste - Oil sold for biofuel	Facilities	Fac
Waste	Waste - Pelletized organic fertilizer on fields from composted product	Facilities - Andrew Feick	Fac
Waste	Waste - Pesticides - integrated pest management focuses pesticide application only to trouble areas - not everywhere)	Facilities	Fac
	Education - Red & Gold Day	OS	OS
	Funding - Grant proposals written (unfunded) to Chiller PEDA, LOI greenroof, Energy Harvest LED lights (PEDA too?)	ENV/OS/Facilities	ENV
	Initiative - Carbon Inventory	OS	OS
	Initiative - President's Climate Commitment - Implementation	OS	OS
Waste	Shipped old/unused furniture to Haiti in partnership with IRN	Facilities - Andrew Feick	Fac

Appendix E: Ursinus' Academic Course Listings for Sustainability Related Courses

Back to Table of Contents

This appendix includes a list of courses offered in our catalogue that cover topics related to sustainability. They include courses from the following academic departments: Environmental Studies, Anthropology, Business & Economics, Biology, Chemistry, English, Philosophy, Political Science, Psychology, Sociology, and French.

Course listings for sustainability-related topics at Ursinus College

ENV-100 **Issues in Environmental Studies(**Faculty) An introductory interdisciplinary course with readings and research on topics across all fields of environmental studies. This course examines environmental issues through many lenses, including ecology, economics, ethics, policy analysis, and the arts. Issues explored include (but are not limited to) population, energy, biodiversity and ecosystem conservation, food and agriculture, global warming, ozone depletion, air pollution, water resources management, and solid waste. Student projects include investigations of local environmental issues and applied conservation activities within the Ursinus and surrounding communities. Open to first-year and sophomore students or others by special permission of instructor. Four hours per week. Four semester hours.
ENV-268 **Wetlands** (Faculty) An exploration of the features common to all wetlands, the great variety of wetlands that exist due to differences in climate and geomorphology, and the many ways in which humans are connected to wetlands. Weekend field trips to area wetlands will broaden our view of regional types and increase awareness and appreciation of the vital role wetlands play. Prerequisite: ENV 100 or permission of the instructor. Offered every other year. Three hours of lecture per week plus three or four, one-day, weekend field trips. Four semester hours.
ENV-272 **Marine Mammal Conservation and Management** (Dr. Wallace) This course addresses historical and current issues concerning the conservation and management of marine mammals, their habitats, and related marine resources. It integrates the biological sciences, policy, law, economics, and humanities (in the form of ethics and values) in presenting and engaging the students in discussions about the history of human-marine mammal interactions, changes in human values and attitudes about the marine environment, the role of human-marine mammal interactions in societal changes, and the policy arena that has developed around marine mammals in the past century. Prerequisite: ENV-100. Three hours per week. Four semester hours.
ENV-299 **Readings in Environmental Studies** (Faculty) Individual study and directed reading of a particular topic or book within the discipline. Students will work closely with a member of the ENV faculty in selecting, reading, and discussing the topic, and in determining a proper written assignment. Prerequisites: ENV-100 and permission of the instructor. One semester hour.
ENV-332 **Urbanization & the Environment** (Dr. Hurley) An introduction to the diversity of environmental transformations that accompany the process of urbanization and their implications for urban sustainability through exploration of the historical, political, social, economic, and ecological dimensions of the human-environment interactions .Field trips to local neighborhoods, nearby towns, and sites in Metropolitan Philadelphia are required. Prerequisite: ENV 100 or permission of the instructor. Offered every other year. Three lecture hours per week. Four semester hours.
ENV-336 **Environmental Planning** (Dr. Hurley) An introduction to a diversity of conceptual approaches in the field of environmental planning and management, including smart growth management, regional planning, land-use planning, collaborative planning, natural hazard mitigation, conservation planning, and watershed management. Field trips in the Philadelphia region will occur. Prerequisite: ENV 100 or permission of the instructor. Offered every other year. Three lecture and three laboratory hours per week. Four semester hours.
ENV-340W **Food, Society, & the Environment** (Dr. Wallace) Few issues are as complex and interdisciplinary as what we eat. The seemingly simple every-day choices we make about our food have repercussions far beyond our diets and wallets. We will explore the food systems in which we live from many different perspectives to achieve an understanding of what food and food decisions mean in terms of personal health, welfare, and budgets, and in the context of society, economy, and sustainability. Written and oral communication of critical thinking is emphasized. Sophomores and above welcomed. Prerequisite: ENV-100. Three hours of lecture plus three hours of field or lab work per week. Four semester hours.
ENV-342 **Globalization & the Environment** (Dr. Hurley) An examination of the cultural, political, and economic linkages that characterize globalization and the consequences these linkages (e.g. through consumption practices) have for specific

places, diverse peoples and cultures, and the environments where they live. Students will examine specific cases from Africa, South America, East and Southeast Asia, and Australia. Prerequisite: ENV 100 or permission of the instructor. Offered every other year. Three lecture hours per week. Four semester hours. (G.)
ENV-350 **Topics in Environmental Studies** (Faculty) A study of a contemporary issue or specific subject area relating to the environment. Topics are often cross-disciplinary and vary according to the special interests of students and faculty. Potential topics include: energy and the environment; landscape architecture; urban environmental studies; and birds in their habitats. Prerequisite: permission of the instructor. Independent written work required. Lab and field work required in some cases. Three hours of class per week. Four semester hours.
ENV-360 **Conserving Biological Diversity** (Dr. Wallace) A study of the conservation of biological diversity in the United States and abroad. Interdisciplinary analytical methods are used to investigate the loss and conservation of wildlife and habitats, with an emphasis on the development of conservation policy in the United States and comparative international case studies of endangered species protection. Specific topics include current trends in global biodiversity loss; the role of human values in biodiversity conservation; international biodiversity conservation strategies, initiatives at zoos and aquariums; and the protection of forests, rangelands, oceans, and coastal zones, birds, fish, marine mammals, and endangered species in the United States. Prerequisite: ENV-100. Three hours per week. Four semester hours.
ENV-362 **Managing Parks & Protected Areas** (Dr. Wallace) A study of strategies for managing parks and protected natural areas locally and internationally. Emphasis is on learning the interdisciplinary tools necessary for developing management plans and implementing protected area policies. Case studies will address issues such as urban and suburban sprawl, pollution, natural resource extraction, biodiversity conservation, and the rights and concerns of indigenous peoples. Local field trips will supplement in-class learning by exposing students to protected areas studied in the classroom. Prerequisite: ENV-100. Three hours of lecture plus three hours of field work per week. Four semester hours.
ENV-364 **Ecosystem Management (**Dr. Wallace) Sustainability is an important social goal, but learning how to achieve it at large scales is challenging and complex. This course examines the conceptual and contextual basis for managing and conserving nature at the ecosystem level. We will explore methods and theories for large-scale conservation, discuss how science, management, and policy are integrated in these efforts, apply problem solving methods to the challenges of large scale conservation, and investigate cases from the terrestrial and marine environments. Prerequisite: ENV-100. Three hours per week. Four semester hours.
ENV-366 **Ecological Change in Historical Perspective** (Dr. Hurley) An introduction to longer-term perspectives on human-environment interactions, drawing on approaches found within environmental history, historical ecology, and historical geography. Particular emphasis is placed on case studies from North America and on regional ecosystems in the Eastern United States. Saturday or Sunday field trips to regional sites are required. Prerequisite: ENV 100 or permission of the instructor. Offered every other year. Three lecture hours per week. Four semester hours.
ENV-370 **Global Climate (**Dr. Joseph) This course focuses on the science of climate, investigating what climate is and what factors determine and influence the climate of an area. Both the natural and anthropogenic (human) forces that may cause climate change are presented from a geological and historical perspective in addition to covering current climatic trends and predictions for future climate. Prerequisite: ENV-100 or permission of the instructor. Offered every other year. Three hours of lecture and three hours of laboratory per week. Four semester hours. (LS.)
ENV-372 **Environmental Issues in Oceanography** (Dr. Joseph) An introduction to the basic scientific concepts of oceanography, focusing on the aspects of oceanography that affect and are affected by humans. Topics include plate tectonics, properties of seawater (chemical and physical), coastal processes (coastal erosion, tsunamis, hurricanes), the effects of/on the ocean in climate change, el Niño/la Niña, the ocean as a resource (fisheries, mining), and pollution of the ocean (ocean dumping, mercury, and oil spills). Saturday or Sunday fieldtrips may be required. Prerequisite: ENV-100 or permission of the instructor. Offered every other year. Three hours of lecture; three hours of laboratory per week. Four semester hours. (LS.)
ENV-381A **Internship (**Faculty) An off-campus academic/work experience under the supervision of a faculty internship advisor and an on-site supervisor, comprising between 120 and 159 hours of work during the course of the internship. Students must have completed 12 semester hours of environmental studies courses including ENV-100 and have permission of the supervising faculty member to be eligible for an internship. Students must document their experience according to the requirements delineated in the College catalogue section on Off-Campus Study. Graded S/U. Three semester hours. (I.)
ENV-381B **Internship (**Faculty) An off-campus academic/work experience under the supervision of a faculty internship advisor and an on-site supervisor, comprising at least 160 hours of work during the course of the internship. Students must have completed 12 semester hours of environmental studies courses including ENV-100 and have permission of the supervising faculty member to be eligible for an internship. Students must document their experience according to the requirements delineated in the College catalogue section on Off-Campus Study. Graded S/U. Four semester hours. (I.)
ENV-382 **Political Ecology** (Dr. Hurley) An introduction to an interdisciplinary field of inquiry concerned with the ecological and social drivers of environmental change and their politicization. Students will explore cases representing a diversity of

ecosystems at local, regional, and national scales from a diversity of locations across the globe, including in Africa, North America, South America, and Southeast Asia. Prerequisite: ENV 100. Offered every other year. Three lecture hours per week. Four semester hours.

ENV-430W **Advanced Environmental Policy Analysis** (Dr. Wallace) An intensive seminar in methods of interdisciplinary environmental problem solving designed to improve professional development and practice in the many fields of conservation. This course will help students develop an understanding of and technical proficiency in using qualitative analytical methods. Theory and cases will address environmental concerns at the local, regional, national, and international levels. Prerequisite: ENV-100, at least one ENV synthesis course, and junior standing. Three hours per week. Four semester hours. (SS.)

ENV-470W **Environmental Studies Senior Seminar** (Faculty) This is a capstone seminar in the methodology and application of critical thinking and other applied analytical and practical skills in environmental studies. It is designed to help students learn practical problem solving skills, and the theories that underlie them, that will help them to identify, define, and analyze environmental problems and develop responses to them. The seminar is designed to provide a synthesis experience for environmental studies majors and will entail group and individual work on a semester-long project. Project-related work will draw from the natural and social sciences as well as from ethics and the study of rhetoric. Prerequisites: ENV-100, junior or senior standing, and at least three additional ENV courses. This course fulfills the ENV capstone and oral presentation requirements. Three hours per week. Four semester hours.

ENV-481W **Research/Independent Work** (Faculty) An independent project conducted using research methods in environmental studies, and including original work in the field, laboratory, or other scholarly forum. Students must have completed 12 semester hours of environmental studies courses including ENV-100 or have permission of their adviser to be eligible for independent research. Four semester hours. (I.)

ENV-482W **Research/Independent Work** (Faculty) See course description for ENV-481W. Four semester hours. (I.)

ENV-491W **Research/Independent Work** (Faculty) Students who are eligible for departmental honors can complete independent research work in this course. Work should be comprised of an independent project conducted using research methods in environmental studies, and including original work in the field, laboratory, or other scholarly forum. Students must have completed 12 semester hours of environmental studies courses including ENV-100 or have permission of their adviser to be eligible for independent research. Four semester hours. (I)

ENV-492W **Research/Independent Work** (Faculty See course description for ENV-491W. Four semester hours. (I)

ENV/ANTH-352. **Peoples & Their Environment** (Dr. Oboler) Human cultural patterns and social institutions are adaptations to particular physical and social environments, and also have impacts on those environments. This course is concerned with the relationship between environments and subsistence systems on the one hand, and social/political institutions and belief systems on the other, using case studies from a variety of traditional societies. We will also consider the relationship between the global ecosystem and problems of Third World development, patterns of peasant production, causes and consequences of rapid population growth, and the fate of indigenous peoples. Prerequisites: ANTH-100 or permission of the instructor. Three hours per week. Four semester hours. (SS.)

ENV/BE-213. **Economics of Environment and Natural Resources (**Dr. Randall) Economic analysis is used to inform, analyze, and evaluate current environmental and natural resource policy decisions. Analyses of environmental problems use cost-benefit or efficiency criteria. Topics include externalities, public goods, common property rights, and sustainability. Prerequisite: BE-100. Three hours per week. Four semester hours. (SS.)

ENV/BIO-215 **Biology of Maya Mexico (**Dr. E. Dawley, Dr. R. Dawley) A study of the environments, fauna, and flora of tropical Mexico and their relation to the Maya people who inhabit that region. We will examine coral reefs, coastal waters, and lowland and highland forests, focusing on animals and plants of particular importance to the ecosystem they inhabit and to the Maya people, past and present. Prerequisite: None. Field investigations accompanied by readings, lectures, and an independent project resulting in a review or research paper. Four semester hours. (This course is part of the UC in Maya Mexico Program.)

ENV/BIO-250 **Environmental Biology(**Dr. Sidie) A study of the biological basis of environmental issues. Includes ecosystems, communities, populations, water, energy, geologic resources, biodiversity, weather/climate, pollution, agriculture/hunger, soil resources/pests, solid/toxic hazardous waste, toxicology, land use. Prerequisite: BIO-101Q or permission of the instructor. Three hours of lecture. Three hours of lab per week. Four semester hours. (LS.)

ENV/BIO-270 **Aquatic Biology** (Dr. Goddard) A study of the path that water takes from the headwaters of a creek down to the deepest oceanic trenches plus all of the aquatic communities found along the way. Human use of freshwater and marine resources and impacts of humans on the freshwater and marine environments will be discussed. Laboratories will include studies of fish and invertebrate anatomy and taxonomy, a visit to a beach, salt and freshwater marsh, and creeks and ponds. Students must be available for two Saturday fieldtrips to estuarine and coastal habitats. Three hours of lecture; three hours of laboratory per week. Prerequisites: BIO-101 and BIO-102; or permission of the instructor. Four semester

hours. (LS.)
ENV/BIO-310 **Biological Oceanography** (Dr. Goddard, Dr. Sidie) A study of the biological bases of ocean science. Topics discussed include: ocean basins, seawater physics and chemistry, currents, waves, tides, upwelling zones, tidal rhythms in organisms, ocean habitats/biota, marine virology, marine microbiology, plankton, trophic relationships, hydrothermal vent communities, coral reefs. Prerequisite: BIO-101Q or permission of the instructor. Three hours of lecture; three hours of laboratory per week. (Course may be conducted in part at a marine field station). Four semester hours. (LS.)
ENV/BIO-320 **Biology of the Neotropics** 9Dr. E. Dawley, Dr. R. Dawley) A field study of Costa Rican tropical habitats including rain forests, montane forests, seasonally dry forests, and wetlands conducted at research sites throughout the county. Topics include diversity and natural history of key plants and animals, ecological interactions and evolutionary processes, and conservation. May include side trips to cloud forests or coral reefs. Prerequisite: Permission of instructor and BIO-101Q. Field investigations accompanied by readings, lectures, and a directed research project. Course will meet 15 hours on campus and three weeks in Costa Rica between the Fall and Spring semesters. Four semester hours. (LS.)
ENV/BIO-325 **Insect Biology** (Dr. Straub) This course will introduce students to the insects—the most diverse group of organisms on the planet. We will examine the physiology, development, behavior, ecology, and evolution of insects to better understand why they are so successful, and special emphasis will be placed on understanding the importance of insects to human welfare. Students will learn the taxonomy of local insects by completing an insect collection. The laboratory component of this course will include insect rearing, experiments, and field trips to collect insects from terrestrial and aquatic habitats. Prerequisite: BIO-101 and BIO-102; or permission of the instructor. Three hours of lecture; three hours of laboratory per week. Four semester hours. (LS.)
ENV/BIO-330 **Marine Biology** (Dr. Sidie) A field-oriented study of the important marine habitats, including pelagic and benthic zones, and intertidal communities. Topics include marine biodiversity-plants, protists, invertebrates, vertebrates; marine ecology; primary production in the sea; estuaries; plankton; nektron; marine mammals. Prerequisite: Permission of the instructor and BIO-101Q. Lecture and field investigations. (Course conducted in part at a marine field station.) Four semester hours. (LS.)
ENV/BIO-394 **Watershed Investigations & Actions** (Dr. Goddard) This course combines class time, research, and community action. Scientific and historical aspects of the Darby Creek watershed examined will include a brief survey of creek flora and fauna and physical properties (limnology), land development directly adjacent to the creek starting in the U.S. colonial period and the industries along the creek that lead to the declaration of a Superfund Site along the creek. Laboratory research is an investigation of pollution in a species of creek fish. Community action is a survey of pollution-indicator macroinvertebrate species with elementary schools throughout the watershed. Prerequisite: BIO-201W; or permission of the instructor. Two hours of lecture and 7 hours of laboratory/community action per week. Four semester hours.
ENV/BIO-415W **Ecology** (Dr. Small) Studies of the interrelationships between organisms and their environments that determine their distribution and abundance in natural systems. Aspects of energy flow, biotic and abiotic limits, population growth and community organization are considered in the context of the ecosystem. Laboratories include local field work and emphasize techniques for collecting and analyzing data. Prerequisites: BIO-101Q and 102Q and 201W, or permission of the instructor. This course fulfills the ENV capstone requirement. Three hours of lecture, three hours of laboratory per week. Four semester hours. (LS.)
ENV/CHEM-101 **Introduction to Environmental Chemistry** (Faculty) This course, intended for non-science majors, will examine selected topics in environmental chemistry through an understanding of basic chemical principles. Topics may include global warming, ozone depletion, pollution, and waste management. Three hours of lecture. Three semester hours. (LS if taken with CHEM-101LQ.)
ENV/CHEM-101LQ **Laboratory in Introductory Environmental Chemistry (**Faculty) Laboratory work related to CHEM-101. In addition to mastering basic chemistry laboratory skills, students will analyze air, water, and soil samples using a variety of techniques. Prerequisite: CHEM-101 (or concurrently). Three hours of laboratory per week. One semester hour.
ENV/ENGL-262 **The Environment in Literature (**Faculty) Students in this course will study literature inspired by a variety of environments. Readings will range from classic essays "Nature" by Emerson and "Walking" by Thoreau to Terry Tempest Williams' 1991 environmental/autobiographical study, "Refuge: An Unnatural History of Family and Place." Ecocriticism, the study of the relationship between literature and the physical environment will provide the theoretical framework for the course. Writing for the class will be half-analytical (critical responses to texts), and half-original, creative student writings about their own environments. Prerequisite: CIE-100. Three hours per week. Four semester hours. (H.)
ENV/GEOL-102Q **Geology: The Earth Around Us (**Dr. Joseph, Faculty) This course examines the current state of knowledge about the Earth and investigates the forces and processes that shape it. Topics include the formation of the Earth and solar system, the materials that comprise the Earth, the forces that currently act on, around, and within the planet, and the relationship of these forces to the processes and features we observe and/or experience at the Earth's surface. To address complex and dynamic geologic processes, this course utilizes knowledge and methods from several disciplines in addition to geology, including biology, math, physics, and chemistry. Three hours of lecture and three hours of laboratory per week.

Four semester hours. (LS.)
ENV/GEOL-105Q **Environmental Geology** Dr. Joseph, Faculty An introduction to environmental geosciences. Includes a study of the earth's environmental systems: lithosphere, hydrosphere, atmosphere, mineral resources, weathering, soils, rivers and flooding, ground water, climate, oceans and coastline erosion, energy sources, human populations, and environmental change. Three hours of lecture and three hours of laboratory per week. Four semester hours. (LS.)
ENV/PHIL-248 **Environmental Ethics** (Dr. Sorensen) The central issue in environmental ethics concerns what things in nature have moral standing and how conflicts of interest among them are to be resolved. After an introduction to ethical theory, topics to be covered include anthropocentrism, the moral status of non-human sentient beings, preservation of endangered species and the wilderness, holism versus individualism, and the land ethic. Three hours per week. Four semester hours. (H.)
ENV/POL-326 **Environmental Law** (Dr. Kane) The study of various state, national, and international legal patterns that have arisen to address environmental concerns. The environmental field will be used to examine the nature and effectiveness of civil, criminal, and administrative action to address a complicated and important social issue. Topics will include federal administrative law; international trade and environmental regulation; control of toxic substances and hazardous wastes; the impact of scientific uncertainty on regulation; federal regulatory programs; civil liability under federal regulations; citizen suits; and the preservation of natural areas. Prerequisites: POL-218 for Politics and International Relations majors or permission of the instructor. Three hours per week. Four semester hours. (SS.)
ENV/PSYC-282 **Environmental Psychology** (Faculty) Study of the interrelationship between human behavior and experience and the manmade and natural environments. Topics include: influences of weather, climate, noise, crowding, and stress; personal space and territoriality; work, leisure, and learning environments; the natural environment and behavioral solutions to environmental problems. Prerequisite: PSYC-100. Three hours per week. Four semester hours. (SS.)
ENV/SOC-220 **Environmental Justice (**Dr. J. Clark) This course will examine how the burdens of local and global environmental problems are distributed across race, class, and gender. Through the examination of local, national, and international case studies, we will gain an understanding of how the risks associated with exposure to toxic pollutants and other environmental hazards coincide with pre-existing patterns of inequality, both globally and in the United States. Close attention will be paid to the political-historical processes through which the distribution of environmental hazard has been produced, and how affected communities have resisted these processes. Prerequisite: any 100-level course in Anthropology or Sociology or permission of the instructor. Three hours per week. Four semester hours. (SS.)
ENV/SOC-285 **Environmental Sociology** (Dr. J. Clark) This course will introduce the field of environmental sociology – the study of interactions between humans, groups and the environment. Students will become familiar with a variety of theoretical frameworks for analyzing environmental problems and apply them to a range of environmental issues scaled from the local to the global. Participants will emerge with a critical ability to analyze popular accounts of environmental problems and proposed solutions with a sociological eye. Prerequisite: any 100-level course in Anthropology or Sociology or permission of the instructor. Three hours per week. Four semester hours. (SS.)
ENV/SOC-288 **Animals & Society** (Dr. J. Clark) In recent years there has been an explosion of research in the humanities and social sciences on what has come to be called the animal question. This course introduces students to the interdisciplinary field of animal studies, with a particular focus on the sociological literature. Students will emerge from the course with a nuanced sociological understanding of some of the most controversial issues raised by our relationship with other animals. Among the issues we will explore are genetic engineering, factory farming, animal experimentation, and the war on "animal rights terrorism." Prerequisite: any 100-level course in Anthropology or Sociology or permission of the instructor. Three hours per week. Four semester hours. (SS.)
ENV/SOC-290 **Science, Technology, and Society** (Dr. J. Clark) Society shapes science and technology, which, in turn, help make society what it is. This course introduces students to the interdisciplinary field of Science and Technology Studies (STS). Students will emerge from the course with a sociological understanding of science and technology. Though the course will focus mainly on biotechnology, it will give students a theoretical toolkit that will help them understand other areas of science and technology as well. Prerequisite: any 100-level course in Anthropology or Sociology or permission of the instructor. Three hours per week. Four semester hours.(SS.)
FRENCH 201 (Colette Trout) This class has a unit that focuses on notions and vocabulary in French about ecological issues. Students are informed about what was been done at UC to have a green campus. Though this course is not cross-listed with ENV, it does focus on sustainability.

Appendix F: Ursinus - Sustainable Office Guidelines

Back to Table of Contents

This is not meant to be an exhaustive list, but a set of ideas and guidelines. If you have questions or ideas to add to this list, please contact the Office of Sustainability at sustainability@ursinus.edu.

Policy & Planning

- Develop a list of actions that the department is willing to implement toward improving their sustainability, e.g., printing fewer documents, lowering their paper use, adjusting all departmental computer settings to print double sided as the default.
- Participate in the OS's Green Certification Program, once it is established.

Power Usage

- Centralize devices by plugging them into a power strip, and then turning them off at the end of the day with the flip on a single switch
- Unplug devices and appliances that you seldom use
- Reduce your use at night, over weekends, and holidays by unplugging them.
- Turn off all lighting and electronic devices when not in use.
- Get rid of energy intensive water coolers. Replace with tap water cooled in a refrigerator (or drinking fountains with bottle attachment).

Responsible Consumption

- Instead of using disposable cups (especially polystyrene), ask everyone in the office to bring in their own mug/cup to keep in the office. The mugs/cups just need to be rinsed out at the end of the party.
- Avoid the use of "hard to recycle" materials such as packaging made from StyrofoamTM (polystyrene).
- In the lunch/break room, replace disposables with reusable kitchenware (e.g., mugs, utensils, etc.) and use refillable containers for sugar, salt & pepper, etc. to avoid individual condiment packets.

- For office functions, utilize reusable kitchenware.
- If tea and coffee are provided, make sure they are Fair Trade certified and have low environmental impact (e.g., organic, shade grown, etc.)
- Reduce paper use in the bathroom (toilet paper, paper towels) using informational signage, dispensers that regulate sheet length, etc.
- Prohibit the use of bottled water for office functions.
- Reduce use of products wherever possible and implement sustainability practices in everyday operations.
- Print promotional materials with low or no-VOC inks.
- Designate a sharing and reuse area for office supplies such as binders, folders and staplers.
- If office has a water cooler with disposable cups, use paper cups that can then be recycled.

Paperless

- Whenever possible, use online filing, resources, communication, storage, document exchange. This will save money on paper, printer ink and energy use as well as saving physical storage space.
- Distribute documents digitally whenever possible (make use of scan and send options or make PDF documents and email); when printing is required, print official documents double-sided on recycled, recyclable paper
- Eliminate or redesign forms to use less paper; or switch forms (such as invoices) to electronic format.
- Design marketing and outreach materials that use less paper – such as e-newsletters.
- Conduct more meetings without paper
- For drafts and internal documents, print on previously printed paper; designate a draft printer tray; and/or reuse office paper as scratch pads.
- Send all meeting materials, including agendas, to meeting attendees ahead of time. Set the expectation that attendees will bring their computers with them, if possible, to the meeting (or ask them to let you know if they will need paper copies).

Computer Power Management

- Don’t use a screen saver

- When buying a computer, look for the ENERGY STAR label
- Turn down the brightness setting on your monitor
- Close unused applications and turn off your monitor when you're not using it
- Turn off peripherals such as printers, scanners, and speakers when not in use

Staff Education

- Incorporate sustainability into staff meeting discussions.
- Offer brown bag lunches and workshops with sustainability as a focal topic.
- Elicit staff input into greening the workplace through surveys, suggestion boxes, or other means.
- Hold an annual think tank meetings to strategize about sustainability within the department. Invite students to participate in these discussions.
- Highlight sustainability efforts on your office's website.
- Post educational information in your office space or building about steps you are taking to be a sustainable organization.
- Provide opportunities for employees to learn about greening their personal lives.
- Use signage at light switches reminding staff to turn off lights.
- Put up signs at elevators to encourage the use of stairs.
- Offer in-house training to help staff change old practices so that lights get switched off, waste is recycled/reused, etc.
- Purchase books about sustainability in your particular department. Keep the books somewhere that they can be accessed easily.
- Consider conducting training, in conjunction with Office of Sustainability staff members, around recycling. This should include what can be recycled and what the limitations of the recycling program are (contamination).

Transportation

- Calculate and track travel expenses and the related carbon footprint for each office. Determine if this travel is cost effective for the College (both monetarily and with regard to the related GHG emissions)
- Consider purchasing carbon offsets in the amount of air travel-related emissions related to faculty and staff business travel.

Appendix G: Ursinus Green Events Guidelines

Back to Table of Contents

When organizing an event, please consider adopting some or all of these "green" guidelines to help lower the impact that your event has on the Earth. Did you know that the plastic utensils that are thrown away after one use don't break down for hundreds of years? Your grandchild's grandchild's grandchild could come across a fork that you used once at a party! As an alternative, use reusable utensils, plates, and glasses and help lower your environmental impact. Below you will find guidelines for organizing and implementing "green" events. Good luck!

- Advertising
  - Print advertising for your event on recycled paper with soy-based inks.
  - Send invitations out digitally rather than printing and sending them through the U.S. mail.
  - Make information available online.
  - Allow for online RSVPs
  - Claim your glory – advertise your event as a "Green Event"
- Carbon Footprint
  - Work to decrease the carbon footprint of all campus events. This could include any of the following (or others):
    - Vegetarian food
    - Local and/or organic food
    - No plastic water bottles
    - Recycled paper in any printed materials (with a statement to that effect)
    - Reduce travel required for the event
    - Use reusable tableware and serving dishes
- Composting
  - Work with Sodexo and/or other caterers to ensure that composting takes place at your campus events.
  - Compost all food, paper napkins, paper plates.
  - Encourage guests to participate in our composting efforts. It will help us and will help them feel that they are part of our cause.

- Event goods
    - Give priority to:
        - Reusable dishes, utensils, glasses
        - Washable linens (napkins and table cloths) rather than disposable.
        - Consider serving finger food rather than foods that require utensils.
    - Rent items that you need for your event rather than purchasing and throwing them away).
    - Ban Styrofoam cups and plates from your event.
    - Use paper plates rather than recyclable plastic plates if at all possible. These can be composted.
    - Use compostable utensils rather than throw-away plastic utensils.
- Food
    - Work with Sodexo and/or other caterers to provide organically grown foods (including vegetables, meats, dairy products) whenever possible and feasible.
    - If tea and coffee are provided, make sure they are Fair Trade certified and have low environmental impact (e.g., organic, shade grown, etc.)
    - Work with Sodexo to ensure that food provided is grown on farms that are committed to protecting the human rights of their farm workers.
    - Work with Sodexo and/or other caterers to provide whole foods that are prepared by the caterer (rather than processed foods that are reheated).
    - Serve only tap water (no bottled water, which contains toxic chemicals and creates trash and/or recycling).
    - Offer water bottle refill stations (or allow guests to refill their water bottles/glasses from pitchers that are at the event).
- Recycling
    - Work with Sodexo and/or other caterers to ensure that recycling takes place at your campus events.
    - Provide recycling bins for staff to use as well as for guests.
    - Recycle all glass bottles, plastic bottles, recyclable plates and cups
    - Encourage guests to participate in our recycling efforts. It will help us and will help them feel that they are part of our cause.
- Signage at Your Event

- Post signage to clearly indicate what can and cannot be recycled. (Digital versions of this signage will be available from the Office of Sustainability's website.)

Caterer

- Request of the event caterer that recycling containers be made available at all events. Recycling bins should be larger than trash receptacles to provide a visible illustration of the campus' commitment to sustainability.
- Request of the event caterer that, for events where food is served and taken away by staff, that a composting container be provided and that food be composted by Sodexo staff. Materials put into the compost would then be added to our compost at Wismer.
- Request of the event caterer that all food-related materials used at events be reusable, compostable or recyclable.

Appendix H: Ursinus Green Purchasing Guidelines

Back to Table of Contents

The following Green Purchasing guidelines are meant to serve as a starting point. They reflect some good practices. If you have suggestions for amending this list, please email them to: sustainability@ursinus.edu

- Beginning the green purchasing process:
  - Identify one person who can help facilitate green purchasing within the department.
  - Track green purchases for future planning and assessment (set up attributes for sustainability aspects)
  - Work with the OS to find sources for materials that are needed.
  - Create a list of preferred vendors based on environmental criteria and purchase from them when possible.
  - Encourage purchasers to consider whether existing items can be used rather than purchasing new items, including sharing or renting as options.
  - Use whole life costing rather than awarding contracts on the lowest price basis.
  - Source giveaways that are recycled whenever possible, including t-shirts, reusable water bottles, pens, paper and other products.
  - Focus on purchases that involve products that have high environmental impact, are expensive, and/or are easily influenced (biggest bang for the buck).
- Before purchasing, ask:
  - Does another department have a surplus that they would be willing to share?
  - Does another department have a surplus that they are not using?
  - If there is an existing item, can it be easily/economically repaired (rather than making a new purchase)
- Prioritize purchasing products that are:
  - Locally produced
  - Locally sold by local business
  - Energy Star rated
  - Durable and well made (built to last)
  - High in recycled/reused content
  - Made from materials that are easily taken apart and are then recyclable at the end of their life

- Reusable and/or refillable
- Easily repaired (in whole or in part) rather than having to be replaced.
- Water and energy efficient
- Made from sustainably managed timber products (e.g., both Lowe's and Home Depot sell products that are certified by the Forest Stewardship Council (FSC)).
- Made from natural materials with no or low-VOC; never purchase teak or other woods that are unsustainable forested.
- Can be bulk ordered/shipped
- Shipping materials are compostable, recyclable, or reusable, and/or the vendor is willing to take back and reuse the packaging.

Appendix I: Ursinus Sustainability Projects/programs that Originated in Academic Courses

Back to Table of Contents

Sustainability projects and programs that originated in academic courses

Type of Project	Sustainability Project/Initiative
Sustainability Projects that Resulted **from** Courses (all approved by Academic Council)	• Organic Farm • Constructed Wetland • Recycling Program • Sustainable Move-In • Sustainable Move-Out • Climate Action Plan (first draft) • Greenhouse Gas Inventory (first year) • Green Roof project on Pfahler • UCompost – residential hall composting (this program is not currently functioning) • Trayless System in the dining hall • Reduced packaging in the Dell laptop shipments; bundling of computers; switch from Styrofoam packaging to compostable bamboo packaging • Development of Science in Motion curriculum on Climate Change for students at local schools • Hunsberger Woods Restoration Plan – project that allowed the College partnered with the local government and NGOs. Included tree planting, rain garden creation, stream restoration. • American Chestnut Foundation Partnership to plant a research orchard of chestnuts. Part of program to develop blight resistant chestnut trees. (This project has not yet been implemented) • Local foods banquet • Plastic water bottle free campus policy (Though this is no longer the case on campus, we are working toward

	reducing the number of disposable plastics used on campus.) • Climate Action Club in Springford School District. • ENV has worked with the Facilities Services Department to expand the student-run organic farm to include an orchard, fruits/vegetables, bees, chickens, a community garden, and a stall at the local Farmers' Market. • ENV faculty is working with the Facilities Services Department to design and implement an an ethnobotany garden on campus, possibly starting in one of our existing planting beds. • Tree planting on campus • Tree mapping project for campus. • Bat & bird houses installed and maintained • Organic Dinners* • Environmental Speaker Series. This is run by faculty who bring in speakers during the academic year. Past speakers include: Wendell Berry, Anna Lappe, Frances Moore Lappe, Manny Howard, Katie Tripp, Scott Wiedensaul, and Douglas Tallamy, among many others.
Sustainability Projects that Continue to be Used in Academic Courses	Recycling program Composting Organic Farm Hunsberger Woods Restoration Plan Ethnobotany garden Farmers' Market Constructed Wetland
Courses that Incorporate Sustainability Concepts	There are over 45 courses offered in the UC curriculum in 11 departments that address sustainability in some way. (see complete list of sustainability-related courses in Appendix E).

Appendix J: Ursinus Sustainable Living Guide

Back to Table of Contents

Energy

- Lighting
  - Replace incandescent bulbs with CFLs.
  - Fact: A fluorescent bulb uses 66% less energy and lasts 10 times longer than an incandescent bulb.
  - By replacing one incandescent light bulb with an energy-saving CFL light bulb, you prevent 1,000 pounds of carbon dioxide from being emitted into the atmosphere, and you save $67 dollars in energy costs over the bulb's lifetime. [3]
- Passive solar heating/cooling.
  - Use drapes to help heat/cool residential rooms. Sunlight is our most efficient source of energy. Here's how it works:
    - In cold weather: open drapes and allow the sun to warm your room – even in winter; close drapes at night to keep warmth in.
    - In warm weather: close drapes (and shut your window) to keep hot sun out/cool air in; at night open up the windows and let the cool air in – use a fan to help draw in fresh cool air from outside.
- Fans vs. A/C
  - Bring a window fan to school with you. It will blow a breeze around your room, cooling you off, while allowing you to wear shorts/tank tops (etc) and not be too cold in your room! Fans use MUCH less electricity, and allow you to remember what season your are in.
  - Make sure you head over to the Facilities office to request a window screen if you bring a fan. You don't want a bat to fly into your room! (yes, they do sometimes fly into open windows!!)
- Appliances
  - Limit the number of appliances in your room. Share TVs, microwaves, mini-friges.
  - Use only Energy Star rated appliances.
  - Unplug appliances and cell phone chargers that are not used regularly (and then only plug them in when you need them; some continue to

[3] http://www.housing.berkeley.edu/green-rssp/rssp_green_sustain.html

consume power even when turned off. This burns out the unit faster and heats up the space around it.
    - Plug all your regularly used appliances into a power strip. Turn that off at night so save electricity use called the "phantom load" of electricity use… power that is being used for no reason by appliances that are just waiting to be used.
- Computers
    - Turn off the screen saver function. These do not "save" your screen (that was for several technologies ago). They do use more energy than Sleep mode does.
    - Set your computers energy use settings to low. Check with IT for help with these settings.
    - Turn your computer off when you are not using it.
- Feng Shui – sort of
    - Keep furniture away from the heating and cooling vents to ensure that air is free to flow from the vent. This allows cooled or heated air to reach your room for efficiently.
- Clothing
    - Dress appropriately to the season: wear sweaters in the winter; wear lightweight clothing in the warmer months.
- Laundry
    - Wash your clothes in cold water (in addition to not having to heat the water, it helps your clothes last longer and look better and reduces shrinkage)
    - Line dry your clothes. Invest in a clothes drying rack and hang your clothes in your room.

Food & Drink

- Dining services currently purchases most of it's food within a 75 mile radius of our campus – so rejoice!
- Eat lower on the food chain. Vegetarian meals require much fewer natural resources to produce than meat-based meals.
- Eat organic! Lobby your food service provider to provide more organic food options and to label them as such.
- Avoid drinks delivered to you in plastic. Did you know that it takes over 2 liters of water to produce the bottle that is used for **every** plastic water bottle…and that doesn't include the water in the bottle!

- BYOB – Bring your own Bottle. And make it a stainless steel bottle if you can…you don't want those plastic chemicals leaching into your water!
- Fill your metal water bottle at one of the three water filling stations on campus (there are two in Wismer; one in the Myrin Library). Ask the College to add more of these. If they know you care, they'll be more likely to prioritize it!
- Compost all your food. Dining Services makes this easy to do: composting happens behind the scenes, but you can do your part by putting your paper napkins and food boats on the conveyor belt in Upper Wismer. They can get composted right along with the food! And if you're really motivated, collect your food waste in your room and bring it with you to Wismer to compost (no plastic bags though).
- Vending machines. Our vending machines are on Vending Misers (they turn off when no one is around), but the food out of vending machines is still low quality. Make healthy choices with your money.

Paper

- Reuse paper (turn it over!)
- Don't print multiple drafts of papers – edit on your computer and print only the final.
- Even better: ask your professors if you can turn your paper in electronically.
- Encourage the faculty in your major to adopt paper-free classes (turn in all papers electronically).
- Fact: The average college student discards (to a landfill) 320 pounds of recyclable paper each year. This means that 6.25 students could recycle 1 ton of paper each year with staggering results:
    - One ton of recycled paper will save:
    - 17 Trees
    - 7,000 Gallons of water
    - Enough energy to heat an average home for 6 months
- We have 1,750 students at Ursinus College. If every student at UC recycled their 320 pounds of paper annually, we could save the following amount of resources:
    - (1750/6.25) = 280 tons of paper recycled
        - 280 x 17= 4,760 Trees Saved
        - 280 x 7,000= 1,960,000 Gallons of Water Saved
        - 280 / 2= 140 Homes could be heated for one year

- The entire Ursinus College population (students, faculty, and staff) is 2,200 people. If every student at UC recycled their 320 pounds of paper annually, we could save the following amount of resources:
    - (2,200/6.25) = 352 tons of paper recycled
    - 352 x 17= 5,984 Trees Saved
    - 352 x 7,000= 2,464,000 Gallons of Water Saved
    - 352 / 2= 176 Homes could be heated for one year

Purchasing

- Before you arrive, consider what you'll need to bring. Here's our Green Purchasing Guide for College (this is not an exhaustive list, just some suggestions):
    - Recycled paper, notebooks, etc.
    - Pens that are refillable
    - Pencils that don't have plastic shells…regular wooden pencils are more sustainable!
    - Bike – bring your bike from home. Or join Bikeshare for $10/year and use one of ours!!
    - Fan – to cool your room off
    - Clothes drying rack
    - Environmentally sensitive laundry detergent
    - Organic cotton or bamboo sheets
    - Storage totes that can be used all year (instead of just for transporting to and from school)
    - Reusable bags for shopping (just say "No Thanks!" to plastic bags at **every** checkout you come to)
    - A set of take-out containers for when you go out to dinner and have leftovers.
    - Stainless steel water bottle and a bottle brush to clean it
    - One or two place settings of reusable utensils and plates/bowls to use in your room.
    - Insulated shades or drapes for your window to keep hot sun in or out (depending on time of year)
    - Sweaters, socks, blankets for cold weather.
    - CFL light bulbs
    - Energy-star appliances, if you must bring appliances. Make sure you collaborate with your roomie to make sure you're not duplicating.
    - Power strips – one for things you don't often use; one for things you use all the time.

Transportation

- Join UCBikeshare and ride to local destinations.
- Use public transportation when possible (SEPTA buses run past campus frequently)
- Bike or walk instead of driving.
- Carpool to go to local attractions like the King of Prussia Mall or local movie theaters
- Leave your car at home

Water:

- A five-minute shower uses between 25-50 gallons of water; shorten your shower by one minute and save 5-10 gallons.
    - If every UC student shortened their daily shower by a single minute, we would save 1,960,000 gallons of water over the course of the 32-week academic calendar.
- Turn the water off when you brush your teeth or shave.
- If you live in an apartment, don't run your dishwasher until it is full.
- Throw your food waste in the compost instead of using the trash.
- Watch for leaky faucets, showers, or toilets and enter a work order as soon as you notice one. A leaky faucet can waste 200 gallons of water a month.
- Wash your clothes in a full load of laundry (not a load of just one or two items of clothing).

Get Involved:

- Join a student club that is involved in environmental themes, like UC Environmental Action.
- Apply to work with one of the Office of Sustainability's student groups:
    - UCGreen Sustainability Fellows
    - EcoREPs
- Join UCBikeshare and ride a bike.
- Become an RA and apply to work on the Sustainability Committee
- Encourage the other clubs and activities that you are involved with to embrace sustainability concepts in their actions or activities.
- Encourage your professors to allow electronic submission of papers.

- Participate in the OS's Green Certification Program for Residence Hall Rooms (once in place).
- Write to your local, state and federal elected officials about environmental and/or sustainable topics that are important to you.
- Volunteer at a local environmental organization. Many local organizations have summer internships available.

Appendix K: Ursinus Facilities Equipment

Back to Table of Contents

Updated 1/27/2012

Year Purchased	Make	Model/Description
	Rogers	Leaf Sweeper
	Jacobson	6 Gang Mowers/Frames
1990	Case/IH	Diesel Tractor
		Gang Rollers
	Power	Roller Lawn All AR1 14-62
	Onan	Portable Generator (Trailer)
1985	Yale	Fork Lift #2P28
1985	York	Rake
1985	Wood	Dixie Mower M5-4
1985	ARPS	Model 90 3 PT Hitch Backhoe
	Karcher	Elect. High Press. Sprayer HD820
1985	Turfco	Top Dresser F12B
1987	Case/IH	Diesel Tractor - 385 UT
1987	Case/IH 485	Utility Diesel Tractor\Loadbuc
1987	Jacobson	Turfcat II DW 224
1989	Heinke	Tornado Chipper Grinder-CG650
1991	Mitsubishi	SF27-D 4 WL. Might MIT w/CAP
1992	John Deere	F935
1992	Case/IH	1862 Cub Cadet
	Telescope	
	Coin Changer	
1996	Ditchwitch	2200 Trencher
1996	Hanson	52" Snowblower - T422D
1996	Ariens 12 H.P.	924085 36" Self Prop. Snowthrow
1994	CAB	For Turfcat
1996	Mighty Mac	PS350T 50 Gal. Sprayer
1995	Vicon	PS203 Spreader Seeder
1994	Cub Cadet Diesel	1782 #144-714-100/54" Mower DK
1994	Cub Cadet Diesel	1782 #144-714-100/54" Mower DK
1994	Case IH	2250 Mount O Matic Loader/BKT.
1996	Cub Cadet	44A Used Mower Deck for 1811
1994	Cub Cadet	54" Snow Blades
1994	Cub Cadet	54" Snow Blades
1994	Cub Cadet	190401 Snow Blades
1994	Cub Cadet	190401 Snow Blades
1994	Cub Cadet 8 HP	826T Snowthrower
1994	Cub Cadet 8 HP	826T Snowthrower
1994	Vicon	P50005G2 Salt Spout

1994	Yamaha	Recond. Gia Golf Cart
	Turf Cat	72" Mower Model 66119
	Cub Cadet	42" Snow Blade
1994	Vicon	PS403DM Seed Spreader
	Cub	54" Mower
	Cub	54" Mower
	Cub	54" Mower
	Cub	54" Mower
	Myers	Turfline Sprayer-1 Piston Pump
	Roto-Hoe	Tiller, Model 904
	Delta	Bench Grinder
	Giant	Vac Push Blower (Mag 8)
	Giant	Vac Push Blower (Old 8)
	Giant	Vac Self-P Vac. Model 1780-K
	Jacobsen	Seeder (Self-P) Model 524
	Jacobsen	Areator/Seeder 3 PT. Model 548
	Line Pro	Line Painter
	Shin Daiwa	Back Pack Blower EB-45
		CP-E Pump Sprayer
	Nelson	Rain Train Model 8401
	Muchinex	Dump Trailer
	Parker	Trial Vac
	E-Z Vac	Trail/Vac
	Water Wagon	101 GAL (3 Piston Pump_
	Myers	Truch Plows 7' - (2 of them)
		Snow Chains- 16", 1 Set
	AMT	3" Mud Pump, Model 335
	AMT	2" Trash Pump Model 3930-96R
	Solar	200 Battery/Engine Starter
	Super Pro	800 Exp System
	Little Wonder	Hedge Trimmers
		Tire Machine (Manual)
	Miller	M-180 Elect. Welder
	Ames	Hose Wagon
	Ames	Hose Wagon
	Stihl	Blower BG-72
	Stihl	Blower BG-72
	Stihl	Blower BG-72
	Stihl	Weedeater
	Stihl	Chain Saw
1992	Cub Cadet	20" Push Mower 072R112/072
1992	Cub Cadet	20" Mulching Mower 098R112
	Power	Pole Saw TT21A
	Karcher	Gas Power Washer HD-950
	McCulloch	Pro-Scraper 11-HD
	Black & Decker	5/8" Drill
1994	Turf Cat	SHT-20 M-B Sweeper Attach.
	Sodmaster	Bantam Model J-12
	Scott	Push Spreader
	Fisher	Push Spreader

	KIFCO	Water Reel B-140
	Pallet Jack	BT- Litter
1998	Club Car	Golf Cart, gasoline (Used)
1999	Stihl	F585 Weedwacker
2001	Trynex SP-1075	10.75 CU Salt Spreader with Mount
2001	Ariens	924506 ST1336 Snowblower
2001	Kubota	L3010D 4 Wheel Drive Tractor
2001	Kubota	RC72-29A 72" Mower
2001	Kubota	L2174 61" Two Stage Snowblower
2001	Sims	Cab for 3010 Kubota Tracto
2001	Club Car	Carry All Utility Vehicle
2001	Edge-R-Rite	N2S/P TF8F303
2002	Bobcat	S185 Bobcat Loader
2002	Bobcat	30C Bobcat Auger
2002	Bobcat	84" Bocat Snowblade
2001	Tennant	Model 7200 Disk Brush Bat.Scrub
2002	Turf 2	RG02 Golf Cart
2004	Villager 4	TG04 Gasoline Golf Cart w/canopy
2004	Turf 6	Gasoline Utility Vehicle VGo4 w/cab
2004	Villager 4	Gasoline w/canopy top & windshield
2003	Curtis	8.5' Power V Plow
2003	Stahl	BG85 Blower
2003	Echo	SRM260S Trimmer-Solid
2003	Echo	PB200 Blower-Handheld
2003	Echo	Deep Root Auger
2003	Echo	EDR260 Gas Drill
2004	Scag	STT29KA 29EFI Power Mower
2004	Scag	SMSST72A 72" Tiger Deck
2005	Stihl	Blower Model BG65C
2005	Scag	Sabor Tooth Tiger Rider Model STT31BSD
2005	Scag	72 " Tiger Mower Deck Model SMST72
2005	Scag	Striper Kit Model SGU9269
2005	Carryall 2	2005 Gasoline Pick-up Utilitiy (Golf Cart)
2005	Carryall 2	2006 Electric Golf Cart w canopy & enclos
2005	Genie (Scissor)	Push Around Personnel Lift Model AWP40S-DC
2005	Kubota	RTV900W-H Utility Vehicle
2005	Kubota	Soft Side Cab
2005	Kubota	72" Blade
2005	Trynex	375 Spreader SP-375
2005	Boss	7'6" Super Duty w/RTC Plow
2006	Blower	RMUEBZ8000 Blower
2006	Power Pruner	ECUPPT260 Power Pruner
2006	Line Trimer	ECUSRM261T Line Trimmer
2006	Honda	Rotary Mulching Mower 21" Self Propelled
2006	Vantage	VV-08-06 Model C1000-AT Van Go Cargo Van
2007	Carryall 6	2007 Carryall 6 Electric Flat-bed Utility Vehicle
2007	Carryall 6	2007 Carryall 6 Electric Flat-bed Utility Vehicle
	John Deere	Gator - Small mower for fields donated
2007	Scag	Turf Tiger Model STT61V27CH
2007	Honda	Walk Behind Push Mower Model HRS216K3SDA

2007	Echo	Hedgetrimmer 20 ECUHC150
2007	Curtis	Curtis Soft Sided Cab for 6x4 Gator Heater
2007	Boss	76" Super Duty Boss Plow
2008		Blade Grinder 1 Hp. SIL88-018
2008		GSTT-61V Bagger
2008		Blower
2008		Line Trimmer
2008	Leinbach	Pulverizer 60" LYT51
2008	Fimco	UTL-40-12V 40 Gallon Utility Sprayer, 12 Volt
2009	V-Max	8500 8' long Spreader
2009		BM18522 72" Front Blade
2009		Trimmer
2009	Ariens	Snowblower ST-1028, 10 HP
2010	Ariens	Snowblower ST26DLE Model 926037
2010	Tiger Cat	72" Diesel Deck
2010	Tiger Cat	Tiger Cat Diesel
2010	Echo	Bed Redefiner Flower Bed Edger BRD-280
2011	Ariens	Snowblower ST26DLE
2011	Kubota	Utility Vehicle RTV900W9-H
2011	Subaru	Blower
2011	Super Duty	Plow RT3

Appendix L: Ursinus Main Buildings List

Back to Table of Contents

Campus buildings, by year, size, average kWh/sq.foot, facilities, and programs served.

Building Name	Year Built	Square Footage	Building Facilities	Programs (if applicable)
Bakes Athletics Center	2001	126,329	The recently renovated facility contains a state-of-the-art fitness center and weight room, a 200-meter indoor track, indoor tennis courts, dance studio, three full-sized basketball courts, spacious locker rooms and team rooms, wrestling room, classrooms, regulation collegiate-sized swimming pool, racquetball court, gymnastics space and the Helferrich gym	Houses the academic department of Exercise and Sport Science and the Department of Athletics and is home to the colleges intramural sports teams
Berman Museum	1921, 2010 (ad'n)	15,447	An art museum and multipurpose space that is used for seminars, lectures and films; a non-circulating art library; three separate exhibition galleries; and complete storage and work areas. Henry and June Pfeifer wing was added in the spring of 2010 and includes a lecture hall, a paper works room, and an outdoor sculpture terrace. Building was formerly a library.	Fine arts museum with exhibition and research spaces. Departments of Art and Art History use this space for classes and exhibits. The space is also used for special events.
Bomberger Hall	1891 (2009r)	20,746	Classrooms, offices, meditation chapel, large auditorium, Heefner Memorial Organ, the second largest organ in Pennsylvania.	Departments of Economics and Business Administration, Anthropology and

				Sociology, Career Services, Campus Chaplain, the Education Department, and Music.
Corson Hall	1969	23,148	Administrative offices	Admission, Advancement, Business Office, Human Resources, President's Office, and Student Financial Services
Kaleidoscope Theater	2005	60,271	Two theaters (black box and a 350-seat proscenium arch theater), dance studios, prop & costume shops, set construction, atrium, green rooms, dressing rooms, classrooms, offices, teaching support space and a gallery and art work space	Houses the Theater and Dance Department. Is used by art students for work and exhibit space. Is also used for special events and is rented to outside groups for events.
Myrin Library	1970	41,640	Book storage (420,000 volumes), lending library,study space for up to 500 people, coffee shop, computing center, offices.	In addition to the library's holdings, Myrin houses the College's Academic Computing Center, the Pennsylvania Folklife Archives, the Ursinusiana Collection of College-Related Artifacts, and

				the offices of the Academic Support, College Communications and Information Technology
F.W. Olin Hall	1990	31,937	Contains a 400-seat lecture hall, a 63-seat tiered classroom, a 42-seat tiered classroom, the college's writing center, eight traditional classrooms and four seminar rooms	Departments of English, History, Modern Languages, Classics, and Philosophy and Religion
Pfahler Hall	1932, 1998r	72,322	Science labs, classrooms, offices, dark room, auditorium, meeting rooms, student work spaces,	Chemistry, Computer Science, ENV, Geology, Mathematics, Physics
Ritter Center	1927, 1980	25,759	An art studio, a television studio, classrooms, auxiliary rooms, offices,	Houses the Media and Communication Studies and Art Departments, and the College's Copy Center.
Thomas Hall	1970, 1991r	34,005	Science labs, classrooms, offices	Biology and Psychology departments
Unity House	1928	2,030	Offices, meeting space, classroom	Multicultural Services, Crigler Institute
Wellness Center	1955	2,652	This building is a converted home and includes offices and examination rooms.	Student Health
Wismer Center	1965, 2009-2011r	59,989	dining facilities, social lounges, an office complex for student activities, retail space, a convenience store, an entertainment room and a	Dining Hall, Zack's, Bookstore, Dean of Student's Office, Residence Life

			multipurpose lounge	Offices, UCARE, Sodexo offices, Student Leadership Offices
Residential buildings - 43	Var.		Consists of approximately 30 houses in a variety of sizes, the majority of which are located on Main Street. All include laundry rooms, common areas, and kitchens	See Appendix M for a list that includes these buildings as well as their square footage and number of residents.

Appendix M: Ursinus Building List, by Type

Back to Table of Contents

Campus Buildings, by type.

Type	St #	St Name	Building Name	Usable Sq. Ft.	Total Sq. Ft.	Construction Date	# of Residents
Academic - Art Studios	511	Main Campus Dr	Ritter Hall & Art Studio	25,759	25,759	1927	
Academic - Classrooms	508	Main Campus Dr	Bomberger Hall	34,042	40,642	1891	
Academic - Classrooms	506	Main Campus Dr	Olin Hall	31,937	45,467	1990	
Academic - Science	610	Main Campus Dr	Pfahler Hall	72,322	72,322	1922	
Academic - Science	700	Main Campus Dr	Thomas Hall	34,005	48,626	1970	
Academic - Theater	612	Main Campus Dr	Kaleidoscope Theater	51,622	60,271	2005	
Administrative Offices	502	Main Campus Dr	Corson Hall	23,148	23,148	1969	
Art Museum	504	Main Campus Dr	Berman Art Museum	18,447	26,833	1921	
Athletics Center	701	Main Campus Dr	Bakes Center/Helferich Gym/Field House	126,329	184,934	1972, 2001	
Dining Hall/Student Center	509	Main Campus Dr	Wismer Center	55,003	59,989	1965	
Library	600	Main Campus Dr	Myrin Library	41,556	55,408	1970	
Wellness Center	789	Main St	Wellness Center (Wagner)	2,652	3,890	1955	
DORM	201-203	E 9TH Ave	201-203 E 9th	6,090	6,090	Not Known	10
DORM	732	Main St	732 Main	5,698	8,688	1925	12
DORM	777	Main St	777 Main	2,128	3,128	1955	7

Type	St #	St Name	Building Name	Usable Sq. Ft.	Total Sq. Ft.	Construction Date	# of Residents
DORM	942	Main St	942 Main	2,744	3,883	1942	9
DORM	944	Main St	944 Main	4,200	4,398	1939	12
DORM	476	Main St	Barbershop - Residence Hall	2,410	4,241	1934	5
DORM	503-507	Main Campus Dr	Beardwood, Paisley, & Stauffer Halls (BPS)	57,778	57,778	1957	163
DORM	604-608	Main Campus Dr	Broadbeck, Wilkinson & Curtis Halls (BWC)	31,761	42,716	1927, 1966 (Wilkinson Hall)	108
DORM	732	Main St	Carriage House	1,628	2,146	1925	3
DORM	409	Main St	Clamer Hall	4,499	7,285	1921	15
DORM	811	Main St	Cloake House	2,584	3,364	Not Known	6
DORM	500	Main St	Commonwealth	6,096	8,762	1920	14
DORM	612	Main St	Duryea Hall	4,110	6,066	1900	9
DORM	785	Main St	Elliot House	3,338	5,298	1958	7
DORM	554	Main St	Fetterolf House	5,033	7,076	1792	9
DORM	33	6TH Ave	Hillel House (Yost)	2,322	3,731	1913	4
DORM	568	Main St	Hobson Hall	3,411	5,793	1898	12
DORM	801	Main St	Isenberg House	4,422	6,057	1895	11
DORM	513	Main St	Keigwin Hall - UC	2,694	4,435	1935	6
DORM	702	Main St	Lynnewood Hall	4,056	6,018	1935	9
DORM	512	Main St	Maples Hall	6,498	6,543	1930	10
DORM	23	6th Ave	Musser Hall	12,036	12,274	Not Known	38
Dorm	514	Main Campus Dr	New Hall	37,677	52,144	2007	127
DORM	640	Main St	Olevian Hall	4,525	6,652	1932	9
DORM	701	Main St	Omwake Hall	3,846	5,515	1925	9
DORM	708	Main Campus Dr	Reimert - Complex A	5,040	7,560	1967	129
DORM	708	Main Campus Dr	Reimert - Complex B	10,890	10,890	1967	
DORM	708	Main Campus Dr	Reimert - Complex C	18,252	18,252	1967	

Type	St #	St Name	Building Name	Usable Sq. Ft.	Total Sq. Ft.	Construction Date	# of Residents
DORM	708	Main Campus Dr	Reimert - Complex D	10,890	10,890	1967	
DORM	30-32	6TH Ave	Residence Hall	3,842	5,594	1920	10
DORM	624	Main St	Residence Hall	2,550	3,720	1910	7
DORM	510	Main Campus Dr	Richter/North Hall	46,388	46,388	2002	109
DORM	646	Main St	Schaff Hall	3,711	5,299	1938	7
DORM	600	Main St	Schreiner Hall	6,432	9,303	1892	16
DORM	55	E 5th Ave	Sprankle Hall	4,217	4,217	1925	13
DORM	26	6th Ave	Sturgis Hall	2,088	3,132	1935	6
DORM	724	Main St	Todd Hall	4,284	6,306	1932	10
DORM	716	Main St	Wicks	5,856	8,332	1936	17
DORM	620	Main St	Zwingli Hall	4,056	6,060	1935	13
DORM	424-426	Main St	424/426 Main	3,055	5,227	1934	10
DORM	444	Main St	444 Main	1,973	3,273	1927	3
DORM & Multi-cultural Affairs	500	Main Campus Dr	Unity House	2,030	3,594	1928	4
Private Residence	65	6TH Ave	65 6th	2,670	4,130	1955	
Private Residence	99	E 9TH Ave	99 9th - President's	4,210	5,889	1943	
Private Residence	100	E 9TH Ave	100 9th	1,380	2,779	1957	
Private Residence	155	E 9TH Ave	155 9th	3,519	3,519	1955	
Private Residence	175	E 9TH Ave	175 9th	1,584	2,996	1962	
Private Residence	275	E 9TH Ave	275 9th	2,260	3,570	1955	
Private Residence	542	Main St	Super House	3,831	5,704	1892	
RENTAL	319	E 9TH Ave	319 9th	1,924	1,924	Not Known	
RENTAL	324	E 9TH Ave	Farmhouse	3,266	3,442	1900	
RENTAL	325	E 9TH Ave	325 9th	1,754	3,508	Not Known	
Facilities	400	Main Campus Dr	Facilities, incl. shop	9,684	9,684	1957	
Facilities	401	Main Campus Dr	Heat Plant	4,453	4,453	1962	
Facilities	408	Main Campus Dr	Chiller Plant	2,500	2,500	~2003	

Type	St #	St Name	Building Name	Usable Sq. Ft .	Total Sq. Ft.	Construction Date	# of Residents
Facilities - Storage/ Private	99	E 9TH Ave	99 9th Garage	0	441	1943	
Facilities - Storage/ Private	99	E 9TH Ave	99 9th Pool House	0	333	1943	
Facilities - Storage	324	E 9th Ave	Barn	0	2041	1900	
Facilities - Storage	325	E 9TH Ave	Garage	0	440		
Facilities - Storage	324	E 9TH Ave	Storage	0	546		
Facilities - Storage	402	Main Campus Dr	Equipment Barn	4,838	4,838	1961	
Facilities - Storage	406	Main Campus Dr	Pole Barn	5,000	5,000	1989	
Facilities - Storage		Main Campus Dr	DLH Garage	0	525		
Facilities - Storage	444	Main St	444 Main Shed	0	200	1927	3
Facilities - Storage	777	Main St	777 Main Garage	0	391	1955	7
Facilities - Storage	785	Main St	Elliot House Garage	0	525	1958	
Facilities - Storage	942	Main St	942 Main Garage	0	418	1942	9
Facilities - Storage	424-426	Main St	424/426 Garage	0	1710	1934	10
Facilities - Storage/ Athletics	701	Main Campus Dr	Utility Storage - Gym	0	759	1972	

Appendix N: Ursinus Fleet Vehicles, Owned and Leased

Back to Table of Contents

Ursinus College Fleet Vehicles – Owned

Year	Make	Model	Dept/Use	Use
1988	EZ	Trailer	DLH	
1991	Dodge	Van	Facilities	
1995	Ford	Super Club Wagon	Facilities	Dining Services
1996	Jeep	Cherokee	Campus Safety	EMS
1999	Ford	F350 Truck	Facilities	
1999	Ford	Altec Lift Bucket Truck	Facilities	
2000	Ford	E-350 SD Cutaway	Chemistry	Science in Motion
2003	GMC	Sierra 1500	Facilities	
2003	Chevrolet	Silverado Pickup	Facilities	
2004	Chevrolet	Express Cargo Van	Chemistry	
2004	Long Chih	LCI-830T Trailer	Facilities	
2005	GMC	Dump Truck	Facilities	
2006	Vantage	VanGO	Facilities	Mail Services
2011	Chevrolet	Silverado 1500	Facilities	

Ursinus College Fleet Vehicles – Leased

Lease Expiry	Year	Make	Model	Dept/Use	Use
2012-03	2009	Toyota	Avalon	President	Personal
2012-08	2010	Toyota	Sienna Van	Facilities	Van #5
2012-09	2010	Toyota	Camry Hybrid	Admissions	
2013-01	2010	Toyota	Sienna Van	Facilities	Van #2
2013-01	2010	Toyota	Sienna Van	Facilities	Van #3
2013-03	2010	Toyota	Camry Hybrid	Admissions	
2013-08	2010	Toyota	RAV 4	Campus Safety	
2014-08	2011	Toyota	Sienna Van	Facilities	Van #4
2014-09	2011	Toyota	Sienna Van (LE)	Facilities	Van #1

Appendix O: Eco-Driving Recommendations

Back to Table of Contents

This is not meant to be an exhaustive list, but a set of guidelines. These are from the Automobile Association (a British equivalent of AAA) cited below.[4] If you have questions or ideas to add to this list, please contact the Office of Sustainability at sustainability@ursinus.edu.

- **"Easy does it:** drive smoothly, accelerate gently and read the road ahead to avoid unnecessary braking.
- **Decelerate smoothly:** when you have to slow down or stop, decelerate smoothly by releasing the accelerator, leaving the car in gear (or put into neutral if driving a stick shift vehicle).
- **Rolling**: in traffic, if you can keep the car moving all the time, so much the better; stopping then starting again uses more fuel than rolling. You should always obey stop signs.
- **Cut down on the A/C:** air-conditioning increases fuel consumption at low speeds, but at higher speeds the effects are less noticeable. So if it's a hot day open the windows around town and save the air conditioning for high speed driving. Don't leave air-conditioning on all the time but aim to run it at least once a week throughout the year to maintain the system in good condition.
- **Turn it off:** electrical loads increase fuel consumption, so turn off your heated rear windscreen, demister blowers and headlights, when you don't need them
- **Stick to speed limits:** the faster you go the greater the fuel consumption and pollution. Driving at 70mph uses up to 9% more fuel than at 60mph and up to 15% more than at 50mph. Cruising at 80mph can use up to 25% more fuel than at 70mph.
- **Don't be idle:** if you do get caught in a queue, avoid wasting fuel – turn the engine off if it looks like you could be waiting for more than three minutes.
- **Don't get lost:** plan unfamiliar journeys to reduce the risk of getting lost and check the traffic news before you leave
- **Don't top off the tank:** Don't "top off" your gas tank. Stop at the click. Topping off your tank allows emissions to escape, sometimes spilling gas.
- **Fuel when cool:** Fuel vehicle when it is cool, not in the heat of the day.
- **Small is good:** Use the smallest vehicle possible for the task. In other words, don't use a van if you really only need an economy car."

[4] See the AA's Eco-Driving advice on their website: http://www.theaa.com/motoring_advice/fuels-and-environment/drive-smart.html

Appendix P: Ursinus Science Labs & Equipment

Back to Table of Contents

Ursinus College Science Labs, Equipment and Fume Hoods

Pfahler Hall Rooms:	Types of Labs	Building Square Footage 72,322	Lab Square Footage	Energy Intensive Equip.	VAV Fume Hoods	CAV Fume Hoods
Chemistry:						
201	Biochemistry			X	4	-
206	Prep Room		410	X	-	1
215	Inorganic Chemistry Lab		1,620	X	7	-
301	Advanced Chemistry Lab		1,050	X	8	-
302	Physical Chemistry Lab		1,040	X	3	-
304	Research Lab			X	-	2
306	Research Lab			X	-	2
307	Research Lab			X	-	2
309	Research Lab			X	-	2
310	Research Lab			X	-	2
312	Research Lab			X	-	2
314	General Chemistry Lab		1,445	X	9	-
314b	Chemistry Stockroom		686	X	-	1
315	Organic Chemistry Lab		2,133	X	29	-
316	General Instrumentation Lab		973		-	-
Physics:						
013	Bio A&P shared with Physics		1,675	X	6	0
013A	Advanced Physics Lab					

013B	Electronics Lab		410			
108	Intro Physics Lab		1,505			
108C	Research Lab			X		
4th Floor	Marsteller Observatory					
Thomas Hall Rooms:	Types of Labs	Square Footage 72,322	Lab Square Footage	Energy Intensive Equip.	VAV Fume Hoods	CAV Fume Hoods
Biology:						
126	Multi-use			X	-	1
128	Intro Biology Lab			X	-	1
206 (wet)	Diatom Population Biology				-	-
220	Physiology/Neurology	34,005	850	X	-	1
007	Ecology				-	-
008	Neurobiology		850	X	-	1
107	Microbiology			X	-	1
110 & Greenhouse	Entomology					
112 (renov.)	Developmental Biology & Neurobiology			X	1	-
118	Biochemistry		1,770	X	-	1
120	Biochemistry		315	2 Bio-Safety Hoods	-	-
121	Developmental Biology & Neurobiology			X	-	-
202	Various			X	-	1
210 (renov.)				X	1	-
217	Cardiac Function			X	-	1

Appendix Q: Pfahler Hall Science Labs & Equipment

Back to Table of Contents

Science labs in Pfahler Hall, descriptions, square footage, and fume hoods.

	Type	Additional Rooms, Special Equipment, Special Features	Net Square Feet (NSF)	VAV Fume Hoods	CAV Fume Hood
PFAHLER					
Chemistry					
Teaching Labs					
Room	Type	Additional Rooms, Special Equipment, Special Features	9,357		
201	Biochemistry			4	-
206	Prep Room	NMR room adjacent (410 sf)	410	-	1
215	Inorganic Chemistry Lab	Unoccupied Setting	1,620	7	-
301	Advanced Chemistry Lab	Equipment: Flame Atomic Absorption (AA) Spectrometer; High Performance Liquid Chromatography (HPLC) attached to Mass Spectrometer	1,050	8	-
302	Physical Chemistry Lab		1,040	3	-
304	Research Lab	Equipment: Fourier-Transform Infrared (FT/IR) Spectrometer		-	2
306	Research Lab	Equipment: High Performance Liquid Chromatograph (HPLC)		-	2
307	Research Lab			-	2
309	Research Lab			-	2
310	Research Lab	Web research Mossbauer Spectrometer		-	2
312	Research Lab			-	2
314	General Chemistry Lab	Unoccupied Setting	1,445	9	-
314b	Chemistry Stockroom	Lab prep & GC - balance room (216sf)	686	-	1
315	Organic Chemistry Lab	Has unoccupied Setting; instrument room (130 sf); balance room (133 sf) - square footage added in; Equipment: HP GCD G1800A (GC/MS)	2,133	29	-
316	General Instrumentation Lab	FT/IR Spectrometer; Thermometric TAM Isothermal Calorimeter; Gold HPLC; Capillary Electrophoresis; HP GC/MS; HP Gas Chromatograph connected to Mass Spectrometer (MS); Electrochemical Analyzer; Flourescence Spectrometer; 2S UV-Visible Spectrometer; 3S UV-Visible Spectrometer; UV-Visible Molecular Absorption Spectrometer; UV-NIR Molecular Absorption Spectrometer	973	-	-

Chemistry Subtotals	14 labs; 1 stockroom		60	14

Math and Computer Science

Teaching Labs

Room	Type	Additional Rooms, Special Equipment, Special Features	690
	Calculator Room		690

Research Labs

Room	Type	Additional Rooms, Special Equipment, Special Features	415
	Hardware Lab		415

Math and Computer Science	1 lab

Physics and Astronomy

Teaching Labs

Room	Type	Additional Rooms, Special Equipment, Special Features	1,915
013	Bio A&P shared with Physics	HVAC air exchange	1,675
013A	Advanced Physics Lab		
013B	Electronics Lab		410
108	Intro Physics Lab	Storage area	1,505
4th Floor	Marsteller Observatory		

Research Labs

Room	Type	Additional Rooms, Special Equipment, Special Features	190
108C	Research Lab	UC Parallel Computing Cluster & HVAC to cool them	190

Physics and Astronomy	5 labs and 1 observatory

Appendix R: Thomas Hall Science Labs & Equipment

Back to Table of Contents

				Net Square Feet (NSF)	VAV Fume Hoods	CAV Fume Hood	Other Hoods
THOMAS							
Biology					VAV hoods	CAV Hoods	
Teaching Labs (all wetlabs)							
Room	Type	Specifics	Additional Rooms, Special Equipment, Special Features	850			
126	Multi-use	genetics, developmental biology; cell biology	refrigerator/freezer; 126A - prep room: autoclave; 2 refrigerator/freezers		-	1	
128	Intro Biology Lab	ecology; cell biology	heated fish tanks		-	1	
206 (wet)	Diatom Population Biology	Teaching and Research			-	-	
220	Physiology/ Neurology			850	-	1	
Research Labs (all wetlabs)							
Room	Type	Specifics	Additional Rooms, Special Equipment, Special Features	2,935			
007	Ecology	Fish	n/a		-	-	
008	Neurobiology	Prenatal Alcohol Exposure (Animal lab - mice)	refrigerator/freezer	850	-	1	
107	Microbiology	Microbiology	Glove Box, autoclave		-	1	
110 & Greenhouse	Entymology	Conservation & ecology of beneficial insects	Greenhouse & 110 (lab)				
112 (renov.)	Developmental Biology & Neurobiology	C. Elegans, (microscopy)	Equipment Room (rm 114): -80oC freezer; 3 incubators; regular freezer; door to		1	-	

			Greenhouse				
118	Biochemistry	Biochemistry & Cell bio	Tissue culture room; cold room (195 SF), -80oC freezer; -20oC freezer; ice maker (all day); centrefuge (unused)	1,770	-	1	
120	Biochemistry	Cold Room? (150 sf) Prep lab? (165 sf)		315	-	-	2 HEPA Biosafety Cabinets
121	Developmental Biology & Neurobiology	C. Elegans, wetlab	Incubator (2)		-	-	
202	Various	Chemo Reception Invertibrates (salamanders & mice)/ Ecology of Suburban mice/ Genetics of fish populations	Animal room; storage; pumps; -80oC; -20oC freezer?; frige/freezers (2); confocal microscope (lasers); facs machine (cell sorting)		-	1	
207					-	1	
210 (renov.)		Prion Proteins in Yeast	Equipment Room: -80oC		1	-	
217	Cardiac Function	Cardiac Function (Animal lab) - mice			-	1	
Biology Subtotal					2	9	2

				Net Square Feet (NSF)	VAV Fume Hoods	CAV Fume Hood	Other Hoods
THOMAS							
Psychology					VAV hoods	CAV Hoods	
Teaching Labs							
Room	Type	Specifics	Additional Rooms, Special Equipment, Special Features	440			
	Quiet CPU Room		multiple computers	190			
	Demonstration CPU Room		multiple computers	250			
Research Labs							
Room	Type	Specifics	Additional Rooms, Special Equipment, Special Features	720			
	Sleep lab			260			
	EEG Lab	two rooms		160			
	Neuro Lab			100			
	Social Process Lab			200			
Psychology Subtotal				1,160			

Appendix S: Sodexo Sustainability Student Promotion Coordinator Job Description

Back to Table of Contents

Sustainability Student Promotion Coordinator

The Sustainability Student Promotion Coordinator (SSPC) supports the on-site campus dining team in the process of developing and implementing sustainable dining promotions, using their input at every stage of the process to inform and inspire creative ideas, and guide the implementation of the resulting promotion campaigns.

In this role, the SSPC interacts with internal team members; district marketing specialist; student promotion coordinator; Pepsi intern; creative agencies (if applicable); media and public relations personnel; client stakeholders, and customers. This person will have a high level of customer contact and must be comfortable assuming a leadership position. The position reports directly to an assigned Dining Manager or District Marketing Specialist.

Qualifications:

- Good Academic Standing – Environmental Sciences Major, Art Major, Media and Communications Major, Theatre Major.
- Demonstrate Strong Presentation, Teamwork, and Leadership Skills.
- Excellent Verbal and Written Communication Skills.
- Dynamic Leadership Abilities.
- Proficient in computer skills, Microsoft Office and Intermediate level of Adobe® Photoshop. Graphic Design and Web Site Design skills are preferred.

Projects: Below is a brief summary of projects for the Sustainability Student Promotions Coordinator.

- Increase awareness of sustainability practices within dining services. Create a clear communication to students, faculty, staff, and the entire College community by the following methods:
    - create advertising plans.
    - develop creative sustainable advertising practices (parents plaza bed sheets, side walk chalk, viral marketing, etc.).
    - messaging, Face book updates, D-txt text messaging.
    - media, web updates, viral marketing.
    - event planning and execution.
- Develop detailed action plans and creative strategies for assigned dining promotions and special events.
- Obtain approval from their Supervisor on all actions including of promotion partners, media coverage, and event hosting/coordination.
- Coordinate with Supervisor to ensure staff is up-to-date on current sustainable facts and activities.
- Positively and professionally represents dining services at any student/campus events they

attend.
- Inform their Supervisor immediately of any potential promotion problems or concerns (budget over-expenditures, partner sponsorship issues, media coverage, etc.)
- Review all media regarding sustainable dining events and awareness to ensure accuracy, content, and plan compliance.

Hours and Compensation:

An average of 10-15 hours per week is expected. Hours are flexible based on academic calendar. Compensation can be hourly or stipend based on experience and skills.
$8.50 to $10.00 per hour or a stipend per semester $500.00 - $900.00 per semester

Tracking: Tactic Sheets and Portfolio:
A digital or printed portfolio is expected at the end of the semester. The portfolio will be a summary of promotion activities, events, tracking results, photos, customer comments, projects from the semester and future recommendations.

Appendix T: Sample AASHE STARS Checklist for Dining Services

Back to Table of Contents

Ursinus College Dining Services
2010-2011 "Green Report Card"
Annual Food Budget

1. Total annual food budget (2010-2011).

2. Please indicate the dollar amount spent in the 2010-2011 academic year on products within each category below.

FOOD PRODUCT	DOLLAR AMOUNT (2010-2011)
Fruits and vegetables	
Dairy	
Eggs	
Meat and poultry	
Seafood	
Coffee	
Locally Grown and Produced Food	

3. Please check the items that you purchase from local growers or processors. We define "local" food as food that has been grown, raised, produced, or processed within 150 miles of campus.

[ ] Vegetables
[ ] Fruits
[ ] Milk
[ ] Processed dairy products (ice cream, cheese, yogurt, butter)
[ ] Grains and beans
[ ] Meat
[ ] Poultry
[ ] Eggs
[ ] Seafood
[ ] Baked goods
[ ] Granola/cereal
[ ] Maple syrup, honey, etc.
[ ] Beverages
[ ] Sauces, spreads, hummus, salad dressing, etc.
[ ] Other. Please describe:

4. What dollar amount of the 2010-2011 food budget was spent on purchasing food that was grown or raised locally?

5. From how many local farms or growers do you purchase food (excluding on-campus farms/gardens)?

Number from which you purchase directly:
Number from which you purchase through a distributor:

Please specify name and location of distributor:

6. How much did you spend in the 2010-2011 academic year on purchasing food that was processed locally?

7. From how many local processors do you purchase (excluding on-campus farms/gardens)?

Number from which you purchase directly:
Number from which you purchase through a distributor:
Please specify name and location of distributor:

8. Do you source any food from an on-campus farm or garden?

If yes, please provide details below.
Source:
Items procured:
Dollar amount spent:

Organic and Sustainably Produced Food

9. Please check items that you purchase that are organically grown or produced. "Organically grown or produced" can be defined accord to USDA or Quality Assurance International standards.

[ ] Vegetables
[ ] Fruits
[ ] Milk
[ ] Processed dairy products (ice cream, cheese, yogurt, butter)
[ ] Grains and beans
[ ] Meat
[ ] Poultry
[ ] Eggs
[ ] Seafood
[ ] Baked goods
[ ] Granola/cereal
[ ] Maple syrup, honey, etc.
[ ] Beverages
[ ] Sauces, spreads, hummus, salad dressing, etc.
[ ] Other. Please describe:

10. How much did you spend on organically grown or produced food in the 2010-2011 academic year?

Please note: For questions 11-14, indicate the percentage based on dollar amount spend in the 2010-2011 academic year.

11. Do you purchase cage-free/free-range eggs and/or confinement-free animal products?

If yes, please provide details below.

	PRODUCT NAME	PERCENTAGE PURCHASED
Cage-free/free-range eggs:		
Confinement-free product 1:		
Confinement-free product 2:		
Confinement-free product 3:		
Confinement-free product 4:		

12. Do you purchase any vegetarian-fed animal products?

If yes, please provide details below.

	PRODUCT NAME	PERCENTAGE PURCHASED
Vegetarian-fed product 1:		
Vegetarian-fed product 2:		
Vegetarian-fed product 3:		
Vegetarian-fed product 4:		
Vegetarian-fed product 5:		

13. Do you purchase any hormone- and antibiotic-free meat and/or dairy products?

If yes, please provide details below.

	PRODUCT NAME	PERCENTAGE PURCHASED
Hormone-free product 1:		
Hormone-free product 2:		
Hormone-free product 3:		
Hormone-free product 4:		
Hormone-free product 5:		

14. Do you purchase seafood that meets Monterey Bay Aquarium Seafood Watch guidelines and/or Marine Stewardship Council Blue Ecolabel standards?

If yes, please provide details below.

	PRODUCT NAME	PERCENTAGE PURCHASED
Seafood product 1:		
Seafood product 2:		
Seafood product 3:		
Seafood product 4:		
Seafood product 5:		

15. Do you offer specifically labeled vegan entrees on a regularly scheduled basis?

If yes, please provide the average number of labeled vegan meals offered each week.

16. Please list and give the dollar values for any other sustainably produced food items you purchase that are not included above:

PRODUCT NAME	DOLLAR AMOUNT
Other food item 1:	
Other food item 2:	
Other food item 3:	
Other food item 4:	
Other food item 5:	

Fair Trade Products

17. Do you purchase Fair Trade Certified coffee?

18. Do you purchase other Fair Trade Certified food products?

If yes, check all that apply:

[ ] Chocolate

[ ] Tea
[ ] Bananas
[ ] Other. Please describe:

Dishware and Eco-Friendly Incentives

19. If you offer disposable dishware at your dining services locations, please indicate materials used.

Check all that apply.
[ ] Plastic
[ ] Polystyrene (Styrofoam)
[ ] Post-consumer recycled content
[ ] Biodegradable/compostable
[ ] Other. Please describe:

20. Do your dining facilities offer discounts or cash incentives to individuals who use reusable dishware, bring a bag, or bring reusable containers?

If yes, please indicate items for which incentives are offered, and describe the incentives below.

DESCRIPTION

[ ] Reusable bag
[ ] Reusable dishware
[ ] Reusable mug
[ ] Reusable to-go container
[ ] Other. Please describe:

Food Composting and Waste Diversion

21. Do your dining facilities compost pre-consumer food scraps?

If yes, please provide details below.

Percentage of meals for which pre-consumer food scraps are composted:
Additional information:

22. Do your dining facilities compost post-consumer food scraps?

If yes, please provide details below.

Percentage of meals for which post-consumer composting is available:
Additional information:

23. Do your dining facilities donate excess food to a food bank, soup kitchen, or shelter?

If yes, please describe below.

24. Do your dining facilities have a trayless dining program?

If yes, please describe below.

Percentage of meals served on campus that are trayless:

Year trayless program was started:
Additional comments:

25. Please tell us about any other steps your dining facilities have taken to reduce waste.

Mark all that apply and describe.

[ ] Food waste audit or study.
[ ] Recycling used cooking oil for biodiesel production.
[ ] Removal of bottled water from all facilities operated by dining services.
[ ] Other. Please describe:

Recycling of Traditional Materials

26. Please indicate which traditional materials your dining facilities recycle. Check all that apply.
Please discuss only the materials you recycle specifically in the dining facilities. Recycling of used cooking oil for biodiesel production should be described in Question 25.

[ ] None
[ ] Aluminum
[ ] Cardboard
[ ] Glass
[ ] Paper
[ ] Plastics (all)
[ ] Plastics (some)
[ ] Other. Please list:

27. Are recycling receptacles located throughout dining locations?

28. What is the dining services' current waste-diversion rate (the percentage of recyclable/compostable waste diverted from traditional disposal)?
Please provide information specifically about your dining services' operation. If information is unavailable, leave blank. Do not use the overall rate for the campus-wide

Appendix U: Ursinus Athletic Facilities List

Back to Table of Contents

Athletics facilities, by type.

Indoor facilities	**Floy Lewis Bakes Athletics Center** • Fitness Center and Weight Room • A regulation collegiate-sized pool • Dance studio • Athletic training room • Racquetball court • 3 classrooms and an exercise lab • Locker rooms • Academic/Administrative/Coaches offices
	Helfferich Gymnasium • Basketball court • Volleyball court • Wrestling room • Gymnastics gym
	Field House • 200-meter track • Three indoor tennis courts • Three full-sized basketball courts • Two batting cages
Outdoor facilities	**Baseball Field** • Baseball diamond is unlighted – used only for day games
	Eleanor Frost Snell Alumnae Field • Artificial turf field hockey field (including lighting and an irrigation system)
	Patterson Field • This is our newly renovated artificial turf football and soccer field. This field was completed during the summer of 2011. • The field is surrounded by a newly resurfaced track. • Lights are installed at this facility and are turned on all night for campus and community runners and walkers.
	Outdoor Field Events • Our field events take place on one of our lower fields, below Patterson. We have a full complement of field event venues: pole vault, high jump, long jump, triple

	jump, discus, shot put & hammer throw
	Eleanor Frost Snell Softball Field • This is an unlit field used for day games.
	Hunsburger Woods Field • This field is located across 9th Ave. from the main campus. • Club Sports practice and potentially competition space
	Practice Fields • Wilkes Field • Lower Football Field (with lighting) • Facilities Field (the old field hockey field)
	Tennis Courts • Ursinus has eight outdoor tennis courts. • Two of the courts have lighting for night practice and/or games

Appendix V: Ursinus Green and Bear It Team Goals

Back to Table of Contents

Green and Bear It Team Goals

Area	Activity	Details
Outreach & Collaboration	Team Development	• Develop draft guidelines for a Green Team certification program. ○ Could include: purchasing carbon offsets for team travel, recycled content uniforms, "green" community service, commitment to environmentally friendly laundry detergents, net zero games, net zero seasons, etc. • Draft ideas for how what incentives might work for team competitions that relate to sustainability. • Create ideas for awards that Athletics Department could give out to seniors for "Green" service to the program.
	Game Day	Green Team members will work together to ensure that sustainability practices are in place for games. This will include: ▪ Placement of appropriate number of recycling containers at game events. ▪ Messaging during games about recycling, the Green & Bear It program, Sustainable Game Days, etc. ▪ Information Booth. Set up information tables at games to inform fans of sustainable programming in Athletics or on their particular team. ▪ Development and publication of an Athletics brochure (scan-able rather than printed).
	Outreach	Work with local school district to collaborate on recycling programs.
Education:	Resource Development	Brochure • Develop brochures about green athletics programming aimed at prospective students, alumni, other audiences. Signage • Create and post signs/posters reminding users to turn off lights, take shorter showers, use stairs, etc. (may include calories burned, energy savings, resource savings, etc). Resource list Create a resource list for the campus community about sustainability in Athletics at UC. This list should have sections on purchasing, recycling, operations, education, outreach and transportation. Each section should provide

		guidance on who to contact, what options are available, and where to find more information. For example: • Recycle used tennis balls (www.rebounces.com); • Recycle used athletic shoes (www.nikereuseashoe.com); • Donate used sporting equipment to www.goodwill.org or Play It Again Sports; • Old sporting trophies can be recycled at www.greentrophyproject.org; and • Yoga mats can be recycled at www.recycleyourmat.org.
	Fan Education	▪ Develop a program within the Athletics Department that will educate and encourage UC Bears fans to participate in energy reduction, waste reduction, and sustainability programming. ▪ Strategize what the message to fans should be, how to communicate the message, how to encourage participation.
	In house education about Sustainability programs	Educate Athletics administrators, coaches and staff on the following aspects of sustainability in athletics ○ Program overview ▪ It will be good if all Athletics staff members know about the Green Athletics program so they can talk to others about it. ▪ Having a brochure will help (online or printed). ○ Student involvement ▪ How student athletes are engaging in the sustainable athletics program. ▪ Benefits of the program to the athletes. ○ Purchasing guidelines for Athletics ▪ Recycled content paper. ▪ "Green" alternatives for athletics supplies/equipment: balls, pads, shoes, uniforms, hats, etc. ○ Promoting your green strategy with sponsors and advertisers
Mission Development		Draft a green mission statement for UC Athletics' Green & Bear It program, e.g., "In considering [Ursinus'] athletic and environmental goals, the department of athletics, through its intramural, club and varsity programs as well as through its physical facilities and interactions with the general public, works to promote a sustainable culture in all of sport."