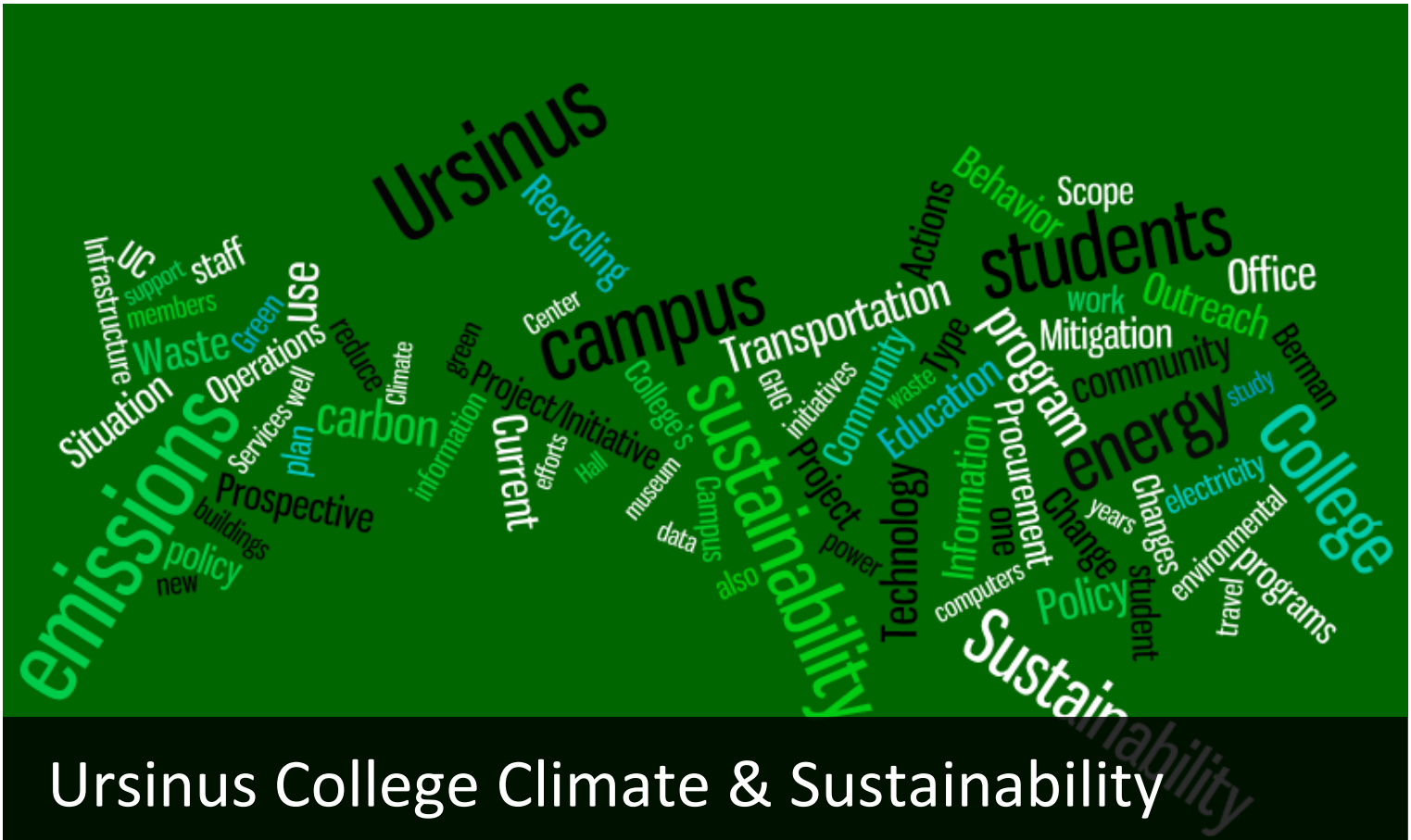

Ursinus College Climate & Sustainability Action Plan

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.

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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

Section 6: Facilities Services Department

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This section of the CSAP addresses the wide variety of areas handled under the Facilities Services Department at Ursinus. There are fifteen chapters that fall under this section. They are:

1. Administration
2. Office of Sustainability
3. Heat Plant and Steam Distribution System
4. Electricity and Chiller Plant
5. Water, Waste and Recycling
6. Landscape and Grounds
7. Renovations and New Construction
8. Building Maintenance and Upgrades
9. Transportation and Fleet
10. Science Labs
11. Copy Center
12. Mail Services
13. Housekeeping
14. Dining Services
15. Bookstore

The vast majority of our GHG emission reductions will come from our actions in the area of mitigation. Actions will fall into areas that mirror the organization of the Facilities Services Department: heat plant and steam distribution system, chiller plant, electricity, waste and recycling, campus planning, landscape and grounds, new construction and renovations, science labs, existing buildings-construction, maintenance of existing buildings, fleet, copy center, mail services, and housekeeping. Other areas that fall under the Facilities Services Department, such as dining services and the bookstore, are addressed separately as they have outside administrative leadership. There is some overlap in these sections of the CSAP, however, as each area has a different set of goals, it is appropriate to separate these areas for ease of use of the plan.

The College is fortunate to have so many supporters of reducing our energy consumption within the campus community. The Facilities Services Department has been instrumental to our success to date. Their continued leadership will be critical to meeting our goals.

The campus is situated in an area where we have access to local suppliers for many of the things we purchase. This ranges from bicycles to solar power.

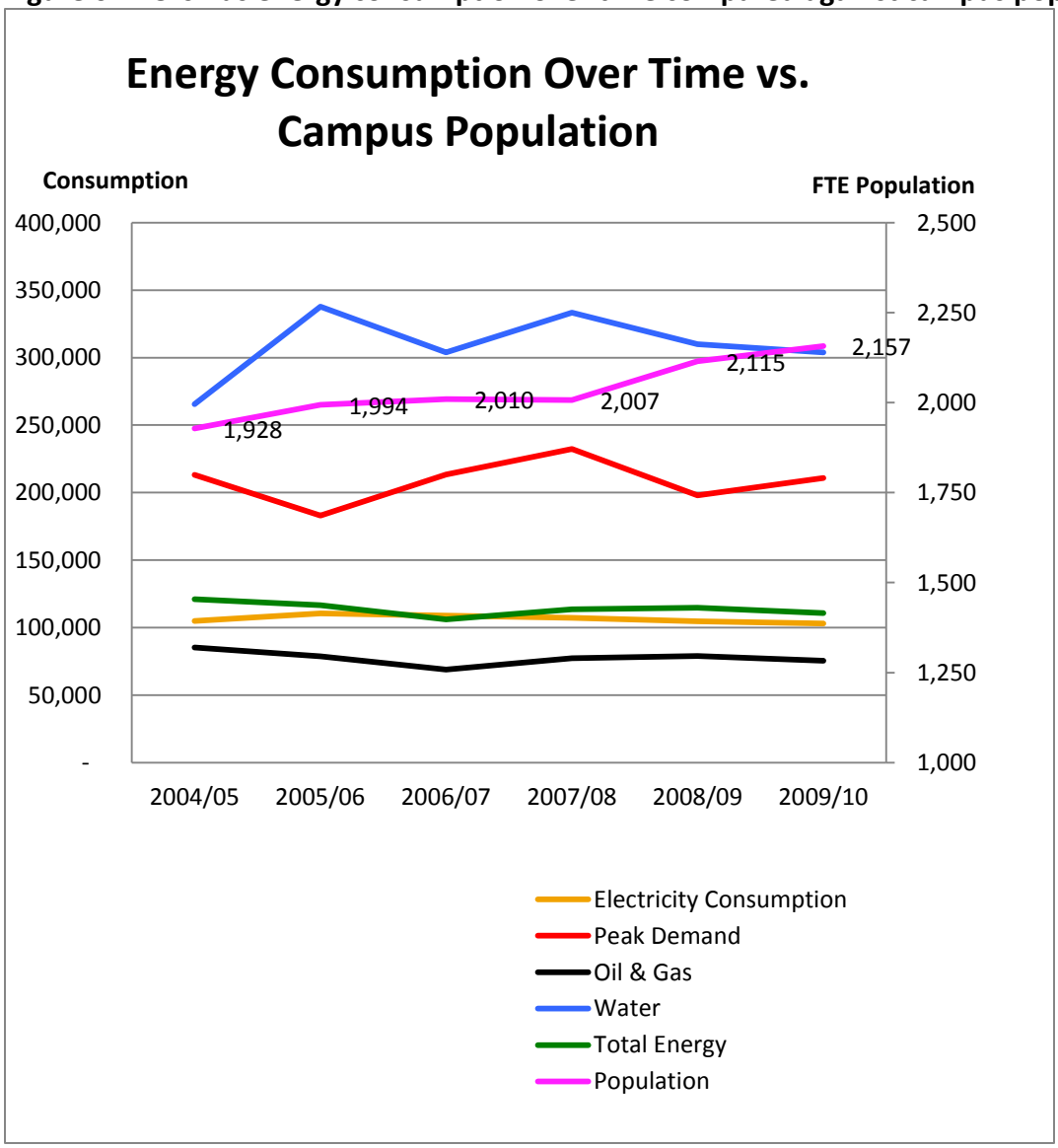
When we built the Kaleidoscope Theatre, the decision was made to change the campus experience and the interior of campus was transformed into an area with walkways and open lawn. Thus, in the past ten years, our campus has seen the removal of parking spaces and a road that went through the middle of the back of campus. We also have trails that run all over campus and can be used for bicycle as well as pedestrian traffic.

The following fifteen chapters of the CSAP include fifteen campus areas that fall under the administration of the Facilities Services Department.

Facilities Services Department - Overview

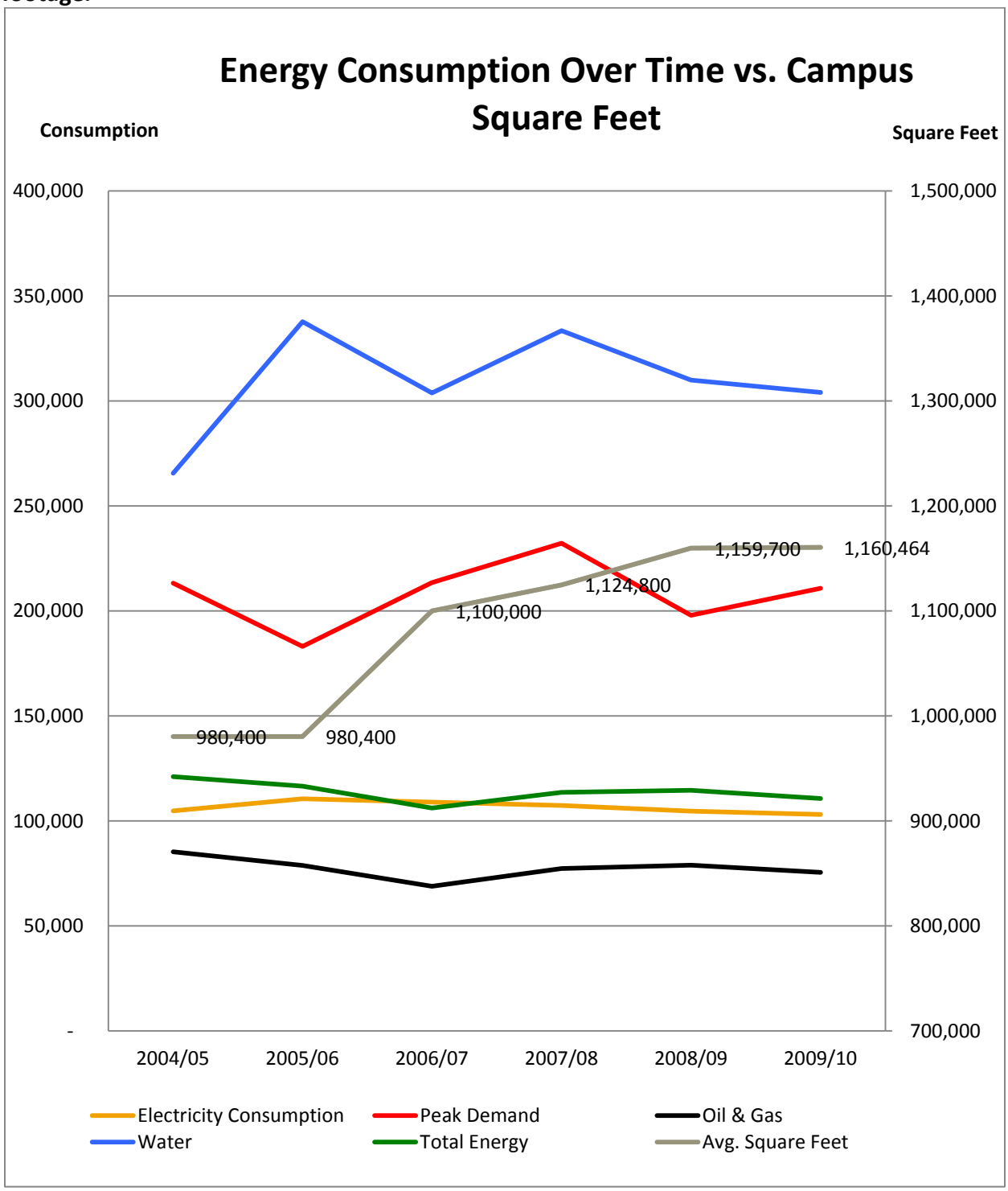
The charts below show that while Ursinus College's student population and building square footage have both increased, our electricity, heating/cooling, and water usage have all dropped. This is due to the conservation measures that have been put into place by our Facilities Services Department. This is an illustration of how effective these measures have been at maintaining a comfortable environment in the face of increasing space and usage demands.

Figure 6-1: Ursinus energy consumption over time compared against campus population.



Feick, UC Facilities Services, 2010.

Figure 6-2: Ursinus energy consumption over time compared against overall building square footage.



Feick, UC Facilities Services, 2010.

Facilities – Chapter 6.1: Administration

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For the purposes of this document, Facilities Services Administration refers to the office of Facilities Services and the areas that are managed within that office that do not have a separate section in this CSAP, including the following areas: facilities-related purchasing, training, oversight, bookkeeping/data entry, website design/management, awareness programs, and grants, among others.

6.1 Current: Facilities Services Administration

The table below shows the mitigation or sustainability projects and/or initiatives that have already or currently are taking place within this administrative unit of the College. These initiatives are broken into eight areas. These areas are further delineated by type of action.

Table 6.1-1: Mitigation and Sustainability projects & initiatives – Facilities Services Administration

Type of Project	Mitigation Project/Initiative: Facilities Services Administration
Policy	Contracting • UC contracts with a composting facility that takes compostable utensils, plates, bowls, etc. This composting facility also provide the College with detailed information on how much waste we are composting and provide the College with additional services, such as conducting tours for classes or groups.
Infrastructure	None at this time.
Operations	Grants • Facilities Services, with the Environmental Studies Department, applied for a grant to reclaim water from our cooling tower. We were not awarded the grant. • Facilities Services, with the Environmental Studies Department, applied for and received a grant to update lights in one of our large parking lots and all of our campus paths to LED. Bookkeeping • Facilities Services staff members maintain files on all energy-related expenditures such that they are available for use when conducting the annual GHG inventory. These files are reviewed regularly and discussed at monthly meetings to identify

	where problems might exist.
Procurement	Flooring • Vinyl flooring is purchased instead of carpet (which is thrown out annually) when possible. • Facilities Services watches for and researches greener flooring products on the market. We try them in a limited capacity after we have verified other institutions have used them successfully. Furniture • Facilities Services purchases long-lasting and low-impact furnishings for our student residences. The furniture that we provide in our residences consists of solid wood desks and metal/wood bed frames. Ursinus also purchases mostly used office furniture from a local supplier. • Ursinus uses the Institution Recycling Network (IRN) to haul away used, surplus, campus furniture for shipment to third-world countries. Unusable, old metal furniture is recycled. Laundry • Facilities Services was instrumental in increasing the efficiency of our laundry by purchasing machines that use two-thirds less energy and water than our old machines. Lighting • Local purchasing (e.g., lamp posts were bought locally - Spring City) • Facilities Services has standardized to LED parking lot and path lighting for all new installations. Science Labs • Facilities Services works with our faculty in the natural sciences to plan and implement energy efficient updates in our science buildings, specifically our labs (e.g., fume hoods). Windows • Energy efficient windows purchased (as needed/able). This lowers the cost of heating and cooling buildings on campus. Printers • Printers replaced to be more efficient. Recycled Paper • Recycled paper for office & printer use and for business cards Cleaning • Our housekeeping contractor uses almost exclusively green cleaning products, chemicals, etc.
IT Changes	Work Orders • Work orders are placed online, eliminating the need for paper submissions.
Behavior Change & Ed.	Energy Dashboard • We are in the end stages of developing and going live with an Energy Dashboard.

	This will enable us to keep close track of our building electricity use via the internet. Raising Awareness • Facilities Services participated in the College's first annual Sustainability Week by creating a week-long Scavenger Hunt for students. • FSD occasionally sends out emails about energy usage and why they are doing things (i.e., turning off parking lot lights in the summer, etc.). Strategy • Facilities Services works with The OS to develop strategies to educate and influence student behavior with regard to heating/cooling, electricity, and water usage on campus. Training • Facilities Services pays for some employees to attend conferences and workshops regarding sustainability topics such as stormwater management, solar electricity, and sustainable grounds maintenance.
Waste & Recycling	Training • Facilities Services holds regular training sessions for its employees on what can be recycled on campus and how recycling should be handled.
Transportation	• When practical, UC purchases hybrid campus vehicles. We currently have two hybrid Admissions vehicles. Ursinus also purchases diesel equipment and trucks, where possible, for grounds maintenance. These are filled from the on-site bio diesel tank.
Community Outreach	None at this time

6.1 Goals: Facilities Services: Administration

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

The table below shows the amounts that UC will need to reduce our emissions in each area to meet our 2020 goal, if we make equal reductions in all areas. Stationary combustion, purchased electricity and commuting are the three largest emissions areas. The college is currently reviewing options for replacing the boiler plant and is considering options for alternative fuel electricity sourcing. Actions in these two areas alone could account for much of our GHG emissions reductions. Commuting is a more complicated issue to address because of the location of the college in a suburban area with limited access to public transportation. The faculty and staff live throughout the Philadelphia metropolitan area and beyond and carpooling will likely be of limited efficacy. However, through awareness and incentive programs we hope

to encourage members of the UC community to invest in energy efficient transportation options, such as biking, car pooling and purchasing hybrid automobiles.

Source of Emissions	Metric Tons of eCO_2	25% reduction
Stationary Combustion	4,644	**3,483**
Mobile Combustion	67	**50**
Fugitive Emissions	273	**205**
Purchased Electricity	1,133	**850**
Commuting	529	**397**
Air Travel	5	**4**
Solid Waste	132	**99**
Total Emissions	7,063	**5,297**

Goal 2: Account for our GHG emissions more accurately.

Create/modify our information gathering system throughout the college to allow for easy, accurate accounting of our greenhouse gas emissions. We particularly need to work on our ability to keep track of commuting information and air travel.

Goal 3: Set up review and modification process for Facilities Services operations.

Create/improve our review process to develop best practices for our Facilities Services operations with the goal being environmental sensitivity and minimal environmental impact as we work to lower UC's direct and indirect GHG emissions.

6.1 PA: Facilities Services: Administration - Prospective Actions

The following prospective actions are suggestions for consideration. It is assumed for the purposes of this document that any on-going activities that are listed above in the "current situation" section will continue. As it is difficult to see far in advance what the needs and constraints on the College will be, there are a wide variety of options presented here to consider. Some may be viable options for immediate implementation; some may seem impossible to implement in the current situation or foreseeable future, but may be viable at a later date depending on changing circumstances. These prospective actions will be reviewed periodically by staff in our Office of Sustainability (OS) and with relevant parties in the affected areas of the College.

6.1 PA-1: Facilities Services Administration – Prospective Actions: Policy

Immediate (2013-2018)

Energy and Water Policy

- Formalize a Campus Energy and Water Policy. This policy should include guidelines on energy and water use, procurement of items that use energy (computers, office equipment, appliances, etc.), and procurement of items through which water flows (taps, aerators, shower heads, toilets, etc.). Ideally this policy would set standards by which the College makes decisions about operations.
    - Work with IT to make Energy Star rated computers a requirement. They have become the industry standard and the practice of college purchasing.

Fleet Vehicle Policy

- Update the Fleet Vehicle Policy to include information about how to drive cars for fuel efficiency. For example:
    - Do not rev the engine.
    - Avoid aggressive driving, including "jack rabbit" starts and hard braking (this can reduce fuel consumption by up to 40%).
    - Do not idle the engine.

  - Check the tire pressure.
  - Use the cruise control when driving on un-crowded highways.
- Amend the Fleet Vehicle Policy to encourage the purchase of fuel efficient (if not Hybrid) vehicles when purchasing or leasing vehicles.

Responsible Consumption

- Consider setting low consumption targets for all departments. E.g., 25% reduction of office paper used by 2020, 50% reduction of office paper used by 2030, etc.

Energy Goals

- Energy reduction goals. Collaborate with the Office of Sustainability to work with all departments (academic and non-academic) to determine energy use reduction goals.

Mid-Term (2019-2030)

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.1 PA-2: Facilities Services Administration – Prospective Actions: Internal Operations

Immediate (2013-2018)

Office Guidelines

- Whenever possible and feasible, incorporate office-wide practices suggested in the Sustainable Office Guidelines into day-to-day operations (Appendix F).
- Encourage offices, departments and individual staff and faculty members to participate in OS green certification programs, once developed.

Event Guidelines

- When possible and feasible, incorporate items from the Sustainable Event Guidelines into event planning. (Appendix G)

Mid-Term (2019-2030)

Alternative Energy

- Explore working with local farms to collaborate on a PPA for solar energy on a larger scale. This would require the right set of circumstances to make economic sense.

Energy Performance Contracting

- Set energy performance standards for contractors, and only contract with those who can demonstrate that they can meet those standards.

Residential Cost Analysis

- Undertake a cost analysis of the long term use of residential houses vs. new dorms. The most energy efficient building is the one already built. Building residential halls to replace houses would generate far more carbon that the efficiency would offset. Therefore we would need to determine if there are any situations in which this would make sense. For example, if our student population grew and we had to build a new dorm to house students; if we wanted to sell some of our properties to support the wider community in having less tax-free land in the town as well as having more properties that could function as a downtown space to support students.

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.1 PA-3: Facilities Services Administration – Prospective Actions: Procurement

Immediate (2013-2018)

Accounting

- Ensure that capital expenditures incorporate energy costs and that savings from energy efficiency measures are taken into account. For some heating and cooling investments, payback is achieved in around three years.

Purchasing Guidelines

- Use the Green Purchasing Guidelines in Appendix H to help guide purchasing decisions.

Residential Buildings

- Work to adjust the procurement process so that in addition to considering cost, material content is also important to decisions about purchasing for residential areas with the goal being to purchase products made from materials that last longer, have fewer or no health concerns, and that have more positive environmental impacts. Products to consider:
    - Beds, desks, chairs, sofas, etc. for residential buildings that is made of and/or contains sustainable materials, including but not limited to fabrics with recycled and recyclable content, non-hazardous materials (e.g., formaldehyde-free chairs, sofas, etc.), solid wooden furniture made from domestic wood produced in North America from renewable forests, etc.
    - Mattresses (made without formaldehyde).
    - Floor mats (recycled).
    - Shower curtains (non-vinyl).
- Consider prioritizing the purchase of furniture and bedding that is produced locally (e.g., mattresses made by a Pottstown manufacturer; see http://www.magicsleeper.net/).

Responsible Consumption

- Reduce use of products wherever possible and implement sustainability practices in everyday operations. Develop a list of suggestions to this end.

Waste Electrical and Electronic Equipment

- When electronic equipment is purchased, ensure that the suppliers specify in the contract how these items will be disposed of at the end of their life cycle.

Dining Hall

- Appliances. Ensure that all newly-purchased appliances are Energy Star qualified.
- Food coolers. As the current equipment ages out, we will explore new options for more energy-efficient models with daytime thermal barriers for open food coolers. Transition to non-ozone-depleting refrigerants.
- Water Saving. Acquire a low-flow pre-rinse spray valve for use in the process of washing dishes in Wismer.

Mid-Term (2019-2030)

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.1 PA-4: Facilities Services Administration – Prospective Actions: Information Technology Changes

Immediate (2013-2018)

Email

- Consider adopting the use of a footer message such as "Please consider the environment before printing this e-mail." in all emails.

Mid-Term (2019-2030)

Online Records & Tracking

- Create a system in which we can update records online for ACUPCC reporting and GHG inventories. This system could be one in which staff members who are responsible for various data points could have access to insert their specific data. Clean Air-Cool Planet, the organization that created the software that UC uses for collecting GHG emissions data, is working on this sort of software.

6.1 PA-5: Facilities Services Administration – Prospective Actions: Behavior Change & Education

Immediate (2013-2018)

Accessibility

- Academics: Work with the OS to put practices into place that will make it viable and appealing for faculty members to incorporate sustainability and climate change concepts into their classes and offices. For example, increase signage around campus, provide educational materials on buildings where sustainability efforts are being made, communicate with faculty about what is happening on campus so they are aware.

Own Sustainability

- Work to make sustainability part of the UC brand. State the College's values and approach to sustainability up front in communications with prospective students, parents, and the press. Own sustainability at the College and wear it proudly.
- Expect staff to fall in line with the College's policies, practices, and expectations around Sustainability.

Sustainability Action List

- 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.

Water

- Meter to the lowest unit possible for real time feedback to residents and building users.

Energy Audits

- Conduct periodic energy audits on all buildings, including residence halls and houses. Address major sources of energy use/loss through education or conservation measures.

- Assess student satisfaction and knowledge about energy efficiency of various facilities annually.

Washers & Dryers

- Post information on or near each set of washers & dryers that contains information on how to save water and gas/electricity. This information should also be provided to the Residence Life staff to include in their living guide.

Website

- Periodically and regularly update the Facilities Services website so that site visitors can learn more about the campus' consumption. Raise awareness about resource use on campus by providing information on water, electricity, oil and gas usage on campus to the community.
- Update with link to the OS website
- Periodically and regularly update the website, include a link to a page that highlights actions Facilities Services has taken to lower the College's GHG emissions.
- Create and include link to a "Being a greener Community Member" website to encourage participation: this could be a website that has information on saving energy on campus. Cross post with OS's website.

Mid-Term (2019-2030)

Water metering

- If we are able to install water meters at the building level, tie this information into our online dashboard.

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.1 PA-6: Facilities Services Administration – Prospective Actions: Waste & Recycling

Immediate (2013-2018)

Records

- Coordinate with The OS staff on ACUPCC and GHG inventory submission requirements to ensure that we are keeping the data in a way that will enable us to track our waste reductions.

Mid-Term (2019-2030)

Waste Water Reduction Targets

- Set targets for waste water reduction and work toward those targets.

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.1 PA-7: Facilities Services Administration – Prospective Actions: Transportation

There are currently no identified Prospective Actions in this area.

Immediate (2013-2018)

Mid-Term (2019-2030)

6.1 PA-8: Facilities Services Administration – Prospective Actions: Community Outreach

Immediate (2013-2018)

Signage

- Post signage on the College and Borough of Collegeville websites about the College's policies that affect the community.

Community Policy Initiatives

- Work with the Boroughs of Collegeville and Trappe to coordinate on policy initiatives on which all three (or the College and one of the boroughs) can work together.

Mid-Term (2019-2030)

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.1 PA-9: Facilities Services Administration – Prospective Actions: Infrastructure

Immediate (2013-2018)

There are currently no identified Prospective Actions in this area.

Mid-Term (2019-2030)

Water

- Set up water metering on Ursinus' main water-using buildings. These would include the academic buildings with science labs, the Bakes Center, Wismer, and the residence halls.

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

Facilities – Chapter 6.2: Office of Sustainability

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The Ursinus College Office of Sustainability (OS) was created in 2010. Staff includes one full time and one part-time staff member work in the Office of Sustainability. The OS has a dual focus on campus: student programming that supports achievement and sustainable operations (including Facilities Services, academics, and administrative aspects of the College's operations).

The OS advises environmentally-oriented student groups on campus that work throughout campus to help promote sustainability and environmentally-minded programming. These groups include:

- **UCGreen Sustainability Fellows**. This program is a student advisory program designed to train a relatively small number of students to be effective environmental and sustainability action leaders. It supports the College's strategic plan, Priority Two, Recommendation 8: Create a culture of service and community engagement. These students receive one-on-one mentoring in the area of their fellowship as well as general professional development and leadership skills development. These students are expected to educate other students and lead activities and events. They also present their work at the College's Celebration of Student Achievement (COSA). Students who are chosen to be UCGreen Sustainability Fellows run sustainability projects that are supported by the Office of Sustainability. These are positions with requirements for projects and reporting. Student Fellows tasks vary from program coordination to specific task and goal oriented projects. Examples of program coordination include but are not limited to UCGreen Sustainability Fellow positions dedicated to the Bikeshare Program, the Move-In Program, the Sustainable Move-Out Program, the EcoREPs program, and more. Positions such as website management, media and communications and recycling are much more task oriented positions.
- **UC Bikeshare**. This student run program serves over 150 students each academic year with 16 bikes that roll over 100,000 miles annually. Students have the opportunity to act as unpaid managers and mechanics for this program, with training built into the program through the UCGreen Sustainability Fellows Program. This program also hosts multiple ride events and mechanics workshops.
- **Ursinus College Environmental Action (UCEA)** This is a student organization that helps to organize environmental initiatives across campus, while also volunteering time off campus for environmental stewardship projects and opportunities. UCEA events in the past include: Owl banding, rock climbing, steam clean ups, mentoring projects at schools, planning earth day, and much more.

Office staff members are responsible for writing, updating, and assisting the College with implementation of the UC Climate and Sustainability Action Plan. Within the OS, implementation of the CSAP is undertaken in both the student and the administrative arenas. Though our staff is small (two people currently) we work across campus on all manner of projects. Staff members encourage student achievement and professional development through UCGreen Sustainability Fellows leadership program. Staff members coordinate and/or supervise student programs related to sustainability and the environment, including but not limited to recycling, composting, Bikeshare, student groups, and more. Staff also collaborate with various stakeholders across the College to collect information for the College's Greenhouse Gas (GHG) Inventory and coordinate various programs/projects. OS programs and events aim to increase awareness and involvement with sustainability on campus.

The OS offers green tours of campus. These tours include stops at the following locations:

- **Bikeshare Bikes.** This program began as a student initiative in 2009. It now provides 16 bikes of various types for the use of Ursinus community members. The program provides bikes, helmets, and long distance bike packs. Training sessions are available for those interested in learning about bicycle maintenance and repair.
- **Ursinus Organic Farm**. This farm began in 2004 as a student research project in ENV-100, which then became a Summer Fellows project. The project established a garden on 2.7 acre plot of land across from the main campus. Under the care of a number of student farm directors (each overseen by environmental studies faculty), it has grown to include a large growing area for seasonal vegetables & fruits, a fruit tree orchard, bees, and most recently, chickens. The farm offers students and faculty educational and research opportunities, locally grown food, partnerships with local non-profits, leadership and work opportunities, and has a student "service hours" component.
- **Berman Art Museum Green Roof & Addition (built to LEED silver standards).** In the spring of 2010 an addition was built onto the Berman Museum of Art, built to LEED silver standards with a constructed green roof on the addition. Students, faculty and staff helped to plant the green roof in the Spring of 2010. This is the first of several green roofs the feasibility of which has been explored on the campus. The green roof offers educational and research opportunities for the College community, while also offering students a place to study and enjoy the benefits of a green roof.
- **Floy Lewis Bakes Center.** This part of the tour takes people past the Athletic Fields where things like Recycling Bins show the schools dedication to waste minimization. The tour also goes past the Floy Lewis Bakes Center and talks about the many energy saving updates the school has made to this building's lighting controls.
- **Composting & Recycling Program.** The tour includes stops by the different types of recycling bins that are available on campus. The tour also shows the various waste disposal locations for composting, recycling and cardboard, including a natural leaf composting site on campus.

- **Naturalized storm water basin (the Ursinus "constructed wetland").** This was a student research project in an environmental studies class that subsequently became a Summer Fellows project in 2004. Planning took eighteen months and the construction was completed in 2007. The basin provides the community with educational and research opportunities around a natural storm water filtration system. It also showcases a prime example of student research and achievement through applied learning.

There have been a number of sustainability-related events on campus over the past number of years, running in size and scope from large and broad to small and narrow in scope. In 2008, the campus hosted a Focus the Nation Climate Change Conference; in 2011 we held Sustainability Week (which included a panel discussion in the Berman Museum, a sustainable football game, bike rides, and scavenger hunts); and we have hosted Earth Day/Week celebrations for almost a decade (this is run by UCEA, one of our student groups). The OS staff members are available to speak about Environmental Studies/ Sustainability-related topics in academic classes, at admissions events, student/parent orientations, with dorm RA's, at alumni events, on green tours, etc. The Office also maintains web & Facebook pages and a Twitter account that are publicly available. Finally, we have produced a newsletter for the Office of Sustainability; this was originally produced by staff and has been picked up by our UCGreen Sustainability Fellows.

A large part of what the OS staff are involved in is necessarily centered on changing student, staff and faculty behaviors. 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 in regards to sustainability. 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.

6.2 Current: Office of Sustainability

The table below shows the mitigation or sustainability projects and/or initiatives that have already or currently are taking place within this administrative unit of the College. These initiatives are broken into eight areas. These areas are further delineated by type of action.

Table 6.2-1: Sustainability projects & initiatives – Office of Sustainability.

Type of Project	Sustainability Project/Initiative: Office of Sustainability
Policy	
Operations	OS staff members undertake all operations with sustainability as an organizing principle. These operations include: • Developing the overall campus sustainability program; • Mentoring and overseeing the UCGreen Sustainability Fellows program; • Collaborating with a variety of offices on campus, including Facilities Services; • Investigating sustainable solutions to common office/student life issues (paper use, transportation, recycling, etc.) • Educating the campus community about sustainability; • Undertaking the campus' GHG inventory; • Organizing events; • Administering programs; • Conducting tours; • Running a recycling/waste audit; Paperless • Whenever possible, we use online filing, resources, communication, storage, and document exchange. This saves money on paper, printer ink and energy use as well as reducing the need for physical storage space.
Procurement	None at this time
IT Changes	Website • The Office of Sustainability website has been created and overhauled with an emphasis on ease of use and navigability. Our goal with our website is to answer questions and provide information for current and future students, alumni, the campus community and the community at large. GHG Inventory • We are working with various departments on campus to increase the digital accessibility of information for our annual GHG inventory. Sustainability Presence • We are working with departments and offices across campus to increase the presence of sustainability on their various websites so that the College as a whole

	presents sustainability as something that is part of our image.
Behavior Change & Ed.	Presentations • Present information about the OS and student opportunities to parents of incoming students during orientation • Host orientation presentations for RA's twice a year on various sustainability programs and sustainable living • Visit Environmental Studies classes to discuss the College's participation in the ACUPCC. • Visit Environmental Studies courses to discuss the OS's UCGreen programs • Bikeshare: Present a once-a-semester bike maintenance workshop to learn how to tune up your own bike. Flyers • Create flyers around a variety of topics, including recycling and campus sustainability events. Events • Sustainability Week 2011: Organize and coordinate week of events including: o Residence Life held a recycled art contest in Fall 2011 to increase awareness. o The Berman Museum organized a panel discussion on sustainable themes in art. o Facilities Services held a sustainability-oriented scavenger hunt. o Athletics Sustainable Game Day. We held our first Sustainable Game Day event in the fall of 2011. We plan to hold three per year. This event aims to raise awareness about sustainability practices on campus, including using tap water instead of bottled, recycling and composting. o Our student environmental organization, UCEA, held a trash can makeover. They collected recyclables from trash cans and recycled them. This was published on their Facebook page. • Clean Green Carnival: Help UC Recyclemaniacs group coordinate and host at least one event per year as a part of the national Recyclemania competition • Homecoming T-Shirt Swap: Coordinate with the Alumni Relations and Development Offices to host at this event. • Sustainability Orientation: hold orientation sessions for RA's and incoming first year students, as well as all students involved in OS programing (i.e. UCGreen Sustainability Fellows, EcoReps). • Capstone: collaborate with the Department of Environmental Studies on Capstone days to educate interested incoming first year students on how to get involved with sustainability initiatives through the OS. • BikeShare Events: coordinate and supervise UC BikeShare fellows to organize events throughout the year that encourage involvement and participation in the UC BikeShare program. Events include Mechanic Mondays, Membership Drives, Staff Rides, etc. • Volunteer Picnic: organize a volunteer picnic at the end of the academic year to thank all of the students, staff and faculty for all of their hard work and collaboration on the many projects and programs that are run through the OS. Signage • Recycling bin labels have been updated over the years to increase awareness and

	clarity of what can and cannot be recycled on campus. Signage and flyers have also been generated by OS staff, student workers and UC Recyclemaniac members to be hung above and around recycling bins across campus to achieve this same goal. • Bins for UCompost have been labeled and continue to be redesigned to encourage residential composting and reduce contamination in food waste collection buckets within these participating buildings. Flyers have also been generated and edited over the years to communicate the goals of UCompost and general composting awareness on campus. • The OS works with academic departments and classes to ensure environmental and sustainability awareness flyers are well informed and reflective of our sustainability practices on campus. Survey • Our student environmental organization, UCEA, did a recycling survey to determine impediments to the success of our programming.
Waste & Recycling	Campus Programs • **Sustainable Move-Out**: This initiative encourages students to donate the things that they no longer want into a free-cycle system where items are exchanged by UC community members, donated to local social justice organizations for reuse, recycling or repurposing. The program runs for approximately two weeks and removes several loads of reusable items from our waste stream. • **Move-In**: This initiative runs at the beginning of the fall semester and handles the waste (trash and recyclables) associated with incoming students in the fall semester. We typically remove a medium sized container truck load of Styrofoam from our waste stream during this event, and dumpster is filled with cardboard to be recycled. Bamboo packaging is also collected to be composted. The OS has also been working with Tech Support to eliminate the printer portion of their first year program, which would eliminate the majority of the Styrofoam collected during this Move In initiative. Tech Support is seeking to eliminate printers as of the Fall of 2013. • **Recyclemania**: We have participated for three years, with some success, in this national recycling competition that promotes behavior change. Starting in 2012, the program was overseen by the OS staff. A group of students (UC Recyclemaniacs) was recruited, organized and trained to run a more successful Recyclemania campaign. • **Take Back the Tap**: The OS supervises the Take Back the Tap campaign through our UCGreen Sustainability Fellows program. A Take Back the Tap UCGreen Sustainability Fellow helps to coordinate this initiative which aims to increase water resource awareness and to increase the use of tap water instead of bottled water. This effort includes a variety of outreach efforts. Waste Audit • This was completed by a senior career study student from Perkiomen Valley High School that helps us track waste data from the past 3 years.
Transportation	BikeShare Program • This program is overseen by the OS and is run by several UCGreen Sustainability Fellows. We have 16 bicycles that are used by over 150 student members each year. Carbon Offsets • We have purchased carbon offsets for conference travel.

Community Outreach	Community Events • We have groups that have participated in the following community events: The Perkiomen Watershed Conservancy's Annual Stream Clean Up, the Phoenixville Green Team and Seventh Wonder co-sponsored French Creek Cleanup, the Community Partnership Parade, the Butterfly Mentorship Program (UCEA), the Camphill Farms Partnership (UCEA). • Annual Community Parade/Hometown Get Together: coordinate with the Berman Museum of Art on this community event. Foster the participation of OS-affiliated groups. • Students are also recruited by the OS to volunteer at a local recycling facility in Pottstown PA, Recycling Services Incorporated. Sponsoring trips for those students to volunteer their time at this recycling center. Public Campus Events • We have hosted events that draw either from our local community or from alumni (or both) that have a sustainability component. These include: Sustainability Game Day (part of the OS's Sustainability Week) and a T-shirt swap (old t-shirts donated for new ones) for attendees at Homecoming. Internship • OS staff oversaw a local high school student for a month-long internship. This was a volunteer position for the student, who got high school credit for performing the job.

6.2 Goals: Office of Sustainability

Goal 1: Work to develop a green culture on the Ursinus Campus. This will be slower to evolve, but will be influenced by the continued evolution of Sustainability programs. As we increase the presence of Sustainability on campus, people will become more aware, and we hope more involved.

Goal 2: 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.

Goal 3: 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 that will benefit all parties.

Goal 4: Act as a center for sustainability information and activity for the Collegeville community.

Goal 5: Work to integrate sustainability as a concept into the fabric of the College. 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.

6.2 PA: Office of Sustainability - Prospective Actions

The following prospective actions are suggestions for consideration. It is assumed for the purposes of this document that any on-going activities that are listed above in the "current situation" section will continue. As it is difficult to see far in advance what the needs and constraints on the College will be, there are a wide variety of options presented here to consider. Some may be viable options for immediate implementation; some may seem impossible to implement in the current situation or foreseeable future, but may be viable at a later date depending on changing circumstances. These prospective actions will be reviewed periodically by staff in our Office of Sustainability (OS) and with relevant parties in the affected areas of the College.

6.2 PA-1: Office of Sustainability – Prospective Actions: Policy

Immediate (2013-2018)

Mission Statement

- Work with Administration officials to create a "green" mission statement for the College.
- Work with various administrative units and departments to investigate the possibility of writing a green mission statement for those departments that includes: procurement, operations, transportation, education, waste reduction and recycling.

Green Pledge

- Develop a pledge to demonstrate the College's commitment to preserving the environment. Encourage students, faculty and staff to share in this commitment in their everyday actions by signing the pledge.

Responsible Consumption

- Consider setting low consumption targets for all departments. E.g., 25% reduction of office paper used by 2020, 50% reduction of office paper used by 2030, etc.

Sustainability Committee

- Work to create a sustainability committee and a structure for meetings, reporting, and purpose. The committee would work collaboratively to ensure that the CSAP is being implemented and would involve students, faculty, staff and administration in decision-making.
- Its responsibilities could include:
- Providing the President with recommendations for future initiatives;
- Selecting the winner of an annual Sustainability Grant (if approved);
- Selecting the theme of Sustainability Week;
- Coordinating campus wide outreach;
- Establishing student-faculty leadership teams for sustainability and environmental stewardship innovation
- Working with faculty on curriculum development.

Mid-Term (2019-2030)

Green Fund

- Work with various campus entities to establish a self-funded research fund for students to pursue sustainability and energy saving programs on the campus. The projects would be required to save energy (in an accountable way) and the savings from the projects would then be channeled back into the research fund pot.

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.

- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.2 PA-2: Office of Sustainability – Prospective Actions: Internal Operations

Immediate (2013-2018)

Data Collection

- Collect baseline data for campus consumption, purchasing, and use of consumables, including paper, electricity, plastic bottles, etc.
- Set reduction targets for those consumables.
- Conduct surveys to determine faculty and staff engagement in sustainability efforts as well as to catalog sustainability-related research and courses.

Academic Sustainability Programming

- Determine how many academic departments already incorporate sustainability concepts in courses and work to increase the number of departments by 50%.

Communication

- Identify effective sustainable solutions to the issue of communicating effectively with students. Share success stories.

Events

- Run all OS sponsored events as "green" events with a low or zero carbon footprint, including food, plates, napkins, utensils, invitations, decorations, low or no waste events, etc.

Climate and Sustainability Action Plan Implementation

- Design an online tracking program that will allow the various College departments to track their progress on CSAP implementation

Green Fee

- Survey students about their perceptions of implementing a $2-5/semester student "Green Fee".
- If this fee was instituted, consider pooling this fee to fund sustainability projects on campus or potentially fund a student research program.
- Create a grant-making committee of students, faculty and staff who select projects to fund.

Office Guidelines

- Whenever possible and feasible, incorporate office-wide practices suggested in the Sustainable Office Guidelines into day-to-day operations (Appendix F).
- Encourage offices, departments and individual staff and faculty members to participate in OS green certification programs, once developed.

Event Guidelines

- When possible and feasible, incorporate items from the Sustainable Event Guidelines into event planning. (Appendix G)

Sustainability Websites - Content

- Work with various campus departments to create content about sustainability initiatives within each respective department that is accessible from a link on their main website landing pages.

Building Maintenance

- Work with Facilities Services staff to create a list of sustainable or "green" materials to use for day-to-day maintenance jobs. This list should cover the types of materials that are commonly used.

Mid-Term (2019-2030)

Energy Goals

- Work with various campus administrative units and departments and with Facilities Services to create goals for lowering the campus energy usage.

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.2 PA-3: Office of Sustainability – Prospective Actions: Procurement

Immediate (2013-2018)

Purchasing Guidelines

- Use the Green Purchasing Guidelines in Appendix H to help guide purchasing decisions.

Purchasing Policy

- Work with Business Office staff to develop a set of green purchasing guidelines that can be suggested to the campus community.
- Work with Business Office staff to update the web interface for purchasing so that green purchasing is facilitated.

Mid-Term (2019-2030)

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.2 PA-4: Office of Sustainability – Prospective Actions: Information Technology Changes

Immediate (2013-2018)

LibGuides

- Work with librarians to set up "LibGuides," in specific areas of interest or study within sustainability, such as Climate Change, Campus Sustainability; Recycling;

Waste Stream; Food; etc.. Embed these tools into online resources, such as websites or Facebook or send around as links.

Data Tracking

- Set up an Excel spreadsheet that tracks commuting distances for all faculty and staff
- Investigate the possibility of setting up an Excel worksheet that, when opened, automatically updates the GHG emissions data from Business office files on College-related air, car and train travel (including mileage information)

Email

- Consider adopting the use of a footer message such as "Please consider the environment before printing this e-mail." in all emails.

Information Gathering

- Identify various projects on which to gather data for possible implementation. Collaborate with staff in Facilities Services to prioritize.
- Create and implement an online survey of faculty and staff to determine commute distances, frequency, preferences for incentive programs, etc.
- Estimate how much energy UC would save by turning off monitors and putting computers to sleep when not in use.
- Create a storehouse of on-campus sustainability research and host it on the OS website.

Information Technology

- Ask the Library staff to create an institutional repository on sustainability.
- Ask colleagues, faculty and others to deposit their works, research, presentations and other sustainability-related materials in the College's Institutional Repository on Sustainability.

EcoReps

- Consider creating a ResLife Goes Green Facebook group. This Facebook group would provide information to students about what other schools are doing as well as keep students up to date on campus sustainability efforts as they relate

to ResLife. This could be a project for the EcoReps program or RA Sustainability committee.

Website

- Utilize the College's website as an open venue for presenting the College's commitment to sustainability and becoming carbon neutral.
- Post educational information online about steps the campus community is taking to be a sustainable organization.
- Establish a Virtual Center for Sustainability at Ursinus to coordinate sustainability-related academic, co-curricular and student-based programs. There is a need for greater coordination, collaboration and visibility of sustainability-related academic, co-curricular and student-based programs. The Virtual Center for Sustainability at Ursinus (VCSU) would be a web-based clearinghouse of all sustainability-related programs on campus. It could also have a link from the Admission webpage for incoming first year students.
- Create a virtual green tour for new faculty and staff members and also for use in orientation for incoming first year students.

Sustainability Briefs.

- Create and disseminate periodic briefs around the topic of sustainability. These briefs would be aimed at educating faculty, staff and students on sustainability initiatives that might affect or be influenced by various campus constituents.

Mid-Term (2019-2030)

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.2 PA-5: Office of Sustainability – Prospective Actions: Behavior Change & Education

Behavior of community members and day-to-day campus life are critically important to the success of campus sustainability efforts and to our ability to reduce our greenhouse gas emissions. The behavior of every member of the Ursinus College community directly impacts the effectiveness of the actions proposed in this Plan. It affects participation, engagement, and overall campus culture. In order to reduce our campus-wide emissions we need to mitigate personal and institutional impacts on the natural environment, including aspects of what we consider to be part of "normal" life.

Immediate (2013-2018)

Expectations

- Work with various College departments to set expectations that UC will embrace sustainability within our financial constraints in such a way that we become a model that other schools aspire to imitate and that prospective students are eager to be part of.
- Be transparent about the reasons for embracing sustainability on campus: these may include fiscal savings, improving students' educations to better train them to address the problems in our world, being a good community member, setting an example of behavior fueled by academic research into the need to reduce GHG emissions, etc.
- Work with faculty and staff so that they understand that OS is responsible for overall sustainability messaging on campus, and as such, will need to give final approvals for class-created flyers that are intended for campus dissemination. This will prevent the inadvertent spread of inaccurate information.

Own Sustainability

- Work to make sustainability part of the UC brand. State the College's values and approach to sustainability up front in communications with prospective students, parents, and the press. Own sustainability at the College and wear it proudly.
- Expect staff to fall in line with the College's policies, practices, and expectations around Sustainability.

Experiential Learning Opportunities

- Work to design and implement a comprehensive set of experiential learning opportunities for campus constituencies (e.g., applications classes; opportunities to participate in environmental activities). These hands-on activities will foster long-term retention of knowledge and understanding among participants. Possible activities include:
    - Sustainability sessions at the local eatery or pub
    - Eco-Art Events/programs
    - Green-Match program – online service to connect workers with sustainability-related on-campus volunteer opportunities. Idea repository for groups who want to do a 2-hr sustainability project; career fair or once per semester opportunities; get credit for it on a website that keeps track and kudos to people who get involved.
    - Hosting a Go Green Picnic
    - Participate in organized green events both on and off campus.
    - Encourage students to create documentaries about campus sustainability. Topics could include: assessing barriers to greening campus offices, conducting cost/benefit analyses of implementing power strips at residence halls, exploring the feasibility of having an expanded BikeShare program on campus, etc. (see Santa Clara)
    - Sustainability Pledge: Introduce sustainability pledge is an informal yet powerful method for increasing awareness of sustainability issues. Several colleges and universities, including Dickinson College, Temple University, Villanova University, Carleton College, Trinity College and others, have introduced sustainability pledges on their campuses. The pledges outline important sustainable behaviors, such as turning computers and electronics off when not in use, setting thermostats lower at night, using compact fluorescent bulbs, etc. The purpose of the pledge is to help increase awareness of climate and sustainability issues, and to provide faculty, staff and students with ways they each can contribute to lowering carbon emissions, reducing wasteful energy losses, and improving campus sustainability.

Receptive Learning Opportunities

- Educational Materials: Work to create an interdisciplinary collection of educational materials aimed at students about sustainability on campus. This information could be delivered to students via multiple media outlets (email, word of mouth, website, Facebook, residence hall bulletin boards, Wismer bulletin boards and table tents, bathroom signage, chalking campaigns, etc.). Students are likely to be unaware of the good things going on around them unless they are told. (ResLife RA Sustainability Committee & EcoReps)

- Let students know how much paper is saved each year by sending them information electronically; increase awareness of extant campus sustainability programming (recycling, composting, BikeShare, etc.)
- Educational Signage: Work to create an organized and unified message campaign to help change behavior. This should focus around energy and water usage, recycling, composting, carpooling, elevator use, etc.
- Offer brown bag lunches and workshops to various campus groups with sustainability as a focal topic.
- Elicit faculty, student and staff input into greening the workplace through surveys, suggestion boxes, or other means.
- Consider having annual think tank meetings to strategize about sustainability within the OS and on the campus. Invite students, faculty and staff to participate in these discussions.
- Provide opportunities for campus community members to learn about greening their personal lives.
- Work with the HR office to design an annual professional development program on sustainability.
- Develop a staff/faculty level EcoREP program to develop a network of implementers across the College.
- Consider purchasing books about sustainability in your particular department. Keep the Work with the Communications & Web Office staff to inform them more about campus sustainability. Once communications staff is fully aware of the resources that it has access to (website, documents, outside websites, etc.), continue to check in with them as needed for additional information about ongoing programs.
- Film Series. Open up discussion around sustainability topics in the context of popular media.
- Speaker and discussion groups. Work to develop a sustainability speaker series or sustainability roundtables and discussions on campus as a regular part of the OS offerings.
- Set up a venue/site for viewing TEDx talks on the environment. This will expose students/community to excellent, high powered speakers on environmental topics; encourage conversation about national level topics. Investigate partnering with local churches or other nonprofit organizations to bring this to the community.

Incentives for Sustainability-Related Teaching, Research and Action

- Design a green certification program that will act as an incentive for all members of the UC community. This program should include different certifications for different groups and individuals. For example, certificates could be offered for: Green Department, Green Office, Green Lab, Green Event, Green Course, etc. These programs would require a well-thought out set of criteria and a graded scale of accomplishment (e.g., Harvard University has green leaf certification at four levels: from one to four leaves).

Professional Development

- Consider co-hosting a professional development day on sustainability with the Vice President of Academic Affairs office.
- Conduct staff/faculty/RA/admissions training in sustainability issues.
- Provide periodic faculty meeting briefs. The object of these would be to update the faculty on the pertinence of the PCC to the workings of the College and the College's progress toward our goal of carbon neutrality.
- Provide periodic departmental meeting briefs. These briefs would be aimed at educating faculty on sustainability initiatives that might affect or be influenced by faculty members in each department, where/how/why to recycle, and on how the Office of Sustainability could assist them in their goals.
- Develop and run workshops to train faculty on how to incorporate sustainability concepts into non-environmental courses.
- Design and implement training sessions around a variety of sustainability topics, including recycling, purchasing, etc., that can be dropped into departmental meetings. Schedule drop in educational programs with departments across campus to increase our recycling rates and campus community understanding of practices.
- Housekeeping: Design a bilingual educational campaign on housekeeping's role in the recycling program.
- Housekeeping: Provide a training session/orientation with housekeeping staff at the end of the summer (before the academic year begins) to ensure that they are properly informed about how and what to recycle.

Promote Sustainability Within Various Campus Offices and Departments

- As needed/requested, work with individual offices and departments to increase their sustainability footprint on campus.
- Work with various departments to design educational campaigns around their sustainability initiatives.
- Work with the following programs, offices and departments, such as:

Academic Affairs

- Partner with Academic Affairs to create periodic briefs around the topic of sustainability. These briefs would be aimed at educating faculty on sustainability initiatives that might affect or be influenced by faculty members in each department, where/how/why to recycle, and on how the Office of Sustainability could assist them in their goals.
- Work with Academic Affairs to support student and/or faculty research and course development around the topic of global climate instability and sustainability.

Biology and Chemistry - Science Labs

- Work with Biology and Chemistry faculty and staff to develop an educational program for all student lab users to teach them about sustainability in the labs and why it is important. A program such as this would serve students well when they go into the workplace where liability issues will be very important.
- Determine if this program could be made mandatory for lab users.

Facilities Services: Electricity Usage Education

- Educate UC community members about the results of energy audits on all buildings, including residence halls and houses. Promote energy saving measures.
- Work with various departments on campus to institute behavior change programs that influence energy usage by all UC community members
- Educate the UC community about how to use the interactive website that is connected to the installed energy monitors.
- Educate students/faculty/staff about the benefits of using power strips to reduce the Phantom Load of electricity from electronics that have power lights (e.g., TVs, stereos), including reduced electricity usage and protection against power surges.

-

Human Resources

- Work with the Human Resources office to produce a resource guide that outlines sustainability-related College policies, employee responsibilities, and information about green buildings. Include a link to this online document to new employees.
- Work with HR to develop a sustainability-related training session for all new faculty and staff members as well as a small document that covers sustainability-related campus issues, campus goals, and what they can do to help achieve those goals.

Information Technology

- Increase awareness of IT-related sustainability actions that could be undertaken by the campus community.
- Work with IT staff to develop documents around the topic of sustainability and sustainable IT use that can be placed on all student and staff desktops.

Myrin Library

- Work with library staff to develop a list of books about sustainability that the library could procure in an effort to build up a section in the library around sustainability.
- Work with library staff to gather information to put on display in the display cases in the Myrin entry way to highlight sustainability efforts on campus.
- Work with library staff to contribute to the campus sustainability newsletter. For instance, a regular column highlighting a sustainability-related library resource (films, books, etc.) or event (movie, discussion, etc.).
- Coordinate with library staff to select or develop signage about the College's sustainability-related policies that affect the community as well as a dedicated sustainability section of a public bulletin board.
- Partner with the Library when hosting a film or lecture series or book discussion on sustainability topics. What about other sustainability events held at the Library? Earth Day could be a good tie in.
- Events. Partner with the Library when hosting a film or lecture series or book discussion on sustainability topics. What about other sustainability events held at the Library? Earth Day could be a good tie in.

Residence Life

- Collaborate with Residence Life staff and/or EcoReps to create information that is aimed at educating students about sustainability in ResLife. This type of information could be created in a number of formats, including:
    - A Greening of ResLife webpage that is linked from the ResLife landing page as well as from the UCGreen landing page. (see information technology changes above)
    - Sustainability tour videos. (ResLife staff or EcoReps)
    - A Sustainability Book for RAs and RDs to use as a sourcebook. This sourcebook would include resources for RAs, lists of local businesses, prize ideas with sustainability themes, etc.
    - A ResLife Facebook page for sustainability. (ResLife staff or EcoReps)
    - A ResLife Sustainability Program Guide in coordination with the UCGreen Office of Sustainability. (ResLife staff or EcoReps)
- Develop a Sustainable Living Guide, ideally developed by an EcoREP with assistance from ResLife and OS. This guide could include sections on the following:
    - The history of sustainability at UC
    - Green living tips for on and off campus
    - Sustainable dining
    - Alternative transportation options on campus
    - Curriculum opportunities
    - How to get involved section
- Look into partnering with ResLife and the College bookstore to provide reusable bags for on-campus residents.
- Work with ResLife to create an educational campaign about sustainable laundry practices. Include the following elements:
    - Use environmentally friendly laundry detergents
    - Wash your clothes in cold water (it's better for your clothes)
    - Hang dry your clothes – they'll last longer!
    - If you dry clean your clothing, use an organic, chemical free dry cleaner.

International Programs

- Work with the Center for International Programs to provide administrator with written resources that discuss the carbon footprint of study abroad travel and how the College is working to lower its overall emissions while at the same time providing excellent educational opportunities for students who choose to study abroad.

Student Affairs

- Work with Student Affairs staff to incorporate programmatic aspect of campus sustainability into orientation for first year students. Orientation is a new student's first opportunity to learn more about Ursinus traditions, respect for diversity, and the community-oriented spirit that thrives throughout the Ursinus campus. Incorporating some aspects and information about campus sustainability into this program would set a foundation for sustainability to be included as part of the College culture and tradition.
- Work with the Student Affairs office to develop a Sustainable Living Guide for all new students. This guide would provide an introduction and history of sustainability at Ursinus, greener living tips for campus residents, as well as curriculum and involvement opportunities. Ideally this guide could be distributed to all first year students during orientation, available in offices around campus, and online in PDF format on the Office of Sustainability website. It could be developed for students by student UCGreen Sustainability Fellows.

Staff Orientation

- Create material to provide to all new faculty (and staff) that would talk about the College's commitment to sustainability, including a link to the Green Tour of the campus (a tour of some of the campus' sustainability projects) for new staff/faculty so that they will understand the College's level of commitment.

Sustainability Literacy

- Investigate creating a sustainability minor and/or a sustainability certificate program. A sustainability minor that taps existing courses would provide opportunities for students to further explore sustainability with little institutional expense.
- Consider a sustainability literacy requirement for Ursinus students that could be fulfilled in a number of ways. Ursinus has agreed to promote student awareness of climate change and sustainability. A literacy requirement could be achieved in many ways, including taking a sustainability-specific course, showing proof of taking a course in high school that qualifies, participating in some number of activities, or taking a special 1-credit course co-taught by a number of faculty.

Sustainability Action List

- 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.

Mid-Term (2019-2030)

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.2 PA-6: Office of Sustainability – Prospective Actions: Waste & Recycling

Immediate (2013-2018)

Composting

- Work to increase the composting program to include all residence halls. Institutionalize this program.
- Work with Dining Services to develop a do-it-yourself composting-in-a-bag program. This program would allow students, faculty and staff to pick up bags from Sodexo and take them to their offices or rooms to compost, and then bring the bag back to the dining hall to be included with the composting.

Science Equipment

- Work with lab science faculty and staff to find alternatives for repurposing or recycling equipment that is no longer useful.

Water Bottles

- Consider the benefits and costs of providing each first year student with a UC water bottle to encourage use of tap water rather than bottled water. If it is

determined that this program would be useful in decreasing our waste, consider implementing it.

- Work with other Facilities Services areas to install more bottle filling water fountains to support this program.

Mid-Term (2019-2030)

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.2 PA-7: Office of Sustainability – Prospective Actions: Transportation

Immediate (2013-2018)

Transportation

- Provide information to the College community about the following topics:
- transportation options,
- expanding our BikeShare program,
- providing local biking maps,
- promoting the RideShare program, and
- the feasibility of a car share program to the campus.

Incentive Programs

- Work to develop an incentive program that promotes the use of electric/alternative Fuel vehicles by UC employees
- Work with NEWu to allow employees who walk or ride bikes to work to count this activity as a NEWu credit that lowers their health care bill.

Bikeshare

- Work with student manager for UC Bikeshare to increase membership, increase and track usage and, if appropriate and feasible, increase the number of bikes that the program manages.
- Tie the BikeShare program information into the incoming first year information that is emailed to students over the summer. Encourage incoming students to participate in the program.

Shuttle

- Periodically reassess the feasibility of providing students with weekend transportation to local destinations in addition to the holiday shuttle transportation to the Philadelphia train station and airport. This would be part of an effort to encourage students to leave their cars home instead of bringing them to UC. Due to substantial costs associated with this type of program, we would need to look into partnering with other area organizations.

Behavior Change

- Work to ensure that faculty, students, and staff have the ability to participate in tele- and web-conferencing. This will reduce travel costs, travel time and the GHG output associated with travel.
- Encourage students to leave their cars home rather than bringing them to college. This move would both lower UC's GHG emissions and has the potential to lower the costs of providing parking.

International Programs

- Work with the College's Center for International Programs to offer students the opportunity to purchase carbon offsets for their airfare-related emissions for study abroad travel. Currently (2011) the cost of these offsets ranges from approximately $12 to $36.
- Work with Center for International Programs to provide information to study abroad students about opportunities to participate in mitigation actions while they are in other countries as a way to raise awareness and reduce overall GHG emissions resulting from the travel.

Commuting

- Support the investigation into future program options that would reduce employees' overall miles traveled related to UC. Possible outcomes:
  - Development of a comprehensive telecommute policy
  - Establishment of tele- and web-conferencing capabilities and support for faculty, students, and staff
  - Determination of opportunities to facilitate carpooling by establishing flexible work hours.
  - Creation of incentives to encourage local employees and students to take public transportation, bike or walk to work. This could be financial or a recognition of some sort.

Mid-Term (2019-2030)

Business Travel

- Educate faculty and staff about the GHG emissions associated with business travel and alternatives that they might consider. For example:
  - Educate faculty/staff about the GHG emissions related to miles traveled and mode of travel.
  - Promote webinars and phone conferences.
  - Promote the use of alumni for admissions trips to high schools where the alums live.

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.2 PA-8: Office of Sustainability – Prospective Actions: Community Outreach

Immediate (2013-2018)

Public Campus Events

- Encourage the surrounding community to participate in on-campus sustainability events that are related to waste and recycling (Sustainability Game Days, Earth Day, Sustainability Week, etc.)

- Welcome the public onto the UC campus and provide leadership on environmental, sustainability and climate related topics.

Off-campus Events

- Collaborate with a local restaurant to establish a "green" discussion forum location and set of events.

Education

- Inform the Collegeville community of the efforts of the College to improve campus sustainability, possibly through an annual newsletter or through the Communications Office.

Stewardship

- Find an environmental stewardship project in the Collegeville community and organize volunteer opportunities available to all students.

Community Collaborations

- Work with students to coordinate with Main St. manager to create a Local First type of program (alliance of locally-owned, independent businesses near Fort Lewis College that created a Be Local Coupon Book; could do "local bucks" program). This could be affiliated with BALLE (Business Alliance for Local Living Economies) which focuses on green economic development strategies
- Work with the Collegeville Main Street manager to see if she'd be interested in taking sustainability to the CEDC as a guiding concept… turn Collegeville into a green community. (trail; river; walking; park; carpooling to work; public transit)
- Promote the many local organizations that host sustainable events and projects at which Ursinus students can volunteer. In the past, Ursinus has sent volunteers to Perkiomen Creek Watershed clean ups, invasive species removal projects, and interns at a local organic farm. The interactions have helped maintain positive relationships between Ursinus and the community.
- Encourage Ursinus community members to collaborate with the local school district (Perkiomen Valley) to develop "green" programming at the local schools.
    - This could take the form of environmental clubs, collaborative work on sustainability/environmental projects, having student mentors from UC work with student groups or classes in the school district.

    - This could also represent a collaboration between multiple departments – Education, Environmental Studies, Math, Biology, Art, English, etc.
- Investigate partnerships with the following types of organizations, when feasible:
    - NGOs
    - Governments
    - Local K-12 Schools
    - Teacher continuing education
    - Sustainability themes in STEM curriculum development
    - Hands-on student education/training
    - Climate Club at local elementary school/s
    - Campus tours

Mid-Term (2019-2030)

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.2 PA-9: Office of Sustainability – Prospective Actions: Infrastructure

Immediate (2013-2018)

Fume Hoods

- Work with Facilities Services and lab science staff to determine actual energy usage of fume hoods.

Building Energy Use Intensity (EUI)[1]

- Work with Facilities Services staff to calculate the EUI for each of the main campus buildings.

[1] "A building's EUI is calculated by taking the total energy consumed in one year (measured in kBtu) and dividing it by the total floor space of the building. For example, if a 50,000-square-foot school consumed 7,500,000 kBtu of energy last year, its EUI would be 150. A similarly sized school that consumed 9,000,000 kBtu of energy last year would have a higher EUI (180) to reflect its higher energy use. Generally, a low EUI signifies good energy performance." (U.S. DOE and U.S. EPA 2011)

HVAC

- Work with Facilities Services staff to create an HVAC Efficiency Plan that includes potential energy saving projects with cost analysis for HVAC applications across campus.

Mid-Term (2019-2030)

Heat Plant

- Replace the 1960's central heat plant with a more efficient decentralized system.
- Be opportunistic about solar power installation with available grants

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

Facilities – Chapter 6.3: Heat Plant & Steam Distribution System

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Our central, high-pressure steam plant was built in 1962. It consists of two water-tube boilers, a deaerator, feed water pumps, chemical treatment equipment, and the campus steam distribution system. Our heating and cooling systems share the same distribution system in some buildings. Once the setting is switched from one to the other, it is switched for the season. Boiler #1 fires only with No. 6 fuel oil and is our stand-by boiler; boiler #2 has a duel-fuel burner and fires mainly with natural gas and is used for most of the year. In years past we have used whichever fuel was least expensive, and we currently only use boiler #1 (fuel oil) when we have to maintain boiler #2 (natural gas). Moving forward we would prefer to move away from using #6 fuel oil and toward a cleaner energy. Though our heat plant is well maintained, it is already beyond its life-expectancy and is far less efficient than modern plants. Replacing the central plant is a multi-million dollar venture and as such must be planned well in advance. We are investigating several scenarios: replacing the plant with a similar type of boiler (an option that may offer the opportunity for electricity cogeneration from excess steam); building a central hot water plant; and installing decentralized hot water boilers. These are detailed below in Table ___.

Table ___. Heat plant replacement options under consideration.

Replace the plant in-kind: Because the campus is already set up for high-pressure steam heat and the under-ground pipe is fairly new, we could replace the boilers with new high-pressure steam boilers. Until recently, the plant has been able to run only one of the two boilers to meet peak load. However, we have expanded to a point where a second boiler is required during peak heat demand. That means that if we have a failure of one boiler during the coldest period, we may not be able to maintain comfortable temperatures campus-wide. It would be prudent to add a small boiler to supplement one of the large boilers during peak heating load and also to handle the summer load more efficiently. This scenario may offer the opportunity for electricity cogeneration from excess steam.

Build a central hot water plant: We would replace the current steam plant with a new, smaller plant adjacent to the chiller plant and use the chilled water piping to circulate the hot water in the non-cooling season. We would decommission the current steam plant, remove the smoke stack and install a small steam boiler to meet the summer reheat needs. The remainder of the old plant would be adapted for alternate use. This option would save $470,000 in annually with a simple payback of eight years. Various financing options are available requiring no cash outlay from the institution.

Install decentralized hot water boilers: Provided we have space, we would install hot water boilers in each buildings or cluster of buildings for heat. This would also allow for the steam plant to be decommissioned, the smoke stack to be removed, and the building to be adapted for reuse. This would be the most efficient heating system we could have and would cost less to install than a central plant. We would need to find/allocate space in each building or cluster of buildings for boilers. The payback for this set up would likely be 3-5 years. The down-side is that it will be difficult to use dual fuel capability, as installing adequately sized oil tanks would require locating them at various sites across the campus. This may not be aesthetically suitable to the college.

Cooling: This is mostly covered in electric; however, there is a heat plant option for some our residence halls. We have significant cooling electricity consumption from window A/C units that students are allowed to bring for some of our older residence halls. One option for removing window A/C units is installing a Valance system. These systems work by distributing heat or cooling that is provided by hot or cold water run through tubes. We have installed this type of system in Richter North and New Halls and it is highly efficient and would be a good retrofit for the residence halls in question. However, because these buildings have little or no

summer occupancy, payback times could be extensive. Each of these should be considered individually for fiscal prudence.

Ursinus commissioned Entech Engineering to perform a comprehensive central steam plant and distribution review in order to investigate the scenarios listed above and provide a recommended way forward with our aging steam plant and cost estimates. The study was completed in 2011 and concluded that, though the central steam plant is old, it is in excellent condition. The system is very tight and we have a very high percentage of condensate return. Entech's recommendation is to retain the central plant, as-is, and modify it to be more efficient. The largest investment would be in adding low-level, independent heating to the buildings served by the central plant. The reason for this is so we can shut down the central plant for six months of the year and still provide adequate heating for the shoulder seasons (the times when outside temperatures vary enough so that heat is not necessary during the day, but it is still cool at night), hot water and building reheat for humidity control. The total project will cost in excess of $1 million. This improvement would save about $250,000 per year in energy cost and significant carbon reduction. The engineering and construction are on the college's capital list but are not yet funded.

The campus steam distribution lines have mostly been replaced in the past 16 years. Our steam load fluctuates from a maximum of 20,000 lbs. of steam per hour in the winter peak to 4,000 lbs. per hour during the summer. There are several buildings on campus that require re-heat during the summer to compensate for over chilled air that results from the dehumidification process: Bomberger Hall, Pfahler Hall, the Kaleidoscope Theatre, the Myrin Library, and the Berman Art Museum all have HVAC system requirements for a heat source year round. This may be an area where savings could be achieved if we are able to shut down the central plant in warm months and provide this re-heat with smaller, local units.

Year-round steam usage is required for domestic hot water, the kitchen dishwasher booster, pool heaters, the deaerator, and steam autoclaves. We also use year-round steam to keep the fuel oil heated to the temperature required to keep it liquid (125° Fahrenheit (F) in summer; 150° F in winter; 180° F when in use). This is estimated to cost the College $3,000 and use approximately 300,000 lbs. of steam annually.

UC has identified projects that will reduce energy consumption related to campus buildings and move us toward our first phase of becoming carbon neutral: a 25% reduction of our per-square-foot greenhouse gas emissions by 2020. Importantly, our Facilities Services Department has taken many measures to maintain the campus' heat plant and steam distribution system in excellent working order. This allows the College to extend the years of useful life of the system and increase the efficiency of the existing system.

6.3 Current: Heat & Steam

The table below shows the mitigation or sustainability projects and/or initiatives that have already or currently are taking place within this administrative unit of the College. These initiatives are broken into nine areas. These areas are further delineated by type of action.

Table 6.3-1: Mitigation Projects/Initiatives – Heat Plant and Steam Distribution System

Type of Project	Mitigation Project/Initiative: Heat Plant and Steam Distribution System
Policy	Energy Study • Completed an energy study to determine the best course of action for heating/cooling the campus. 2011. Will be investigating funding the recommended action over the next 5 years.
Operations	Maintenance. • Our maintenance staff members perform regular tune-ups and cleaning on our boilers. This allows us to put off the purchase of a new heating system (and the upstream GHG emissions that might be associated with it), and ensures that our existing boilers perform at their peak level. • Our HVAC systems are winterized annually. Energy Saving Initiatives – Regulating Heat Use • We typically heat from October 15th through April 15th. The heat is set between 67-70 degrees. Night temperatures are set at 60 degrees in academic/administrative buildings. The daytime start up time for the heating system is 6 am. • Thermostat timing is set weekly, depending on the buildings' schedules for each week. • During the month between April 15-May 15th and again between October 1st and 15th, we use circulating air as much as possible rather than heating or cooling. • Facilities Services adjusts temperatures in campus buildings during the winter breaks to reflect the occupied or unoccupied status of the building; decreasing temperatures during weekends and evenings, when buildings are normally unoccupied. • Energy Saving Initiatives – Building Upgrades • Conversion. Many of the Main St. houses have been converted to natural gas from oil over last several years.

	• HVAC. Individual HVAC controls with variable frequency drives (VFD) have been installed in many of our large buildings. • Insulation. UC is in the process of installing insulation in ceilings & walls of campus buildings to improve seasonal temperature retention. • Thermostats. Updated to electric and separated for each room to take into account windows left open. • Windows. Energy efficient windows purchased and installed (as needed/able). This lowers the cost of heating and cooling buildings on campus.
Procurement	None at this time
IT Changes	Scheduling Thermostat Changes • Facilities Services uses the Blackboard Facilities Management schedule to alert them to when events or classes are happening on campus. This allows them to adjust the building temperatures when not in use.
Behavior Change & Ed.	Events • Facilities Services participated in the College's first annual Sustainability Week by creating a week-long Scavenger Hunt for students to participate in. This event included finding information about Energy Use, Water, Heating, and Recycling. Strategy • Facilities Services works with The OS to develop strategies to educate and influence student behavior with regard to heating/cooling, electricity, and water usage on campus. • One such strategy is the development of an energy dashboard that will enable the Ursinus Community to see real-time energy use and whether that use is above or below our goal.
Waste & Recycling	
Transportation	Heating Oil • Because natural gas prices are much lower than oil, we have relied more heavily on natural gas for fuel, significantly reducing our truck oil deliveries to fewer than ten deliveries per year.
Community Outreach	None at this time
Infrastructure	Boilers • Because our boilers have been so well maintained, they will likely last for an additional 15-25 years, despite already being at the end of their initially-projected life span. The excellent maintenance that they have received over the years has enabled the college to postpone a major investment and capital expenditure. We anticipate that technologies will have advanced substantially before we need to make this investment, which will benefit the College further. Valance Heating & Cooling System • We installed a Valance system in our two newest residence halls, Richter North and New. This system is energy efficient and allows us to have centralized A/C rather than individual window units in these residential halls, which now house the Summer Fellows students.

6.3 Goals: Heat & Steam

Goal 1: Determine what the Facilities Services Department's commitment to sustainability is within the realm of Electricity/Energy Use, and publish that commitment within the community.

Goal 2: Within the UC Community, including the Facilities Services Department, increase awareness of the Facilities Services Department's commitment to sustainability and the importance of conserving resources.

Goal 3: Set GHG emissions reduction goals for the heat plant and publicize these within the College community.

Goal 4: Set heat plant-use reduction goals for all buildings on campus.

6.3 PA: Heat & Steam - Prospective Actions

The following prospective actions are suggestions for consideration. It is assumed for the purposes of this document that any on-going activities that are listed above in the "current situation" section will continue. As it is difficult to see far in advance what the needs and constraints on the College will be, there are a wide variety of options presented here to consider. Some may be viable options for immediate implementation; some may seem impossible to implement in the current situation or foreseeable future, but may be viable at a later date depending on changing circumstances. These prospective actions will be reviewed periodically by staff in our Office of Sustainability (OS) and with relevant parties in the affected areas of the College.

6.3 PA-1: Heat & Steam – Prospective Actions: Policy

Immediate (2013-2018)

Energy Cost Accounting

- For projects that require large capital expenditures, consider adopting a policy of incorporating energy costs associated with the lifetime of the project into the overall project cost. Consider taking the project's energy efficiently related

savings and payback time into account when making decisions about capital expenditures.

Goal Setting

- Set goals for reducing our Heat Plant's GHG emissions. These goals should put us on track for meeting our overall goal of reducing our emissions to zero by 2060.

Mid-Term (2019-2030)

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.3 PA-2: Heat & Steam – Prospective Actions: Internal Operations

Immediate (2013-2018)

Cost Analysis

- Analyze the impact that changing thermostat temperatures by one degree (in either direction) in each building has on our energy use for both summer and winter months. Calculate using degree days for comparability.
- Use this information to inform decisions about thermostat settings on campus as well as for determining cost effectiveness of various energy-saving strategies.

Energy Management Technology

- Install thermostats, motion sensors, CO_2 detectors in buildings that make air changes in response to CO_2 levels rather than automatically on timer, etc.
- Install HVAC tracking so that we can operate our buildings more efficiently.
- Install occupancy sensor control of HVAC package units.

- Install insulation on pipes, windows, walls, ceilings, roofs, as when and where possible with higher R value insulation materials.

Hot Water

- Washing Machines. Contract with our laundry provider to institute a laundry quota system. This would allow students a certain number of "free" laundry cycles (washer or dryer). After they used their quota, they would have to purchase additional cycles. This would theoretically lead to larger and fewer loads of laundry being done. (See X section).
- Eliminate hot water in settings where it is legal to do so.
- Decrease hot water temperature setting overall and lower it to "vacation" settings during breaks.
- Solar. Consider using solar hot water heaters to supply all locations with the energy needed to produce hot water.
- Cooking Oil. Investigate water heating technology that runs off of used cooking oil.

Summer Shut Down

- Perform a study to determine the cost of moving the main boilers to a summer shut down status and installing building boilers to supply hot water in off season; investigate financing options for the plan.
- If indicated by the study, 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 caused by the central heating plant. This is equivalent to a savings of 55,378.6 kg of CO_2.

Free Heating: Non-residential Buildings

- Maximize free heating opportunities and monitor impact on energy savings. This zero-cost measure should save wasted energy by using ambient temperature air during mild weather to assist with heating needs and reduce need for steam heat. Our heating and chilling plants share the steam distribution system, so they cannot function

simultaneously. When we switch from heating to cooling, we do not switch back until the seasons change.[2]

- Thermostat Settings in Non-Residential Buildings. For heating, consider changing the temperature range for daytime heating from 67-70 degrees to 66- 68 degrees.
- When the outside air temperature is higher than the daytime heating range, consider lowering the temperature of the heating system to take advantage of this "free" heating opportunity. Alert campus on these days that they may open their windows if they would like to get some fresh air.
- Consider instituting a period of no heating or cooling in the fall similar to the April 15-May 15 period in the spring. Even if this is only for a week, this would save energy.
- Consider changing the startup time for heating/cooling from 6 a.m. to 7 a.m. This would depend on building use, but would save additional heating requirements. This would likely require an educational campaign for faculty and staff.
- Ensure that any changes made to the heating/cooling system on campus would not affect the temperature settings required to preserve archival material and artwork, and ensure that the specific preservation, educational and athletic programs that have different environmental requirements are accommodated.

Free Heating: Residential Buildings

- Currently, residence halls do not have cut back times/dates for heating or cooling. Buildings are currently available for student occupancy during school year breaks. Most of our residential houses and halls are closed during the summer. Although it is not feasible at this time to shift students from one room to another to facilitate shutting down some buildings during breaks, this is something to investigate for the future.

[2] Our current settings are as follows: **Heating**: daytime 67-70 degrees F; nighttime 60 degrees F, Oct. 15-April 15; **Cooling**: daytime 75-78 degrees F, nighttime system shut off, May 15-Oct. 15.

- Consider changing the temperature range for daytime heating from 67-70 degrees to 66- 68 degrees in residential buildings.
- Consider reducing the nighttime temperature by two to three degrees from 1:00 a.m. until 6:00 a.m. This would reduce the cost of heating these spaces, and perhaps reduce the heat enough that students would not have to open their windows at night to cool their rooms down.
- Assess the impact on use and cost of reducing the temperatures for various buildings.

Air Handling System Operation

- Investigate whether there are opportunities to better match the air handling system operation to building use. If the air handling system is operated 24 hours a day, this is likely wasting energy at night. Shutting down the air handlers when they are not needed can save both heating and cooling energy
- The two oldest residence halls have antiquated heating thermostatic controls. There are too many residence rooms being controlled by one thermostat. This leads to rooms over-heating and it is not uncommon to see windows open in winter to cool rooms. The controls and piping should be updated. It is intrusive and expensive, so it should be done when the buildings are renovated.

Mid-Term (2019-2030)

Night time Temperature Settings for Academic Buildings

- Study the needs of the buildings to determine if there is a risk of freezing if building nighttime temperatures were lowered below 60 degrees in winter. Make changes to system settings, as appropriate.

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.3 PA-3: Heat & Steam – Prospective Actions: Procurement

Immediate (2013-2018)

Energy Cost Accounting

- For projects that require large capital expenditures, incorporate energy costs associated with the lifetime of the project. Take savings from energy efficiency aspects of the project into account and consider payback time.
- Investigate installing individual steam meters for each building. The resulting data will help us gauge building efficiency and aid investment prioritization.

Purchasing Guidelines

- Use the Green Purchasing Guidelines in Appendix H to help guide purchasing decisions.

Mid-Term (2019-2030)

6.3 PA-4: Heat & Steam – Prospective Actions: Information Technology Changes

Immediate (2013-2018)

Metering Heat

- Determine if it is possible to meter heat for any of the campus buildings, including Main Street residential houses. For those buildings where this is a possibility, hook meters up and display that information on the Energy Dashboard.

Mid-Term (2019-2030)

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.3 PA-5: Heat & Steam – Prospective Actions: Behavior Change & Education

Immediate (2013-2018)

Heating Awareness Program

- If possible, consider running separately metered student houses such that average electricity/water/fuel use is calculated to determine what students are allowed to use. Students would then be charged for overages on those amounts. (The program at Guilford College, for example, offers a grace period of one month to get their use down into the target range.)

Own Sustainability

- Work to make sustainability part of the UC brand. State the College's values and approach to sustainability up front in communications with prospective students, parents, and the press. Own sustainability at the College and wear it proudly.
- Expect staff to fall in line with the College's policies, practices, and expectations around Sustainability.

Mid-Term (2019-2030)

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.3 PA-6: Heat & Steam – Prospective Actions: Waste & Recycling

There are currently no identified Prospective Actions in this area.

Immediate (2013-2018)

Mid-Term (2019-2030)

6.3 PA-7: Heat & Steam – Prospective Actions: Transportation

There are currently no identified Prospective Actions in this area.

Immediate (2013-2018)

Mid-Term (2019-2030)

6.3 PA-8: Heat & Steam – Prospective Actions: Community Outreach

There are currently no identified Prospective Actions in this area.

Immediate (2013-2018)

Mid-Term (2019-2030)

6.3 PA-9: Heat & Steam – Prospective Actions: Infrastructure

Immediate (2013-2018)

Heat Plant – Next Generation

- Ursinus must develop a plan for next generation heat plant and steam distribution system. Ursinus' boilers have already exceeded their design lifetime. Due to their excellent maintenance, however, their life expectancy is another 15-25 years (approximately 2026-2036). The College's building square footage is likely to grow during these years, and with it, the demand for heat.
    - At this time it is appropriate to plan for conversion to a system that is more environmentally friendly and that has lower GHG emissions. Planning for the next generation of heat plant should begin about ten years earlier to take advantage of emerging innovations and technology.
    - Upgrading our heat plant will require budgetary awareness and planning as it will require a major capital expenditure. The College will need to have long term plans to accumulate capital to fully fund this investment, which will be substantial.
    - By planning for this now, we avoid the need to make quick decisions in a crisis situation should the boilers fail unexpectedly.

Pool Heating

- The College plans to install a pool dehumidification unit in the near future. Work to ensure that this unit is designed such that waste heat from the unit can be used to maintain pool water temperatures during the summer.

Summer Shut Down

- Pursue the transition to summer shutdown for the heat plant. This will involve switching the boilers that supply heat and hot water to the entire main campus

to summer shut down mode and installation of building hot water heaters for summer use.

- Install building boilers/furnaces to handle summer heating/hot water requirements.
- According to the preliminary study, this action would lead to about a 35% decrease in emissions caused by the central heating plant. This is equivalent to a savings of 55,378.6 kg of CO_2.

Summer Re-heat

- Review the HVAC systems in Bomberger Hall, Pfahler Hall, the Kaleidoscope Theater, the Myrin Library and the Berman Art Museum to determine if there are opportunities to reduce summer heat requirements.

HVAC Upgrades

- Modernize HVAC systems in older buildings concurrent with renovations.

Individual Building Solutions

- Perform a cost benefit analysis of installing a Valance heating/cooling system in some of the older residential halls that do not currently have central air conditioning. This would need to consider the electricity used by the student-owned window A/C units, as well as the impact of installing a Valance system on decisions about our heat plant (and vice versa).
- Consider geothermal options for new buildings. Though it is not fiscally feasible to convert the entire campus to geothermal energy, examine the possibility of using geothermal energy for heating/cooling in any new buildings that are constructed on our campus.

Mid-Term (2019-2030)

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

Facilities – Chapter 6.4: Electricity & Chiller Plant

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Ursinus is a larger electricity customer, with multiple buildings and it's own switchgear (the switches and circuit breakers that protect the electrical equipment) and an on-campus high-voltage power distribution system (a system of high voltage transformers and cables that distribute electricity across campus). The College's switchgear and half of the electric power distribution system is in good condition. The College has been updating the high-voltage distribution system (or loop) in phases; two of four phases are complete. There are three very old transformers in BPS, BWC and Wismer that need to be replaced. These are on the 5-year physical plant funds list for budget committee consideration and funding.

Since fiscal year 05-06 Ursinus has funded energy efficiency modifications. This set of projects (called the energy efficiency modification pool) has allowed us to make many efficiency modifications on campus, including: variable frequency drives (VFDs) to control mechanical equipment motor speed, HVAC (heating, ventilation & air conditioning) controls, energy studies, lighting retrofits and occupancy sensors. We are working throughout the campus and are mostly done with these relatively easy and inexpensive "low-hanging fruit" projects.

Facilities Services looks at electrical energy consumption on campus as a tree, with a trunk, branches & leaves. The trunk is the main, high voltage distribution loop and switchgear. The branches are the building mechanical systems and the leaves are the campus community of individual electricity consumers. Our Facilities Services Department works primarily on reducing our electrical energy consumption at the "trunk" and "branch" level. Addressing consumption at the individual consumer level requires raising awareness and changing habits. Energy conservation based on individual behavior change will require the dedication and actions of individual students, faculty, and staff outside of Facilities Services. Although Facilities Services does not control the "leaves" of the campus' "energy tree", it does try to moderate use when possible through energy-saving initiatives and through behavior change strategies.

Peak demand mitigation is critical to lowering our energy use and costs. Our highest demand for electrical energy comes during the hottest summer days when air conditioning is required in most of our buildings. Ursinus used to have to pay PECO a demand ratchet, or a percentage of our peak (highest) demand of electricity in addition to the actual kWh usage, regardless of how

much the College used.[3] Though we no longer have to pay PECO a demand ratchet, our energy use profile is still important for generation pricing when we go to market. Since this affects how much we pay every month (even when we don't need it) it is particularly important to try to decrease our energy requirements on those days when outside temperatures cause us to use more electrical energy to cool our buildings. On these days, we observe the campus energy consumption real-time via a web interface and if it appears that our consumption is higher than we want it to be, we will engage in load-shedding (shutting down non-essential equipment) to reduce our kWh consumption. We have been successful in doing this some years, less so in others. Our HVAC programmer has written code that, when implemented, automatically slows down or turns off non-essential equipment. This method has enabled us to more effectively control our peak load.

The driver for peak electrical demand is cooling. The highest demand is usually on the hottest day. So, the target for peak demand control is the chiller plant. The campus' chiller plant has a 1,500 ton cooling capacity and was built to handle the College's master plan. Currently we are at capacity. Though the plant is fairly new and operates efficiently, it still draws the most power during the period of highest demand. The way to control the peak is to generate our cooling during periods of low demand; at night. Thermal storage can be accomplished using either chilled water or ice. Though the initial study indicates storing water may be less expensive to implement, ice is more practical. We require further study to define our approach before making such a significant investment. We do not have an indefinite amount of time, however, as our plant is at its current capacity and expansion beyond the Berman addition will require additional cooling resources.

Another strategy for peak load reduction is solar. Solar produces its highest output when it is sunny and hot, which is also when we hit our peak demand. If we are able to execute a Power Purchase Agreement and install a 350 kW solar array, it will help us to reduce our peak demand.

Summer is the time of year when our electricity use peaks because of air conditioning. Therefore we have put a number of practices into place to mitigate our use of A/C (see the table below). We continue to work to decrease our need for A/C, however, there are certain

[3] This arrangement is typically put in place for large-scale customers that have a sizeable electrical infrastructure in place. It protects the electricity provider from losses. However it also leads to excess energy use since the customer pays a percentage of peak demand regardless of actual kWh use.

factors that we cannot get around. We have to keep at least one residence hall operational during the summer to house our students who stay on campus. We keep the A/C on in whichever large residence hall (Richter/North or New) is housing summer fellows. We also have some buildings which have cooling requirements that must be met, such as our library, certain science labs, and our museum. Another factor on our campus is the age of our buildings. We have many older buildings which are very much part of our campus, but which have their own set of complexities. We are working to make those buildings as weather-proof as possible, but they will remain old buildings with challenges.

With regard to investing in energy efficiency to reduce our GHG emissions, our first priority is our own infrastructure; however, we recognize that we will not be able to reach our ultimate goal of becoming carbon neutral without investing in renewable energy sources. To that end, we have generally investigated alternative energy sources as a means of stabilizing energy cost and reducing college greenhouse gas emissions. The College intends to continue to investigate alternative fuel sources as it moves forward in time. We are open to considering options that will save the College money, promote the educational experience of our students, and reduce our GHG emissions.

Solar energy is part of our plan to reach carbon neutrality. To date, Ursinus has been unsuccessful in its attempts to enter into a Power Purchase Agreement (PPA) that would bring solar panels to the roofs of several of our buildings. Although this is disappointing, it is somewhat tempered by the fact that having a solar array through a PPA would not lower our carbon emissions unless we also purchased the RECs (Renewable Energy Credits) associated with the power that was generated.

Geothermal is also an option for the College. Though it will not be fiscally feasible to convert the entire campus to geothermal energy, we will examine the possibility of using geothermal energy for heating/cooling any new buildings that are constructed on our campus.

Campus-generated wind energy is unfortunately not an option for Ursinus. The College initiated discussions about wind energy production on the campus, however, initial estimates were that there is not enough wind energy potential on our campus to make it a viable option with current technologies.

6.4 Current: Electric & Chiller

The table below shows the mitigation or sustainability projects and/or initiatives that have already or currently are taking place within this administrative unit of the College. These initiatives are broken into eight areas. These areas are further delineated by type of action.

Table 6.4-1: Mitigation Project/Initiative - Electricity & Chiller Plant

Type of Project	Mitigation Project/Initiative: Electricity & Chiller Plant
Policy	Athletic Complex Lighting Study • We completed a lighting study of the athletic complex, our biggest lighting energy consumer. Overall, the study showed that we rarely have lights on in unused spaces, but still spend a lot on expensive lighting in large areas that may have few occupants. The overall simple payback is 4.12 years. Much of this work is now complete. The field house has been converted to more efficient, fluorescent lighting from metal halide. Every fixture is on its own motion sensor. We have also converted the pool and main gym from HID lighting to fluorescent. All Athletic Complex classrooms have been converted from T-12 fluorescent to T-8 and placed on motion sensors. Energy Curtailment - Demand Response Program • We participate in a Demand Response program which enables us to sell unused electrical grid rights on the open market via a third party (PJM). Ursinus has successfully participated in a Peak Load Reduction (PLR) program for several summers. The college agrees to drop 940 kW when a grid emergency is declared. This program has yielded between $25K and $40K in revenues to Ursinus annually. We are preparing to enter a new three-year contract that would yield $40K in 2012, $63K in 2013 and $46K in 2014. Energy Saving Measures • Thermostat timing is set weekly, depending on the buildings' schedules. • Run exchange programs to provide compact fluorescent bulbs in exchange for incandescent bulbs. • Adjusts temperatures in campus buildings during the summer to reflect the occupied or unoccupied status of the building, increasing temperatures during weekends and evenings, when buildings are normally unoccupied. Heating Master Plan • We commissioned a campus heating master plan to help us determine the most prudent course of action with regard heating on campus. Though this study was primarily concerned with our Heat Plant, there were also recommendations regarding solar hot water heating, which would potentially have an impact on any future solar projects.

	Pfahler Hall Energy Study • We commissioned an energy study of our biggest energy-consuming building, Pfahler Hall. The study found that Pfahler is responsible for 1/3 of the college's overall energy use. The study provides a list of efficiency projects to bring this science building's consumption down. The overall simple payback for the projects is 2.3 years. The College makes funding decisions on a case-by-case basis. Currently, it does not have the capital to invest in expensive upgrades except for those with a short payback. • Space Heaters • Space heaters are not allowed on campus in residential areas and are discouraged in office spaces.
Infrastructure	Science Labs • *Ursinus has worked with science faculty and installed manual switches to place some labs in an unoccupied mode and reduce air changes to the minimum accepted by departments*. Energy Saving Upgrades to Infrastructure • UC is in the process of installing insulation in ceilings & walls of campus buildings to improve seasonal temperature retention • Updated HVAC controls have been installed in most campus buildings. We have also installed variable frequency drives (VFDs) and we winterize annually to reduce lost energy.
Operations	Air Handling Units (AHUs) with Variable Frequency Drives (VFDs) • We have been putting Variable Frequency Drives (VFDs) on our air handling units. This saves money by reducing our electricity consumption. Pumps increase or decrease speed as needed rather than operating at a constant rate. Air Handling System Operation • We have identified opportunities to better match the air handling system operation to building use. If the air handling system is operated 24 hours a day, this is likely wasting energy at night. Shutting down the air handlers when they are not needed saves both heating and cooling energy Electric Metering • I*nstall HVAC tracking campus-wide so that we can operate our buildings more efficiently.* Energy Curtailment - Demand Response Program. • When an energy emergency is declared, the College shuts down all non-essential electricity in the academic and non-residential areas. We have achieved up to 60% reductions in our power load during these events. Energy Saving: A/C Regulation • We cool our buildings to 75-78 degrees/May 15-October 1st. The temperature is set between 75-78 degrees. The air conditioning is turned off at night in non-residential buildings. The daytime start up time for the cooling system is 6 am. • Thermostat timing is set weekly, depending on the buildings' schedules for each week.

	• During the month between April 15-May 15th and again between October 1st and 15th, we use circulating air as much as possible rather than heating or cooling. • The cooling temperatures of academic and administrative buildings are set back based upon what is going on in a building in the evening – which we determine weekly based upon the buildings' online calendar. • Once a residence hall closes in May, those halls that are centrally air conditioned stay off until the students start coming back. • On campus, the A/C units are turned on when the average evening temperature reaches 70 degrees and 85 percent humidity. Energy Savings: Lighting Usage • Installed motion sensors on lights in bathrooms, offices, classrooms and renovated residence hall bedrooms. • Custodial services works during daytime, reducing lighting requirements at night. • West Parking Lot - closed at times during the summer with lights off to save energy required to light the area. • Conducted a lighting study in the gym to determine needs, as noted above. Energy Savings: Lighting Upgrades • Energy efficient lighting retrofits have been completed in most campus buildings. • LED lights installed for outdoor walking lights (last 10x longer than fluorescents). • Replace 28-32 watt fluorescent lamps with 25 watt low-mercury tubes (all fixtures with suitable ballasts). • Replaced incandescent-bulb exit signs with LED signs. Energy Savings: Machine-related • Vending Misers have been installed in all campus vending machines. • Office machines set to low power mode overnight and on weekends when usage is low, automatically start up during the work day. • Appliances are replaced with Energy Star/energy saving models, as needed. Power Factor • We checked the buildings on campus approximately 10 years ago for their power factor (see the Facilities Services glossary). All UC buildings have a power factor of over 90%. This allows the buildings to use energy more efficiently. The power factor is on each building meter.
Procurement	Laundry • We increased the efficiency of our laundry by leasing machines that use two-thirds less energy and water than our old machines. Lighting • Local purchasing (e.g., lamp posts were bought locally - Spring City). Science Labs • We have made updates in our science buildings that are more energy efficient (e.g., fume hoods). Windows

	• Energy efficient windows purchased (as needed/able). This lowers the cost of heating and cooling buildings on campus. Printers • Printers have been replaced with more efficient models.
IT Changes	Energy Dashboard • The College is in the process of getting our energy metering onto an online energy "dashboard" that will allow students to see real-time energy usage. The meters are up and running, we are now working on the Information Technology (IT) interface. Scheduling Thermostat Changes • Facilities Services uses the Blackboard Facilities Management schedule to alert them to when events or classes are happening on campus. This allows them to adjust the building temperatures when not in use.
Behavior Change & Ed.	Energy Curtailment - Demand Response Program • The Demand Response Program, in which we agree to curtail our energy use as a campus during periods of high demand to the grid, is an excellent tool for making the campus community aware of energy usage and how to cut down on energy usage. Events • Facilities Services participated in the College's first annual Sustainability Week by creating a week-long Scavenger Hunt for students to participate in. This event included finding information about Energy Use, Water, Heating, and Recycling. Strategy • Facilities Services works with The OS to develop strategies to educate and influence student behavior with regard to heating/cooling, electricity, and water usage on campus.
Waste & Recycling	None at this time
Transportation	None at this time
Community Outreach	None at this time

6.4 Goals: Electric & Chiller

Goal 1: Determine what the Facilities Services Department's commitment to sustainability is within the realm of Electricity/Energy Use.

Goal 2: Within the UC Community, including the Facilities Services Department, increase awareness of the Facilities Services Department's commitment to sustainability and the importance of conserving resources.

Goal 3: Set waste reduction/GHG emissions reduction goals within the College community.

Goal 4: Set energy-use reduction goals for all buildings on campus.

6.4 PA: Electric & Chiller - Prospective Actions

The following prospective actions are suggestions for consideration. It is assumed for the purposes of this document that any on-going activities that are listed above in the "current situation" section will continue. As it is difficult to see far in advance what the needs and constraints on the College will be, there are a wide variety of options presented here to consider. Some may be viable options for immediate implementation; some may seem impossible to implement in the current situation or foreseeable future, but may be viable at a later date depending on changing circumstances. These prospective actions will be reviewed periodically by staff in our Office of Sustainability (OS) and with relevant parties in the affected areas of the College.

6.4 PA-1: Electricity & Chiller – Prospective Actions: Policy

Immediate (2013-2018)

Alternative Energy

- Work to establish a policy that would require that we get at least 10% of our electricity from alternative energy sources by 2016.
- If we enter into a PPA for solar power, investigate having the contract written so that Ursinus would purchase the RECs at a discounted prices after the initial five-years of the contract. This might make it easier to obtain financing and would then allow us to reduce our carbon emissions in our annual inventory for those years.

Capital Expenditures

- For projects that require large capital expenditures, incorporate energy costs associated with the lifetime of the project. Take savings from energy efficiency aspects of the project into account and consider payback time.

Energy Consumption

- Institute a policy that requires all appliances purchased for, and potentially those brought to campus by UC community members, be Energy Star certified after a date to be determined. This includes those in offices, in student rooms, and in

the kitchens. This would not apply to lab refrigerators or other lab equipment that must be maintained to certain specifications unless Energy Star certifications are available for those.

- Institute a fee for non-Energy Star personal refrigerators brought to campus after the date above.
- Set a limit on the total number of amps allowed on electronic equipment in each dorm room.

Energy Cost Accounting

- For projects that require large capital expenditures, consider adopting a policy of incorporating energy costs associated with the lifetime of the project into the overall project cost. Consider taking the project's energy efficiently related savings and payback time into account when making decisions about capital expenditures.

Energy Performance Contracting

- Set energy performance standards for contractors and only contract with those who can demonstrate that they can meet those standards.

Goal Setting

- Set goals for reducing our electricity-related GHG emissions. These goals should put us on track for meeting our overall goal of reducing our emissions to zero by 2060.
-

Mid-Term (2019-2030)

Alternative Energy

- Research the possibilities of increasing the percentages of our electricity that comes from alternative energy as the years move on, for example: 25% of our electricity from alternative sources by 2020; 35% by 2025; 50% by 2040; etc.
- Incorporate geothermal HVAC systems when/if possible when constructing new buildings.

Offsets

- When we have made all of the improvements to our campus that we can to reduce our GHG emission, investigate the purchase of carbon offsets to continue to meet our goal of becoming carbon neutral.

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.4 PA-2: Electricity & Chiller – Prospective Actions: Internal Operations

Immediate (2013-2018)

Chiller Loop

- Look for opportunities for raising chiller loop temperatures for greater efficiency.
    - Raise chiller loop temperatures and monitor impact on users and energy savings. This zero-cost measure could potentially save energy and related costs and emissions by optimizing loop temperatures to meet cooling demand efficiently.

Electricity Use

- Identify campus buildings (or lockable areas of buildings) that are not in use over the weekends and at night and determine if it would be possible to program the lighting and possibly some of the outlets in those buildings and/or building areas to stay off during unused times.
- Install motion sensors in all classrooms.
- Determine the minimum amount of lighting/square feet required for various types of spaces on campus (classrooms, labs, hallways, bathrooms, dining rooms, offices, storage areas, etc.), and ensure that the College is not over-lighting spaces. Remove light bulbs (including fluorescent tubes) when possible.

Electric metering

- Meter to the lowest unit possible for real time feedback to residents and building users.
- Install HVAC tracking campus-wide so that we can operate our buildings more efficiently.

- Installing occupancy sensor control of HVAC package units.

Energy Audits

- When we have accomplished all actionable items from our most recent energy audit, conduct new energy audits on all buildings, including residence halls and houses, as feasible.

Free Cooling: Non-Residential Buildings

- Application: Non-residential buildings only. Changes would not be made that affect the temperature settings required to preserve archival material and artwork, and would need to support the specific preservation, educational and athletic programs that have different environmental requirements.
    - Maximize free heating opportunities and monitor impact on energy savings. This zero-cost measure should save wasted energy by using ambient temperature air during mild weather to assist heating needs and reduce need for steam heat. Our heating and chilling plants share the steam distribution system, so they cannot function simultaneously. When we switch from heating to cooling, we do not switch back until the seasons change.[4]
    - Thermostat Settings in Non-Residential Buildings: For cooling, consider changing the temperature range for daytime cooling from 75-78 degrees to 77-79 degrees.
    - Consider changing the startup time for heating/cooling from 6 a.m. to 6:30 a.m. or 7 a.m. This would depend on building use, but would save additional heating requirements. This would likely require an educational campaign for faculty and staff.
    - When the outside air temperature is higher than the daytime heating range, consider lowering the temperature of the heating system to take advantage of this "free" heating opportunity. Alert campus on these days that they may open their windows if they

[4] Our current settings are as follows: **Heating**: daytime 67-70 degrees F; nighttime 60 degrees F, Oct. 15-April 15; **Cooling**: daytime 75-78 degrees F, nighttime system shut off, May 15-Oct. 1.

would like to get some fresh air.

- Investigate technology that would automatically turn the cooling system off when the outside air temperature is below a certain level. This would need to accompany an educational campaign for staff & faculty to have fans in their work spaces.
- Consider extending the period of no heating or cooling in the fall from a two-week period (Oct. 1-15) to a month-long period (set as deemed appropriate) similar to the April 15-May 15 period in the spring. Even if this is only extended for a week, this would save energy.

Free Cooling: Residential Buildings

- Currently, residence halls do not have cut back times/dates. Buildings are currently available for student occupancy during school year breaks. Most of our residential houses and halls are closed during the summer. Although it is not feasible at this time to shift students from one room to another to facilitate shutting down some buildings during breaks, this is something to investigate for the future. Consider instituting such times and days.
- Once a residence hall closes in May, those buildings that are centrally air conditioned stay off until the students start coming back. The air conditioning stays on in whichever large residence hall (Richter/North or New) is used to house summer fellows and other students on campus.
- Consider changing the temperature range for daytime cooling from 75-78 degrees to 77-79 degrees.
- Investigate technology that would automatically turn the cooling system off when the outside air temperature is below a certain level. This would need to accompany an educational campaign for students to have fans in their rooms.
- Consider increasing the nighttime temperature range by one or two degrees.

Refrigerants

- Continue to update current cooling/refrigerants to more eco-friendly systems, including moving away from R-22 refrigerants, as per legal requirements.

Mid-Term (2019-2030)

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.4 PA-3: Electricity & Chiller – Prospective Actions: Procurement

Immediate (2013-2018)

Responsible Consumption

- Reduce use of products wherever possible and implement sustainability practices in everyday operations.

Purchasing Guidelines

- Use the Green Purchasing Guidelines in Appendix H to help guide purchasing decisions.

Mid-Term (2019-2030)

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.4 PA-4: Electricity & Chiller – Prospective Actions: Information Technology Changes

Immediate (2013-2018)

Information Tracking

- Track average building-level use of electricity as a percentage of average overall energy use. Display this information on our energy page.

Mid-Term (2019-2030)

6.4 PA-5: Electricity & Chiller – Prospective Actions: Behavior Change & Education

Immediate (2013-2018)

Alternative Cooling

- Encourage the use of fans to circulate air if the temperature feels too warm in buildings.

Collaboration

- Work across facilities and with administrative departments on campus that deal with buildings and community-member behavior to strategize decreasing the College's consumption of electricity.

Fees

- Consider charging a fee for non-Energy Star residential refrigerators.
- Consider allowing only two appliances in each dorm room free of charge (i.e., students may choose to bring two of the types of appliances that they are allowed to bring (including refrigerator, microwave, stereo, TV, etc.). Consider imposing a charge on rooms that have more than two.

Own Sustainability

- Work to make sustainability part of the UC brand. State the College's values and approach to sustainability up front in communications with prospective students, parents, and the press. Own sustainability at the College and wear it proudly.
- Expect staff to fall in line with the College's policies, practices, and expectations around Sustainability.

Pilot Energy Program

- Consider running the separately metered student houses such that average electricity/water/fuel use is calculated to determine what students are allowed to use. Students would then be charged for overages on those amounts. The program at Guilford College offers a grace period of one month to get their use down into the target range.

Mid-Term (2019-2030)

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.4 PA-6: Electricity & Chiller – Prospective Actions: Waste & Recycling

There are currently no identified Prospective Actions in this area.

Immediate (2013-2018)

Mid-Term (2019-2030)

6.4 PA-7: Electricity & Chiller – Prospective Actions: Transportation

There are currently no identified Prospective Actions in this area.

Immediate (2013-2018)

Mid-Term (2019-2030)

6.4 PA-8: Electricity & Chiller – Prospective Actions: Community Outreach

Immediate (2013-2018)

There are currently no identified Prospective Actions in this area.

Mid-Term (2019-2030)

Alternative Energy Collaboration

- Explore collaborating with local businesses and/or governmental bodies on a PPA for solar energy on larger scale.

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.4 PA-9: Electricity & Chiller – Prospective Actions: Infrastructure

Immediate (2013-2018)

Renewable Energy

- Investigate installing RevolutionTM Bikes (or similar) in the Floy Lewis Bakes Center for athletics. The bikes could be connected to the facility's electrical grid through an inverter. This would provide students with a hands-on opportunity to participate in lowering the College's carbon footprint. It would also function as an educational tool that would show students how much electricity is used compared with what can be generated. Depending on the success of the program, it could be expanded so that human-created electricity could be used to power increasingly large percentages of the facility.

Chiller Plant

- Conduct upgrades to the central chiller, as needed.

Refrigerants

- Continue to update current cooling/refrigerants to more eco-friendly systems, including moving away from R-22 refrigerants, as per legal requirements.

Mid-Term (2019-2030)

Chiller Plant

- When needed, replace the main chillers for campus with a new more energy efficient system.

Renewable Energy

- Strategically plan and contract with solar providers to incorporate solar arrays across campus to shift to a dependence on solar power rather than on fossil fuels or nuclear energy.
    - www.epa.gov/greenpower/buygp/solarpower.htm

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

Facilities – Chapter 6.5: Water, Waste & Recycling

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On campus our water, waste and recycling are handled through our Facilities Services Department. However, parts of our recycling programs are administered and budgeted through the Office of Sustainability (OS). The actions that are the responsibility of the OS staff appear in the OS chapter of the CSAP.

Water: Our water on campus comes from the Collegeville-Trappe Joint Public Works Department. The source is local groundwater, so we are mindful of the quality of our groundwater and of local and regional practices that might negatively impact our water supply. In the past two fiscal years (2009-10 and 2010-11), we used over 30 million gallons of water annually. At a cost of $3.10 per 1,000 gallons, this is a major expenditure for the College. Much of our water is used in our cooling towers that are associated with our chiller plant. Athletic field irrigation is another high-demand area for water. Water Infrastructure on campus includes: our cooling tower and chiller plant, a water pipe system that runs throughout campus, the irrigation system for the athletic fields and domestic water use by students for bathing, laundry and waste removal.

Water conservation measures undertaken to date include installation of water-saving laundry equipment, appliances and low-flow toilets (see table below). Irrigation remains costly, especially for the field hockey, baseball, softball and practice and fields. Our large-scale water conservation initiatives include the following:

- Install cooling tower blow-down reuse system to water our athletic fields.
- Continue fixture replacement with low-flow units through normal maintenance and renovation.
- Use Energy Star water-based appliances.
- Use front-loading washing machines.
- Install a recovery tank and pump to reclaim turf field irrigation water to reuse on grass athletic fields.
- Pilot low-flow shower heads.

Sewer: Our sewer infrastructure runs underneath the campus in a system of pipes that are connected to the Collegeville/Trappe Municipal Authority's sewer system. All water that is not used for irrigation goes back into the sewer system, and we are charged for that service. In addition, we have an extensive stormwater drainage system, which handles any extra runoff from field irrigation. Stormwater on the west side of campus is diverted to naturalized stormwater basin so that it can be filtered back into the groundwater system. The rest of our stormwater is directed into local streams, as per local code.

As of January 2012, sewer rates for the College are $5.00/1000 gallons. The sewer-use calculation is based on our overall water consumption (over 30 million gallons) less the amount of water used for non-sewer uses, such as irrigation. Thus, removing water from the sewer system has become increasingly appealing as a cost cutting measure that is also sustainable. To this end, we have received approval from the Pennsylvania Department of Environmental Protection to use the cooling tower blow-down water for athletic field irrigation, however we have not yet located funding to implement this project. By putting this water (approximately 1,000,000 gallons) into the natural water system rather than the sewer system, this initiative will save us over $5,000/year in sewer costs. In addition to this large-scale water re-use project, we also use a number of smaller-scale water-saving devices: we use front-loading washing machines and install low-flow toilets and urinals when we renovate or replace fixtures, and we also have a food pulper and tray less system in our dining hall which reuses water in the tray less system. Using water-saving shower heads could also save a substantial amount of water, however, in the past there has been significant student protest when we have used these fixtures.

Composting: Ursinus College started composting food scraps (including meat and dairy) from the Wismer Dining Hall in the fall of 2009. The Ursinus Environmental Studies faculty and students collaborated with the directors of Facilities Services and Dining Services to create a compost program that reduces campus waste, supports a local sustainable business and transforms a renewable resource (food waste) into a marketable product (compost). Our current compost facility, ArbOrganic Acres is located in Pottstown, approximately 15 miles from campus. This composting facility allows us to compost many different items that are produced on campus, including paper napkins, food boats and all of our food waste. The composting program is made more effective by the fact that we have a food pulper (we had the pulper prior to the composting program's origination). The pulper allows us to create a slurry and remove most of the water from the food before we dispose of it. This limits the number of trips that must be made for pickups. The food pulper also allows us to reuse water that is removed from

the food. The water is removed from the food, purified, and then used to keep the tray less conveyor belt system moving smoothly. We deliver our compost to the facility, so this transportation cost will need to be accounted in our GHG inventory. Our compost facility is approximately 15 miles from campus.

Recycling: We currently have single stream recycling on campus. This allows us to recycle plastics 1-7, paper (including cardboard), glass, and metal cans. Our recycling program is overseen by an OS staff member, and falls under the purview of Facilities Services; Housekeeping (also under Facilities Services) is responsible for the collection of our recycling. The program started as a club in the 1990s, reformed into a student-run program in the early 2000s, and was picked up by Facilities Services prior to 2010. The program is bolstered by effective start- and end-of-year recycling and reuse programs (Move-In and Move-Out) that are run by the OS. The recycling program boasts outreach to all campus buildings, including our off-campus residential houses. Current concerns in the program are lack of unified presentation of our recycling bins (we currently have four different styles of bins on campus) and the need for on-going educational campaigns to help all members of the campus community as well as staff who come in for events understand the parameters of the program.

6.5 Current: Water, Waste & Recycling

The table below shows the mitigation or sustainability projects and/or initiatives that have already or currently are taking place within this administrative unit of the College. These initiatives are broken into nine areas. These areas are further delineated by type of action.

Table 6.5-1: Mitigation Projects and initiatives – Water, Waste and Recycling

Type of Project	Mitigation Project/Initiative: Water, Waste and Recycling
Policy	Recycled Paper • We require that our Housekeeping contractor uses recycled toilet paper and paper towels Composting • Facilities Services has recently changed our contract for composting to a company that will allow us to compost additional items, including paper food boats. • Contract with a composting facility that picks up our compost rather than having to deliver it ourselves (combining transportation costs with other pickups that are being made). • Contract with a composting facility that supports student visits and research on site. Energy Accounting • For projects that require large capital expenditures, we incorporate energy costs associated with the lifetime of the project. We take savings from energy efficiency aspects of the project into account and consider payback time. Recycling • *Facilities Services has upgraded our recycling contract to include increasing amounts of materials and single-stream recycling*.

Operations	Recycling
	• We recycle the following items on campus:
	  ○ Mixed: bottles & cans, glass, mixed paper, plastics 1-7, & newsprint
	  ○ Compact fluorescent light bulbs
	  ○ Rechargeable batteries
	  ○ Printer cartridges
	  ○ Electronics and backup batteries
	  ○ Hazardous waste
	  ○ Scrap metal
	  ○ Cardboard
	• A compacter is used on all trash to reduce the number of waste pick-ups.
	• We have worked to ensure that our cleaning staff (who are responsible for picking up recycling) are trained in what is/isn't recyclable and what constitutes contamination.
	• Recycling and trash are picked up on a schedule (not daily) and are picked up simultaneously to reduce the number of trips.
	• When bags are all collected, record many bags are collected and location and number of contaminated bags.
	Composting - Food
	• All post-consumer food from dining services is collected in five 40-gallon totes for delivery to our composting contractor.

	• Food pulper is utilized. This reduces the volume of our compost and the overall weight of our compost by removing the water from the food. Composting – Yard Waste • All yard waste is deposited in an unused area behind New Hall. This is not an official composting facility, but rather a natural site for allowing yard waste to decompose naturally. • Grass cuttings are mulched back into the lawns by our mowers. Water • Newly installed turf field will help reduce the amount of water used on our athletic fields. • We have installed low flow toilets & urinals. • Flow restrictors have been installed on shower heads & faucets. • We will be installing power assist toilets.
Procurement	Recycling Bags • We use clear plastic bags for regular trash and green plastic bags for our recycling. This has helped with the clarify the perception that recycling and trash are not intermixed by our cleaning staff. • We use stickers that indicate that recycling bags are "contaminated" so that….. Recycling Bins • We have purchased recycling bins for our academic and administrative buildings as well as personal blue bins for offices and residential rooms. • Athletics bins for outdoor use were purchased in summer 2011.
IT Changes	Web Page • We have a dedicated webpage that educates our community about waste and recycling on and off campus. • We have a dedicated webpage for educating our community about campus composting opportunities.
Behavior Change & Ed.	Events & Campus Program Support • Facilities Services supports campus sustainability events and oversees the Office of Sustainability. • Hosted a Sustainability Scavenger Hunt during Sustainability Week to encourage student awareness of Facilities Services' role in campus sustainability efforts. • Provides assistance to students organizations and the OS in arranging for major events such as Move-In and Sustainable Move-Out.
Waste & Recycling	Furniture • Sent surplus, used, college furniture to Haiti during the summers of 2010 and 2011 rather than to local organizations. While this ended up adding to our emissions through transportation, it also supported environmental justice concerns in Haiti, helping those who had little left after the hurricane. Water • Facilities Services applied for a grant to reclaim water from our cooling tower. We will continue to apply for grants to make this important project a reality.
Transportation	Water Bottles

	• We provide filtered tap water rather than using plastic or glass water bottles that would then end up having to be recycled. Bottled water also must be transported to campus and then transported away (either to the landfill or the recycling facility). • We have water filtration stations in Wismer (lower and upper) and in the Myrin Library. We plan to install additional stations in high-use areas as water fountains need to be replaced. • Campus Safety replaced its bottle-supplied water cooler with a water-fed filtered one. Composting • Our food pulper in Dining Services allows us to make fewer trips to our compost facility. The machine removes as much as 90% of the bulk from our food waste.
Community Outreach	Partnerships • We partner with local organizations on a number of events, including the Perkiomen Watershed Conservancy's annual stream cleanup and electronics recycling.
Infrastructure	Recycling Bins • Residential – we have large bins in every residence hall; we have large bins in most of the residential houses. • Academic & Administrative Buildings – we have large bins in all of these buildings. These bins are all the same except for those in the Kaleidoscope. This promotes awareness and consistency. • Personal bins. We have personal bins for offices by request. Each first year residential center room is equipped with a personal recycling bin. Also, the RAs in residential houses can request personal bins for all rooms in the house. When personal bins are in residential rooms, they become part of the room inventory. • Outside: General – we have recycling bins outside near some of the existing outdoor trash cans. These bins are all the same model, which is good for consistency and awareness. Unfortunately these bins are very similar in style to the trash bins and they get a large amount of trash in them. Also they have old labeling and don't indicate that paper can be deposited there. • Outside: Athletics venues – we have large blue recycling bins located around many of our outdoor athletics venues. These were purchased fall of 2011. • Green plastic bags. We use color-coded plastic bags to line our larger recycling bins. We did this to increase awareness of our recycling vs. trash practices. Though this has been helpful, there are still areas for improvement. Cardboard Shed • We have a shed for storing and dropping off corrugated cardboard before it's picked up by our waste hauler for recycling. Compacter • All of our trash is compacted on site, allowing for fewer pick-ups by our waste contractor. Composting • We have five 40-gallon, lockable totes for storing ground food scraps. • We have a food pulper which removes 90% of the volume and weight of our food by removing the water. This reduces the number of trips that we make to drop off our compost.

6.5 Goals: Water, Waste & Recycling

Goal 1: Determine what the Facilities Services Department's commitment to sustainability is within the realm of Water, Waste and Recycling, and advertise that commitment within the community.

Goal 2: Within the Facilities Services employee population, increase awareness of the Facilities Services Department's commitment to sustainability and the importance of conserving resources.

Goal 3: Set waste reduction/GHG emissions reduction goals within the College community.

Goal 4: Set goals for increasing our recycling rate and for decreasing the amount of waste generated per UC community member.

Goal 5: Work with the OS to set goals for reducing our water, waste, and recycling-related GHG emissions from transportation.

Goal 6: Determine and work to implement waste reduction goals for each building with interim goals.

6.5 PA: Water, Waste & Recycling - Prospective Actions

The following prospective actions are suggestions for consideration. It is assumed for the purposes of this document that any on-going activities that are listed above in the "current situation" section will continue. As it is difficult to see far in advance what the needs and constraints on the College will be, there are a wide variety of options presented here to consider. Some may be viable options for immediate implementation; some may seem impossible to implement in the current situation or foreseeable future, but may be viable at a later date depending on changing circumstances. These prospective actions will be reviewed periodically by staff in our Office of Sustainability (OS) and with relevant parties in the affected areas of the College.

6.5 PA-1: Water, Waste & Recycling – Prospective Actions: Policy

Immediate (2013-2018)

Recycling Contracts

- Stipulate specific actions for the cleaning staff to take with regard to recycling and waste.
    - Require labeling of each contaminated recycling bag at the collection site.

Mid-Term (2019-2030)

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.5 PA-2: Water, Waste & Recycling – Prospective Actions: Internal Operations

Immediate (2013-2018)

Recycling

- Determine our recycling rate. Set interim targets to increase our rates.
- Increase the recycling program to include bins (and thus pickups) at all College-owned residences.
- Gather and analyze data on the effectiveness of campus recycling bins by location, based on volume of recyclables; modify bin placement accordingly.
- Catalog how much recycling is created at the building level.
- Work with contracted waste haulers to ensure effectiveness of our recycling program and emphasize our commitment to lowering our landfill contributions.
- Determine if it is possible to track the amount of land-fill waste and recycling coming out of individual buildings; if so, begin tracking this information to identify areas where we can increase recycling and decrease land-fill waste.
- Create a Contamination Pilot Program. Hire student workers to sort through recycling that has been collected to remove contaminants.
    - This program could start in one or two highly visible locations where students would benefit from visual reinforcement of our recycling program. (First year centers, Reimert Hall, Wismer).
    - To further separate the recycling from the trash, investigate the possibility of having these student workers drive the recycling over to the pick-up area.

Composting

- Increase the composting program to include all residential halls and houses. Institutionalize this program.

Water

- Install flow-restrictors on all lavatory faucets

Day to Day Operations

- Distribute documents digitally whenever possible; when printing is required, print official documents double-sided on recycled, recyclable paper.

Mid-Term (2019-2030)

Tracking

- Conduct a waste audit of the campus. This year-long process would illustrate the amount of recycling, trash, and composting created on campus, the sources for all waste (building, campus, events, etc.). Volume, cost, and contamination levels are all calculated. This would allow us to fully understand our waste production and would provide us with baseline information from which we could track our progress toward waste-reduction goals.

Water

- Decrease the amount of water that is used on athletic fields.

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.5 PA-3: Water, Waste & Recycling – Prospective Actions: Procurement

Immediate (2013-2018)

Energy Accounting

- For projects that require large capital expenditures, incorporate energy costs associated with the lifetime of the project. Take savings from energy efficiency aspects of the project into account and consider payback time.

Recycling Bins

- Make purchases of bins based on our determination of a consistent branding for our recycling bins (color, size, shape, messaging).
- Purchase enough blue bins for every residential room on campus and every office on campus.

Composting

- Purchase bins, as needed, to facilitate the institutionalization of the composting program throughout the residential halls and houses.
- Purchase differently colored plastic bags for residential composting bins when/if the program is institutionalized. They should be clearly different from the garbage and recycling bags for educational purposes.

Purchasing Guidelines

- Use the Green Purchasing Guidelines in Appendix H to help guide purchasing decisions.

Water

- Purchase and install low flow plumbing fixtures.
- Purchase and install water filtration stations in key high-traffic areas around campus, including the Bakes Athletic Complex, Pfahler and Thomas halls.
- Purchase and attach water bottle fillers onto regular water fountains.

Mid-Term (2019-2030)

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.5 PA-4: Water, Waste & Recycling – Prospective Actions: Information Technology Changes

Immediate (2013-2018)

Collaboration with the OS

- Work with staff in the OS to create various online educational and informative tools. These could include:
  - Interactive Recycling Maps: These would be maps that students and UC community members can access online. The maps would show where recycling bins and other resources are on the UC campus. This would include composting, unusual recyclables, e-waste, etc.
  - Educational Videos: These videos would be aimed at students and would educate and entertain on the topics of recycling, waste, and composting. Videos would be posted on the OS and Facilities Services websites as well as shown in Wismer Lower periodically.
  - Multimedia flyers: These flyers would be designed for display on the Wismer video display and would cover topics relevant to the campus waste and recycling program. They would also be posted to the OS and Facilities Services websites.
  - Online Polls & Surveys: Topics for these polls (located on the OS and Facilities Services websites) would include recycling, composting and waste on campus. These polls would be monitored and interpreted by OS staff.

Mid-Term (2019-2030)

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.5 PA-5: Water, Waste & Recycling – Prospective Actions: Behavior Change & Education

Immediate (2013-2018)

Behavior

- Support UC-sponsored behavior change programs that influence waste production by all UC community members (see Office of Sustainability section for additional details).

Education

- Work with OS staff to promote education about our waste, recycling and water usage.

Own Sustainability

- Work to make sustainability part of the UC brand. State the College's values and approach to sustainability up front in communications with prospective students, parents, and the press. Own sustainability at the College and wear it proudly.
- Expect staff to fall in line with the College's policies, practices, and expectations around Sustainability.

Training

- Require all Dining Services employees to attend a training session on composting.

Water: Laundry

- Consider contracting with our laundry provider to institute a laundry quota system. This would allow students a certain number of "free" laundry cycles (washer or dryer). After they used their quota, they would have to purchase additional cycles. This would theoretically lead to larger and fewer loads of laundry being done, and could encourage the use of drying racks rather than the use of a cycle to dry small amounts of clothing.
- Investigate the feasibility of eliminating hot water in non-residential lavatories; implement if possible.

Mid-Term (2019-2030)

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.

- Reassess goals and prospective actions.

6.5 PA-6: Water, Waste & Recycling – Prospective Actions: Waste & Recycling

There are currently no identified Prospective Actions in this area.

Immediate (2013-2018)

Mid-Term (2019-2030)

6.5 PA-7: Water, Waste & Recycling – Prospective Actions: Transportation

There are currently no identified Prospective Actions in this area.

Immediate (2013-2018)

Mid-Term (2019-2030)

6.5 PA-8: Water, Waste & Recycling – Prospective Actions: Community Outreach

Immediate (2013-2018)

Community Partnerships

- Partner with outside organizations to participate in educational programs to collect various unusual waste items. For example, political signs, etc.

Mid-Term (2019-2030)

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.5 PA-9: Water, Waste & Recycling – Prospective Actions: Infrastructure

Immediate (2013-2018)

Recycling Bins

- Determine a consistent branding for our recycling bins (color, size, shape, messaging).

Water

- Increase the number of water filtration stations or water fountains with bottle fillers across campus.
- Upgrade water fountains with bottle filler adapters when possible, feasible and deemed appropriate for the usage of the fountain.

Mid-Term (2019-2030)

Large Scale Water Recycling from A/C cooling Towers

- Set up a system to re-use to the ~1 million gallons of water (per year) used by the air conditioning cooling towers for use for watering the athletic fields.

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

Facilities – Chapter 6.6: Landscape & Grounds

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Ursinus College extends over 170 acres of which approximately 30-35 acres are maintained, either in lawn or in playing fields. These areas vary in their treatment: some are mown regularly; some have grass that must be maintained at particular heights; some areas are planted with shrubs interspersed with lawn. Of note, the campus does have a naturalized stormwater basin that is designed to filter stormwater runoff from the back part of the campus. This area has a management plan that is implemented by the Facilities Services Department.

Five of the campus' 170 acres are maintained in forested cover adjacent to the campus, and approximately 85% of this forested land is in deciduous trees. The main campus has the benefit of a long history of planting and maintaining large trees. Approximately 65 acres of the campus have partial mature tree cover; these trees are primarily deciduous trees, many of which are in decline due to age, disease, or other factors. Though this is not a forested area, these trees do function to sequester some carbon; they also provide shade and wind protection for the buildings that are nearby as well as providing other benefits to the campus. The College's Tree Master Plan recommends planting many additional trees to supplement trees that have already been lost to disease or environmental impacts as well as planting trees to increase the tree cover on the main campus.

In order to care for the grounds, Facilities Services owns a sizable number of vehicles, including mowers, golf carts, wheel loaders, forklift, a skid steers, large tractors, snow blowers, etc. In addition, the department uses numerous gasoline-powered tools. (See Appendix K for an approximated list of College owned equipment.)

The grounds at Ursinus College provide opportunities for offsets and other improvements. Since fertilizer use contributes to the majority of the ground's GHG emission, switching over to more natural alternatives that have a smaller carbon footprint should be a main priority. Forest and soil sequestration are interesting options, however, their offset potential should be further investigated before serious consideration. Installing a green roof is expensive, but it has many benefits including lowered heating and cooling costs, offsetting, and increased education and awareness opportunities.

Our tree master plan identifies almost 800 individual trees on the campus, not including the trees on the forested acres, in/around the Hunsberger Woods area, or around the residential houses. Of those, the contractor identified 35 (4.5%) as needing to be removed immediately. Most of these trees are in the areas of campus where the soils are heavily compacted by foot traffic as well as event and day-to-day use. The total number of trees in this more heavily used part of campus is closer to 300. This makes the percentage of trees from this area that need to be removed closer to 12%. There were an additional 35 trees that were identified as having a 5-10 year life expectancy. All of these additional trees are also in the area that is more heavily used on campus. Thus, this is an additional 12% of the trees that will be gone in 10 years. Together this is almost 25% of the trees in the most heavily used areas of campus that either need to be removed immediately or will likely be dead in the next 10 years. This is clearly an area where the College will need to put a good deal of attention, as the trees on the campus are highly valued and are seen as being a great attribute of the College.

6.6 Current: Landscape & Grounds

The table below shows the mitigation or sustainability projects and/or initiatives that have already or currently are taking place within this administrative unit of the College. These initiatives are broken into nine areas. These areas are further delineated by type of action.

Table 6.6-1: Mitigation Project/Initiative: Campus Planning, Landscape & Grounds

Type of Project	Mitigation Project/Initiative: Campus Planning, Landscape & Grounds
Policy	Grounds • Facilities Services has been integral in making decisions regarding: how to treat our grounds with less pesticide; planting and maintaining old and new trees; mulching leaves rather than landfilling them; reducing the need for watering the grounds through plantings; managing stormwater runoff; designing and implementing the construction of athletic fields to be more sustainable; and more. Tree Planting • The College has set aside annual funds to replace trees that are lost due to disease and age. • Tree Master Plan • We have prepared a tree master plan that addresses, at least briefly, a variety of topics in addition to trees, including: stormwater runoff, lawn maintenance and protection, native plant species, rain gardens, edible landscape opportunities, etc. (2011). This master plan will guide all future activities on the campus grounds by our workers. The college is currently undertaking strategic planning. This effort will likely be followed by a master planning effort. The tree master plan will need to be modified commensurate with the master plan.

Infrastructure	Naturalized Stormwater Basin • In 2006-2007, the Facilities Services Department worked with the Environmental Studies Department to design and construct a naturalized basin area to help stormwater runoff go through a natural filtration process and recharge the groundwater rather than being channeled directly into the Perkiomen Creek. This naturalized stormwater basin area is on the north side of campus and pulls in water from the main campus parking lot, Kaleidoscope Performing Arts Center, Bakes Athletics Center as well as our baseball field, Snell Field , softball field and practice football field. Green Roof • Have installed a small green roof on the Berman Museum of Art's new wing. Lighting • The lights of the Main St. crosswalks, 201 9th parking, 500 Main & Maples lot, Corson lot, walkway from Edgar Gate to Myrin Library, and the walkway in front of Wismer Student Center are all LED lights. • Musco sports lights, the most efficient in the industry, were installed in 2011 on Patterson Field. • Ursinus was awarded a Pennsylvania Energy Development Authority (PEDA) grant to retrofit all of the West Parking lot lights and much of the campus walkway lights to LED. This work was completed in 2013. Pedestrian Campus • In 2004, as we were constructing the Kaleidoscope Theatre on our campus, we made a strategic decision to remove the road that transected the campus. This made our internal campus into a pedestrian campus. We were able to save the trees that had lined the internal road, and they now line a pedestrian thoroughfare. We have paths that traverse the campus and are suitable for pedestrians and bicycles. • The College provides bike racks outside of most buildings, including residence halls. Plants • Use native species when planting on campus. • The College maintains five acres of forested land adjacent to the campus.
Operations	Athletic Fields • 2010-11: the athletic fields were top dressed with compost rather than chemically fertilized. Parking Lots • We turn off a portion of the lights in the West parking lot during school breaks to save energy and reduce our electricity consumption. Pesticides • We use integrated pest management, which focuses pesticide application only to trouble areas – rather than everywhere Downed Trees • In wooded campus areas, trees that fall are left to decompose in order to

	support ecological health of the ecosystem.
Procurement	Fertilizers • We are purchasing organic fertilizers and compost for parts of the campus.
IT Changes	None at this time
Behavior Change & Ed.	Education • Environmental Studies has worked with the Facilities Services Department to expand the student-run organic farm to include an orchard, fruits/vegetables, bees, and chickens. • Work with Environmental Studies faculty to design and implement an ethnobotany garden next in one of the existing planting beds.
Waste & Recycling	Leaf Composting • We have an area where leaves are left to compost naturally. This lowers our waste disposal budget and allows for natural decomposition.
Transportation	Longevity of Use • Our Facilities Services staff are using some vehicles that are over 20 years old. Six of our vehicles are over ten years old. This is perhaps the best way to be sustainable – use what we have.
Community Outreach	None at this time

6.6 Goals: Landscape & Grounds

There are currently no goals identified for Landscape and Grounds.

6.6 PA: Landscape & Grounds - Prospective Actions

The following prospective actions are suggestions for consideration. It is assumed for the purposes of this document that any on-going activities that are listed above in the "current situation" section will continue. As it is difficult to see far in advance what the needs and constraints on the College will be, there are a wide variety of options presented here to consider. Some may be viable options for immediate implementation; some may seem impossible to implement in the current situation or foreseeable future, but may be viable at a later date depending on changing circumstances. These prospective actions will be reviewed periodically by staff in our Office of Sustainability (OS) and with relevant parties in the affected areas of the College.

6.6 PA-1: Landscape & Grounds – Prospective Actions: Policy

Immediate (2013-2018)

Tree Master Plan

- Ensure that all grounds staff members are aware of the campus Tree Master Plan, and educate them about why this important to the College and to them.
- Ensure that all grounds staff members know what they will be accountable for within the scope of the tree master plan.
- Work with faculty to determine if there is a role to be played by students in the implementation of the Tree Master Plan.

Parking

- Work with the Borough of Collegeville to get a special exception to the regulation or a variance to the building code that requires additional parking spaces with each new building on campus.

Mid-Term (2019-2030)

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.6 PA-2: Landscape & Grounds – Prospective Actions: Operations

Immediate (2013-2018)

Landscape

- Greenscape the campus using native plants, non-chemical fertilizers, natural pesticides (when needed).
- Use chopped up leaves as mulch for planting beds.
- Use compost as soil amendment on all fields and in planting beds.
- Cut the grass on the lawns to a higher length (4") so that the grass maintains its ability to recover from cuts more easily. This has a side benefit of allowing more clover flowers to survive. Clover flowers support the populations of bees at the UC Organic Farm.

Master Plan

- Work to implement the campus tree master plan, with particular emphasis on measures that will lower our impact on the ecosystem, such as stormwater management and landscape design, and that improve the ability of our grounds to absorb GHGs from the atmosphere, such as planting pine trees with high ability to absorb GHGs.
- Identify parts of the Master Plan that are particularly in alignment with our commitment to becoming carbon neutral as well as more ecologically sound (e.g., planting only native species of plants), and put emphasis on implementing those parts of the plan.
    - This should be done in coordination with the Environmental Studies Department and/or the OS, to maximize student academic and service learning opportunities.

Mid-Term (2019-2030)

Plant Trees on Campus

- In order to expand the forested area, consider planting native tree species throughout campus. Other colleges such as Montgomery County Community College and Northland College are increasing tree quantity on their campuses in an attempt to offset their GHG emissions.

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.6 PA-3: Landscape & Grounds – Prospective Actions: Procurement

Immediate (2013-2018)

Fertilizers, Pesticides and Other Products

- Increase the percentage of environmentally "friendly" and sustainable products purchased for treating the landscape and grounds, including fertilizers and pesticides.
- Work with the Office of Sustainability to identify products that are needed for use on the grounds and more environmentally friendly options for these products.
    - Use this identified list to make purchased for maintaining the UC grounds.

Purchasing Guidelines

- Use the Green Purchasing Guidelines in Appendix H to help guide purchasing decisions.

Responsible Consumption

- Reduce use of products wherever possible and implement sustainability practices in everyday operations.

Mid-Term (2019-2030)

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.

- Reassess goals and prospective actions.

6.6 PA-4: Landscape & Grounds – Prospective Actions: Information Technology Changes

There are currently no identified Prospective Actions in this area.

Immediate (2013-2018)

Mid-Term (2019-2030)

6.6 PA-5: Landscape & Grounds – Prospective Actions: Behavior Change & Education

Immediate (2013-2018)

Own Sustainability

- Work to make sustainability part of the UC brand. State the College's values and approach to sustainability up front in communications with prospective students, parents, and the press. Own sustainability at the College and wear it proudly.
- Expect staff to fall in line with the College's policies, practices, and expectations around Sustainability.

Sustainability Practices

- Develop a list of actions that the department is willing to implement toward improving their sustainability, e.g., riding bikes to work areas, eco-friendly procurement, cutting cycles for the lawn, etc.

Mid-Term (2019-2030)

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.6 PA-6: Landscape & Grounds – Prospective Actions: Waste & Recycling

Immediate (2013-2018)

Leaves & Yard Waste

- Assess current practices periodically to determine if there are methods that could be used that would improve waste and recycling of organic materials on the College grounds.

Mid-Term (2019-2030)

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.6 PA-7: Landscape & Grounds – Prospective Actions: Transportation

Immediate (2013-2018)

Bicycle Use

- Whenever possible, use bicycles (with trailers, if needed) instead of trucks or golf carts to get from one campus location to another. This has multiple benefits: lowers our campus emissions of GHGs, reduces the need to maintain vehicles, increases awareness of bicycle use on campus, and improves the health of College employees. This could be tied into our health insurance program's interest in improving the UC employee population's health (NewU).

Engine shut off

- Do not idle vehicles operated on the UC campus.

Vehicles

- Periodically test the gas caps on grounds vehicles. About 30 gallons of gas a year can be lost due to faulty gas caps.

- Maintain the grounds vehicles and gasoline-powered equipment to ensure they are running efficiently.
- Investigate the possibility of upgrading some of Facilities Services grounds vehicles to biodiesel. If possible, work with students on these upgrades.

Mid-Term (2019-2030)

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.6 PA-8: Landscape & Grounds – Prospective Actions: Community Outreach

Immediate (2013-2018)

Signage

- Post signage about the College's policies that affect the community.
- Post interpretive signage around the campus at locations that highlight our sustainable/environmental projects or programs. These would include: the Berman green roof and addition; the Patterson Field; the naturalized stormwater basin; the Organic Farm; the solar array (when installed); the Bikeshare Program; etc.

Mid-Term (2019-2030)

Stormwater

- Work with Collegeville Borough to help the borough meet its stormwater runoff quantity and quality mandates.

Community Involvement

- Maintain a college presence on The Perkiomen Watershed Conservancy Board of Trustees.

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.6 PA-9: Landscape & Grounds – Prospective Actions: Infrastructure

Immediate (2013-2018)

Bike Racks

- Install bike racks, preferably in covered areas, next to all campus buildings that do not already have racks.

Naturalized Stormwater Basin (Constructed Wetland)

- Work with the Environmental Studies faculty and students to assess how the maintenance plan for the naturalized stormwater basin is being implemented. Determine if there are aspects of the plan that need to be readdressed or handled differently. Encourage incorporating students in longer-term use of the area as an educational tool.

GHG Sequestration

- Choose trees with high carbon sequestration capabilities when planting trees on campus grounds. Different tree species are able to sequester more carbon than others so the species proposed should be carefully researched to allow the maximum carbon sequestration. An example of this can be seen in a comparison of maple trees versus pine trees. Approximately 36 maple trees will sequester one ton of carbon over 25 years while it takes only six pine trees to sequester one ton of carbon over that same time period (Erase Carbon Footprint, 2009). The cost of this project would depend on the species and number of trees and will not necessarily save the college any money, except as an alternative to a more expensive carbon offset.

Native Species

- Choose native plant species for all applications on campus. Non-native species of trees and shrubs can be detrimental to native species by outcompeting them

for resources such as water. They may also be less supportive of native animals and ecosystems and may have unknown deleterious impacts on our local ecosystem. Although we are not in an undisturbed ecosystem, we are nevertheless part of a larger ecosystem and support a local watershed here on the Ursinus Campus. As good stewards of the land, it is important to protect the ecosystem of which we are a part. To do this, we need to commit to promoting native species of plants and animals as well as attempting to limit our negative impacts on the ecosystem.

Stormwater Runoff

- Identify realistic and cost-effective strategies to reduce the amount of stormwater runoff that is created on our campus. Our campus drains into the Perkiomen Creek, which runs along the northern border of our campus, across a heavily trafficked road from our property. To do this, we should consider:
    - Installing rain gardens where feasible on campus.
    - Increasing the amount of campus that drains to our naturalized stormwater basin (if possible). It is likely that the sciences expansion will result in Thomas, Pfahler and Reimert runoff being re-routed to the basin.
    - Protecting areas where erosion may be an issue.
    - Ensuring that areas that are currently in forest continue to serve the function of filtering stormwater runoff.

Mid-Term (2019-2030)

Bike Racks

- Install additional bike racks, as needed, next to all campus buildings.
- Investigate the possibility of installing a covered central bike storage area that would allow bike users to park their bikes in a sheltered area.

GHG Sequestration

- Investigate the possibility of using soil and landscape sequestration as an offset to our carbon emissions. As increasing amounts of research are done and knowledge is acquired in the field of sustainability, additional ecological carbon offset alternatives are likely to emerge.

Extensive Green Roof

- Work toward the addition of at least one extensive green roof system at Ursinus College. An extensive green roof is a roof layering system that consists of approximately six layers. These layers not only serve to protect the roof, but also nourish the plants that grow on the top layer. The layering system and the plants act as an insulator, keeping the cool air in the building in the hot summer months and also keeping the warm heated air in during the winter. Green roofs can also be helpful in storm water management. The addition of a green roof to campus has the potential to decrease heating and air-conditioning usage, reducing GHG emissions, while also saving the college money.

Parking Areas

- Proceed with the plan to remove the parking area behind Wismer and the road that runs between Richter/North Hall and New Hall.
- Address expected soil compaction issues during site restoration.

Soil Compaction

- Because of the heavy use of the lawn areas on the Ursinus campus, the soils in these areas are substantially compacted. This has negative implications for all of our plants, including our trees. As we focus on keeping our trees and shrubs healthy on campus, we will need to address this basic infrastructure issue on our grounds.
- Soil compaction has implications for how well trees sequester carbon as well as stormwater runoff and the grounds' ability to recharge the groundwater. If the soil is too compacted, water cannot effectively infiltrate and reach the root systems of trees and other plants.

Stormwater Runoff

- Implement strategies to reduce the amount of stormwater runoff that is created on our campus. Much of our campus currently drains into the Perkiomen Creek, which runs along the northern border of our campus, across a heavily trafficked road from our property. To do this, we should consider:
    - Installing rain gardens where feasible on campus.
    - Increasing the amount of campus that drains to our naturalized stormwater basin (if possible).
    - Protecting areas where erosion may be an issue.

- Ensuring that areas that are currently in forest continue to serve the function of filtering stormwater runoff.
- The campus master planning effort will likely plan for an extended retention basin to be constructed for the East campus outflow as well.

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

Facilities – Chapter 6.7: Renovations and New Construction

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One of Ursinus' greatest assets is its historic building stock. They provide a graceful beauty to our campus. However, they also represent a liability in terms of energy usage. Most of these buildings were built before energy conservation was a thought in anyone's mind, and prior to the invention of many of the current most common energy saving practices and/or equipment. Because of these factors and the high cost of renovating older buildings, we will have to renovate and retrofit them to current energy conservation standards as financial resources allow. Major renovations (and even some minor ones) represent an opportunity for Ursinus to address more serious energy concerns, however costly retrofits can have a long-term return on investment timeframe, thus having a negative impact on our energy budget's bottom line. If Ursinus College is going to decrease its future energy use, costs and emissions, we must design new buildings and plan renovations to minimize life-cycle costs.

In committing to the ACUPCC, the College also committed to building new buildings and major renovations to Leadership in Energy and Environmental Design (LEED) silver standards.[5] In recent years, the College has undertaken several renovations to LEED silver standards, including the Berman Art Museum addition, Wismer renovations, the bookstore renovation and two science lab renovations. These projects have not been LEED certified as a cost saving measure, but we attain the same energy-saving benefits from them. And our renovations and retrofits and other conservation measures are having a demonstrable impact. Between 2001 and 2010, the College increased its total building square footage by almost 400,000 square feet. During that same time, because of energy efficiency upgrades, renovations, and construction practices, the College's level of net CO_2 emissions remained static.[6] The College typically includes some or all of the following in its renovations: low flow water systems, recycling of construction

[5] LEED certification is obtained by including all required sustainability elements in a project as well as a certain number of additional elements (each given a number of points). Projects with more points can qualify for higher LEED certifications (there are four in all: Certified; Silver; Gold; and Platinum). (U.S. Green Building Council 2011)

[6] In 2001 Ursinus' total building square footage was 816,727 and its net emissions were 9,003.1 MT eCO_2. In 2010, The College's total building square footage was 1,160,464 and its net emissions were 8,683.1 MT eCO_2.

waste/removal, energy efficient lighting and windows, insulation improvements, room occupancy sensors, variable speed drives and pumps, and heat recovery. (See Figure ___ for a list of sustainability projects and initiatives.)

From time to time, the College also needs to add new structures to the campus. We have been in a long-term discussion about updating our science buildings (Pfahler and Thomas Halls). This is likely to include both a major addition that would connect our science buildings and substantial renovations to both buildings. This renovation is needed, but will be costly and represents a major capital commitment. Pfahler Hall is our largest energy user, thus any renovation to it has the potential to create sizeable GHG emission reductions. Additionally, the Facilities Services Department has identified projects that will reduce energy consumption related to energy consumption in campus buildings and move us toward our long term goal of becoming carbon neutral.

We currently are planning to do phased renovations of two residence halls: BWC and BPS over the coming ten years. (2016-2020) These renovations will include many energy saving measures. A green roof on Wismer Dining Hall is also in the 10-year plan for the College. The College has a plan for renovating the kitchen in Wismer as well. This will be accomplished between 2016 - 2019, depending on other projects. The renovation of the kitchen will include replacing old energy inefficient equipment throughout the kitchen and will also have a significant and positive impact on energy usage.

6.7 Current: Renovations & New Construction

The table below shows the mitigation or sustainability projects and/or initiatives that have already or currently are taking place within this administrative unit of the College. These initiatives are broken into nine areas. These areas are further delineated by type of action.

Table 6.7-1: Sustainability projects & initiatives – Renovations and new construction.

Type of Project	Sustainability Project/Initiative: Renovations and New Construction
Policy	Waste Removal • We require our contractors to haul away waste products and to recycle as much of it as is possible.
Operations	Organization • We have a plan for upgrading and retrofitting existing buildings with more sustainable systems. We update this plan regularly and work with the administration to ensure that our goals are aligned with those of the college. Energy Saving Initiatives • Conversion of many Main St. houses to natural gas from oil over last several years (2009 - 2012). • Insulation. UC is in the process of installing insulation in ceilings & walls of campus buildings to improve seasonal temperature retention. • Thermostats. Updated to electric and separated for each room to take into account windows left open. LEED Construction • Berman Art Museum addition built to LEED Silver specifications. Though we do not have official certification, we tracked points on the Berman addition to make sure that we are maintaining LEED silver standards (33-38 points). • Wismer phases 5 & 7 (STV Architects & Bono Construction) was designed to LEED silver standards. • Bookstore second floor (KSS Architects & Warfel Construction): Designed to LEED silver standards. • Two of the laboratories in Thomas Hall were renovated during the summer of 2011: built to LEED silver specifications. Sustainable Practice in Renovations • In smaller-scale renovations of Reimert Hall, toilets and showers were replaced with low-flow, motion sensors were put in place for all lighting, epoxy floors were installed instead of carpet, higher efficiency HVAC units were installed and old furniture was donated to Haiti. • Myrin Library renovations were done with sustainable practices, though on a very small scale. Green Roof • Green roof installed on Berman Art Museum addition. • Green roof to be installed on Wismer (outside of dining area) between 2016-2023. Kitchen

	• Kitchen. The College has a plan for renovating the kitchen in Wismer Hall. We hope that this will be accomplished in 2016 or 2017, depending on the completion of other projects as well as fiscal considerations. The renovation of the kitchen will include replacing old energy-inefficient equipment throughout the kitchen. This will have a significant impact on Dining Services' energy usage.
Procurement	Energy Efficiency • Energy efficient windows are purchased for renovation jobs. This lowers the cost of heating and cooling buildings on campus. Local • We purchase materials and equipment locally when possible (e.g., lamp posts were bought locally in Spring City). Sustainable Materials • Epoxy floors are installed in areas that need high durability instead of carpet (carpet often needs to be thrown out annually). • VCT floors are installed, as needed, as a replacement for carpets in dorm rooms and other applications. • Green carpet (from Interface Flooring) is used when we purchase carpeting.
IT Changes	None at this time
Behavior Change & Ed.	None at this time
Waste & Recycling	Construction Waste • We work to reuse/re-purpose as much material, equipment and furniture as we can.
Transportation	None at this time
Community Outreach	None at this time

6.7 Goals: Renovations & New Construction

Goal 1: Determine what the Facilities Services Department's commitment to sustainability is within the realm of Construction and Renovation, and make that commitment public within the UC community.

Goal 2: Set energy-use reduction targets for all buildings on campus.

Goal 3: When undertaking a major renovation of existing buildings, aim to reduce annual average energy consumption for that building by at least 15% per gross square foot of space.

6.7 PA: Renovations & New Construction - Prospective Actions

The following prospective actions are suggestions for consideration. It is assumed for the purposes of this document that any on-going activities that are listed above in the "current situation" section will continue. As it is difficult to see far in advance what the needs and constraints on the College will be, there are a wide variety of options presented here to consider. Some may be viable options for immediate implementation; some may seem impossible to implement in the current situation or foreseeable future, but may be viable at a later date depending on changing circumstances. These prospective actions will be reviewed periodically by staff in our Office of Sustainability (OS) and with relevant parties in the affected areas of the College.

6.7 PA-1: Renovations & New Construction – Prospective Actions: Policy

Immediate (2013-2018)

Contractors and Vendors

- Give preference to contractors and vendors who can help us meet our sustainability commitments without increasing our costs.
- Encourage vendors to provide products and services that will help us meet our sustainability commitments.

LEED Construction Standards

- Whenever possible, increase the energy efficiency standards on new construction or renovation projects, with a target of supplementing the existing LEED Silver requirement.
    - This could be achieved by increasing the minimum number of points for the LEED energy conservation credit or by setting an overall minimum building Energy Use Intensity (EUI) standard.
    - Use similar buildings at other institutions to inform energy guidelines; vary these guidelines based on building type.
- Evaluate the LEED Existing Building Rating System for guidance on building renovations that are not required to be built to LEED silver specifications.

Mid-Term (2019-2030)

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

LEED Construction

- If possible, build renovations and new construction to LEED gold or platinum standards.
- When possible, have one or more of our built-to-LEED-standard buildings certified because…..

6.7 PA-2: Renovations & New Construction – Prospective Actions: Operations

Immediate (2013-2018)

Building Energy Use Intensity (EUI)[7]

- Work with OS staff to calculate the EUI for each of the main campus buildings as a way of tracking our campus energy efficiency.

Energy Sub-Meters

- Install electrical energy sub-meters as a standard practice. If possible, also install water and steam sub-meters.

HVAC

[7] "A building's EUI is calculated by taking the total energy consumed in one year (measured in kBtu) and dividing it by the total floor space of the building. For example, if a 50,000-square-foot school consumed 7,500,000 kBtu of energy last year, its EUI would be 150. A similarly sized school that consumed 9,000,000 kBtu of energy last year would have a higher EUI (180) to reflect its higher energy use. Generally, a low EUI signifies good energy performance." (U.S. DOE and U.S. EPA 2011)

- Work with Office of Sustainability staff to create an HVAC Efficiency Plan that includes potential energy saving projects with cost analysis for HVAC applications across campus.

Renovations - Dining Hall

- Consider heat recovery ventilation as an improvement to the HVAC or water heating systems. This is most commonly used in food service facilities by transferring waste heat from refrigeration compressors to water for hot water use or the ventilation system for warm air.
- Consider upgrading the commercial kitchen ventilation (CKV) system to a variable speed exhaust system in the dining hall kitchen. Demand exhaust hoods detect heat and carbon dioxide levels and adjust fans accordingly.

Sustainability Renovation Best Practices

- Install thermostats, motion sensors, and CO_2 detectors in buildings that make air changes in response to CO_2 levels rather than automatically on timer, etc.
- Install HVAC tracking so that we can operate our buildings more efficiently.
- Incorporate geothermal HVAC systems when possible.
- Install insulation with higher R value insulation materials on pipes, windows, walls, ceilings, roofs, when and where possible.
- Use low VOC paints on campus.
- Investigate the viability of vegetative roofs for new and remodeled buildings.

Mid-Term (2019-2030)

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.7 PA-3: Renovations & New Construction – Prospective Actions: Procurement

Immediate (2013-2018)

Purchasing Guidelines

- Use the Green Purchasing Guidelines in Appendix H to help guide purchasing decisions.

Mid-Term (2019-2030)

6.7 PA-4: Renovations & New Construction – Prospective Actions: Information Technology Changes

Immediate (2013-2018)

Website

- Work with OS staff to create a "Sustainable Buildings" webpage that details to our sustainable construction practices and highlights the College's achievements in this area. Link this webpage to both the Facilities Services webpage and the OS's webpage.
- Update FSD's building page to inform the campus about renovated or new buildings to include sustainability facts for each building. Include a table of these facts on the Sustainable Building webpage.
- Create a page for each building or renovated area that highlights some of its sustainable features and like to the Sustainable Buildings website. This would serve to educate the UC community about what we are doing as well as allow us to be transparent as to what we are claiming on our renovations and construction.

Mid-Term (2019-2030)

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.

- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.7 PA-5: Renovations & New Construction – Prospective Actions: Behavior Change & Education

Immediate (2013-2018)

Education

- Consider having annual think tank meetings to strategize about sustainability within the FSD.
- Invite students to participate in a roundtable discussion about construction practices on campus.
- Offer occasional sustainability tours of buildings that are built/renovated to LEED specifications.

Own Sustainability

- Work to make sustainability part of the UC brand. State the College's values and approach to sustainability up front in communications with prospective students, parents, and the press. Own sustainability at the College and wear it proudly.
- Expect staff to fall in line with the College's policies, practices, and expectations around Sustainability.

Tracking LEED points

- Consider publishing LEED standards and points that we track for each of our buildings on our "Sustainable Buildings" webpage (detailed above). This would serve to educate the UC community about what we are doing as well as allow us to be transparent as to what we are claiming on our renovations and construction.

Mid-Term (2019-2030)

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.

- Reassess goals and prospective actions.

6.7 PA-6: Renovations & New Construction – Prospective Actions: Waste & Recycling

There are currently no identified Prospective Actions in this area.

Immediate (2013-2018)

Mid-Term (2019-2030)

6.7 PA-7: Renovations & New Construction – Prospective Actions: Transportation

There are currently no identified Prospective Actions in this area.

Immediate (2013-2018)

Mid-Term (2019-2030)

6.7 PA-8: Renovations & New Construction – Prospective Actions: Community Outreach

Immediate (2013-2018)

There are currently no identified Prospective Actions in this area.

Mid-Term (2019-2030)

Public Access

- If Ursinus has a LEED certified building, offer occasional tours to the public.

6.7 PA-9: Renovations & New Construction – Prospective Actions: Infrastructure

Immediate (2013-2018)

Bike Racks

- Install bike racks, preferably in covered areas, next to all new campus buildings.

Mid-Term (2019-2030)

Bike Racks

- Install additional bike racks, as needed, next to all campus buildings.
- Investigate the possibility of installing a covered central bike storage area that would allow bike users to park their bikes in a sheltered area.

Extensive Green Roof

- Plan an extensive green roof into any new buildings on campus.
    - An extensive green roof is a roof layering system that consists of approximately six layers. These layers not only serve to protect the roof, but also nourish the plants that grow on the top layer. The layering system and the plants act as an insulator, keeping the cool air in the building in the hot summer months and also keeping the warm heated air in during the winter. Green roofs can also be helpful in storm water management. The addition of a green roof to campus has the potential to decrease heating and air-conditioning usage, reducing GHG emissions, while also saving the college money.

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

Facilities – Chapter 6.8: Building Maintenance and Upgrades

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The College's Facilities Services Department is responsible for the maintenance on 69 buildings on campus, not including smaller storage buildings. This includes 45 residential buildings, two science buildings, a museum, a state of the art theater, an administrative office building, the facilities building, the athletic complex, and three additional academic buildings. (See Appendix L for a list of the buildings, and their purposes and Appendix M for a list of buildings by type.)

Campus buildings provide the setting for and/or the cause of most of the College's GHG emission-producing activities that are not related to transportation. Of the buildings, our two science buildings, Pfahler and Thomas Halls, are the largest contributors to Ursinus' GHG emissions. Because of this, the College has invested substantially in making sustainability-related improvements to its buildings. These updates tend to be long-term improvements, and range from installing insulation in roofs and upgrading windows to insulated windows to upgrading the HVAC systems to variable speed drives and installing electric thermostats. The College has made fairly sizeable investments in this area and have reaped the benefits; while the student population and square footage has increased, the College has been able to stay fairly stable with its resource use.

As the College moves forward in unstable financial times, it will be looking carefully at each expense, including those related to its buildings. Decisions will likely be made based on payback periods at least to an extent, but we hope to be able to continue to make improvements to campus buildings that will make them more economically sustainable for the long term.

6.8 Current: Building Maintenance & Upgrades

The table below shows the mitigation or sustainability projects and/or initiatives that have already or currently are taking place within this administrative unit of the College. These initiatives are broken into nine areas. These areas are further delineated by type of action.

Figure 6.8-1: Mitigation projects & initiatives – Renovations and new construction.

Type of Project	Mitigation Project/Initiative: Existing Buildings: Maintenance
Policy	Building Maintenance • Facilities Services encourages all workers to fix things right the first time. This is a fundamentally sustainable approach that has helped the College save money and reduced the need to spend time, money and resources to fix various problems repeatedly. Quality is one of the department's guiding principles. • Facilities Services has a list of energy-saving projects that it works from, called the Energy Pool. This allows us to track our progress toward our sustainability goals.
Operations	Heating/Cooling • Conversion of many Main St. houses to natural gas from oil over last several years (2009-2012). • Facilities Services has been putting Variable Frequency Drives (VFDs) on our air handling units and pumps. This saves money by reducing our energy consumption. Motors increase or decrease speed as needed rather than operating at a constant rate. • Thermostats. Updated to electric & separate for each room to take into account windows left open. Insulation • The College is in the process of installing insulation in ceilings and walls of campus buildings to improve seasonal temperature retention and create an envelope of protection from the cold/hot air outside. • Insulation upgrades are made throughout our residential buildings when feasible. Our goal is to have all ceilings insulated with R30 insulation. Due to the need for flexibility in budgeting and difficulty accessing occupied spaces, we do not currently have a time line for this goal. Insulation is upgraded when renovations are made. Lighting: Usage Patterns • Installed motion sensors on lights in bathrooms, offices, and classrooms. • Custodial services works during daytime, reducing lighting requirements at night. • West Parking Lot is closed at certain times to save energy required to light the area. • Conducted a lighting study in the athletic complex to determine needs. • Lighting: Upgrades • LED lights installed for outdoor walking lights are more energy efficient and last 10x longer than fluorescents • Replace 28-32 watt fluorescent lamps with 25 watt low-mercury tubes (all fixtures with suitable ballasts). • Replace incandescent-bulb exit signs with LED signs.

	Machine-Related Energy Saving • Vending Miser installed in all campus vending machines. • Office machines set to low power mode overnight and on weekends when usage is low, automatically start up during the work day. • Appliances are replaced with Energy Star/energy saving models, as needed. Maintenance • We plan to develop a list of sustainable products to use in our day-to-day routine repairs. • We currently use no- and low-VOC paint in many of our campus locations. • Our staff members perform regular maintenance checks and cleaning on the air handling, heating, plumbing and other systems in our existing buildings. • HVAC: Facilities Services winterizes our HVAC systems annually to save energy and money. • Carpets: Carpets in high-replacement frequency areas are replaced with vinyl composition tiles (VCT) as they need replacing. The VCT has a 20+ year life expectancy, which is much better than carpet in a college setting. Science Labs • We have made updates in our science buildings that are more energy efficient (e.g., to fume hoods). For more information on this, see the chapter on the science labs. Water • Facilities Services has installed low flow shower heads and faucets aerators in some of the bathrooms in residential buildings. • Facilities Services has installed low flow toilets in some residential building bathrooms. • We have water meters in all residential houses. Windows • Due to cost of wholesale replacement of all windows, Facilities Services installs energy efficient replacement windows as they are needed. This will take time to implement. We currently have energy efficient windows in approximately 80 % of residential windows.
Procurement	Approach • Our Facilities Services purchases are made with longevity of use as well as fiscal reasoning in mind. While we would prefer to purchase only sustainable products, economically we are not well-positioned to do this when cost differentials are large. However, we typically use products until the end of their useful life and then do our best to replace those products with a reasonable alternative that makes sense both fiscally and environmentally. Please see the Facilities Services Administration section for a list of products.
IT Changes	Work Orders • We have instituted an online work order request system that enables us to streamline our operations and reduce our paper usage and waste stream contributions.
Behavior Change & Ed.	Energy Dashboard • Facilities Services has installed real time energy monitors in all of the main campus buildings.
Waste & Recycling	Recycling • Facilities Services maintenance workers collect and recycle used hazardous materials from the buildings. These items include fluorescent bulbs, batteries, smoke

	detectors, etc. Repurposing • Facilities Services has partnered with outside organizations to repurpose building materials, furniture and lights for several of our building renovations.
Transportation	None at this time
Community Outreach	None at this time

6.8 Goals: Building Maintenance & Upgrades

Goal 1: Determine what the Facilities Services Department's commitment to sustainability is within the realm of building maintenance, and publicize that commitment to the campus community.

Goal 2: Within the UC Community, including the Facilities Services Department, increase awareness of the Facilities Services Department's commitment to sustainability and the importance of conserving resources.

Goal 3: Set energy-use reduction targets for each building on campus. And work with the OS and building occupants to reach those targets.

6.8 PA: Building Maintenance & Upgrades - Prospective Actions

The following prospective actions are suggestions for consideration. It is assumed for the purposes of this document that any on-going activities that are listed above in the "current situation" section will continue. As it is difficult to see far in advance what the needs and constraints on the College will be, there are a wide variety of options presented here to consider. Some may be viable options for immediate implementation; some may seem impossible to implement in the current situation or foreseeable future, but may be viable at a later date depending on changing circumstances. These prospective actions will be reviewed periodically by staff in our Office of Sustainability (OS) and with relevant parties in the affected areas of the College.

6.8 PA-1: Building Maintenance & Upgrades – Prospective Actions: Policy

Immediate (2013-2018)

Residential Houses

- If our student population decreases in size, consider closing up some of our smaller residential houses or renting them to faculty/staff.

Mid-Term (2019-2030)

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.8 PA-2: Building Maintenance & Upgrades – Prospective Actions: Operations

Immediate (2013-2018)

Electric metering

- When feasible, meter to the lowest unit possible for real time feedback to residents and building users (i.e., by floor rather than just by building).

Energy Saving Initiatives

- Convert Main St. houses that are using heating oil to natural gas.
- Put motion sensors in all classrooms. Sensors should be able to pick up motion from most of the classroom so that students taking tests can wave their arm and have the lights go back on.
- Continue installing insulation in ceilings and walls of campus buildings to improve seasonal temperature retention and create an envelope of protection from the cold/hot air outside, including: walls and ceilings.
- Continue to update thermostats to electric and install separate devices for each classroom and office to take into account windows left open.

Heating/Cooling

- Install insulation behind the switch and outlet plates on outside walls of all buildings.
- Reduce solar heat gain through the use of shading devices and window glazing options to reduce space cooling demands (up to a 30% decrease).
- Regulate fresh air intake via real-time CO_2 sensing in return-air buildings where occupancy varies widely.
- Conduct energy audits on all of the residential buildings, halls and houses.

Lighting

- Decrease interior lighting power per square foot to the minimum required. Conduct site surveys to determine reduction of the number of light bulbs. De-lamping to be based on those site surveys. Final foot-candle readings for all spaces should be at or above the standards established by the Society of Illuminating Engineers.[8]
- Decrease exterior lighting power per square foot (percentage to be determined based on current lighting).

Mid-Term (2019-2030)

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.8 PA-3: Building Maintenance & Upgrades – Prospective Actions: Procurement

Immediate (2013-2018)

Green Materials

[8] See - http://www.northwestern.edu/fm/environmental_sustainability.htm - for more information.

- Work with OS staff to create a list of sustainable or "green" materials to use for day-to-day maintenance jobs. This list should cover the types of materials that are commonly used.

Purchasing Guidelines

- Use the Green Purchasing Guidelines in Appendix H to help guide purchasing decisions.

Mid-Term (2019-2030)

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.8 PA-4: Building Maintenance & Upgrades – Prospective Actions: Information Technology Changes

Immediate (2013-2018)

Preventative Maintenance

- Create a schedule for preventative maintenance on all our buildings. This schedule should include all items that need either on-going or periodic maintenance. By maintaining the buildings and their contents we will increase our sustainability by extending the useful life of building components, thus decreasing our need to purchase replacements.
- Move to a paperless maintenance system.

Mid-Term (2019-2030)

- Replace gas-powered Facilities Service vehicles with diesel (biodiesel) or electric.

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.

- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.8 PA-5: Building Maintenance & Upgrades – Prospective Actions: Behavior Change & Education

Immediate (2013-2018)

Own Sustainability

- Work to make sustainability part of the UC brand. State the College's values and approach to sustainability up front in communications with prospective students, parents, and the press. Own sustainability at the College and wear it proudly.
- Expect staff to fall in line with the College's policies, practices, and expectations around Sustainability.

Staff Education

- Consider offering in-house training to help staff change old practices.
- Consider having annual think tank meetings to strategize about sustainability within the FSD. Invite students to participate in these discussions.

Mid-Term (2019-2030)

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.8 PA-6: Building Maintenance & Upgrades – Prospective Actions: Waste & Recycling

Immediate (2013-2018)

Materials Recycling

- When renovating spaces on campus, investigate the possibility of having an architectural salvage company come in to assess whether they could use any materials that would otherwise be put into the landfill.

Mid-Term (2019-2030)

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.8 PA-7: Building Maintenance & Upgrades – Prospective Actions: Transportation

There are currently no identified Prospective Actions in this area.

Immediate (2013-2018)

Mid-Term (2019-2030)

6.8 PA-8: Building Maintenance & Upgrades – Prospective Actions: Community Outreach

There are currently no identified Prospective Actions in this area.

Immediate (2013-2018)

Mid-Term (2019-2030)

6.8 PA-9: Building Maintenance & Upgrades – Prospective Actions: Infrastructure

There are currently no identified Prospective Actions in this area.

Immediate (2013-2018)

Mid-Term (2019-2030)

Facilities – Chapter 6.9: Transportation & Fleet

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Facilities Services' fleet includes a variety of vehicles that are used on and off campus. These range from hybrid automobiles to a bucket truck, which can be driven on streets, and from electric golf carts to mowers and wheel loaders, which are confined to campus. See Appendix N for a list of the UC Fleet vehicles. We own a number of trucks and vans that are older than ten years; and several that are over 20 years old. These are all vehicles that do not travel long distances and are primarily (some exclusively) used on the campus. This reflects our commitment to maintenance, fiscal responsibility, and by virtue of association, to sustainability.

The college leases all of the vehicles that we use for admissions, the president's car, and our five 7-passenger vans. This allows us to have smaller payments and not have to put a great deal of money into maintaining our high-mileage vehicles. Several of these vehicles are coming to the end of their lease periods. We will be reviewing these vehicles to determine if leasing hybrids continues to make fiscal sense.

6.9 Current: Transportation

The table below shows the mitigation or sustainability projects and/or initiatives that have already or currently are taking place within this administrative unit of the College. These initiatives are broken into nine areas. These areas are further delineated by type of action.

Table 6.9-1: Mitigation Project/Initiative: Transportation

Type of Project	Mitigation Project/Initiative: Transportation
Policy	Fleet • Decisions about purchasing new vehicles for the Facilities Services fleet are made with lowering our carbon footprint in mind, particularly with regard to decreasing our gasoline consumption.
Operations	None at this time
Procurement	Vehicles • The College has invested in biodiesel and electric powered vehicles for Facilities Services. • The College has leased hybrid cars for Admissions/ administrative use.
IT Changes	None at this time
Behavior Change & Ed.	None at this time
Waste & Recycling	None at this time
Transportation	None at this time
Community Outreach	None at this time
Infrastructure	Longevity of Use • Our Facilities Services staff are using some vehicles that are over 20 years old. Six of our vehicles are over ten years old. This is perhaps the best way to be sustainable – use what we have.

6.9 Goals: Transportation

Goal 1: Determine what the Facilities Services Department's commitment to sustainability is within the realm of Transportation, and publicize that commitment within the community.

Goal 2: Within the UC Community, including the Facilities Services Department, increase awareness of the Facilities Services Department's commitment to sustainability and the importance of conserving resources.

Goal 3: Set transportation-related GHG emissions reduction goals within the College community.

6.9 PA: Transportation - Prospective Actions

The following prospective actions are suggestions for consideration. It is assumed for the purposes of this document that any on-going activities that are listed above in the "current situation" section will continue. As it is difficult to see far in advance what the needs and constraints on the College will be, there are a wide variety of options presented here to consider. Some may be viable options for immediate implementation; some may seem impossible to implement in the current situation or foreseeable future, but may be viable at a later date depending on changing circumstances. These prospective actions will be reviewed periodically by staff in our Office of Sustainability (OS) and with relevant parties in the affected areas of the College.

6.9 PA-1: Transportation – Prospective Actions: Policy

Immediate (2013-2018)

Goal Setting

- Identify benchmarks for MPG, fuel use, and fuel efficiency within the College fleet.
- Set goals and interim targets for waste reduction, procurement, and energy-use reduction.
- Set a timeline for achieving interim targets and implementing these goals.

Contracts - Vendors

- Give preference to vendors who can help us meet our sustainability commitments.
- Encourage vendors to provide products and services that will help us meet our sustainability commitments.
- When making leasing decisions, consider savings from gas mileage in overall long-term cost of leasing the automobiles.

Mid-Term (2019-2030)

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.9 PA-2: Transportation – Prospective Actions: Operations

Immediate (2013-2018)

Air/Business Travel

- Encourage alternative transportation and/or reduced/no emission vehicles for ground transportation.
- Reduce environmental impacts for university–affiliated travel through fees for offsets.

Alternative Transportation

- Expand staff bicycle usage.

Idling

- Do not idle any vehicles on the UC campus. Idling contributes greenhouse gas emissions, shortens engine life and increases engine maintenance costs.

Vehicles

- Periodically test the fleet's gas caps. About 30 gallons of gas a year can be lost due to faulty gas caps.
- Maintain the fleet to ensure it is running efficiently.
- Investigate the possibility of upgrading more campus Facilities Services vehicles to biodiesel.
    - If possible, work with students on these upgrades.
    - If possible, source the biodiesel fuel on campus from dining services, which currently sells its leftover cooking oil.
- Consider installing speed limiters on fleet vehicles to improve gas mileage so that they operate closer to their optimum efficiency.

Mid-Term (2019-2030)

Vehicles

- When possible, upgrade vehicles that are used by Facilities Services on campus to solar electric or biodiesel.

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.9 PA-3: Transportation – Prospective Actions: Procurement

Immediate (2013-2018)

Vehicle Purchasing

- Consider adding more fuel efficient or hybrid vehicles to the fleet when new purchases are made.[9]

Purchasing Guidelines

- Use the Green Purchasing Guidelines in Appendix H to help guide purchasing decisions.

Mid-Term (2019-2030)

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

[9] See EPA's Green Vehicle guide at http://www.epa.gov/greenvehicles/.

6.9 PA-4: Transportation – Prospective Actions: Information Technology Changes

There are currently no identified Prospective Actions in this area.

Immediate (2013-2018)

Mid-Term (2019-2030)

6.9 PA-5: Transportation – Prospective Actions: Behavior Change & Education

Immediate (2013-2018)

Eco-driving

- Encourage Facilities Services staff as well as all community members who drive fleet vehicles to drive using "eco-driving" principles such as those in Appendix O.
- Encourage all staff members who use the vehicles to keep them in good running condition, walk rather than drive when possible, and to not idle the vehicles.

Own Sustainability

- Work to make sustainability part of the UC brand. State the College's values and approach to sustainability up front in communications with prospective students, parents, and the press. Own sustainability at the College and wear it proudly.
- Expect staff to fall in line with the College's policies, practices, and expectations around Sustainability.

Mid-Term (2019-2030)

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.9 PA-6: Transportation – Prospective Actions: Waste & Recycling

There are currently no identified Prospective Actions in this area.

Immediate (2013-2018)

Mid-Term (2019-2030)

6.9 PA-7: Transportation – Prospective Actions: Transportation

There are currently no identified Prospective Actions in this area.

Immediate (2013-2018)

Mid-Term (2019-2030)

6.9 PA-8: Transportation – Prospective Actions: Community Outreach

There are currently no identified Prospective Actions in this area.

Immediate (2013-2018)

Mid-Term (2019-2030)

6.9 PA-9: Transportation – Prospective Actions: Infrastructure

Immediate (2013-2018)

- Investigate the possibility of reducing diesel emissions from university–owned vehicles through waste oil sourced bio-diesel.

Mid-Term (2019-2030)

Infrastructure changes

- Create infrastructure to support hybrid and alternative fuel vehicles, such as charging posts and alternative fuel pumps.

- Increase percentage of alternative fuel vehicles in fleet. Alternative fuel vehicles include: electric hybrids, diesel hybrids, electric, hydrogen, B20 or higher, and E85 or higher.

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

Facilities – Chapter 6.10: Copy Center

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The Copy Center provides services for the faculty and staff of the College. Located in Ritter Hall, the Copy Center is open Monday through Friday, 8:15 am - 12:15 pm. In addition to basic copying, services offered by the Copy Center include booklet making, color copying, copying on 3-hole paper, multi-part carbonless forms, paper cutting, paper folding, paper supplies, and tablet making.

Equipment in the Copy Center includes: a large black & white copier capable of bulk jobs, a color copier also capable of bulk jobs, a cutting machine, a coning machine (which punches holes in documents and binds them together with a plastic binding, and an engraving machine (which can engrave signs into plastic and metal up to 18”x24”). The Copy Center also holds a substantial inventory of colored and white office paper, much of which has at least some recycled content.

Copy Center staff are responsible for maintenance on all copiers on campus as well as ordering all paper for the campus. We lease our copiers from Xerox. Our copier contract with Xerox includes services and toner for all Xerox copiers.

The Copy Center **accepts copy requests** in person, delivered via interoffice mail, or emailed as an attachment to the Copy Center via email. Turnaround time for most jobs is within 24 hours. Copy requests can be made in person or online, and orders can be dropped off in person or sent via interoffice mail.

The Copy Center schedule roughly coincides with the Mail Services schedule:

8:15 am	Copy Center opens.
9:00 am	Delivery to Corson Hall (and occasionally urgent special deliveries).
10:00 am	Mail, including interoffice orders, is dropped off at the Copy Center; orders that are ready are picked up at this time by Mail Services and are delivered across campus.
12:00-1:15 pm	Mail Services makes another stop at the Copy Center to see if there is anything that has to be delivered that afternoon and that stop is usually between 12:00 and 1:15 pm.

The Copy Center maintains 50 Xerox copiers around campus. Additional copiers are maintained by staff in the information technology services department and are noted in that section of this CSAP.

6.10 Current: Copy Center

The table below shows the mitigation or sustainability projects and/or initiatives that have already or currently are taking place within this administrative unit of the College. These initiatives are broken into nine areas. These areas are further delineated by type of action.

Table 6.10-1: Mitigation Project/Initiative: Copy Center

Type of Project	Mitigation Project/Initiative: Copy Center
Policy	None at this time
Operations	Maintenance • Our copy center staff members perform regular tune-ups and cleaning on our copiers. This ensures that our existing copiers last throughout the lease. Energy Saving Initiatives • All copiers go into sleep mode when not being used.
Procurement	Printers • Printers are replaced with energy efficient models. All have maintenance contracts. All consumables (parts, toner, ink cartridges, maintenance) are included in contracts except for paper and staples. Paper • All of our white office paper has 30% post consumer waste paper content. • We also have a number of colored papers that we have in our stock room that have varying amounts of recycled content. • The Copy Center does not place orders for neon colored papers. These papers are not available with any recycled content.
IT Changes	Online Orders • The Copy Center has an online form that UC customers can use to place orders. This saves time and paper. • The online form is in the process of being streamlined for ease of ordering.
Behavior Change & Ed.	Behavior Change • Copy Center staff have begun to encourage UC community members to use staples

	rather than plastic cones to make booklets. They did this by educating the UC community about ways to save money that are also more sustainable. For example, the cost of stapling a document is much less than the cost for coning a document. This saves departments and the College money and reduces the use of plastic cones. • Staff in the copy center also encourage patrons to have all orders printed double-sided.
Waste & Recycling	Recycling • Our staff is aware of the College's recycling efforts and works to recycle as much waste as possible. • Xerox takes some of the printer cartridges back. • The Copy Center recycles the printer cartridges that Xerox won't take back.
Transportation	None at this time
Community Outreach	None at this time
Infrastructure	Copy Center Office • The current office space for the Copy Center was designed specifically with ease of use and efficiency in mind. This has saved time and provided additional ventilation for the machines used in the space.

6.10 Goals: Copy Center

Goal 1: Determine what the Copy Center's commitment to sustainability on campus is, and publish that commitment within the community, including on the Copy Center's website.

Goal 2: Within the Copy Center, increase awareness of the department's commitment to sustainability and the importance of conserving resources.

Goal 3: Work with the Facilities Services Administration to set energy-use reduction goals for the Copy Center.

Goal 4: Work with the Facilities Services Administration to set waste reduction/procurement goals within the Copy Center.

6.10 PA: Copy Center - Prospective Actions

The following prospective actions are suggestions for consideration. It is assumed for the purposes of this document that any on-going activities that are listed above in the "current situation" section will continue. As it is difficult to see far in advance what the needs and constraints on the College will be, there are a wide variety of options presented here to consider. Some may be viable options for immediate implementation; some may seem impossible to implement in the current situation or foreseeable future, but may be viable at a later date depending on changing circumstances. These prospective actions will be reviewed periodically by staff in our Office of Sustainability (OS) and with relevant parties in the affected areas of the College.

6.10 PA-1: Copy Center – Prospective Actions: Policy

Immediate (2013-2018)

Goal Setting

- Identify benchmarks for waste, procurement, and energy use within the Copy Center.
- Set goals and interim targets for waste reduction, procurement, and energy-use reduction.
- Set a timeline for achieving interim targets and implementing these goals.
- Before the end of the current lease, determine whether it is still necessary to provide a central copy service or whether this function should be outsourced. This scrutiny should be applied at the end of each lease.

Responsible Consumption

- Consider setting low consumption targets for all departments. E.g., 25% reduction of office paper used by 2020, 50% reduction of office paper used by 2030, etc.

Contracts - Vendors

- Give preference to vendors who can help us meet our sustainability commitments.
- Encourage vendors to provide products and services that will help us meet our sustainability commitments.

Mid-Term (2019-2030)

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.10 PA-2: Copy Center – Prospective Actions: Internal Operations

Immediate (2013-2018)

Double-Sided Copying

- Charge extra for single-sided printing where double-sided printing is possible.

Forms

- Expand the Supplies Request form so that it includes papers of different recycled content along with prices for that paper.

Office Guidelines

- Whenever possible and feasible, incorporate office-wide practices suggested in the Sustainable Office Guidelines into day-to-day operations (Appendix F).
- Encourage offices, departments and individual staff and faculty members to participate in OS green certification programs, once developed.

Event Guidelines

- When possible and feasible, incorporate items from the Sustainable Event Guidelines into event planning. (Appendix G)

Mid-Term (2019-2030)

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.10 PA-3: Copy Center – Prospective Actions: Procurement

Immediate (2013-2018)

Copiers

- Ensure all copiers across campus are Energy Star rated.
- Lease or purchase copiers that have toner cartridges that can be recycled/reused.
- Investigate leasing or purchasing copiers that can use soy-based inks.

Paper

- In addition to white office paper, increase to 50% the amount of paper purchased that has recycled content.
- Consider purchasing papers graded 4, 5, or N.
- Continue to try papers with higher post consumer waste recycled content. When economically feasible, switch to papers that have higher recycled content for all colors.

Inks

- Investigate the possibility of purchasing and using soy-based inks in some of our campus printers.

Purchasing Guidelines

- Use the Green Purchasing Guidelines in Appendix H to help guide purchasing decisions.

Mid-Term (2019-2030)

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.10 PA-4: Copy Center – Prospective Actions: Information Technology Changes

Immediate (2013-2018)

Email

- Consider adopting the use of a footer message such as "Please consider the environment before printing this e-mail." in all emails.

Website

- Update the website to include information about what the Copy Center does to encourage sustainability in the office as well as in its business dealings with companies. Information could include: recycling lists (what is recycled), sustainable product availability with prices, how people can be more environmental when copying, etc. Work with Office of Sustainability Staff on this project.

Mid-Term (2019-2030)

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.10 PA-5: Copy Center – Prospective Actions: Behavior Change & Education

Immediate (2013-2018)

Behavior Change

- Offer incentives for “sustainable copying”, including printing double-sided, using stocked recycled-content colored paper colors.
- Increase the cost of copying single sided when double sided is an option. For example, if someone has only a single page document, they shouldn’t pay more. Or if there’s a form that can only be single sided b/c someone needs to sign it and turn it back in, etc.

Education

- Make the Ursinus community aware of the sustainable activities and procedures that happen within the Copy Center.

Own Sustainability

- Work to make sustainability part of the UC brand. State the College's values and approach to sustainability up front in communications with prospective students, parents, and the press. Own sustainability at the College and wear it proudly.
- Expect staff to fall in line with the College's policies, practices, and expectations around Sustainability.

Sustainability Action List

- 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.

Mid-Term (2019-2030)

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.10 PA-6: Copy Center – Prospective Actions: Waste & Recycling

Immediate (2013-2018)

Recycling

- Participate in toner cartridge recycling programs whenever possible.
- Investigate additional reuse programs for materials that Xerox will not take back.

- Work with companies that recycle components or entire copier units when they are done.

Mid-Term (2019-2030)

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.10 PA-7: Copy Center – Prospective Actions: Transportation

There are currently no identified Prospective Actions in this area.

Immediate (2013-2018)

Mid-Term (2019-2030)

6.10 PA-8: Copy Center – Prospective Actions: Community Outreach

There are currently no identified Prospective Actions in this area.

Immediate (2013-2018)

Mid-Term (2019-2030)

6.10 PA-9: Copy Center – Prospective Actions: Infrastructure

There are currently no identified Prospective Actions in this area.

Immediate (2013-2018)

Mid-Term (2019-2030)

Facilities – Chapter 6.11: Mail Services

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Ursinus College Mail Services provides mail and package services for the campus community. This arm of the Facilities Services department accepts most campus deliveries, from overnight package deliveries to office supplies and equipment, furniture and large chemical tanks. They have computer programs that allow them to track all student packages as well as a program that allows them to keep track of all other deliveries. They have a Vantage VanGo that is used to deliver mail across campus. For other deliveries, they have access to Facilities Services vehicles on an as-needed basis, including the fork lift and larger trucks for heavy or over-sized items. They do not handle deliveries for Dining Services or the campus bookstore, and there are some departments that occasionally receive deliveries directly, including Athletics and Theater & Dance.

In addition to deliveries, Mail Services handles shipping for the campus community. They ship individual packages as well as large, pre-packaged shipments, such as the campus laptops when they are returned to Dell. Mail Services projects that it will have processed approximately 17,000 incoming packages for students during the 2011-12 school year. This represents a 15% increase over the previous year. Much of this volume is due to students placing individual book orders.

We have a single scheduled daily pickup for express packages from FedEx. Otherwise shippers stop at Ursinus only when they are dropping off packages or if they are called.

Located at the Facilities Services building, Mail Services is open 8 am-4:15 pm Monday-Friday.

Package deliveries are increasing throughout Mail Services department. The cause is primarily the rise of online text book purchases. Students now have the option to order used copies of text books for classes at a fraction of the cost of purchasing them new. This fact has led to significantly increased numbers of packages that must be processed through our mail room.

In the beginning of 2011, Mail Services started using a new technology that allows them to track student packages online, creating a digital paper trail for each package and alerting students electronically when they have received a package (and where it is located – either in their mail box or at Mail Services). This system has become increasingly critical to the daily task of handling student packages as the number of packages increases.

Mail Services is planning to upgrade the software that they use to track non-student packages as well. This software would not include an alert system for recipients, but would allow Mail Services staff to more accurately track when and where any given package was delivered using the bar codes that are already on packages when they arrive on campus.

6.11 Current: Mail Services

The table below shows the mitigation or sustainability projects and/or initiatives that have already or currently are taking place within this administrative unit of the College. These initiatives are broken into nine areas. These areas are further delineated by type of action.

Table 6.11-1: Mitigation Project/Initiative: Mail Services

Type of Project	Mitigation Project/Initiative: Mail Services
Policy	None at this time
Operations	On-Campus Envelopes • These envelopes are used repeatedly for campus or internal mailings, saving paper and money.
Procurement	None at this time
IT Changes	Student Package Tracking • In 2011, Mail Services began using software that tracks packages that are received for students and then automatically generates an email alert to the student as to where the package can be retrieved. This saves Mail Services staff a great deal of time and substantially improves their ability to handle the increasing volume of packages. • The system also saves paper, as staff no longer need to place paper alerts in students' mail boxes.
Behavior Change & Ed.	None at this time
Waste & Recycling	None at this time
Transportation	Post Office Delivery • The USPS picks up our outgoing mail daily. This alleviates the need for us to count delivery to the local post office in our emissions.
Community Outreach	None at this time
Infrastructure	None at this time

6.11 Goals: Mail Services

There are no goals identified currently for Mail Services.

6.11 PA: Mail Services - Prospective Actions

The following prospective actions are suggestions for consideration. It is assumed for the purposes of this document that any on-going activities that are listed above in the "current situation" section will continue. As it is difficult to see far in advance what the needs and constraints on the College will be, there are a wide variety of options presented here to consider. Some may be viable options for immediate implementation; some may seem impossible to implement in the current situation or foreseeable future, but may be viable at a later date depending on changing circumstances. These prospective actions will be reviewed periodically by staff in our Office of Sustainability (OS) and with relevant parties in the affected areas of the College.

6.11 PA-1: Mail Services – Prospective Actions: Policy

There are currently no identified Prospective Actions in this area.

Immediate (2013-2018)

Mid-Term (2019-2030)

6.11 PA-2: Mail Services – Prospective Actions: Internal Operations

There are currently no identified Prospective Actions in this area.

Immediate (2013-2018)

Mid-Term (2019-2030)

6.11 PA-3: Mail Services – Prospective Actions: Procurement

Immediate (2013-2018)

Purchasing Guidelines

- Use the Green Purchasing Guidelines in Appendix H to help guide purchasing decisions.

Mid-Term (2019-2030)

6.11 PA-4: Mail Services – Prospective Actions: Information Technology Changes

There are currently no identified Prospective Actions in this area.

Immediate (2013-2018)
Mid-Term (2019-2030)

6.11 PA-5: Mail Services – Prospective Actions: Behavior Change & Education

Own Sustainability

- Work to make sustainability part of the UC brand. State the College's values and approach to sustainability up front in communications with prospective students, parents, and the press. Own sustainability at the College and wear it proudly.
- Expect staff to fall in line with the College's policies, practices, and expectations around Sustainability.

Immediate (2013-2018)
Mid-Term (2019-2030)

6.11 PA-6: Mail Services – Prospective Actions: Waste & Recycling

There are currently no identified Prospective Actions in this area.

Immediate (2013-2018)
Mid-Term (2019-2030)

6.11 PA-7: Mail Services – Prospective Actions: Transportation

Immediate (2013-2018)

Pick-ups

- Determine if it is possible to arrange for overnight carriers to make stops at Ursinus only if they have been alerted that there is a package to pick-up, rather than stopping on a regular route.

Mid-Term (2019-2030)

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.11 PA-8: Mail Services – Prospective Actions: Community Outreach

There are currently no identified Prospective Actions in this area.

Immediate (2013-2018)

Mid-Term (2019-2030)

6.11 PA-9: Mail Services – Prospective Actions: Infrastructure

There are currently no identified Prospective Actions in this area.

Immediate (2013-2018)

Mid-Term (2019-2030)

Facilities – Chapter 6.12: Science Labs

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Other than our central heat plant, our science buildings are the biggest individual contributors to our GHG emissions. These are Pfahler and Thomas Halls; Pfahler is both newer and larger than Thomas, but both are older buildings by the standards of current science buildings. We have recently completed substantial updates to some of the labs in Thomas Hall. The buildings have laboratories for chemistry, biology, psychology, physics, and geology.

Science labs are one of the main energy users in science buildings; they require multiple air changes per hour) to protect the users from the build-up of dangerous chemical levels (this consists of venting heated/cooled air to the outside and bringing in fresh outside air which then must be heated/cooled to room temperature. All of our chemistry and most of our biology labs have fume hoods, which are designed to vent air (and the chemical fumes in the air) out of the lab (and particularly the area directly under the fume hood) like a vacuum. The fumes vent externally on the roof. Each hood has a sash that operates like a window sash – and for safety, should be shut when not in use (for variable air volume (VAV) hoods being shut also prevents air changes from over-ventilating the room).

Fume hoods are either constant air volume (CAV) or VAV. This distinction determines how much energy the hoods use. In order to maintain a constant volume of air moving through the hood at all times, CAV hoods have a bypass opening (typically behind a grill near the top of the hood) that widens as the sash is closed to prevent increased air velocity at the sash, which could be detrimental to safety or the integrity of experiments in the hood. On average, CAV fume hoods use as much energy as 3 to 3.5 typical residential homes (at a cost of between $2,500-$3,000/year). (University of Colorado Boulder Facilities Management n.d.) (UND Sustainability 2012) We have 23 CAV hoods. VAV hoods, conversely, have variable volume levels, but constant air velocity, with the result being that there is a lower volume of air moving through. However, this is only true when the sash is closed. In order to save energy with our VAV hoods, it is critical to close the sash when work is completed. We have 62 VAV hoods. In addition to these, we also have two HEPA Biosafety fume hoods. (See Appendix P for a list of Ursinus' lab spaces, their use and associated fume hoods.

The fume hoods themselves do not consume most of this energy: they are simply enclosed workstations where lab work is carried out. The energy is consumed mostly through the heating or cooling of the replacement outside air cycled in through release of the contaminated exhaust air. It is therefore most energy efficient to use the fume hoods when the outside temperatures are equivalent to the inside temperatures.

In addition to the fume hoods, our labs have equipment that pulls a great deal of electricity, including: autoclaves, minus 80^{o} freezers, other freezers, cold rooms, centrifuges, incubators, heated fish tanks, microscopes, computers, and lighting.

Individual faculty members are responsible for training students and checking on compliance within their own labs with regard to hoods, freezers, and other equipment. The effectiveness of this approach may be compromised by student reticence to risk social stigma (even if imagined) by asking respected faculty members for information about how various equipment should work. Some of the practices that will lower our lab-related emissions require a shift in behaviors, but some will require cultural change at the organizational level. Information on how other labs are achieving sustainability is readily available through a variety of sources, including the National Institutes of Health, Massachusetts Institute of Technology (MIT), and Yale and Harvard Universities.[10]

In Pfahler Hall, we have 20 lab spaces with fume hoods, including those for the Chemistry, Physics/Astronomy, Environmental Studies, and Math and Computer Science departments, and one observatory. Within these labs, we have 60 VAV and 14 CAV fume hoods – all in our Chemistry labs. Our four largest labs also have an unoccupied setting for the entire lab that allows users to lower the HVAC air changes to minimum levels when appropriate. The CAV hoods can be switched off, however, this is not currently practiced for a variety of reasons, including habit and safety. Our Physics & Astronomy labs do not have any fume hoods, however they do have special HVAC requirements due to equipment-related cooling needs. This is also true for the math student computer research lab. See Appendix Q for a list of Pfahler Hall laboratories and equipment.

In Thomas Hall, we have 15 Biology labs. We also have a number of rooms in our Psychology Department where research takes place, including a computer lab. In the Biology labs we have

[10] See http://www.labmanager.com/?articles.view/articleNo/3610/article/Sustainable-Lab-Operations for additional information.

nine CAV hoods, two VAV hoods, and two HEPA Biosafety Hoods. The CAV hoods can be switched off, however, this is not currently practiced for a variety of reasons, including habit and safety. . See Appendix R for a list of Thomas Hall laboratories.

6.12 Current: Science Labs

The table below shows the mitigation or sustainability projects and/or initiatives that have already or currently are taking place within this administrative unit of the College. These initiatives are broken into nine areas. These areas are further delineated by type of action.

Table 6.12-1: Mitigation projects/initiatives for campus laboratories.

Type of Project	Mitigation Project/Initiative: Labs
Policy	Lab Hours • Biology labs are closed for students between midnight and 6 a.m.
Operations	Energy Saving Initiatives • Thomas research labs in rooms 112 & 210 (NSF, Ballinger & Warfel Construction) were updated to LEED standard construction. Chemicals • We use less toxic chemicals if and when experiments permit. • The organic chemists will use small scale equipment for experiments that will yield enough product for the students to examine; otherwise, the larger scale glassware is used. • We recycle/reuse paint thinner and ferric chloride in the printmaking area until it is no longer effective. • We keep information about chemicals used in all labs in an easily accessible location within each department, including where the chemicals are stored and safety data sheets.
Procurement	Energy Efficient Purchases • We have made updates in our science buildings that are more energy efficient (e.g., fume hoods). Chemicals • For our introductory labs, we place bulk orders once a month or at the beginning of the semester. Researchers (faculty and students) are encouraged to include their orders with this bulk order in order to decrease shipping costs. This also reduces transportation emissions related to these orders. • Additionally, we purchase chemicals in small quantities, as needed, for many orders. This enables us to purchase only small amounts of certain chemicals on hand. • One staff member tracks the chemical inventory, handles waste, and can coordinate sharing of chemicals.

Information Technology	Website • Information about lab safety (and sustainability related to chemical safety) is available on the Facilities Services Environmental Health & Safety website. • Chemistry has information available on its website about lab usage, including one reference to fume hood functionality.
Behavior Change & Ed.	Lab Usage Guidelines • Chemistry has a lab usage guide that they require all student researchers to sign. This document includes keeping doors and windows closed so that the fume hoods function properly. It also requires that all chemical containers be clearly marked with contents (not chemical formulas) and dates opened. • Biology has a set of lab guidelines and requires student researchers to be trained before using the department's autoclaves.
Waste & Recycling	Hazardous Chemicals • We reduce our waste first by being careful with procurement of chemicals. • We have strict protocols for labeling chemicals, and all chemicals are disposed of properly. • All hazardous chemical waste containers are sealed except when adding waste chemicals. • Glassware is used over and over as well as most equipment in the chemistry labs. • Chemical containers are re-used to collect waste whenever safe to do so. Equipment • Switched most of our thermometers from mercury to alcohol based – some mercury thermometers remain in use for some of our Chemistry research.
Transportation	
Community Outreach	Science in Motion • Environmental Studies created a climate change lab for this educational lab program that travels to local schools. • Environmental Studies is working on creating a Waste and Recycling lab for this program (2013).
Infrastructure	HVAC Modifications • The modifications to the HVAC system in two labs (Thomas 112 and 210) during the summer of 2011 have an energy recovery component. • In 2011 we decreased the air changes for the fume hoods from about 25/hour all the time to 17/hour in occupied mode and 6-7/hour in unoccupied mode. • The HVAC systems are set to sense the static pressure in the duct work and automatically increase or decrease the air handler unit to adjust to a set point. Fume Hoods • The CAV fume hoods in the labs all have on/off switches on them. • Our VAV hoods in Pfahler are sash-linked such that the air flow changes depending on how high the sash is raised. Lab Switches • In 1997, Facilities Services installed a binary on/off switch in four of our large teaching labs (Pfahler 215, 301, 314, and 315), which allows users to set the lab to occupied/unoccupied mode. Decision Making • For projects that require large capital expenditures, the College incorporates energy costs associated with the lifetime of the project. We take savings from energy efficiency aspects of the project into account and consider payback time.

6.12 Goals: Science Labs

Goal 1: Determine what the Facilities Services Department's commitment to sustainability is within the realm of the Science Labs, and publicize that commitment within the campus community.

Goal 2: For departments that include a lab science (biology, chemistry, physics, environmental studies), determine the departments' commitment to sustainability principles within the science labs, and publicize that commitment within those departments' communities and to the campus.

Goal 3: Within the community of science lab users at UC in both Pfahler and Thomas Halls, increase awareness of the related Department's and the College's commitment to sustainability and the importance of conserving resources.

Goal 4: Coordinate between the relevant academic departments and Facilities Services Department to set energy-use reduction targets within the science labs.

Goal 5: Set sustainability goals for the science labs.

6.12 PA: Science Labs - Prospective Actions

The following prospective actions are suggestions for consideration. It is assumed for the purposes of this document that any on-going activities that are listed above in the "current situation" section will continue. As it is difficult to see far in advance what the needs and constraints on the College will be, there are a wide variety of options presented here to consider. Some may be viable options for immediate implementation; some may seem impossible to implement in the current situation or foreseeable future, but may be viable at a later date depending on changing circumstances. These prospective actions will be reviewed periodically by staff in our Office of Sustainability (OS) and with relevant parties in the affected areas of the College.

6.12 PA-1: Science Labs – Prospective Actions: Policy

Immediate (2013-2018)

Fume Hoods

- Consider having the Safety Committee coordinate with OS staff to create a set of guidelines or a policy for fume hood use on campus.

Mid-Term (2019-2030)

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.12 PA-2: Science Labs – Prospective Actions: Internal Operations

Immediate (2013-2018)

Sustainability Guidelines

- Whenever possible and feasible, incorporate office-wide practices suggested in the Sustainable Office Guidelines into day-to-day operations (Appendix F).
- Encourage departments to use the Green Purchasing Guidelines (Appendix H).
- When possible and feasible, incorporate sustainable event guidelines into event planning. (Appendix G)

Consider implementing sustainability measures such as those listed below, which were suggested by the National Institutes of Health, Massachusetts Institute of Technology (MIT), Yale and Harvard Universities, and Lab Manager Magazine (Vyas 2010):

"Chemical Handling System

- Consider adopting the following U.S. EPA recommendations regarding chemical products and processes: (US EPA 2011)

- Green Chemistry: Source Reduction/Prevention of Chemical Hazards
  - Design chemical products to be less hazardous to human health and the environment[11].
  - Design syntheses and other processes to be less energy and materials intensive (high atom economy, low E-factor).
  - Reuse or recycle Chemicals.

Chemical Storage

- Identify one (or several) fume hoods in each lab to act as dispensing hoods, where chemicals may be stored overnight. Leave all other hoods with no chemicals storage. Ensure that the sashes are closed on all hoods at night or when not in use, and work with Facilities Services to determine if some of the hoods (or all but the dispensing hoods) could be turned off overnight.
- Continue to educate and train users of the fume hoods about the importance of storing chemicals in designated locations (in the cabinet under the fume hood or shelf in lab) instead of in the hood so that there is optimal air flow in the hoods.

Energy Use Plan

- Work with Facilities Services to create a sustainable energy use plan for the labs to help lower UC's electricity load. Below is a list of items suggested by Harvard University to lower energy use in their labs (Harvard University Office for Sustainability 2011):
  - "Close variable volume fume hood sashes whenever possible to reduce ventilation rates. Encourage lab mates to do the same.
  - Defer autoclave cycles and dishwasher runs, if possible, until the end of the day so that they run overnight after the peak air conditioning load has passed.
  - Avoid opening freezers for prolonged periods of time in case a brownout might impact their ability to maintain temperature, particularly if these freezers are not on backup power.
  - Close blinds in order to reduce solar heat load, particularly if there is direct sunlight coming in.
  - Have the faculty or staff member who is in charge of each lab email all lab users about sustainability initiatives, requesting that group members adapt their practices when possible, and find equipment that can be turned off when not in use."

[11] "Chemicals that are less hazardous to human health and the environment are: Less toxic to organisms and ecosystems; Not persistent or bioaccumulative in organisms or the environment; Inherently safer with respect to handling and use." (US EPA 2011)

- Determine which, if any, electrical equipment (e.g., chilled centrifuges, ovens, refrigerators) can be turned off (and on) to save electricity. Any equipment that is deemed suitable should be indicated as such and marked with an easily identifiable sticker that indicates warm-up times so that users can plan accordingly.
- Identify when equipment is being underutilized. If it is underutilized and realistic and safe, share the equipment between different departments and lower the overall number of appliances that are in use.

Experiments

- For labs that have occupied/unoccupied switches, consider creating a system that would alert other users to experiments that are running for longer than a few hours and that require the labs to be left on the "occupied" setting. This would ensure that labs are not inadvertently turned to the "unoccupied" setting during the experiment, and would allow others to turn the lab to "unoccupied" knowing that there would be no harm to another's experiment.
- Utilize virtual experiments instead of actual experiments, reducing or eliminating the need for materials.

Fume Hood Sashes

- Set up a check system to ensure that fume hoods are closed at the end of the day.
- Place stickers on the side of each fume hood (or on the sash) to remind users to close them when done.
- If fume hoods are not in use over a long time period (for example, in the event that lab needs have changed), and if safe and practical, investigate turning off unused fume hoods. If this is feasible, Facilities Services must be notified so they can rebalance the return air. Also, the fume hood should be marked as "non-operational" clearly so that it is not used inadvertently.

Lighting

- Seek ways to reduce the general illumination of laboratory spaces to the Illuminating Engineering Society of North America (IESNA)-recommended levels. These levels have gone down significantly over time and are likely to be lower than our current light settings.
- Use CFLs or LED bulbs wherever possible. Identify areas where bulbs are not needed and remove them from their ballasts, marking the ballasts as intentionally bulb-free.

- Use task lighting rather than overhead ambient lighting when possible, including when there are only a few people working in the lab at a given time.

Managing Refrigerators, Freezers, and Ultra-Low Temperature (ULT) Freezers

- Clean and defrost freezers and vacuum the condenser coils periodically (e.g., yearly) or as needed (as when the ice is more than 2 cm thick) to increase their energy efficiency.
- Clean out old samples regularly. Assess whether all refrigerators are in use and/or needed, whether samples could be combined into fewer refrigerators, and unplug those refrigerators that are not being used.
- If possible, unplug/turn off ice makers at night and/or over the weekends."
- Operate the -80^{o}C ULT freezers with sustainability and proper functioning in mind (UTMB Research Technical Services 2011):
  - Keep ambient air temperature around the freezers at no more than 78^{o}F.
  - When possible, do not put room temperature samples in the freezer (first place them in a "cold drop" freezer (e.g., liquid nitrogen).
  - Limit the time the freezer door is open (opening the door for one minute can cause the temperature to rise by 20^{o}C).
  - Gently scrape ice accumulation from the door areas with an ice scraper (not a screwdriver or knife).
  - When excessive ice has built up, thaw the freezer in order to remove it. (Contents will need to be removed to another freezer and the unit unplugged and opened. Once the ice is thawed, plug the freezer back in and adjust the setpoint to -20^{o}C for 24 hours. Once it has reached that temperature, lower the setpoint to -80^{o}C.)
  - Clean the inlet air filters and condenser coils inside the freezer at least once a year.
  - Ensure that the two condenser fans are running while the freezer is turned on. If they are not, there is a problem.
- Coordinate with all users to perform regular annual (or more frequently, if needed) preventive maintenance on -80^{o} freezers, and operate them to increase their efficiency.

Mid-Term (2019-2030)

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.

- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.12 PA-3: Science Labs – Prospective Actions: Procurement

Immediate (2013-2018)

Equipment

- When making equipment purchases, consider energy costs as part of the decision making process.
- Purchase Energy Star rated products when available (this is the norm on campus for all appliances, and is a commitment that we have agreed to as a College).
- When feasible, consider purchasing equipment with other departments and sharing time on the equipment (rather than having multiples of the same equipment).
- When upgrading fume hoods, replace CAV hoods with VAV hoods if appropriate to the lab use. If it's necessary to replace a hood with a CAV hood, ensure that there is an on-off switch available for users.

Green Chemistry

- Whenever possible, make use of MIT's Green Chemistry wizard. This interactive tool provides alternatives to approximately 200 of the most commonly used hazardous chemicals. These alternatives are often less expensive, saving the departments money for procurement. http://ehs.mit.edu/site/content/green-chemical-alternatives-purchasing-wizard

Purchasing Guidelines

- Use the Green Purchasing Guidelines in Appendix H to help guide purchasing decisions.

Mid-Term (2019-2030)

Tracking & Assessment

- Continue the efforts noted above.

- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.12 PA-4: Science Labs – Prospective Actions: Information Technology Changes

Immediate (2013-2018)

Website

- Link the websites for each department that has a laboratory with fume hoods, energy-intensive equipment, chemicals, green chemistry alternative website etc. to the Laboratory Safety page on the UC website: http://www.ursinus.edu/netcommunity/page.aspx?pid=1655.
- Work with OS staff to create a lab sustainability guideline sheet. Include a link on each of these department's websites to this document.
- Link departmental websites to outside websites that provide information about "green labs" such as the U.S. EPA's Green Chemistry website: http://epa.gov/greenchemistry/pubs/about_gc.html.

Mid-Term (2019-2030)

Website

- Work with the Office of Sustainability to develop a "sustainable lab" website.
- Include a link on each of the related department's websites to a sustainable lab website.

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.12 PA-5: Science Labs – Prospective Actions: Behavior Change & Education

Immediate (2013-2018)

Fume Hoods

- Educate and encourage laboratory users to close fume hoods when not in use through education and/or incentive programs (including peer-to-peer programs).
- Work with OS and Facilities Services staff to develop an educational training program around lowering user-driven fume hood energy use.

Green Chemistry

- Encourage faculty members and students to apply "Green Chemistry" principles to each step of their chemical research.

Lab Sustainability

- Work with OS staff to develop a mandatory educational program for all student lab users to teach them about sustainability in the labs and why it is important. A program such as this would serve students well when they go into the workplace where liability issues will be very important. It could include:
    - Closing the fume hoods whenever they are not in use (energy savings, reducing heat/air conditioning loads, preventing off-gassing of chemicals not under the fume hood, etc.).
    - Closing all chemical bottles except when removing/adding chemicals (VOC reduction, money savings from less off-gassing; health and safety issues).
    - Covering beakers that have chemicals in them (same as chemical containers).
    - Turning off power switches on equipment when finished using; this only includes equipment that doesn't need to be powered at all times (energy savings, extending the life of the equipment, etc.).
    - Turning off lights when leaving any empty rooms… and turning off lights of rooms that you see are empty (energy savings).
    - Keeping doors and windows closed when not in use (energy savings and safety).
    - Disposing of lab waste (recycling, hazardous, trash) properly (health, safety, legal requirements). This should include what should/should not go down the drain.
    - For labs that have an "unoccupied" setting, this should be utilized whenever the lab is not occupied.

- Include information about lab sustainability in course descriptions or syllabi, similar to those sections that discuss lab safety.
- Update any lab use guidelines-type documents to include: closing fume hoods, keeping windows and doors to labs closed, closing chemical storage containers, turning off fume hoods (if allowed), turning off lights, setting room to unoccupied (if possible appropriate), etc.

Volatile Chemicals

- Require students and faculty to cover beakers that hold volatile chemicals when not in use, even when under a fume hood. These chemicals off-gas more quickly in high air-flow areas like labs. Also there is no filter on the fume hoods, so chemicals are diluted by air flow, but not filtered. Covering beakers will save chemicals (and the money used to purchase them) and it will reduce pollution. (Harvard University Office For Sustainability 2011)

Mid-Term (2019-2030)

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.12 PA-6: Science Labs – Prospective Actions: Waste & Recycling

Immediate (2013-2018)

Equipment

- When equipment is no longer needed, find a new home for it, either on campus or at another institution, rather than throwing it away.
- If repurposing or finding a new home for equipment is not possible, work with OS staff to recycle as much of the equipment as possible (unless arrangements need to be made through the granting institution).

Recycling

- Ensure that there are recycling bins in all lab areas for all the types of waste that are recyclable in the labs.

- Establish a culture in the labs that encourages recycling and reuse (when possible).

Mid-Term (2019-2030)

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.12 PA-7: Science Labs – Prospective Actions: Transportation

There are currently no identified Prospective Actions in this area.

Immediate (2013-2018)

Mid-Term (2019-2030)

6.12 PA-8: Science Labs – Prospective Actions: Community Outreach

Immediate (2013-2018)

Science in Motion

- Investigate including additional sustainability topics in the Science in Motion curriculum.

Mid-Term (2019-2030)

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.12 PA-9: Science Labs – Prospective Actions: Infrastructure

Immediate (2013-2018)

Fume Hoods

- Convert CAV fume hoods to VAV hoods when possible and appropriate.
- Work with faculty and lab staff to determine where it would be acceptable to install on/off switches on fume hoods. Work with faculty/lab staff and Office of Sustainability (OS) staff to develop a educational plan for implementation.
- If possible, install sash stops on all fume hood sashes that currently do not already have stops installed.
- Work with OS staff to determine actual energy usage of fume hoods as well as strategies for and cost of reducing that use.
    - Include strategies for reducing fume hood energy use in the HVAC Efficiency Plan.

HVAC Changes

- Modernize HVAC systems in older buildings concurrent with renovations.
- Install occupancy sensor-based HVAC night setbacks in laboratories, if feasible with lab use.
- Reduce air changes and fan speeds in laboratories and other buildings with unnecessarily high air changes. Industry standards are between 4-12 air changes per hour or more, depending on the chemicals being used in the lab. (Harvard University Office for Sustainability 2011) (Harvard University Office for Sustainability 2011)
- If safe and there are no adverse effects on on-going experiments, set a separate night-time temperature set-back for the labs (from current 68^{o}-72^{o} to 65^{o}), similar to the night set-backs on all campus buildings.

Lighting

- Determine the amount of light that is being used in the science labs. Work to have them correspond to those recommended by the NIH: 50 footcandles for ambient light; 75 footcandles for bench work.

Mid-Term (2019-2030)

Fume Hoods

- Investigate the possibility of installing a room-level occupancy sensor on the labs with more than one fume hood. A sensor like this would sense when there was no one in the lab and shut down designated fume hoods unless the manual over-ride for experiments was turned on.

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

Facilities – Chapter 6.13: Dining Services

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Wismer Hall houses several programs, most notably the Ursinus College Dining Services. The building was constructed in the early 1970s and has undergone several additions and renovations, most recently during the summer of 2011. The kitchen itself is due for an overhaul in the next five years. At that time much of the equipment in the kitchen will be replaced with more energy efficient models. During the summer of 2011, we renovated a portion of our Student Center that opened up the main stairway to the lower floor and expanded the front of the building into the plaza.

Wismer Dining Hall offers a wide variety of fresh and prepared foods to our students, faculty, staff and guests. The Market Place at Wismer Dining Hall is a buffet-style facility. Wismer Dining Hall stations serve a wide array of foods, including home-style entrees, freshly baked pizza and pasta, deli sandwiches and wraps, fresh fruit and salads, and desserts. Located in the lower level of Wismer Center is Zack's Food Court, a food court-style facility that offers eat-in and take-out services. Zack's stations include Jazzman's Café, Sandella's, 155 Grill, and SubConnection. There is also a Jazzman's located in the Myrin Library.

Sodexo Dining Services has 1,585 students signed up for the meal plan. They serve approximately 3,400 meals per day (roughly 500 at breakfast; 800 for lunch & dinner upstairs; 650 for lunch and dinner downstairs). Over the course of the school year, this is approximately 840,000 meals served. The customers are primarily students, with a small number (30-40) of faculty and staff at each lunch.

The weekday breakfast hours run later than some of our comparable schools, however this allows students to attend their 9:00 classes and still eat breakfast afterwards.

Summer service is much abbreviated. Dining is available during lunch only, and only for faculty and staff. Summer Fellows students are provided with one lunch per week during their eight-week time on campus. If the College were interested in expanding this service for the Summer Fellows, Sodexo would need commitment from 35 students before the Summer Fellows term began. This would enable the company to retain staff over the summer, which would, in turn, provide the campus with lower staff turnover in the dining areas. Sodexo professional staff members spend several days in August just prior to first year Move-In in annual training of the dining services staff.

Ursinus Dining Services keeps an **average** of 2.5 days worth of food on hand. This is significantly less than the Sodexo standard of seven days and substantially less than the 10-15 days of food that our peer institutions keep on hand. Food is inventoried on Thursday and the accounting week starts every Friday with deliveries. This reduces our need for storage and reduces the GHG emissions from truck deliveries.

Sodexo has an in-house marketing team that can create educational materials aimed at students. This information can be disseminated in the dining hall for maximum impact.

In an effort to become more sustainable, Dining Services has recently implemented a variety of changes. In 2010, all dining locations became tray-less, reducing food waste and conserving water and energy. Extensive efforts have been made to increase the amount of food waste that is composted at the on-campus composting area behind New Hall. A new vegan/vegetarian food station was established in Wismer Dining Hall, providing the Ursinus community with new and more sustainable food options. Also, Dining Services has expanded its vegetarian options such that there are multiple vegetarian/vegan options at each dining station.

Multiple student groups have also worked to increase the sustainability of Dining Services. Wismer on Wheels is a student-run daily program that delivers unused food from Wismer Dining Hall to a homeless shelter in Norristown. This is food that has not been put out at all.

Dining services plays a major role in our students' on-campus experience. They typically eat three meals a day at one of the dining areas. This means that there are three opportunities every day for messages about food-related or other sustainability to reach our student population.

6.13 Current: Dining Services

The table below shows the mitigation or sustainability projects and/or initiatives that have already or currently are taking place within this administrative unit of the College. These initiatives are broken into nine areas. These areas are further delineated by type of action.

Table 6.13-1: Mitigation and Sustainability Project/Initiative: Wismer Dining Services

Type of Project	Mitigation and Sustainability Project/Initiative: Wismer Dining Services
Policy	None at this time
Internal Operations	Dishware • We currently reuse dishware approximately 200 times before it must be replaced. Refrigeration • Food on hand. Dining Services keeps on average 2.5 days-worth of food on hand. (Sodexo standard is 7 days of food; peer institutions' standard is 10-15 days of food.) This reduces the amount of energy needed to store food that requires refrigeration. • Consolidation. Food stored in refrigerators during breaks and summer is consolidated to reduce the cubic footage of chilled space. • Freezers. Thermal barriers are used at night on three of the open food coolers. Food storage • Perishable meats are packed in cryovac-sealed packaging to extend the time during which they can be used.
Procurement	Food Purchased & Served • Healthy Practices. Dining Services serves only fresh produce, makes its soups and mashed potatoes from scratch, does not use MSG in foods, uses no microwaves to heat foods, and uses trans-fat-free oils for cooking. • Breads. Sodexo purchases and serves only locally sourced bagels and breads. • Eggs. Sodexo purchases and serves only cage-free eggs or liquid pasteurized cage-free eggs in the dining hall, bakery and Jazzman's. • Locally Grown Vegetables. Dining Services works with its produce suppliers to purchase locally grown vegetables. They are in talks with a second produce supplier on this topic. • Milk. Dining Services purchases and serves only antibiotic and bovine growth hormone free milk. • Organically grown meat. Dining Services is investigating purchasing meat grown organically, possibly for special events, as this method of raising animals is less resource-intensive for the earth. • Meat. Dining Services purchases and serves mostly hormone-free and antibiotic-free meats. • Seafood. All seafood served has been cleared by the Monterey Bay Aquarium's Seafood Watch program.

	• Vegetarian options. Dining Services has increased the number of vegetable offerings that are available to students. We ensure that there are multiple vegetable options at each station in the dining area.
Behavior Change & Education	Awareness • Food Waste. Two different student groups have held week-long food waste events where leftover food was scraped onto piles, weighed and then findings were reported. • Local Food Banquet. An occasional dinner that celebrates local food. • Local Food Fair. An occasional event that brings in local vendors so that students can learn more about where their food comes from. • Sustainability Week. Sodexo participated in our Sustainability Week activities by putting together a presentation for students and giving away reusable grocery bags. Incentives • We have a BYO Cup reduced price incentive program at our coffee shop, and plan to expand that program to our informal dining area, Zack's. Student Sustainability Workers • As fiscally feasible, Sodexo Dining Services hires Sustainability Student Promotion Coordinators. These students research ideas for improving the sustainability of the services offered by Dining Services. (See Appendix S for job description.) • Real Food Challenge. This is a national program that two students working with Sodexo brought to the campus. We began working with this program in the spring semester of 2011, but are currently in a holding pattern with it. We hope to re-engage as the program encourages serving locally-grown, unprocessed food to the students.
Waste	Composting • All prepared food from Dining Services that is not used by Wismer on Wheels is composted. • All food that is left on plates is composted. This food is run through a Somat food pulper, which removes most of the water in the food. This removes almost 90% of the volume of the food, which allows us to have fewer compost containers on our loading dock and reduces the cost to deliver it to the compost facility. • All utensils and bowls used in the smaller dining areas are recyclable. However, students do not always recycle. Water Use • Tray less system in the dining hall began as a student research project and was subsequently implemented in Wismer Dining Hall. • The water that is removed from the compostable food with the food pulper is then filtered and reused to help operate the food pulper and the tray less conveyor belt system. This reduces the amount of water used to operate these systems by approximately 75%. Repurposing • Used cooking oil is sold for biofuel to Waste Oil Recyclers in Modena, PA. Gallon for gallon, the cooking oil we recycle prevents the release of 26% of the CO and 39% of the particulate matter associated with a gallon of standard diesel fuel. It

	also prevents CO_2 that would be emitted by that diesel fuel by 100%. • Students run a daily program where unused food from the dining hall is taken to a homeless shelter in the neighboring city of Norristown. This program diverts between 60 and 75 pounds of food from the compost facility (or landfill) every day. This is approximately 20-25 pounds of food each meal, three times a day Monday through Friday, and twice a day Saturday and Sunday (only two meals are served in Wismer Dining Hall on Saturdays and Sundays).
Transportation	Local Food • Dining Services uses locally grown produce and herbs when possible. Deliveries • Dining Services receives most of its food each week in a single delivery on Fridays, reducing transportation-related expenses as well as person-power for putting the food away after delivery. • By switching to a Philadelphia vendor (Sysco[12]), Dining Services has reduced the transportation-related mileage from the weekly 200 miles-round-trip to a weekly 50-miles round-trip.
Infrastructure	Green Building • A green roof is planned for installation on Wismer Hall (outside of dining area) between 2011 and 2016. Renovations • Kitchen. The College has a plan for renovating the kitchen in Wismer Hall. We hope that this will be accomplished in 2016 or 2018, depending on the completion of other projects as well as fiscal considerations. The renovation of the kitchen will include replacing old energy-inefficient equipment throughout the kitchen. This will have a significant impact on Dining Services' energy usage.

6.13 Goals: Dining Services

There are no currently identified goals for Dining Services.

[12] See http://syscophilly.com

6.13 PA: Dining Services - Prospective Actions

The following prospective actions are suggestions for consideration. It is assumed for the purposes of this document that any on-going activities that are listed above in the "current situation" section will continue. As it is difficult to see far in advance what the needs and constraints on the College will be, there are a wide variety of options presented here to consider. Some may be viable options for immediate implementation; some may seem impossible to implement in the current situation or foreseeable future, but may be viable at a later date depending on changing circumstances. These prospective actions will be reviewed periodically by staff in our Office of Sustainability (OS) and with relevant parties in the affected areas of the College.

6.13 PA-1: Dining Services – Prospective Actions: Policy

Immediate (2013-2018)

Evaluation

- If Ursinus determines that it is appropriate to participate in an evaluation and rating system, such as STARS, have Dining Services participate in filling in the Dining Services portion of the information requested. (See Appendix T to see a sample blank AASHE STARS checklist for dining services.)

Food

- Investigate Farm-to-College programs that have been implemented at other colleges and universities. [13]

Procurement

- Establish a policy that bans the purchase and use of all kitchen cleaning chemicals that are not environmentally friendly.[14]

Responsible Consumption

[13] Information about the Farm-to-College program can be accessed at http://www.farmtocollege.org.

[14] Many organizations, such as Green Seal (http://www.greenseal.org/), have online databases of "green products" that have been certified as non-toxic and non-harmful to the environment.

- Consider setting low consumption targets for all departments. E.g., 25% reduction of office paper used by 2020, 50% reduction of office paper used by 2030, etc.

Students

- Work with the administration to determine what the consequences are of stealing dishware, glasses, etc. from the dining hall. For example, Sodexo estimates that they have almost 100% loss of their plastic cups (4,000-5,000 cups) every school year. This is an annual of loss to the College of approximately $3,000.
- Work with the administration to determine some method of deterring students from taking food off premises.

Waste

- Institute composting food prep waste into the kitchen culture.
- Work with Residence Life and the administration to establish a fee for cups and other take out containers that accounts for the cost of the materials used/waste.
    - This could be a backdoor fee that is shown as a discount for students who either eat in or bring their own cups/mugs for drinks.
    - This may have health code implications, which should be considered.

Mid-Term (2019-2030)

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.13 PA-2: Dining Services – Prospective Actions: Internal Operations

Immediate (2013-2018)

Food

- Open a local/organic food station in Wismer Dining Hall. Serve food from the Organic Garden at this station when available. Label the food as coming from the UC Organic Garden.
- Increase the percentage of organic food options offered at all campus locations.
- Serve only fair trade coffee and tea at Wismer Dining Hall.
- Promote and support sustainable agriculture through choice of vendors.
- Introduce an eco-friendly, reusable takeout container that students can purchase with Dining Dollars or cash and can use at Zack's instead of traditional takeout containers.[15]
- Consider eliminating ice dispensed with refrigerated beverages.

Energy Usage

- Investigate the installation of thermal barriers for walk-in coolers.
- Energy reduction goals. Work with Facilities Services to determine energy use reduction goals.

Sustainability Guidelines

- Whenever possible and feasible, incorporate office-wide practices suggested in the Sustainable Office Guidelines into day-to-day operations (Appendix F).
- Encourage departments to use the Green Purchasing Guidelines (Appendix H).
- When possible and feasible, incorporate sustainable event guidelines into event planning. (Appendix G)

Mid-Term (2019-2030)

Composting

- Continue to strengthen composting practices within Dining Services and meet the food waste-composted goal of 100%.
- Work with the staff of Dining Services to compost pre-consumer waste products as well.

[15] For example, G.E.T. Enterprises has created reusable food containers called "Eco-Takeouts." They are 100% BPA free polypropylene. http://ecotakeouts.com/

Energy

- Work toward energy use reduction goals.

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.13 PA-3: Dining Services – Prospective Actions: Procurement

Immediate (2013-2018)

Food

- Purchase food from local sources whenever possible to reduce transportation-related emissions.[16]
- Investigate purchasing locally-roasted and/or fair trade organic coffee.[17] Coordinate this purchase with the school's purchasing office if Sodexo's purchasing system doesn't allow for this arrangement with a local producer.

Purchasing Guidelines

- Use the Green Purchasing Guidelines in Appendix H to help guide purchasing decisions.

Uniforms

- Purchase uniforms and T-shirts made from recycled and/or sustainably grown/harvested material.

Waste

- Introduce an eco-friendly water bottles and coffee mugs (metal or PBA-free plastic) available for purchase with Dining Dollars or cash.

[16] An excellent online resource for finding local farmers is www.localharvest.org.

[17] One Village is an example of a local company that roasts fair trade coffee. They are located in Souderton, PA. http://onevillagecoffee.com/

- Purchase and use compostable containers, plates, utensils and cups for all to-go meals (if student does not have reusable food container) and catered events.
- Purchase and handout composting bags to campus community members for them to use in their residence or office space. These bags are then brought back and put through the food pulper.

Mid-Term (2019-2030)

Food

- Work toward purchasing and serving only cage-free or liquid pasteurized cage-free eggs for the dining hall.
- Work toward purchasing and serving only hormone-free and antibiotic-free meat products.[18]
- Work toward introducing and getting acceptance of grass fed beef, depending on cost and availability.
- Set a goal and take steps to achieve this goal of providing locally sourced produce during seasonal availability at least 50% of the time.

Responsible Consumption

- Reduce use of products wherever possible and implement sustainability practices in everyday operations.

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.13 PA-4: Dining Services – Prospective Actions: Information Technology

There are currently no identified Prospective Actions in this area.

[18] www.sustainabletable.org has an "rBGH-free Dairy Map" that lists providers of hormone-free dairy products by state.

6.13 PA-5: Dining Services – Prospective Actions: Behavior Change & Education

Immediate (2013-2018)

Events

- Campaigns. Institute sustainability as a Dining Services campaign.
- Use food from the Organic Garden to make soups and invite students to small-scale speaker series where they can discuss sustainability in terms of food.
- Co-host once/semester sustainability lunches with The OS.
- Organize regularly scheduled themed dinners that focus on sustainability topics.

Hands-On

- Introduce an eco-friendly water bottle and coffee mug (metal or PBA-free plastic) available for purchase with Dining Dollars or cash. Promote this to students by offering a discount to students who use them.
- Weigh and display dining waste for a week during Sustainability Week. Have students scrape excess food off of plates into trash can to help establish a connection between the individual and their food waste. This would be combined with a substantial educational component about the impact of food waste.
- Offer cooking classes that shift students away from microwavable products, fast foods, vending machines, etc.

Information

- Table-top Triangles. Design informational table-top information sheets that can be placed on all tables in the dining room.
- Display ingredients lists for all foods offered in all campus locations.
- Educate students about what they are and are not allowed to take from the dining areas and what the consequences are. (There is currently no way to enforce this due to the cost of personnel to staff exits)
- Enlarge the signs indicating vegan/vegetarian/organic foods within the signing area.

Own Sustainability

- Work to make sustainability part of the UC brand. State the College's values and approach to sustainability up front in communications with prospective students, parents, and the press. Own sustainability at the College and wear it proudly.
- Expect staff to fall in line with the College's policies, practices, and expectations around Sustainability.

Real Food Challenge

- Re-engage in the Real Food Challenge program and become and remain active participants.

SSPC workers

- Reinstate the SSPC program.
    - Have SSPC students determine carbon emissions associated with various foods served in the dining hall. Label food entrees as low/medium/high-carbon at point-of-service.
    - Have SSPC students conduct a survey of students to determine attitudes about eliminating ice for beverages.
    - Have SSPC students conduct an inventory of pounds of food per delivery so that we can better account for the amount of food that is wasted.
    - Develop an educational campaign around composting of food, eating less food, and eating locally.
    - Require all Dining Services employees to attend a training session on composting.

Staff Education

- Consider offering in-house training to help staff change old practices so that lights get switched off, waste is recycled/reused, etc.
- Consider purchasing books about sustainability in dining services. Keep the books somewhere that they can be accessed easily.
- Consider having annual think tank meetings to strategize about sustainability within dining services. Invite students and kitchen staff to participate in these discussions.

Sustainability Action List

- 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.

Mid-Term (2019-2030)

Food

- Have sustainability student workers develop a way for the Ursinus community to easily access information about where all food served by Dining Services comes from.

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.13 PA-6: Dining Services – Prospective Actions: Waste & Recycling

Immediate (2013-2018)

Recycling & Composting

- Work toward composting the food scraps and leftovers that are generated in the preparation of food for the dining hall and other dining areas.
  - Train kitchen staff in how to compost this food and what can and what cannot be recycled.
- Recycle the plastics and cans that are generated in the preparation of food for the dining hall and other dining areas.
- Ensure that all Ursinus students, faculty, staff, and guests can easily locate recycling receptacles. Put descriptive label on all recycling bins describing what can and cannot be placed inside.

- Ensure that all plates, cups, and bowls that are provided at events are either recyclable or compostable. Depending on which, make sure that there are recycling or composting receptacles at the events.
- If the College contracts with a composting facility that takes compostable utensils, plates, bowls, etc., work toward ensuring that all such ware that is provided by Dining Services is compostable.

Waste Reduction

- Eliminate the use of polystyrene foam (Styrofoam) serving cups and plates. This elimination would have to be flexible in the face of a health emergency.
- Eliminate plastic bags for take-out food, or charge a fee to students who choose to purchase one.

Food Waste

- Strive to improve the percentage of food waste that is composted by Dining Services.
- Collect more accurate data on the amount of food waste that is diverted from composting by the Wismer on Wheels program. Have students who run this program track data as a stipulation for providing the food.
- Increase the amount of compostable materials that actually make it into the compost.
- Institute a yearly food waste collection to remind students of how much food is wasted every day. Have this collection coincide with Sustainability Week in September.

SPCC Workers

- Work with SSPC workers to determine if there is a way to further reduce the amount of waste per student per meal. Implement ideas that seem feasible and cost effective.

Mid-Term (2019-2030)

Zero Waste Goal

- Work toward attaining "Zero Waste" operations by working to have all incoming and outgoing materials reduced, reused, recycled, or composted.

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.13 PA-7: Dining Services – Prospective Actions: Transportation

Immediate (2013-2018)

Alternative Fuel

- Reuse. Investigate technology and resources involved in using cooking oil to fuel biodiesel cars/trucks involved in campus operations.

Mid-Term (2019-2030)

Alternative Fuel

- If feasible, reuse oil from cooking to fuel one or more biodiesel cars/trucks involved in campus operations. This would be a project that would require ongoing coordination with student groups, The OS and Facilities Services.

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.13 PA-7: Dining Services – Prospective Actions: Community Outreach

There are currently no prospective actions in this area.

6.13 PA-9: Dining Services – Prospective Actions: Infrastructure

Immediate (2013-2018)

Composting Infrastructure

- When purchasing additional or replacement compost bins, purchase locking bins so that food smells will not leach into the surrounding area.
- Consider expanding the Wismer loading dock to accommodate the additional composting bins.

Composting Contracting

- Re-assess our composting contractor and consider other options.
- Assess contractors based on cost, what they can compost for us and other services (including educational) that they can offer to the College.

Energy Goal

- Work with the Dining Services director to determine goals for energy use reduction.

Energy Saving - Electricity

- Food coolers. Investigate thermal barriers on the walk-in coolers in the kitchen. These have been cumbersome and difficult to clean in the past. We will need to find an alternative that more effectively meets all operational needs and sustainability goals.
- Appliances. Consider removing deep-fryers.[19]
- Ice machines. Depending on survey results, consider eliminating ice dispensed for beverages.
- Insulation. Ensure that refrigerated areas and hot water supplies are properly insulated.

[19] According to Sustainable Foodservice Consulting, fryers are often the most expensive piece of equipment in dining service facilities. They use large amounts of energy and produce fryer oil that is costly to dispose of. Fried foods are high-fat and associated with health issues. Many traditionally fried foods that are currently served by Dining Services could be replaced with baked versions.

- Lighting. Ensure that all lighting is energy-efficient. This includes replacing incandescent bulbs with Compact Fluorescent Lamps or LEDs and installing occupancy sensors.

HVAC

- Investigate the possibility of installing kitchen exhaust hoods with heat recovery components.
- Investigate the pressure of the HVAC system for the building. If there is negative pressure, work to increase the pressure to acceptable levels (1" of air pressure is ideal in commercial settings).

Procurement

- Appliances. Ensure that all newly-purchased appliances are Energy Star qualified.
- Food coolers. As the current equipment ages out, we will explore new options for more energy-efficient models with daytime thermal barriers for open food coolers. Transition to non-ozone-depleting refrigerants.

Water

- Water Saving. Acquire a low-flow pre-rinse spray valve for use in the process of washing dishes in Wismer.

Mid-Term (2019-2030)

Hot water

- Solar. Consider using solar hot water heaters to supply all Dining Services locations with the energy needed to produce hot water.
- Cooking Oil. Investigate water heating technology that runs off of used cooking oil and weigh this option against other possible uses for the oil (sale for biofuel) or the removal of the deep fryers.

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

Facilities – Chapter 6.14: Housekeeping

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Ursinus College contracts out housekeeping to an independent contractor. The housekeeping staff is comprised of approximately 25 employees. These employees are responsible for cleaning the public spaces in all campus buildings, as well as staff/faculty offices. They take out the garbage from the bins in those areas as well as removing the recycling from bins in public spaces indoors and share the responsibility with Facilities Services for bins located outdoors. They are responsible for transferring recycling and garbage to their respective dumpsters and determining whether there is contamination in the recycling bags.

Our housekeeping staff members have been trained in how to identify recycling that is contaminated as well as the importance of recycling for our campus overall. Contamination in the recycling is a concern in certain areas of the campus. Housekeeping staff have "contaminated" stickers to place on the contaminated bags as an educational initiative to help Ursinus community members know why certain bags of recycling are being put in the trash. We also use green bags for our recycling bins so that it is easier for all community members to know what is and isn't recycling.

6.14 Current: Housekeeping

The table below shows the mitigation or sustainability projects and/or initiatives that have already or currently are taking place within this administrative unit of the College. These initiatives are broken into nine areas. These areas are further delineated by type of action.

Table 6.14-1: Mitigation and Sustainability Projects/Initiatives - Housekeeping

Type of Project	Mitigation and Sustainability Projects/Initiatives - Housekeeping
Policy	None at this time
Infrastructure	None at this time
Operations	Work hours • Converted custodial services to daytime hours in order to reduce lighting requirements at night. Energy Saving Initiatives • Housekeeping staff have been instructed to turn lights off in rooms and buildings when they are finished with their work in those spaces. Recycling • We have instituted a system that allows the housekeeping staff to publicly identify recycling bags that have been contaminated with a "contaminated" sticker placed on such bags. This has helped change the perception that our housekeeping staff is not participating in the recycling program as well as educating our community members about the fact that contamination means that recycling becomes "trash".
Procurement	Cleaning • We use almost exclusively green cleaning products, chemicals, etc. Recycled Paper • We require that our Housekeeping contractor provide recycled toilet paper and paper towels in campus lavatories.
IT Changes	None at this time
Behavior Change & Ed.	Stickers • Bags of recycling that are contaminated are labeled as such with stickers. This allows community members to know why some recycling is thrown in with the garbage.
Waste & Recycling	Single Stream Waste • Our housekeeping staff members are on the front lines of our recycling efforts. They collect and distribute both trash and recycling for the academic and non-academic buildings on campus. They are educated about what can and cannot be recycled and recycling contamination issues. Data Tracking • Keep track of how many bags of recycling are "contaminated." This level of data tracking would assist the OS and the College in understanding where to concentrate efforts.
Transportation	Car Pooling • Many of our housekeeping staff carpool to work, which saves them money and

	reduces the College's staff-commuting-related emissions.
Community Outreach	None at this time

6.14 Goals: Housekeeping

Goal 1: Determine what the Facilities Services Department's commitment to sustainability is within the realm of Housekeeping, and publicize that commitment within the community.

Goal 2: Set staff education goals within housekeeping.

a. Green cleaning, products and processes.
b. Recycling, our process and why it matters.
c. Ursinus' sustainability commitment and where Housekeeping fits in.

6.14 PA: Housekeeping - Prospective Actions

The following prospective actions are suggestions for consideration. It is assumed for the purposes of this document that any on-going activities that are listed above in the "current situation" section will continue. As it is difficult to see far in advance what the needs and constraints on the College will be, there are a wide variety of options presented here to consider. Some may be viable options for immediate implementation; some may seem impossible to implement in the current situation or foreseeable future, but may be viable at a later date depending on changing circumstances. These prospective actions will be reviewed periodically by staff in our Office of Sustainability (OS) and with relevant parties in the affected areas of the College.

6.14 PA-1: Housekeeping – Prospective Actions: Policy

Immediate (2013-2018)

Policy Recommendations: See the Facilities Services Administration section of the CSAP.

Mid-Term (2019-2030)

6.14 PA-2: Housekeeping – Prospective Actions: Internal Operations

Immediate (2013-2018)

Day to Day

- Clean the outsides of the recycling and trash receptacles on a monthly- or as-needed basis so that it is clear that they are being maintained. This should help UC community members understand that the College is supportive of this effort.
- Emblazon the cleaning carts with eye-catching stickers that contain messages about "green" cleaning on campus.
- Ensure that lights are turned off in unused classrooms and office spaces.
- Include Spanish translations on the recycling bins as a way to be inclusive of our housekeeping staff members whose primary language is Spanish.

Events

- Ensure that there are clean, well-marked recycling receptacles placed at all campus events. There should be recycling containers next to every trash can.

Training

- Provide periodic training, in both English and Spanish, to housekeeping staff members to reinforce the importance of recycling and their role in our success.
- Identify and address problem areas where there is more recycling or concerns around housekeeping staff compliance and provide additional training for staff members in those areas.
- Seek input from housekeeping staff about areas of concern to them with regard to sustainability requirements.

Mid-Term (2019-2030)

Recycling

- Investigate whether housekeeping staff could be assigned to remove trash from recycling bins when there is minimal contamination. If this is deemed to be a possibility, implement it as part of the recycling contamination solution.

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.14 PA-3: Housekeeping – Prospective Actions: Procurement

Immediate (2013-2018)

Green Cleaning Products

- Work with housekeeping to purchase more green products to increase our green cleaning program. Products could include:
  - Non-toxic cleaning solutions (e.g., vinegar, baking soda, non-toxic detergents, etc.). These are made by many companies, including Seventh Generation, Sustainable Earth, and??.
  - Use unbleached cotton cloths that can be washed (by a contracted company) and reused instead of using paper towels and throwing them away.
- Avoid products that have warnings on them such as “danger” and “poison” or that contain ingredients that are “corrosives” or are labeled as any of the following: “Chronic Health Hazard”, “vapor harmful”, “causes burns”, or “may be fatal or cause blindness if swallowed.”

Purchase consumer-used products that have a lower impact on the environment

- Purchase only non-bleached lavatory tissue products (paper towels and toilet tissue) for all lavatories on campus.
- Purchase hand soaps that are environmentally friendly for soap dispensers.

Purchasing Guidelines

- Use the Green Purchasing Guidelines in Appendix H to help guide purchasing decisions.

Mid-Term (2019-2030)

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.14 PA-4: Housekeeping – Prospective Actions: Information Technology Changes

Immediate (2013-2018)

Online Comments

- Investigate the creation of an online form that students/staff can fill out to report issues and also to write comments (positive and negative). The point of such an online form would be to automate the process of pointing out areas that need attention, similar to the work request form that Facilities Services currently operates for repairs.
    - Benefits of an online form would include: the ability to track problem areas (both locations and types of problems), the ability to identify locations and campus populations where educational campaigns would help, the ability to better meet the needs of the UC community.
    - The importance of this stems in part from the fact that the housekeeping staff is so important to the success of the recycling program on campus. But also because they interact with or are seen by the community every day.
- If this is deemed to be feasible and reasonable, implement this online form system.

Mid-Term (2019-2030)

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.

- Reassess goals and prospective actions.

6.14 PA-5: Housekeeping – Prospective Actions: Behavior Change & Education

Immediate (2013-2018)

Own Sustainability

- Work to make sustainability part of the UC brand. State the College's values and approach to sustainability up front in communications with prospective students, parents, and the press. Own sustainability at the College and wear it proudly.
- Expect staff to fall in line with the College's policies, practices, and expectations around Sustainability.

Training

- Conduct training sessions with staff members (in their native language) to explain what the College is doing overall regarding sustainability and what their role is in meeting the College's goals. It is critical for our housekeeping staff members to understand why it is important for them to be on board… not only because they are being paid to do so, but because it is healthier for them as well as the overall community. Make sure that there are feedback loops to inform the process and make implementation more effective.
- Training sessions should revolve around specific tasks that individuals are involved with, but all housekeeping staff members should also be exposed to the overall picture of what the other housekeeping staff members are being asked to do.

Public Relations

- Have Housekeeping employees wear a pin that has a "green" message.
    - These pins could say something that communicates the message that they are working on sustainability on the campus: "Greening Ursinus Housekeeping", "Recycling: Ask me how" (for those whose English would support conversation), "Housekeeping is Going Green", etc.

Mid-Term (2019-2030)

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.14 PA-6: Housekeeping – Prospective Actions: Waste & Recycling

Our housekeeping staff is on the front lines of our recycling program. They are responsible for collecting the recycling and waste and determining whether the recycling is contaminated, and thus not recyclable. This puts them in a delicate and important PR position, made somewhat more awkward because these workers are contract employees. UC community members have, in the past, been suspicious that the waste and recycling are not actually being separated, in large part due to the contamination of the recycling (and thus the need to throw a bag of recyclable materials into the trash), but potentially also due to cultural differences and poor communication of process. The solution to this complex situation lies only in part with the Housekeeping staff.

Immediate (2013-2018)

PR

- Work with the OS to determine ways to make it clear what is and is not being recycled and why.
    - This could involve having housekeeping staff place "Contaminated" stickers on recycling bags that have been contaminated by users. This would educate community members about why that particular bag of recycling is actually "trash" and help community members understand why it is important to use the recycling bins appropriately.
    - This could also involve an educational campaign about Housekeeping's role in the recycling program run by the OS. See the CSAP section on the OS for more information.
- Institute recycling of paper towels in bathrooms

Mid-Term (2019-2030)

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.14 PA-7: Housekeeping – Prospective Actions: Transportation

Immediate (2013-2018)

Vehicles

- Do not idle any vehicles on the UC campus.

Mid-Term (2019-2030)

There are currently no identified Prospective Actions in this area.

6.14 PA-8: Housekeeping – Prospective Actions: Community Outreach

There are currently no identified Prospective Actions in this area.

Immediate (2013-2018)

Mid-Term (2019-2030)

6.14 PA-9: Housekeeping – Prospective Actions: Infrastructure

There are currently no identified Prospective Actions in this area.

Immediate (2013-2018)

Mid-Term (2019-2030)

Facilities – Chapter 6.15: Bookstore

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The Ursinus Bookstore is located in the Wismer Center. The store is operated by Barnes & Noble Booksellers. Barnes & Noble supports sustainability efforts at colleges and universities that promote these efforts. The facilities have recently been renovated so that there is slightly less floor space in the store. The inventory consists of books for classes (ordered ahead by faculty), a limited selection of books for general reading, Ursinus clothing and gear, some residence hall room merchandise, and other small items.

6.15 Current: Bookstore

The table below shows the mitigation or sustainability projects and/or initiatives that have already or currently are taking place within this administrative unit of the College. These initiatives are broken into nine areas. These areas are further delineated by type of action.

Table 6.15-1: Sustainability projects & initiatives – UC Bookstore.

Type of Project	Mitigation Project/Initiative: Transportation
Policy	Sustainable Sourcing • Currently, Barnes and Noble is partnered with a company called Alta Gracia for some clothing, and this partnership is to extend further in the future. Worksites are monitored by Barnes and Noble, to ensure best practices are adhered to, living wages paid, and quality of life for workers is bettered.
Operations	Books • Promotes textbook rentals • Promotes used textbooks • Promotes e-text books Paper • Less paper used in checkout process, as only one receipt now prints for rental agreements. Suggested to company that ALL receipts be generated through email. Backup of documents, instead of being printed, will now be saved to desktop and filed in appropriate folders, eliminating unnecessary consumption Marketing Sustainability • Emphasize buy-backs, used and digital textbooks and rentals. • Provide students with the opportunity to purchase collegiate clothing from socially and environmentally conscious brands, such as Alta Gracia

	• Sell reusable shopping bags-currently do Customer Service • B&N does not typically offer bags for purchases unless asked. • B&N is planning to stop printing emails unless absolutely critical.
Procurement	
IT Changes	E-improvements • Online Ordering • E-Textbooks • B&N is undertaking a Nook Study
Behavior Change & Ed.	Drink-ware • Bookstore's website sells a variety of reusable drink-ware, including metal and plastic water bottles and ceramic mugs.
Waste & Recycling	Recycling • *We recycle cardboard boxes, light bulbs, paper goods, plastic, and* aluminum.
Transportation	None at this time
Community Outreach	None at this time
Infrastructure	Energy Saving Initiatives • Bookstore lights are on an energy saving, programmable auto off/on schedule. • Air conditioning and heating units are on a programmable schedule-shutting down when the Bookstore is closed. Housekeeping • Uses environmentally friendly "Green Safe" cleaning products and cleaning supplies.

6.15 Goals: Bookstore

There are no goals currently identified for the Bookstore.

6.15 PA: Bookstore - Prospective Actions

The following prospective actions are suggestions for consideration. It is assumed for the purposes of this document that any on-going activities that are listed above in the "current situation" section will continue. As it is difficult to see far in advance what the needs and constraints on the College will be, there are a wide variety of options presented here to consider. Some may be viable options for immediate implementation; some may seem impossible to implement in the current situation or foreseeable future, but may be viable at a later date depending on changing circumstances. These prospective actions will be reviewed periodically by staff in our Office of Sustainability (OS) and with relevant parties in the affected areas of the College.

6.15 PA-1: Bookstore – Prospective Actions: Policy

Immediate (2013-2018)

Mission Statement

- Investigate the possibility of writing a green mission statement for the bookstore that includes: procurement, operations, transportation, education & behavior change, waste reduction and recycling. Work with UCGreen on this mission. Adopt as much as possible from the Barnes & Noble statement of support for sustainability.

Goal Setting

- Commit to (1) discover best practices; (2) innovate when solutions don't exist; (3) reduce waste and inefficiencies; (4) adopt and embrace new habits; and (5) measure and celebrate progress.

Responsible Consumption

- Consider setting low consumption targets for all departments. E.g., 25% reduction of office paper used by 2020, 50% reduction of office paper used by 2030, etc.

Sustainable Sourcing Policy

- Consider adopting a 'no sweat' policy for the Bookstore's clothing suppliers to ensure it is manufactured in ethical conditions.
- When possible, source Fair Trade products which ensure a fair working wage for workers.

Mid-Term (2019-2030)

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.15 PA-2: Bookstore – Prospective Actions: Internal Operations

Immediate (2013-2018)

Office Guidelines

- Whenever possible and feasible, incorporate office-wide practices suggested in the Sustainable Office Guidelines into day-to-day operations (Appendix F).
- Encourage offices, departments and individual staff and faculty members to participate in OS green certification programs, once developed.

Event Guidelines

- When possible and feasible, incorporate items from the Sustainable Event Guidelines into event planning. (Appendix G)

Textbooks

- When possible, buy back used textbooks for use in future semesters to encourage students to sell and to encourage more students to purchase used books.
    - Consider offering higher buy-back prices for textbooks to encourage students to sell them.

  - Make it clear to students ahead of time what used textbooks will be worth in trade-in value vs. cash-back value.
  - Inform students of the value of used books based on the condition they are in (with examples). Students like to feel that they are aware of the process.
  - Resell textbooks, preferably on campus, but otherwise to wholesalers.
- Encourage the sale of eBooks
- Work to reduce inventory of books that are not purchased.
- Consider offering a discount (based on the cost of excess inventory) to students who purchase text books ahead of the semester order . List books that are being ordered online as faculty send in orders; offer students a discount if they place their order prior to when you place your order.
- Encourage in-store sales
  - Identify in-store advantages to students purchasing textbooks and capitalize on those advantages. Some of these advantages are: convenience, the ability to examine the book, assurance that they are purchasing the correct text book, student-centric return policies, loyalty cards, and customer service. (DeVito 2006)
  - Eliminate "channel conflict" between the B&N bookstore and wholesalers, if present.
  - Educate students about the benefits of shopping in the B&N campus bookstore: use every purchase as an opportunity to do so.
  - Use an online promotion strategy to encourage students to purchase from the campus B&N rather than ordering online from an outside retailer.

Responsible Consumption

- Reduce use of products wherever possible and implement sustainability practices in everyday operations.

Marketing Sustainability

- Market sustainability actions within the Bookstore to the campus community.
- Work with IT and the OS to reduce peripheral energy use on campus by encouraging the use of "smart" power strips (and then selling them at a low price).

Customer Service: Consider all of the following:

- Use recycling bins for paper, cardboard, and plastic gift cards at registers
- Power off all registers and computers at the end of the day to conserve energy.
- Use cleaning rags instead of paper towels.
- Reuse plastic bags and reuse paper for scratch paper.
- Minimize the content of emails to fit on one page-
- Communicate with costumers primarily via email and phone instead of using paper mail.
- Arrange shipments using the smallest amount of packaging material as possible.
- Use a single sheet of tissue for each custom wrapped item.
- Registers and computers go into energy saver mode when not in use.
- Recycle shredded paperwork.
- Reuse office supplies such as rubber bands, paperclips, etc.
- Provide recycled/sustainable office and school supply choices, such as: content notebooks, multi-use printer paper, fine business stationery, folders, planners, filler paper, art pads, index cards, journals, pens, pencils, highlighters, paper clips, staples, rulers, indexes, sheet protectors, binders, post it notes, energy saving, long life light bulbs, rechargeable batteries, and battery chargers.

Accounting

- Send outdated documents to a shredding/recycling company.
- Reuse boxes that are in good shape for storage and filing.
- Reuse reporting paper for scratch paper.

Receiving and Delivery division:

- Reuses inbound boxes/cartons and packaging materials for shipping.
- Lights and computers are shut off at the end of each day.

Mid-Term (2019-2030)

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.15 PA-3: Bookstore – Prospective Actions: Procurement

Immediate (2013-2018)

Sustainable Products

- Promote on-campus sustainability initiatives by purchasing and marketing sustainable products, including, recycled products, locally-produced products. These could include items such as:
  - recycled notebooks, index cards, greeting cards
  - filler and printer paper,
  - pens and pencils
  - Dividers and binders
  - Expanding files and pencil cases
  - Sketch and writing journals
  - Flash drives
  - t-shirts
  - reusable tote bags,
  - energy efficient light bulbs
- APC surge protectors which eliminate standby power from computer peripherals (standby power accounts for 5%-10% of all residential power consumed.)
- Laptop bags (Act2 GreenSmart) made entirely of recycled plastic bottles.

Purchasing Guidelines

- Use the Green Purchasing Guidelines in Appendix H to help guide purchasing decisions.

Mid-Term (2019-2030)

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.15 PA-4: Bookstore – Prospective Actions: Information Technology Changes

Immediate (2013-2018)

Email

- Consider adopting the use of a footer message such as "Please consider the environment before printing this e-mail." in all emails.

QR codes

- If asked to provide coupons for events, make them available on-line via a coupon code on the website or a QR code.

Mid-Term (2019-2030)

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.15 PA-5: Bookstore – Prospective Actions: Behavior Change & Education

Immediate (2013-2018)

Best Practices

- Consider developing 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.

Own Sustainability

- Work to make sustainability part of the UC brand. State the College's values and approach to sustainability up front in communications with prospective students, parents, and the press. Own sustainability at the College and wear it proudly.
- Expect staff to fall in line with the College's policies, practices, and expectations around Sustainability.

Sales Items

- Consider adding a line of "green" products to the online and in store sales items. Consider including organic fabric clothing, recycled fabric clothing, "green"

tchotchkes, recycled office products, CFL light bulbs, sustainable material laptop bag,

Staff Education

- Consider offering in-house training to help staff change old practices so that lights get switched off, waste is recycled/reused, etc.
- Staff participation in sustainability educational sessions.
- Spearhead the design and production of one or more Ursinus branded reusable bags, offering them for sale
- Spearhead Bookstore communication concerning our sustainability efforts.

Mid-Term (2019-2030)

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.15 PA-6: Bookstore – Prospective Actions: Waste & Recycling

Immediate (2013-2018)

Recycling

- Investigate the possibility of purchasing recyclable graduation caps and gowns.
- Provide recycling receptacles on the sales floor for rechargeable batteries and empty ink jet cartridges.
- Recycle newspapers and cardboard.

Reusing

- Reuse cardboard cartons and packing materials for returns
- Reuse packing materials such as peanuts, bubble wrap, newspaper and Kraft paper.

Reducing

- Work to produce minimal waste. Business materials should reused to the furthest of their extent whenever possible.

- Don't put unnecessary advertising inserts in bags in order to reduce waste.
- Designate a target for cutting back on plastic bags

Mid-Term (2019-2030)

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.15 PA-7: Bookstore – Prospective Actions: Transportation

Immediate (2013-2018)

Delivery

- When students order online, shipping/transportation is handled in bulk and orders are picked up in-store. This eliminates the need to have items shipped directly and separately to them.

Mid-Term (2019-2030)

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

6.15 PA-8: Bookstore – Prospective Actions: Community Outreach

There are currently no identified Prospective Actions in this area.

6.15 PA-9: Bookstore – Prospective Actions: Infrastructure

Immediate (2013-2018)

Lighting

- Utilize natural lighting whenever possible. Upgrade the lighting system to use a control panel that dims all Bookstore lighting as it gets brighter outside. (Daylight harvesting)

Mid-Term (2019-2030)

Tracking & Assessment

- Continue the efforts noted above.
- Track progress toward goals.
- Track sustainability actions taken within the Department and building.
- Reassess goals and prospective actions.

Works Cited

42U. Energy efficiency best practices. 2012. http://www.42u.com/efficiency/data-center-best-practices.htm (accessed March 15, 2012).

About.com. Kilowatt per Hour. 2011. http://saveenergy.about.com/od/energyefficientappliances/g/kilowatt_def.htm (accessed 2011 йил 14-September).

ACUPCC. ACUPCC Implementer. 2011 йил September.

American College and University Presidents' Climate Commitment. “Implementation Guide.” Presidents Climate Commitment. (accessed 2010 йил 1-December).

Clean Air-Cool Planet. Clean Air-Cool Planet Carbon Calculator Users Guide. 2010. http://www.cleanair-coolplanet.org/toolkit/calculator/v6.5_Users_Guide.pdf (accessed 2010 йил 6-December).

DeVito, David and Nate Rempe. "Textbook Insights: What is in store for the college bookstore? Whitepaper." Textbook Insights: What is in store for the college bookstore? Nebraska Book Company. 2006. http://www.nebook.com/images/KIP_whitepaper1.pdf (accessed 02 27, 2013).

“Summary for Policy Makers.” In In IPCC Special Report on Renewable Energy Sources and Climate Change Mitigation, by O., R. Pichs-Madruga, Y. Sokona, K. Seyboth, D. Arvizu, T. Bruckner, J. Christensen, J.-M. Devernay, A. Faaij, M. Fischedick, B. Goldstein, G. Hansen, J. Huckerby, A. Jäger-Waldau, S. Kadner, D. Kammen, V. Krey, A. Kumar, A. Lewis, O. Lucon, P. Edenhofer, edited by R. Pichs-Madruga, Y.Sokona, K. Seyboth, P. Matschoss, S. Kadner, T. Zwickel, P. Eickemeier, G. Hansen, S. Schlömer, C. v. Stechow (eds) O. Edenhofer, 25. Cambridge, United Kingdom and New York, USA: Cambridge University Press,, 2011.

Gardner, Andrew. “Middlebury Athletics Adopts Green Mission.” About Middlebury Athletics. 2009 йил 8-June. http://www.middlebury.edu/athletics/about/generalnews/node/112741 (accessed 2011 йил 7-July).

GHG Protocol Initiative. About the Greenhouse Gas Protocol Initiative. 2011. http://www.ghgprotocol.org/ (accessed 2011 йил 15-September).

Harvard University Office for Sustainability. "Peak Energy Demand in the Summer." Harvard University Office for Sustainability. Harvard University. 2011. http://green.harvard.edu/node/4270 (accessed February 3, 2012).

Harvard University Office For Sustainability. "Volatile Chemicals." Harvard University Office for Sustainability. Harvard University. 2011. http://green.harvard.edu/node/2800 (accessed February 3, 2012).

Monitoring Analytics, LLC. “State of the market report for PJM.” 2010 йил 15-11. http://www.pjm.com/documents/reports/~/media/documents/reports/state-of-market/2010/2010q3-som-pjm.ashx (accessed 2011 йил 11-05).

Pennsylvania Bus Association. “Act 124 (Idling Restrictions) and Motorcoaches.” PBA Bulletin. 2008 йил 11. http://www.pabus.org/documents/Bulletins/2008%20November%20%20Reporter%20Idling%20ACT%20124.pdf (accessed 2011 йил 17-05).

Santa Clara University Office of Sustainability. “Climate Neutrality Action Plan.” 2010 йил 15-01. http://www.scu.edu/sustainability/upload/SCU-Climate-Action-Plan-011510.pdf (accessed 2011 йил 24-05).

Schaper, Louise L. "Let green creep: Ten steps to sustainable library operations." Library Journal Archive. Library Journal. 05 15, 2010. http://www.libraryjournal.com/article/CA6727897.html (accessed 03 21, 2012).

U.S. EPA. Creating an ENERGY STAR Showcase Dorm Room. http://www.energystar.gov/index.cfm?c=higher_ed.bus_dormroom (accessed 2011 йил 24-05).

UND Sustainability. Close the fume hood. 2012. http://green.nd.edu/education/college-of-science-energy-challenge/close-the-fume-hood/ (accessed March 20, 2012).

Union of Concerned Scientists. Climate change impacts and solutions for Pennsylvania: How today's actions shape the state's future. Cambridge, MA, MA: Union of Concerned Scientists, 2008.

University of Colorado Boulder Facilities Management. Lab fume hoods. http://www.colorado.edu/FacMan/about/conservation/FumeHoods.html (accessed March 2, 2012).

Ursinus College. Ursinus College - About Us. 2010. http://www.ursinus.edu/netcommunity/page.aspx?pid=418 (accessed 2010 йил 10-December).

US EPA. Introduction to the concept of green chemistry. 08 10, 2011. http://epa.gov/greenchemistry/pubs/about_gc.html (accessed 02 23, 2012).

USGBC. USGBC: What LEED is. 2011. http://www.usgbc.org/DisplayPage.aspx?CMSPageID=1988 (accessed 2011 йил 14-September).

UTMB Research Technical Services. "RTS Tech Tips." University of Texas Medical Branch Health - Research Services. Dec. 30, 2011. http://research.utmb.edu/RTS/tech_projects.shtm (accessed Feb. 22, 2012).

Vyas, Nandita and John C. Mlade. "Sustainable Lab Operations." Lab Manager Magazine. LabXMedia Group. April 2, 2010. http://www.labmanager.com/?articles.view/articleNo/3610/article/Sustainable-Lab-Operations (accessed February 3, 2012).

Appendices

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

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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

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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

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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

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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 OS	ENV & Facilities	ENV

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

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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

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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

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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

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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

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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

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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. [20]
- 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

[20] 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

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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

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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

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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

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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

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This is not meant to be an exhaustive list, but a set of guidelines. The list below is from the Automobile Association (a British equivalent of AAA) below.[21] 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."

[21] 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

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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

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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

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				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

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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

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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

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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

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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."