A Report to the President

on the Future of Sustainability at Westminster College

Respectfully Submitted by

The Sustainability Committee

April 7, 2011

**Executive Summary**

*Objective*

In the fall of 2010, President Dorman convened a group of campus community members to assess current and future sustainability activities at Westminster College. The group was charged with delivering a set of key recommendations related to one of the 39 Key Goals of the College’s strategic plan. This goal, related to sustainability, reads as follows:

*Develop, support, and recognize programs to improve the College’s efforts toward environmental sustainability and incorporate more sustainable practices into its operations and infrastructure.*

*Process*

A Sustainability Committee, with representatives from student, faculty, administration, and staff met on a weekly basis over seven months to evaluate existing and potential sustainability practices at Westminster College. As a first step, the Committee documented existing sustainability initiatives (Appendix 1) on campus. From there, the group identified seven overarching goals within the context of sustainability that were felt to be a priority at Westminster College:

Goal 1: Administration and Organization

Goal 2: Research, Curriculum, Collaboration and Outreach

Goal 3: Student Involvement and Campus Culture

Goal 4: Campus Operations and Grounds

Goal 5: Service, Partnerships, and Communication

Goal 6: Finances and Resources

Goal 7: Assessment

Based on a review of best practices of campus sustainability across the nation (an abbreviated list of initiatives in Pennsylvania can be found in Appendix 2), a list of specific recommendations were proposed and then categorized under each of the overarching goals.

*Conclusions*

Among the nearly 70 recommendations that follow, two main priorities emerged from the Committee’s deliberations: (1) The need for a Sustainability Coordinator to provide dedicated and legitimate leadership for sustainability initiatives, and (2) A need to shift the campus culture to embrace the precepts of sustainability.

**Priority One**

Sustainability practices affect all areas of campus operations, from purchasing to curriculum to finances. We envision that the Sustainability Coordinator has a voice in the President’s Cabinet (since all campus decisions do affect sustainability) either by a direct report to the President or through the Vice President of Finance. We also envision that this leader would have access to financial resources to ensure that sustainability would be an ongoing, long-term endeavor of the College. This individual, the Sustainability Coordinator, would serve as the chair of a Sustainability Council through which he/she would help coordinate, promote, oversee, and implement sustainability initiatives. Ideally, a Sustainability Coordinator would be a full-time position. In the short term, a faculty member with course release or an administrator/staff member with a reduced responsibility could serve in this role on a temporary basis.

**Priority Two**

Sustainability is a relatively new concept and not necessarily fully embraced by students. The Committee therefore suggests that a top down approach is necessary as a first step to educate students about the precepts of sustainability. The Committee recognizes that meaningful integration of sustainability education can occur through both curricular and co-curricular offerings. Sustainability education in Fresh Start, the First Year Program, and co-curricular events have been recognized as excellent ways to achieve this goal. The infusion of sustainability throughout the formal curriculum is yet another important step in imbuing sustainability in the values and cultural norms of Westminster.

As faculty, staff, and administrators, we have a critical role to play regarding the campus culture. We must lead by example. Leadership and support from the highest levels of the institution are essential if sustainability is to succeed at Westminster College. It is with this understanding that the Sustainability Committee looks forward to meeting with the President to discuss this document, its recommendations, and the ultimate direction the institution will take to address them.

*The Report*

This report contains a detailed list of recommendations falling under the seven overarching goals. A comprehensive appendix provides significant supporting information related to these goals and recommendations.

**Sustainability Committee Membership**

Neal Edman, Vice President for Student Affairs, Chair

Helen Boylan, Professor, Chemistry

Mike Cosgrove, Crafts Supervisor, Physical Plant Office

Jeff Creveling, Director, Sodexo Food Services

Colin Feeney, Student

Clarence Harms, Professor Emeritus, Biology

Steven LaRue, Student (SGA)

Jim Mohr, College Chaplain

Mary Pitman, Secretary, Chemistry

Stephanie Reed, Assistant Director of Residence Life

Caitlin Roberts, Student

Mona Shawky-Moufid, Sodexo Food Services

Ann Throckmorton, Professor, Biology

**Introduction**

In August, 2010, President Dorman, recognizing the sea-change in environmental sensitivity across the nation, called for the creation of a committee that would draft recommendations that would lead the College forward in sustainability. The Campus Sustainability Committee, comprised of faculty, staff, administration and students was subsequently formed to meet that challenge to “identify practices and policies that could be implemented campus-wide yielding improved behaviors on the part of faculty, staff, and students toward making the College community more environmentally sensitive than we currently are.” The committee was also asked to audit current sustainability practices at the College with an eye toward embracing those that have been effective and searching for “gaps” and opportunities in our sustainability efforts that could be improved. Ultimately, the acceptance of the committee’s recommendations would be determined, in large part, by the extent to which they could be implemented in a “measured and affordable way” and “embedded into the culture of the campus” as an “organic part of the way we do things at Westminster.”

The following report is a result of the committee’s efforts over the past seven months to respond to the President’s charge. During those months, it became clear that the Westminster community has made great strides in the realm of sustainability. It became equally clear that in order to build upon those achievements, an institution-wide culture shift is necessary that embraces the many facets of sustainability. To do this, a strategy is required that is priority driven, far-sighted, realistic, and affordable in its implementation.

**Sustainability**

Sustainability has been defined in many different ways with little clear consensus on one working definition. At one end of the spectrum sustainability is narrowly defined as living and acting in harmony with the environment and focuses on recycling, all forms of pollution and waste mitigation, energy conservation, and the like. At the other end of the spectrum, AASHE (The Association for the Advancement of Sustainability in Higher Education) casts sustainability as a complex integration of human and ecological health, social justice and intergenerational equity; building a “better world” for all generations. The breadth of such a definition encompasses not only environmental, but community sustainability.

Regardless of the lack of consensus, what is important is not so much agreement on the definition of sustainability but the values that underlie any such definition. Essential to the success of a sustainability program is the embedding of these values into the culture of the institution. Hence, the prominence of the two goals: Curriculum, and Student Involvement/Campus Culture. More importantly, however, is the Committee’s recognition that in order for the Plan to endure, there must be dedicated and legitimate administrative stewardship at the top and with direct responsibility for the oversight of the sustainability council. Without that critical leadership, efforts towards sustainability run the risk of being ill defined, short-sighted, and reactive.

It is with the guiding principle of culture change that the Sustainability Committee was able to lay out in this report a set of ideals and recommendations that will find their success ultimately rooted in the values and moral fabric of Westminster College. These were the result of a careful distillation process guided in large measure by the works of two highly regarded organizations devoted to sustainability on college and university campuses: AASHE’s *Sustainability Tracking and Rating System (STARS)* (Appendix 3a) and the Sustainable Endowments Institute’s *The College Sustainability Report Card*(Appendix 3b).The documents provided exemplary frameworks against which Westminster College can plan for and gauge its relative progress toward sustainability. The precision and eloquence of *STARS* presented the Committee with the opportunity to use their words in crafting several of this report’s introductory goal statements.

**Goals**

The Committee prioritized its recommendations within seven overarching goals:

Goal 1: Administration and Organization

Goal 2: Research, Curriculum, Collaboration and Outreach

Goal 3: Student Involvement and Campus Culture

Goal 4: Campus Operations and Grounds

Goal 5: Service, Partnerships, and Communication

Goal 6: Finances and Resources

Goal 7: Assessment

**Goal 1: Administration and Organization**

Institutionalizing sustainability by dedicating resources to sustainability coordination, incorporating sustainability into primary campus plans, and developing plans to move towards sustainability are essential elements of a successful sustainability program. Staff and other resources help an institution organize, implement, and publicize sustainability initiatives. These resources provide the infrastructure that fosters sustainability within an institution. Strategic and physical campus plans guide an institution and its physical development. These important documents establish an institution’s priorities and influence budgeting and decision making. Incorporating sustainability into these plans is an important step in making sustainability a campus priority and may help advocates implement sustainable changes. Sustainability plans and climate plans provide a road map for how to achieve sustainability goals.

**Sustainability Coordination**

Westminster should create a *Sustainability Council* (referred to as the *Stewardship Task Force* in the College’s 2009-2019 Strategic Plan) charged to coordinate sustainability work on campus. The individual tasked with the oversight of this Council should report directly to the President of the College. Appendix 4 provides a national salary average for an individual in this position. The Council will advise on and implement policies and programs related to sustainability on campus and will focus on sustainability broadly (i.e. not just one sustainability issue, such as climate change) and cover the entire institution.

**Strategic Plan**

To its credit, the College has included in its strategic plan *Advantage Westminster: The Ten Year Operational Plan (2009 – 2019),* Key Goal #4H: *The Initiative to Improve our Campus*. This is an important step in the campus’s sustainability efforts since the strategic plan is the guiding document for the College. It shapes our priorities and guides budgeting and policy making. It also signals the College’s commitment to sustainability and may help infuse an ethic of environmental and social responsibility throughout the campus community.

In its current form, Key Goal #4H is to “Develop, support, and recognize programs to improve the College’s efforts toward environmental sustainability and incorporate more sustainable practices into its operations and infrastructure.” Specifically, the Goal calls for:

1. the creation of a *Stewardship Task Force* to brainstorm specific methods to improve environmental stewardship at the College;
2. exploration of part-time manpower support for the continuation of composting operation at the Field Station;
3. the development of the Field Station into an environmental science resource for the College and the region; and,
4. continued work with Sodexo Food Service on an improved system of separating post-consumer waste and the consideration of financial incentives to stimulate compliance by students, depending upon the recommendations of the committee.

The Committee recommends that the College add to the strategic plan as many recommendations found within this document as deemed practicable.

**Sustainability Plan**

Developing a sustainability plan provides an exceptional learning opportunity for an institution’s stakeholders to use the campus as a laboratory and learn what it takes to become sustainable. A sustainability plan provides a road map for achieving sustainability and may help guide decision making. Having measurable goals with corresponding timeframes will help motivate the College to maintain its commitments to sustainability and implement sustainable practices.

The College should create a sustainability plan developed with input from faculty, staff, and students. The plan would include measurable goals with corresponding strategies and timeframes to achieve the goals. This document provides recommendations upon which to build the plan. Some will require considerable resource allocations while others can be achieved through grass root efforts at little financial support.

**Climate Plan**

Adopting a formal plan to mitigate greenhouse gas emissions indicates the institution’s commitment to reducing its global warming impact. Since multiple facets of the College’s operations can help reduce emissions, developing a climate action strategy can help the College realize its sustainability goals as well as climate targets.

**Human Resources**

Incorporating sustainability into an institution’s human resources programs and policies serves as an investment in human resources and is integral to the achievement of a healthy and sustainable balance between human capital, natural capital, and financial capital. Faculty and staff members’ daily decisions impact an institution’s sustainability performance. Equipping them with the tools, knowledge, and motivation to adopt behavior changes that promote sustainability is an essential activity of a sustainable campus.

**Staff Professional Development in Sustainability**

The College should offer training and/or other professional development opportunities in sustainability at least once per year for employees. Faculty, administrators, and staff members in each department make important contributions to an institution’s sustainability performance. By offering training and professional development opportunities in sustainability to all staff members, Westminster helps equip its staff to implement sustainable practices and systems and to model sustainable behavior for students and the rest of the campus community.

**Sustainability in New Employee Orientation**

Westminster should address sustainability issues during new employee orientation. Sustainability, including issues of health and wellness, in new employee orientation helps establish sustainability as an institutional priority and part of the campus culture. This would come at an opportune time when an employee is getting acquainted with the College and developing new work routines and habits. Incorporating sustainability in the orientation, formally or informally, can help encourage their adoption of environmentally and socially preferable habits, routines, and choices.

**Goal 2: Research, Curriculum, Collaboration and Outreach**

**Undergraduate Programs in Sustainability**

As an institution of higher education, Westminster is uniquely positioned to prepare students to understand and address sustainability challenges. The College has a long history of formal environmental education through its Environmental Science program which was established in 1979. It is critical to continue to support this program, as well as the more recent Environmental Studies minor. Student interest is high in these interdisciplinary programs. However, courses in them are not consistently staffed and, in many cases, are only taught as faculty overloads. The College can signal its commitment to sustainability by ensuring that courses required for these programs can be taught on a regular schedule within standard faculty workloads.

As the College considers infusing sustainability into other aspects of the curriculum, there are several important elements that must be accomplished: (1) Establish and promulgate a working definition of sustainability; (2) Identify existing courses and programs that currently address sustainability; (3) Assess the sustainability literacy of Westminster students, focusing on knowledge of sustainability topics – not values or beliefs; (4) decide upon those courses whose primary focus would be on sustainability and those with tangential relationships; and (5) Formalize and conduct curricular outcome assessments specific to sustainability.

**Sustainability-Focused Courses**

It is recommended that the College develop additional sustainability-focused courses in a variety of disciplines. These are courses that focus on concepts of sustainability throughout the course, to educate students about how different dimensions of sustainability relate to and support each other in theory and practice. These courses should explore the scientific, social, economic, and environmental dimensions of sustainability and examine issues or topics using sustainability as a lens. Their goal should be to equip students with the knowledge and skills to integrate disparate components of sustainability in addressing complex issues.

**Sustainability-Related Courses**

It is recommended that the College develop additional sustainability-related courses in a variety of disciplines. These are courses that include sustainability as part of the course, either by incorporating distinct course components on sustainability or including modules that concentrate on a single sustainability principle or issue. These courses help build knowledge about sustainability and introduce students to sustainability concepts. They may also provide students with in-depth knowledge of a particular aspect of sustainability (such as the natural environment) or provide a focus area (such as renewable energy) for a student’s sustainability studies, or they may broaden students’ understanding of sustainability from within different disciplines.

**Sustainability Course Identification**

The College should conduct an inventory of existing academic offerings to serve as a foundation for developing additional courses in sustainability. That information should be shared with the campus community to help identify strengths, weaknesses. and opportunities for growth. In addition, a list of sustainability courses will help current and prospective students find sustainability course offerings. A list of sustainability courses offered at Westminster College and other institutions can be found in Appendix 5.

**Sustainability Immersive Experience**

The College should give students the opportunity to participate in focused immersive programs related to sustainability. Those programs will enable students to learn about sustainability challenges and solutions and to deepen and expand their knowledge of sustainability. The programs may take place off-campus, overseas, or on-campus and may be offered in partnership with outside entities. For example, Westminster College has excellent outdoor education resources, including Brittain Lake, the Field Station and the College Woods. Outdoor resources are an excellent venue for students and faculty to connect to the natural world, but our outdoor resources are underutilized and underappreciated. It is imperative that the College integrate these outdoor resources as part of the “main campus.” Initiatives should be put into place to encourage increased usage of our outdoor education resources.

**Goal 3: Student Involvement and Campus Culture**

Engaging in sustainability issues through co-curricular activities allows students to deepen and apply their understandings of sustainability principles. College-sponsored co-curricular sustainability offerings help integrate sustainability into the campus culture and set a positive tone for the institution. Westminster College has a great track record in this area, including programming such as:

* Environmental Speaker Series
* Annual Student Symposium on the Environment
* Diverse assortment of events to celebrate Earth Week
* Sustainability in Motion outreach and workshops.

The following recommendations will serve to bolster existing programs and educational opportunities currently afforded to the campus community.

**Student Sustainability Outreach Campaign**

Campaigns engage the student body in sustainability issues and can help raise their awareness about sustainability. In addition, campaigns encourage students to adopt or try sustainable practices and lifestyles. It is recommended that Westminster continues to hold at least one sustainability-related outreach campaign directed at students on a long-term basis. The campaign could take the form of an energy conservation competition such as the Residence Life program’s inter-hall *Ozone Cup,* the Sierra Student Coalition’s *Do It In the Dark* electrical consumption competition, or other opportunities such as *The President’s Sustainability Initiative* (Appendix 6) . Or it could take the form of a collective challenge such as a campus-wide drive to achieve a specific sustainability target.

**Sustainability in New Student Orientation**

Including sustainability in student orientation demonstrates that sustainability is an institutional goal, sets the tone, and encourages students to adopt sustainable habits in their new environment. To this end, the Committee encourages the College to include sustainability in its Fresh Start orientation activities and programming. Specifically, this could include providing to each new student an “eco-kit” that would include a reusable water bottle, canvas bag, energy efficient light bulb, and the like. Additionally, local retailers could be encouraged to offer discounts to students who purchase Energy Star© refrigerators.

**Themed Housing**

The College presently hosts several theme-based living areas within the residence halls. It would be opportune to consider having sustainability-themed housing (residence hall, floor, or theme townhouse) where residents learn about sustainability and practice a sustainable lifestyle together. For example, UCLA’s Green Sustainability Theme Program1 provides a living and learning environment for students interested in sustainability and environmental justice. The goal of their program is “to bring students and faculty together in a variety of structured and informal ways to explore issues such as global environmental change, policy and management of natural resources, sustainable rural and urban environments, and environmental leadership. The program would provide students and faculty with a forum to exchange ideas, challenge each other’s thinking, and share experiences about a variety of topics in small group settings.”

**Sustainable Enterprise**

The practical application of knowledge is a critical component of the overall learning experience at Westminster College. A focus on sustainability offers myriad opportunities for students to learn as well as earn from their work towards sustainability. To this end, the College should consider the creation of a student-run sustainable enterprise on campus. This could be accomplished through the work of existing student organizations such as Students in Free Enterprise (SIFE) or the Public Relations Student Society of America (PRSSA), or refocus the mission of an existing enterprise such as The Club Room through which they can gain sustainable business skills.

**Sustainability Events**

The College has hosted several large- and small-scale symposia, programs, and events over the years with a focus on sustainability such as *Get Real!’s* “Go Green” workshop, the Young Presbyterian Scholars’ annual *Global Gift Market*, Audio Visual Services’ *Project Green AV,* among others. It is recommended that Westminster continues to expand its major events offerings related to sustainability by offering additional conferences, speaker series, or symposia, which have students as the intended audience.

**Outdoors Program**

The Titan Traverse Program continues to provide a well-rounded approach to sustainability through its organized hiking, orienteering, caving, backpacking, kayaking, and other outings for students. It is recommended that the Program now adopt in its mission the seven *Leave No Trace* principles: (1) *Plan Ahead and Prepare; (2) Travel and Camp on Durable Surfaces; (3) Dispose of Waste Properly; (4) Leave What You Find; (5) Minimize Campfire Impacts; (6) Respect Wildlife; (7) Be Considerate of Other Visitors*.

Additionally, the College should continue to encourage the development and growth of student organizations on campus whose focus is sustainability such as Sierra Student Coalition, The Green Party, Circle K International, and Habitat for Humanity.

**Themed Semester**

The first year of college is perhaps one of the most life-changing events of a young adult’s life. If ever there would be an *educational moment*, this would be it. This offers the College an opportune time to instill in its students the values and traditions held dear by the College. Therefore, in order to sow the seeds of sustainability, Westminster should consider focusing sustainability through the development of a sustainability-related themed semester, year, or first-year experience. This could take the form of choosing a sustainability‑related book for *The Next Chapter* program,incorporating sustainability into the Inquiry 111 curriculum, or building sustainability into the joint programming efforts of The Diversity Symposium, Chapel, and Peace Studies offerings, to name but a few, throughout a semester or academic year.

**Goal 4: Campus Operations and Grounds**

**Buildings**

Occupied buildings are generally the largest users of energy and the largest source of greenhouse gas emissions on campuses. A quite significant amount of potable water can also be used in buildings. Institutions can design, build, and maintain buildings in ways that provide a safe and healthy indoor environment for inhabitants while simultaneously reducing the building’s impact on the outdoor environment.

**Building Operations and Maintenance**

Westminster’s buildings are the largest source of campus energy consumption and greenhouse gas emissions. In 2009, an energy and water conservation audit report was prepared for Westminster College. Recommendations within that report such as upgrades to HVAC systems, window replacements and electrical upgrades will not only reduce our carbon footprint, but will save Westminster College money in the process.

Additionally, by adopting and following as close as possible LEED (Leadership in Energy and Environmental Design) guidelines for sustainable maintenance and operations, the College can conserve energy and water, minimize impacts on the surrounding site, reduce waste and water consumption, promote indoor environmental quality, and support markets for environmentally preferable materials while providing healthy and productive work, learning, and living spaces.

More information about the specific LEED standards for building operation and maintenance can be found at: <http://www.usgbc.org/ShowFile.aspx?DocumentID=8876>

**Building Design and Construction**

The College has taken significant strides in a conscientious effort to build and renovate its buildings in accordance with the tenets of sustainability. To wit, the residence halls window replacement program; geothermal heating of Berlin Village; heating system upgrades and replacements throughout the campus; the addition of the computerized VVC HVAC system in McKelvey Campus Center; to name but a few.

As the College pursues the renovation its signature buildings such as Patterson Hall and Hoyt Science Center, as well as the construction of new buildings on campus, it should endeavor to use as many LEED guidelines for New Construction and Major Renovations as practicable. New buildings should also be designed and built in accordance with green building guidelines and policies that cover the following topics: Impacts on the surrounding site, energy consumption, usage of environmentally preferable materials, indoor environmental quality, and water consumption. By designing and building for enhanced indoor environmental quality (IEQ), Westminster can ensure its buildings provide safe, healthy, and productive spaces for the campus community.

The College should also consider using old or abandoned buildings for purposes other than for which they were initially constructed. One example is the relocation of the Art Department to the underutilized lower level in Russell Residence Hall.

More information about LEED standards and policies can be found at: <http://www.usgbc.org/ShowFile.aspx?DocumentID=8868>.

**Indoor Air Quality**

Westminster should continue to work to protect the health of building occupants by monitoring and protecting indoor air quality. The College can promote productivity in the workplace and classroom by improving ventilation and managing exposure to indoor pollutants. This creates safe learning, living, and work environments and reduces illnesses for students and staff alike. The use of air quality assessment firms such as AGX to assess and monitor the air quality in our buildings is essential in addressing this issue in our buildings, especially residence halls, as they age.

**Greenhouse Gas Emissions Inventory**

Conducting a greenhouse gas (GHG) emissions inventory is a process that helps identify sources of emissions and prioritize emissions reduction strategies. GHG emissions inventories help the campus community better understand the link between our behaviors and global warming.

To this end, it is recommended that Westminster conduct a GHG emissions inventory covering combustion of fuels to produce steam, heat, or power using equipment in fixed locations such as boilers, burners, heaters, furnaces, incinerators. This inventory has already developed some momentum since a baseline was established at the College through 2009-10 GHG emissions data gathered by Dr. Helen Boylan’s Chemistry class in the 2009-10 academic year (Appendix 7). The GHG emissions were assessed using the Clean Air Cool Planet calculator. More information about the report and results can be found at:

<http://www.paenvironmentdigest.com/newsletter/default.asp?NewsletterArticleID=16267&SubjectID=&SearchWord=westminster>

**Energy**

Westminster should reduce its energy consumption through conservation and efficiency, and switching to cleaner and renewable sources of energy such as solar, wind, geothermal, and low-impact hydropower. Implementing conservation measures and switching to renewable sources of energy can help the College save money and protect it from utility rate volatility, and help shape markets by creating demand for cleaner, renewable sources of energy.

**Building Energy Consumption**

In September, 2006, Sodexo Campus Solutions conducted a *Preliminary Energy Assessment* (Appendix 8) on the Westminster campus. The investigators concluded that it was “apparent from the low energy usage per square foot that the College is doing the right things to minimize energy usage” Nevertheless, there were areas such as lighting, aging mechanical systems, and building climate control systems that could be upgraded to further conserve energy.

The federal government has set a plan in motion to reduce energy consumption in federal offices by three percent (3%) each year, for a total reduction of 30% between the years 2005 and 2015.  It is recommended that the College set the same ten-year benchmark to achieve a 30% reduction in energy consumption over the next decade.

**Clean and Renewable Energy**

Westminster should use energy from clean and renewable sources such as: (1) Generating electricity from clean and renewable energy sources on campus and retaining or retiring the rights to the environmental attributes of such electricity; (2) Using renewable sources for non-electric, on-site energy generation, such as biomass for heating; (3) Catalyzing the development of off-site clean and renewable energy sources (e.g. an off-campus wind farm that was designed and built to supply electricity to the institution) and retaining the environmental attributes of that energy; (4) Purchasing the environmental attributes of electricity in the form of Renewable Energy Certificates (RECs) or other similar renewable energy products that are either Green-e Energy certified or meet Green-e Energy’s technical requirements.

**Timers for Temperature Control**

Temperature controls that are capable of being automatically adjusted for occupied/unoccupied times or night setbacks are available in varying degrees in 22 buildings on campus. The automated systems were employed in response to recommendations of the Energy and Water Conservation Audit Report that was done recently. However, none of these control systems are being used to their full potential and, in many cases, not at all.

The largest campus buildings would provide the most savings if the systems were used to their full potential. For example, McKelvey Campus Center and McGill Library have computer-based automated building control systems. The decision was made by the College to leave their controls in “Occupied” mode since it was difficult for occupants to agree on temperature settings at different times of the day or night. Consequently, the HVAC systems remain in one operating mode and do not adjust temperatures when the buildings are unoccupied.

It is strongly recommended that the current automated HVAC system policy be revisited in order to receive the maximum benefits of those systems – especially within McKelvey and McGill.

**Lighting Sensors**

Westminster should aim to use motion, infrared, and/or light sensors to reduce energy use for lighting in its buildings. Motion sensors are currently successfully deployed in McKelvey Campus Center restrooms.  All academic buildings could easily be retrofitted.

**LED and Downcast Lighting**

The College should use whenever possible Light Emitting Diode (LED) technology in lighting applications such as in exit signs.  LED light bulbs typically last six times longer than CFL bulbs and use about half the wattage of fluorescent lighting (roughly 6 watts of power versus 14 watts of power for a CFL light bulb).  For an LED bulb's average lifespan (60,000 hours), about 360 kilowatt hours of electricity is used.  CFL bulbs used over 60,000 hours will use around 840 kilowatt hours of electricity, according to the website Product Dose <http://www.productdose.com/LightBulb_Comparison.xls> which compared different light bulb energy specifications.  
  
The College should in all new exterior lighting plans install light pole-mounted downcast lamp heads to reduce light pollution on the campus. The College should also develop a long-term plan to replace old and/or non-functioning light pole-mounted fixtures with downcast lamp heads.

**Energy Metering**

Westminster has the capability to monitor energy consumption via electric and/or gas meters that are affixed to energy input sources in buildings across campus. Each building has individual electric meters and, with the exception of PPO Buildings 2 and 3, each building has its own water meter. Building-specific gas meters are used in all campus buildings except Eichenauer Hall, the Fieldhouse, and Russell Hall, where they are gang-metered. “Gang” metering makes it impossible to isolate energy consumption to a specific building. It is therefore recommended that the College place water and gas usage meters in all buildings to isolate that building’s usage. This will not be an easy process, but may be worth the cost benefit in the long term.

**Grounds**

This subcategory seeks to recognize institutions that plan and maintain their grounds with sustainability in mind. Beautiful and welcoming campus grounds can be planned, planted, and maintained in any region while minimizing the use of toxic chemicals, protecting wildlife habitat, and conserving water and resources.

**Biodiversity**

The College should work to improve the sustainability of campus grounds through Integrated Pest Management (IPM). This approach promotes the health of human and non-pest wildlife while enabling institutions to maintain an attractive campus environment and minimize costs.

The Plan should adhere to the following four-tiered approach:

1) Set action thresholds

2) Monitor and identify pests

3) Prevention

4) Control

**Wildlife Habitat**

The College should continue to implement programs to protect and/or create wildlife habitat on College-owned land. Westminster has already taken significant steps in this direction by reinvigorating McClure’s Run; combining and surrounding portions of Britain Lake with fencing to slow its eutrophication, i.e., a process where water bodies receive excess nutrients that stimulate excessive plant growth; developing the Nature Trail; and installing bat houses on Hillside Residence Hall.

**Tree Campus USA**

The College should aspire to be recognized by the Arbor Day Foundation’s *Tree Campus USA* program. The program recognizes colleges and universities that manage their campus trees, connect with the community beyond campus borders to foster healthy urban forests, and strive to engage the student population in opportunities centered on campus, community and forestry efforts. The College must meet five standards set forth by the *Tree Campus USA* program: (1) the establishment of a campus tree advisory committee, (2) campus tree plan, (3) campus tree program with dedicated annual expenditures, (4) Arbor Day observance, and (5) a service learning project. Steps are currently being taken to move towards this goal by planting indigenous trees grown at the Field Station’s arboretum as well as through the recommendations outlined in the College’s Landscaping Master Plan. More information on these standards can be found at: <http://www.arborday.org/programs/treecampususa/standards.cfm>.

**Composting**

Westminster should compost or mulch waste from grounds keeping, including grass trimmings and continue composting pond weed from Britain Lake and shredded paper from several sources (Appendix 9).

**Purchasing**

The College should use its purchasing power to help build a sustainable economy. Collectively, institutions spend many billions of dollars on goods and services annually. Each purchasing decision represents an opportunity for the College to choose environmentally and socially preferable products and services and support companies with strong commitments to sustainability.

**Cleaning Products Purchasing**

Westminster should have an institution-wide stated preference to purchase Green Seal™ or EcoLogoTM certified cleaning products to reduce exposure impacts for all building occupants and the environment, thereby promoting clean and healthy work, living, and learning spaces. The stated preference can take the form of purchasing policies, guidelines, or directives to purchase green cleaning products.

Green Seal™ is a company that is an independent, non-profit organization that strives to achieve a healthier and cleaner environment by identifying and promoting products and services that cause less toxic pollution and waste, conserve resources and habitats, and minimize global warming and ozone depletion. EcoLogo™ products provide a market incentive to manufacturers and suppliers of environmentally preferable products and services in more than 120 product categories (more than 7,000 products currently certified). The incentives help purchasers and consumers identify products and services that are less harmful to human health and the environment.  EcoLogo™ certification provides the assurance that those products and services meet stringent environmental standards that have been verified by a third party auditor.  More information on both of these product standards can be found at: [www.greanseal.org](http://www.greanseal.org) and [www.ecologo.org](http://www.ecologo.org).

**Office Paper Purchasing**

Westminster is strongly encouraged to have an institution-wide stated preference for the purchase recycled-content office paper. By supporting markets for environmentally preferable paper, institutions contribute to significant conservation of water, energy, and virgin forest.

**Vendor Code of Conduct**

Westminster should take proactive steps to ensure that their vendors meet minimum standards of environmental and social responsibility via a “Vendor Code of Conduct” or equivalent policy that sets expectations about the social and environmental responsibility of vendors with whom the college does business.

**Transportation**

The College should move toward sustainable, well maintained transportation systems. Transportation is a major source of greenhouse gas emissions and other pollutants that contribute to health problems such as heart and respiratory diseases and cancer. Due to disproportionate exposure, these health impacts are frequently more pronounced in low-income communities next to major transportation corridors. In addition, the extraction, production, and global distribution of fuels for transportation can damage environmentally and/or culturally significant ecosystems and may financially benefit hostile and/or oppressive governments.

At the same time, campuses can reap benefits from modeling sustainable transportation systems. Bicycling and walking provide human health benefits and mitigate the need for large areas of paved surface, which can help campuses to better manage storm water. Institutions may realize cost savings and help support local economies by reducing their dependency on petroleum-based fuels for transportation.

**Campus Fleet**

The College currently leases 7- and 12-passenger vans. Westminster should move to the use of smaller and/or more fuel efficient vehicles to reduce greenhouse emissions and improve local air quality. The development and spread of alternative fuel and power technology would be promoted by including in Westminster’s motorized vehicle fleet (cars, trucks, tractors) vehicles that are:

A. Gasoline-electric hybrid

B. Diesel-electric hybrid

C. Plug-in hybrid

D. 100 percent electric

E. Hydrogen fueled

F. Fueled with B20 or higher biofuel

G. Fueled with E85 or higher ethanol

Another option would be for the College to consider using Zipcar Inc., a car sharing program, currently used by Bucknell University and other institutions across the nation that provides cars to campuses that can be rented on an hourly basis (gas and insurance included). Zipcar provides a fleet of fuel-efficient vehicles, access to cars for all eligible drivers in the campus community, reservation and account management tools, staff for account management and fleet staff and marketing support. The College would provide dedicated staff to manage the program, parking spaces for the fleet and co-marketing support. More information is available at: [http://www.zipcar.com/universities](http://www.zipcar.com/universities/).

**Bicycles**

In the fall, 2009, Dr. Doug Armstead, Assistant Professor of Physics and ardent bicyclist, formed an ad hoc committee of campus constituents in order to create a more hospitable environment for bicyclists on campus. The proposal, which focuses on bike racks across campus, is currently being refined. It is recommended that Westminster consider seriously the adoption of the recommendations in the proposal. Moreover, the committee also suggests that the plan be broadened to include a bicycle sharing program, indoor and secure bike storage, shower facility and locker access for bicycle commuters in order to make the campus more bicycle friendly.

**Vehicle Idling**

Truck idling affects our environment and our energy supply in several ways. Trucks consume up to one gallon of diesel fuel for each hour at idle, using as much as 2,400 gallons of fuel every year per truck. This totals 1.2 billion gallons of diesel fuel consumed every year from idling. On average, each idling truck produces about 21 tons of carbon dioxide (C02) and 0.3 tons of nitrogen oxides (NOx) annually totaling over 11 million tons and 150,000 tons, respectively. Diesel exhaust also contains particulates, sulfur dioxide, carbon monoxide, hydrocarbons, and various air toxins.

To stem this tide, Westminster should create a policy that forbids vendors from placing their truck/vehicles in “idle” during their deliveries/pickups at the College.

**Waste**

It is strongly recommended that Westminster minimize its waste by reducing, reusing, recycling, and composting. These actions mitigate the need to use resources such as trees and metals (*virgin* materials). It generally takes less energy and water to make a product with recycled material than with *virgin* resources. Reducing waste generation also reduces the flow of waste to incinerators and landfills which produce greenhouse gas emissions, can contaminate air and groundwater supplies, and tend to have disproportionate negative impacts on low-income communities. Waste reduction and diversion also save institutions costly landfill and hauling service fees. In addition, waste reduction campaigns can engage the entire campus community in contributing to a tangible sustainability goal.

Below, are several specific areas upon which the campus should focus its efforts. A more thorough accounting of the College’s current waste reduction and recycling efforts can be found in Appendix 9, *Solid Waste Management at Westminster College - 2011*.

**Waste Reduction**

According to the EPA in 2006, U.S. residents, businesses, and institutions produced more than 251 million tons of municipal solid waste, which is approximately 4.6 pounds of waste per person per day – which translates to roughly 6,400 pounds of waste created each day by Westminster students alone. The College should continue in its efforts to decrease the total amount of materials discarded per *weighted campus user* compared to a baseline established by the College.

**Waste Diversion**

Westminster should continue to reduce waste and conserve resources by recycling and composting materials above and beyond dining hall waste.

The College should consider establishing policies and/or methods to divert materials from the landfill or incinerator by recycling, composting, reusing, donating, or re-selling. This would include construction and demolition (C&D) wastes. Construction and demolition is a significant source of waste that falls outside of an institution’s standard waste stream and may be handled by a separate contractor or waste hauler.

**Electronic Waste Recycling Program**

E-wastes typically contain toxic components, such as lead and mercury that can contaminate soil and groundwater and have detrimental human health impacts if handled improperly. At the same time, e-waste contains components that can be recycled. Likewise, computers, cellular phones, and other electronic materials can be donated or re-sold at reduced cost to non-profit organizations and community groups. Given the environmental and workplace health hazards that arise from electronic waste, the College should take steps to ensure that workers’ basic safety is protected and environmental standards are met.

To this end, the College should centralize its distributed, oftentimes sporadic, electronic waste recycling efforts into a unified E-waste recycling program. For example, Audio Visual Services’ has initiated the *Project Green AV* Program that includes battery and electronics recycling; consumer guidance regarding technology sustainability initiatives and responsible recycling; technology recycling assessment; bi-annual *Technology Recycling drives*; *safe lamp & media* (VHS, DVD, flash) disposal; and *gently used* equipment donation program and equipment salvage. Student organizations such as the Sierra Student Coalition offer a variety of similar recycling programs such as cell phone and ink cartridge recycling programs, both located in the McKelvey Campus Center. These, and similar efforts should be identified, organized and merged under one umbrella.

**Chemical and Hazardous Waste Management**

A hazardous waste minimization plan has been implemented by the College, and all chemicals purchased for academic purposes are generally done so by the College’s Chemical Hygiene Officer (CHO) so as to centralize the procedure. A campus-wide chemical and hazardous waste usage inventory program is also in place for academic departments so there is no ordering of excess chemicals or toxic chemicals when a substitute can be found. The monitoring of all hazardous waste generated by academic departments and programs is also managed by the CHO, allowing a better record keeping system of chemicals present and those disposed of by academic departments and programs.

It is clear that the College places a high priority on hazardous waste management.  The dollars spent (roughly $15,000 for hazardous materials and waste removal alone) have been well worth the cost.

To expand upon its success, it is recommended that the College centralize the CHO's oversight to include the Physical Plant Department, Student Health Center, and Sodexo Food Services’ use of hazardous and deleterious materials such as cleaning/disinfecting chemicals, pharmaceuticals, and pesticides.

**Materials Exchange**

Westminster should explore creating a surplus department or formal office supplies exchange program that facilitates reuse of materials. This would also apply to the creation of a venue for the exchange of clothes, furniture, and collections by the campus community such as is currently done on the *My.Westminster “Community”* website, or through the *Free Store* concept established at various institutions such as Warren-Wilson College in Asheville, NC (Appendix 10).

**Limiting Printing**

The College has in place an effective policy for reducing students’ computer printing across campus. Under this plan, both the students and college share in the cost to reduce unnecessary printing that wastes resources. To this end, all Westminster students receive a $32.50 allocation for free printing using network printers in the three public labs, library, and several other department labs. Students exceeding that allotment are responsible for the next $25 worth of printing. Students may request credit for additional printing beyond the $25 for academic purposes.

During the first semester after policy implementation, 100,000 less pages were printed than the previous semester. For fall semester 2009, of 1285 students who used the network printers, 1188 students did not incur any additional charges beyond the allotment. A total of 172,597 pages were printed by those 1285 students on the network printers.

It is evident that this policy has been very effective in reducing students’ printing waste. The next challenge for the College is to explore additional ways to further reduce printing waste. For example, no longer requiring hard-copy capstone student theses and other lengthy documents; limiting the number of bulletin boards on campus; moving to electronic versions of the College’s student publications: The Argo, The Holcad, and Scrawl; and further encouraging faculty, staff and administration to use electronic media in lieu of hard copies.

Further information about the College’s student printing policy can be found at <http://www.westminster.edu/resources/computing/payforprint.cfm>.

**Materials Online**

The College has made significant progress in recent years replacing hard copy publications with on-line versions. For example, the Registrar’s Office stopped printing the schedule of classes and all related registration documents (lists of clusters, IPs, final period schedule, schedule changes, calendar, grade reports to both students and parents requesting them, returning and incoming students’ class schedules, etc.), moving all to the online My.Westminster website.  Additionally, the Student Affairs Office prints the *Handbook for Students* for incoming first year students only, and no longer prints the *College Calendar*.

Westminster should continue its forward momentum and consider as a default to not print the College Catalog, telephone directories, and other similar publications used for mass consumption, but instead make these materials available online. This would require a gradual phase-in process and predicated on assurances that “hard-copy” back-ups of vital information such as the *College Catalog* and *Handbook for Students* would be available.

**Move-In and Move-Out Waste Reduction**

A program to reduce residence hall move-in and move-out waste should be developed by the College. Currently, the College provides at no charge to students roll-offs across campus to discard their waste at year’s end. This serves to reduce hall cleanup for custodial staff, but does little to reduce students’ overall waste. To this end, staff and students could work together to break down boxes, develop a residential “socialization program” to set the tone for waste reduction, and organize waste sharing and collecting at move-out, using different roll-offs for reusable and waste discards, offering reusable items to community organizations as desired.

**Water**

Pumping, delivering, and treating water is a major energy user, so institutions can help reduce energy consumption and the greenhouse gas emissions associated with energy generation by conserving water. Likewise, conservation and effective stormwater management are important in maintaining and protecting finite groundwater supplies. Water conservation and effective stormwater management also reduce the need for effluent discharge into local surface water supplies, which helps improve the health of local water ecosystems.

**Water Consumption**

According to the EPA, over 6 billion gallons of water are lost each day to leaks. Additionally, the average consumer in the United States uses 100 gallons of water per day - which translates to 36,500 gallons per year. The College should make a concerted effort to reduce campus water consumption, thus reducing pressures on local aquifers, streams, rivers, lakes, and aquatic wildlife. One example would be the introduction of “dual flush” toilets in limited occupancy residential buildings such as Berlin Village and/or Gateway Housing units. It is further recommended that the metric employed to assess water usage is *Consumption per Weighted Campus User* and compared to a baseline decided upon by the College.

**Stormwater Management**

By decreasing stormwater runoff and treating stormwater on site, institutions can help replenish natural aquifers, reduce erosion impacts, and minimize local water contamination. Westminster should continue to pay close heed to stormwater management in its policies, plans, and strategies that mitigate the stormwater runoff impacts of new construction, major renovation, and other projects that increase paved surface area or otherwise significantly change the campus grounds.

The College has already taken measures to improve storm water management across campus, specifically with the renovation of McClure’s Run which has led to improved water quality of the outflow into Little Neshannock Creek*.* Additionally, storm water run-off management is a prominent feature at Berlin Village as witnessed by the introduction of porous filtration berms in its parking areas. The berms allow for the filtration and collection of parking lot water runoff, its storage in underground tanks, and gradual release into Brittain Lake. Last, the College’s Landscaping Plan should be reevaluated for its acknowledgment of stormwater management and the affect recommended changes within the Plan will have not only on the quantity, but the quality of stormwater runoff across campus.

**Building Water Metering**

Building-level water consumption meters are located on all campus buildings. The College should continue to carefully monitor water usage within each building to establish baseline indexes to help guide future water conservation strategies.

**Landscaping**

The College has already begun to adopt several of the recommendations of the Landscape Plan completed in 2010 and will continue to do so into the future as funding permits. This is a good start. The College should carefully examine its planting priorities within that Plan based on the recommended plants' status (e.g., native versus non-native species) and water requirements.

To this end, Xeriscaping techniques (landscaping and plantings that reduce or eliminate the need for supplemental water from irrigation), although not a significant priority in a region that receives between 35 – 40 inches of annual rain (Region 5), should be recognized in some way within the College’s Landscape Plan. It would be useful to prioritize and include in the Plan the following native and drought tolerant plants: "Longwood Blue" Bluebeard, Autumn Joy Sedum, Moonbeam Coreopsis, Purple Coneflower, Lamb’s Ears, Maidengrass, Blue Fescue, and Northern Sea Oats.

It is also recommended that the College monitors invasive plant species on campus and adopt ways to control them. For example, the application of Xeriscaping techniques can be found in the renovation of McClure’s Run. Regretfully, the incursion of invasive plant species throughout the Run now poses a threat to its well being.

**Dining Services**

The College should help build a sustainable food system. Modern industrial food production often has deleterious environmental impacts. Pesticides and fertilizers used in agriculture can contaminate ground and surface water, which has potentially dangerous impacts on wildlife and human health. Furthermore, the often long-distance transportation of food to institutions produces greenhouse gas emissions and other pollution. Additionally, farm workers are often paid sub-standard wages, subjected to harsh working conditions, and exposed to dangerous pesticides. Institutions can use their food purchases to support their local economies; encourage safe, environmentally-friendly farming methods; and help alleviate poverty for farmers.

**Food Purchasing**

The College, its food service, and snack vendor(s) should help to build sustainable food systems through its food purchases. This can be done by prioritizing the purchase of local, organic, Fair Trade, and sustainably harvested food items. These actions help foster robust local economies, healthier soils and streams, and secure livelihoods for farmers.

STARS suggests that food purchases should meet one or more of the following criteria: Grown and processed within 250 miles of the College; Third-party certified (USDA Certified Organic, Marine Stewardship Council Blue Ecolabel, Food Alliance, Fair Trade); Grown on a farm that operates as a cooperative; has a social responsibility policy covering the following for all workers: union or prevailing wages, transportation and/or housing support, and/or health care benefits.

The 250 mile radius poses some difficulties in the production and purchase of greens due to the climate in this part of the country. Nevertheless, when practical, Sodexo Dining Services does purchase produce from local farms through Paragon Produce.

Sodexo currently has programs that use Fair Trade products and sustainable seafood. They will continue to increase the scope of their support for these programs as the Fair Trade movement goes forward.

**Trayless Dining**

The College will continue its “tray optional” program with the intention of totally eliminating trays from the dining halls/areas by fall 2011. Currently, the resident dining program in McGinness Cafeteria offers a “tray optional” program. Although Westminster has no pre-promotion data, national studies show post consumer waste has been reduced by 25% when trayless programs are in effect. Observations on the Westminster campus show that only 10% of our students chose to use a tray in 2009-10. It appears clear that the total elimination of trays should not pose a significant hardship for our dining students.

**Vegan OR Vegetarian Dining**

Westminster offers diverse, complete-protein vegan dining options during every meal. Westminster’s food services vendor, Sodexo Dining Services, will continue to expand and vary its vegan/vegetarian options as necessary.

**Trans-Fats**

Sodexo currently uses frying oil that does not include trans-fats and seeks to avoid foods that include trans-fats in its dining operations. This will policy and practice will be continued.

**Pre-Consumer Food Waste Composting**

In accordance with Key Goal #4H of the Strategic Plan to:

“…*explore part-time manpower support for the continuation of composting operation at the Field Station, and the development of the Field Station into an environmental science resource for the College and the region”,*

the College is urged to provide the necessary resources to continue operation of its pre- and post-consumer food waste composting program at the College’s Field Station. (See Appendix 9 for resource requirements.)

**Food Donation**

Westminster, through Sodexo Dining Services, will continue to seek out recipient community organizations and agencies in the area to donate leftover or surplus perishable food products. Presently, donations are made during College vacation periods to The New Castle Rescue Mission, and the Prince of Peace Center, a non-profit social service agency located in Farrell, Pennsylvania.

**Recycled Content Napkins**

Westminster will continue to use recycled content napkins in its Dining Service operations.

Sodexo currently uses Tork Xpressnap napkins which are produced from 100% recycled product.

**Bottled Beverages**

It is strongly recommended that the College reduce significantly the number of bottled beverages available on campus. This could be accomplished by providing each student a reusable mug and limiting or eliminating bottled drinks, especially bottled water, offered at the TUB and vending machines across campus.

Inroads have been made in this area. Sodexo Dining Services will continue to offer discounts to customers who use reusable mugs instead of disposable cups in *To-Go* food service operations. This program, which is available at *The TUB* and *Jazzman’s Café,* allows customers to fill reusable mugs at a significant discount (in some cases by as much as 50%) to the cost of the use of a fountain cup or purchase of the same bottled beverage. Several styles of reusable beverage container are available for purchase.

Additionally, the Pepsicola Corporation is experimenting with a plastic bottle recycling machine which offers monetary incentives for returned bottles. Sodexo has been apprised of this beta test and will explore their options should the time come for the College to take advantage of this opportunity.

**Reusable *To-Go* Containers**

The College plans to sell in the fall of 2011 reusable containers to be used for Sodexo *To-Go* meals. These containers would be returned by the purchaser to Sodexo Dining Services for cleaning and re-use by the purchaser throughout the academic year.

**Waste Reduction**

Sodexo Dining Services will continue its current practice of recycling pre-consumer plastic, glass, cans, and cardboard. Post-consumer recyclable containers are available for student use in *The TUB*.

**Goal 5: Service, Partnerships, and Communication**

**Collaboration and Volunteerism**

Volunteerism and the sense of compassion that community service helps develop are fundamental to achieving sustainability. From tutoring children to removing invasive species to volunteering at a food bank, students, faculty, and staff can make tangible contributions that address sustainability challenges through community service. Community engagement can help students develop leadership skills while deepening their understandings of practical, real-world problems. Institutions can contribute to their communities by harnessing their financial and academic resources to address community needs. For example, faculty research and courses can focus on how to address community problems. In addition, Westminster can offer incentives for its graduates to pursue careers that fill community needs, and it can use its prominence to advocate for sustainability outside of the institution.

**Community and Inter-Campus Sustainability Partnerships**

The College should expand its partnerships with the local community, including school districts, government agencies, non-profit organizations, colleges and universities in the area, or other entities to advance sustainability. As a business and educational leader within the region, Westminster can be a powerful ally and partner in building sustainability education and engagement in the outlying community and beyond.

Current partnerships/programs currently exist with classroom visits by *Sustainability in Motion* mobile educators as well as the distribution of outreach kits on sustainability which are available to K-16 students and teachers. The College also has a good working relationship with the Slippery Rock Watershed Coalition (SRWC) as a result of a long-standing collaboration between Dr. Boylan’s Advanced Laboratory students and the SRWC. More environmental service learning projects should be developed within the existing relationship with the SRWC or by forming additional partnerships.

**Sustainability in Continuing Education**

Offering continuing education courses and programs in sustainability to the community builds their knowledge about the subject and also provides the training people need to obtain and perform green jobs. Certificate programs offer professional recognition for sustainability training and are important tools in helping students obtain, perform, and advance their position in green jobs.

Westminster is encouraged to offer continuing education non-credit courses that are focused on or related to sustainability.

**Community Service Participation**

Volunteerism and the sense of compassion that community services help develop are fundamental to achieving sustainability. From tutoring children to removing invasive species to volunteering at a food bank, students can make tangible contributions that address sustainability challenges through community service. In addition, community engagement can help students develop leadership skills while deepening their understandings of practical, real-world problems.

The College is encouraged to build on the civic engagement efforts that have brought it much recognition by increasing its focus on sustainability outreach.

**Farmers’ Market**

The College is commended for its efforts to support the Fireman’s Auction and is encouraged to expand its support to include support and/or participation in a farmers’ market in the New Wilmington area.

**Communication**

**Sustainability Outreach and Publications**

The College should produce materials and publications that enhance student learning about sustainability outside of the formal classroom. The publications and outreach materials may include the following: A central sustainability website that consolidates information about Westminster’s sustainability efforts, a sustainability newsletter, a vehicle to publish and disseminate student research on sustainability, building signage that highlights green building features, food service area signage and/or brochures that include information about sustainable food systems, signage on the grounds about sustainable grounds-keeping strategies employed, a sustainability walking map or tour, a guide for commuters about how to use alternative methods of transportation, a guide for green living and incorporating sustainability into the residential experience, and regular coverage of sustainability in The Holcad and/or WCN.

A “Sustainability Desk” is recommended to serve as a clearing house for all information related to sustainability both within our campus community and locally/regionally. Westminster College should strive to be the sustainability information leaders in the region. Staff (including student workers) at the sustainability desk would:

* Oversee a sustainability website that describes all sustainability initiatives at Westminster College, a “how to” guide on being sustainable, and local/regional sustainability concerns
* Maintain a sustainability event calendar where all relevant events on campus and the region are posted
* Work with the College’s Communications Department to regularly put out press releases about sustainability
* Collaborate with campus and local media (TV, radio, print) to encourage routine sustainability coverage
* Engage the community with public relations campaigns (flyers, brochures, events) to raise awareness about sustainability
* Serve as an intermediate between the public and faculty experts, making connections to help address local/regional sustainability questions or needs.

**Goal 6: Finances and Resources**

There can be great intrinsic reward in the quest towards sustainability. Much can be said for the personal satisfaction one gets for simply doing the “right” thing. However, intrinsic reward, as history tells us, can be a fleeting thing. Hence, the benefits of institutionalizing a reward system that would help buoy enthusiasm and encourage innovation over the long term. For example, there could be the establishment of a *President’s Prize* that would be presented to an individual, organization, or department for their innovation in sustainability on campus. Or the award could be a financial one in which a department would receive a portion of the cost savings to the College that was a result of their sustainability recommendation. These awards could be applied to the full spectrum of sustainability on campus.

**Green Revolving Fund**

Funding efficiency upgrades is a difficult decision to make, especially when budgets are tight and more traditional approaches to new construction and renovation are typically less expensive in the short term. However, the cost of energy continues to rise and takes a larger bite out of the College’s budget each year. To combat this escalation, the Committee recommends the establishment of a new Special Fund, “The Green Revolving Fund.” This fund would serve to finance sustainability improvements, while earning a high return on investment. The cost savings would be used to replenish the fund for investment in the next round of green upgrades. The Sustainable Endowments Institute’s most recent report, *Greening the Bottom Line: The Trend toward Green Revolving Funds on Campus* 2 revealed that the median annual return on investment of Green Revolving Funds at 52 institutions surveyed was 32 percent. A case in point is Western Michigan University’s GRF that has financed 101 projects, with an average annual return on investment of 47 percent.

It is also recommended that the costs for sustainability repairs and alterations across campus be absorbed by the *Green Revolving Fund* rather than assessments to the respective department(s). It is the concern of the Committee that departments will be reluctant to report or request such changes for fear that it would negatively impact their bottom line.

**Endowment**

An institution’s endowment portfolio serves to further the mission of the institution by bolstering its financial health. Within that portfolio are corporations whose success is critical to the endowment’s ultimate health. Each corporation has an impact, large or small, on the Earth; the values it holds for its relationship with the environment is also, by association, a measure of the College’s values. This is inescapable.

It is recommended that the College review on a regular basis its endowment portfolio to better ensure that the corporations within it adhere to the values espoused by the College concerning matters of pollution and sustainability. Moreover, as opportunities arise the College should attempt to invest in the renewable energy sector or, at the very least, consider sustainability factors of those corporations up for consideration as part of the endowment portfolio.

**Goal 7: Assessment**

Assessing sustainability on college and university campuses is a fairly recent endeavor. Over the past five years there has been rise to several assessment instruments, some developed by non-profit organizations committed to sustainability, others by for-profit ventures (Appendix 3a - e). These instruments take many different shapes and forms. Assessments can be single-institution, privately viewed reports to on-line publicly disseminated cross-institutional comparisons. The latter allows for identifying and benchmarking leaders and best practices; communicating common goals, experiences, and methods; and providing a directional tool to measure progress toward the concept of a “sustainable campus”. The most beneficial assessment tools identify the most important attributes of a sustainable campus, are measurable and comparable, assess processes beyond ecological efficiencies, assess motivations, and are readily understood by many stakeholders.

The most often cited sustainability assessment instruments specific to colleges and universities are AASHE’s *Sustainability Tracking, Assessment & Rating System* (STARS), *The College Sustainability Report Card,* an online self-auditing program administered by GreenReportCard.org*,* and the *Sustainability Assessment Questionnaire* (SAQ) distributed byThe Association of University Leaders for a Sustainable Future (ULSF*).* These instruments were used quite extensively by the Sustainability Committee in the development of this proposal. Samples of assessment tools can be found later in the Appendix of this report.

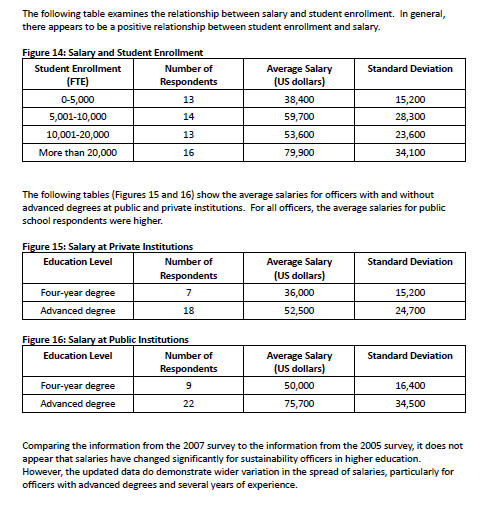
The College need not adopt any one formal evaluation instrument. Meaningful assessment can be readily achieved by the creation of its own measurement tool(s). Crafting a more “local” instrument would offer the benefit of targeting specific needs and programs that are unique to Westminster College. What is critical, however, is that the instrument incorporates the precepts found in the more widely recognized assessment tools used by other institutions. This is important in that it establishes a sound and consistent framework against which Westminster can compare its efforts against other colleges’ progress towards sustainability. Whether or not the College wishes to more explicitly share and benchmark its findings against those institutions will be left to the College’s administration.

**References**

1Residence Hall Floor with a Sustainability Theme.  *UCLA Sustainability*. Retrieved from <http://www.sustain.ucla.edu/article.asp?parentid=1294> UCLA (2011, April 3).

2The Trend Towards Green Revolving Funds on Campus. *Greeningthebottomline.org*. Retrieved from <http://www.greeningthebottomline.org/> Greening the Bottom Line – The Sustainable Endowments Institute (2011, February 21).

**Appendix 4**



# **Appendix 5**

# A Sample of Courses on Campus Sustainability

This resource lists courses that focus on “campus sustainability.”  Students in these courses conduct research on and implement projects that advance sustainability on campus. Examples include performing a campus sustainability assessment, researching green building options, and designing a campus bike share program. This resource lists courses that focus on “campus sustainability.”  Students in these courses conduct research on and implement projects that advance sustainability on campus. Examples include performing a campus sustainability assessment, researching green building options, and designing a campus bike share program.

## **Aquinas College**

**Sustainable Business 200 - Sustainable Energy Systems  
Sustainable Business 315 - Building Social Capital**Both courses require student teams to make campus assessments, formulate innovative improvements, and be involved in the implementation of the project (if the project is accepted in the campus sustainability initiative process).

**Sustainable Business 100 - Industrial Ecology  
Sustainable Business 201 - Sustainable Business Management**Both courses require student teams to make campus assessments, formulate innovative improvements, and be involved in the implementation of the project (if the project is accepted in the campus sustainability initiative process)

## **Brown University**

**Environmental Studies 0410 - Environmental Stewardship and Sustainable Design**  
Students address the economics and logistics of implementing strategies to conserve resources and reduce the negative impacts of the built environment. Students collaborate in interdisciplinary teams on projects to investigate opportunities to reduce the negative environmental impacts of the Brown campus and community and increase the positive impacts.

## **Carleton College**

[**Environmental and Technology Studies 298 - Ethics and Values Colloquium**](http://serc.carleton.edu/files/introgeo/campusbased/ENTS_syllabus.doc)  
Students develop sustainability indicators for the college and complete research on the indicators. Dr. Savanick also authored a Science Education Resource website that is designed to help geoscience faculty use the campus in the teaching of courses. A [campus based learning](http://serc.carleton.edu/introgeo/campusbased/index.html) approach is utilized

## **Clark University**

[**Environmental Science 103 The Sustainable University**](http://www.clarku.edu/academiccatalog/course.cfm?id=1860)  
This course explores both the theory and practice of sustainability by examining the role of the university in promoting a socio-technical transition toward sustainability. In addition to reading and writing about the challenges of sustainability and the role of the university in promoting sustainable practices in society, students in this course engage directly with the practical challenges associated with promoting sustainable behavior and fostering institutional and social change through service-learning team projects focused on the Clark University campus and the local Worcester community.

## **DePauw University**

**Philosophy 209 - Environmental Ethics**  
The course material is primarily theoretical philosophy, but students have the option to choose service learning projects on campus sustainability in lieu of standard academic papers. Students conduct campus-based service projects to assist DePauw's efforts to become a more sustainable institution.

## **Hartwick College**

**Introduction 150 - The Idea and Practice of Sustainability**   
This First Year Seminar integrates the ideas, theories, and practices of sustainability in real world applications to the student’s living environment. Through an intentional living/learning community, students will reside in Robertson Lodge at the Pine Lake Environmental Campus and study the prospects for sustainability on both campus and global scales.

## **Oberlin College**

**Environmental Studies 312 - Campus Sustainability: A Practicum**  
Engages students in various aspects of solving sustainability problems on campus. Themes change from year to year but include issues pertaining to energy consumption, water use, materials, food, transportation, and waste handling as well as technical matters of measurement standards and metrics to analyze data. Students conduct analysis of technical options to improve efficiency, and strategies to promote organizational learning relative to climate and environment.

## **Paul Smith's College**

[**Environmental Studies 399 - Campus Sustainability: Students as Change Agents**](http://www.aashe.org/documents/CampusSustainabilitySyllabusPaulSmithsCollege.doc)  
Provides students with a real-time exploration of methods, policies, procedures and interaction with stakeholders related to furthering sustainability practices within organizations. Paul Smith's College is used as the primary case study to investigate its institutional practices related to sustainability and the associated roles of members of the campus community.

## **Rice University**

**Environmental Studies 302 - Sustainability: Rice into the Future**  
Students use the Rice campus and local community as a laboratory in which to do projects to reduce environmental impacts, enhance sustainability, or resolve environmental problems.

## **Rochester Institute of Technology**

**Honors Science and Mathematics 1055-300 - The Greening of RIT**This course seeks to teach students about the concept of sustainability by using the campus of RIT as their laboratory. During the quarter, students will investigate methods and strategies used by other colleges and universities to minimize environmental impacts in areas such as energy use, solid and hazardous waste management, transportation, landscaping and construction, food production and consumption, and purchasing. They will assess their personal and RIT's environmental impacts, develop strategies for minimizing the impacts, implement changes where possible, and prepare reports designed to guide RIT to becoming a greener campus. (Honors student status) Class 3, Lab 3, Credit 4 (S)

## **Texas Christian University**

**Sociology 30213 - Applied Sociology**  
Students focus on how to apply sociological theory and concepts to a project in the area of sustainability.  Recent projects included the creation of the TCU Purple Bike Program (a campus wide bike program offering free rental of bikes) and a carbon offset web site titled EnviroFootprint.org.

## **University of Colorado at Boulder**

[**Sustainable Solutions Consulting: an on-campus service learning course. ENVS 3001**](http://envs.colorado.edu/undergrad_program/C106/ENVS-3001/)  
Students gain experience in real world problem solving as they work with CU’s professional staff from Facilities Management, Housing and Dining Services, Environmental Center, and CU Recycling on top priority projects to move CU-Boulder towards greater realization of the University’s goals for sustainability. All projects fill requested needs of operations units at the University. Professional-level written and oral reports to stakeholders are required.

## **University of New Mexico**

[**SUST 434 -001**](http://www4.unm.edu/sust/uploads/file/SUST434.2009.Syl.pdf) **-**[**Synthesis of Sustainability Perspectives and Innovations**](http://www4.unm.edu/sust/uploads/file/SUST434.2009.Syl.pdf)  
Presents frameworks for complex and creative analysis, including systems thinking and synergistic integration of the three pillars of sustainability: environment, equity, economy. Examines innovative local and international case studies in environment, business, policy, and community development.

## **University of Portland**

**Environmental Studies 400 - Integrating Seminar in Environmental Studies**  
This is a problem oriented seminar in which student teams with varying backgrounds in environmental studies (and other disciplines) conduct research and analysis of regional environmental issues. Students will conduct greenhouse gas emission audits, research avenues for campus greenhouse gas mitigation, and combine the concept and practice of sustainability throughout this course.

## **University of Wisconsin, Oshkosh**

[**Environmental Studies 390 - Special Topics: Campus Sustainability**](http://www.aashe.org/files/ES%20390%20campus%20sust%20syll%20Spr%202010.pdf)  
Students will examine the concept of sustainability at three levels: as a social issue facing the global community; as a guiding principle for the operations, teaching, research, and outreach at institutions of higher education; and as a set of specific challenges facing our own university. The course will be project based. Students will complete two group projects relating to campus sustainability.

## **Ursinus College**

**Environmental Studies 100 - Issues in Environmental Studies**  
Students choose a campus sustainability project on which to work, individually or in small groups, usually with more senior students who have been working on the projects for some time. Projects include working with the college’s Facilities Services Dept on energy conservation or materials processing and waste stream (recycling, reducing consumption), working on the college’s constructed wetland, or in the college’s organic farming project.

**Environmental Studies 391 - Independent Research or Environmental Studies 491 - Honors Research**  
Students undertake one or two semesters of independent work on a large-scale project. Projects include design of a green building for the campus environmental center, the creation of the plan for an Ursinus organic garden project, the design and planning (ecological, economic, and business) for a constructed wetland as part of the college’s stormwater management system, a retrofit of the environmental residence hall into a zero-impact house, and the creation of a prototype and test plot for a green roof.

**Environmental Studies 470 - Environmental Studies Senior Seminar**  
Students in the senior seminar work on a group project for the duration of the semester. This project has sometimes been an off-campus partnership with a local conservation group, and sometimes an on-campus sustainability project. Recent projects of the latter variety have included the writing of a sustainability master plan for the college and writing implementation plans for the college’s organic garden project and constructed wetland.

## **Westchester University**

**Honors 314 - Science, Technology, and Environmental Systems**  
Among other projects, this course studies ecological footprints and has students analyze resource use on campus.  In 2006-07 students developed 12-15 minute presentations that they presented to various constituencies on campus (food service, purchasing, etc.)

**Westminster College**

**ENV 101 Environmental Literacy (4 SH).** This course aims to teach students about a broad range of environmental issues, inviting them to investigate how the historical and cultural facets of those issues cast light upon certain environmental realities. Drawing from a range of artistic, economic, historical, literary, political, philosophical, and scientific approaches to key environmental concepts, this course invites you to investigate current debates about environmental issues.

**ART 105 Art and Nature (4 SH).** This course takes an in-depth look at the natural world through

art. Students explore a variety of subjects from butterflies to birds; seedpods to sea shells; the

microscopic to the expanse of landscapes. Content and themes ranging from more scientific to the artistic. Primary techniques are basic drawing and painting using simple and portable materials. The course revolves around the creation of a field journal/sketchbook. More involved projects spin off assignments from the sketchbook. Students can expect to work on location/campus and at the biology department’s Field Station and Nature Trail. Our studio is the great outdoors.

**BIO 105 Pattern and Process in the Natural World (4 SH).** This is a cluster course for the nonmajor. In it, students will learn how scientific discoveries are made and they will use the scientific method to investigate biological systems. Ecological concepts will be used to illustrate biological patterns at the individual, population, and community level and to explain the importance of change in the natural world. A laboratory which emphasizes field work is included. A. Throckmorton.

**ENG 131 Nature Writing (4 SH).** Studies in English, American, world or comparative

literature, or in specific literary genres and themes. Individual sections experiment with different

approaches and topics. The times and a brief description of each course is provided each semester. These courses are designed primarily for non‑English majors. More than one ENG 101–151 may be taken for credit, as long as each course is different. Designated 101–151 courses receive Intellectual Perspective credit.

**ES 160 Concepts of Environmental Science (4 SH).** An investigation of the effect of humans on the Earth’s environment and on the other species that inhabit our planet. The course will look at the impact that an increasing human population has on the resource utilization, pollution production, habitat degradation, and the extinction of species. It will include a brief look at the policies and laws that specifically relate to environmental problems.

**PHI 230 Environmental Ethics.** Beginning with an examination of the nature of ethics in

general, this course will explore a variety of theoretical positions on subjects such as the

philosophy of nature, animal rights, deep ecology, eco-feminism, and global justice. One

guiding theme will be the difference between the “anthropocentric” and an “eco-centric”

attitude.

**ES 230 Chemical Analysis (4 SH).** A study of the theoretical foundation and skills necessary for the solution of problems encountered in the area of quantitative chemical analysis, including classical and modern methods. Emphasis is given to the evaluation and presentation of data, sampling, equilibrium dynamics of analytically important reactions, experimental design, volumetric techniques, absorption and emission spectroscopy, electrochemical methods, and analytical separations. Examples and laboratory exercises will include environmental air, soil and water systems. *Prerequisites*: CHE 117, and MTH 135 or 150 (may be co-requisite). H. Boylan. *(Also listed as CHE 230.)*

**PS 242 Environmental Policy and Politics (4 SH).** This course explores “the environment” as a

focus of public policy, an issue in political debate, and a basis for thinking about the purposes of

political life. It reviews some of the classic readings in environmentalism, considers domestic and

international policy approaches to major issues such as climate change, clean air and water, and

sustainable development, and explores the ways in which thinking “environmentally” challenges

our standard assumptions about policy-making and political life. *Prerequisite*: PS 101 or consent

of instructor. E. Cohen

**ES 250 Risk Assessment (4 SH).** This course provides an introduction to risk assessment, and

includes the characterization of hazard, exposure assessment, the quantification of risk, and the

application of risk analysis to environmental decision making. Specific topics will include human

and environmental risk assessment, sources of potential hazards, transport and transfer processes, acute and chronic exposure to hazardous substances, and the effects of stressors on individuals, populations, and communities of organisms. Risk assessment will be considered within a regulatory framework, and the limitations of the current risk analysis paradigm will be addressed. *Prerequisites*: BIO 203 and CHE 117.

**ECO 270 Environmental and Natural Resource Economics (4 SH).** A study of how the economic system depends on the environment and how the environment is influenced by the economic system. Topics include: economic analysis of common resources; economic analysis of depletable and renewable natural resources; the population problem; economics of pollution; the economic valuation of environmental goods; and ecological economics.

**ES 360 Ecology (4 SH).** A study of the structure of ecological populations, communities, and

ecosystems, and the processes that affect them. Topics include population growth, regulation, and dynamics, population interactions, food webs, species diversity, succession, biogeography, and energy flow and nutrient cycling. Laboratories stress experimental design and data analysis. *Prerequisite*: C- or better in BIO 203. (*Also listed as BIO 360.*)

**BIO 361 Biological Diversity (4 SH).** An in-depth, cross-sectional study of the diversity of

eukaryotic organisms. Pertinent to this course is the evolutionary process which is centered on

adaptation, diversity, natural selection and speciation. Topics include paleontology, life histories,

survival strategies in feeding and reproduction, biogeography and patterns of extinction. The social, ethical and political consequences of human activities will also be addressed. This course assumes reasonable knowledge of all major taxa and schemes of taxonomy. The laboratory component will consist primarily of field work. *Prerequisite*: C- or better in BIO 203. Offered Fall Semester.

**CHE 375 Green Chemistry (4 SH).** A study of the principles, concepts, and applications of green

chemistry. Particular attention will be given to industrial processes, catalysis, waste management,

and renewable resources. Discussions will focus on the current literature on green chemistry.

While the course does not include a laboratory, students will participate in a project that applies the principles of green chemistry to a laboratory experiment used in the chemistry curriculum. This project will serve as the culminating experience for the course. *Prerequisites*: CHE 230 and CHE 261. P. Smith.

**ENV 401 Environmental Studies Seminar (4 SH).** The Environmental Studies Seminar is an

integrative experiential and project-based course that is a capstone experience for all ENV minors. Students are expected to bring their discipline-specific expertise to the group and collaborate on a class project that identifies a problem, examines it from a multidisciplinary perspective and provides practical solutions. *Prerequisites*: ENV 101 and at least one ENV Group I elective (ES 160, ECO 270 or PS 251) or approval by instructor.

**ES 465 Introduction to GIS (4 SH).** This course is an introduction to the theory and use of

Geographic Information Systems, including the fundamental concepts of GIS, capabilities of GIS,

and applications for dealing with spatial data. Key issues for discussion will include data input, data models, database design and database queries, sources of information for spatial databases, spatial analysis, computational algorithms, and information presentation. Other issues such as the nature of geographic phenomena to be represented in a GIS, comparisons of different GIS representational schemes, and appropriate use of geographic information will also be covered. These topics will be discussed within an environmental context using ArcView, a PC-based GIS software package. A.Throckmorton. *(Also listed as BIO 465.)*

**ES 601, 602 Environmental Science Capstone: Problem Analyses in Environmental Science (2 SH each).** Interdisciplinary senior research project designed to study an environmental problem from an integrated, multidisciplinary viewpoint. Students work collectively to develop testable hypotheses, design and implement experiments to test their hypotheses, and present their results in comprehensive written and oral reports. *Prerequisite*: successful completion of all required courses in the major.

**Appendix 9**

**Solid Waste Management at Westminster College – 2011**

**Paper products** – Collected by Physical Plant personnel and placed into appropriate dumpsters for Tri-County pickups: cardboard that is broken down flat by recipients of packages; shredded paper and office “white” paper. Sodexo, the major recipient of goods in cardboard boxes diligently breaks down boxes and transports them to appropriate receptacles. Problems identified: if boxes are not broken down, they go into compactor or dumpster; large boxes are still too frequently found in the dumpster; newspapers are not now being regularly collected (they had been collected by student groups but not at present); no record is kept of the quantity being recycled.

**Glass/aluminum/plastic bottles/cans** – Collected by Physical Plant personnel and placed into appropriate dumpsters for Tri-County pickups: Problems identified: members of the college community do not always dispose of bottles/cans in appropriate receptacles; no record is kept of the quantity being recycled.

**Food waste** – Sodexo’s pre-consumer food waste from the dining halls is now being collected and composted privately; both pre- and post-consumer wastes were systematically collected, weighed and composted at the Field Station between 2005 and 2009; at that point, the operation ceased for want of staffing. At the peak of operation, 12 to 18 tons per year of food waste from the campus dining facilities operated by Sodexo were composted. Problems identified: pre-consumer waste now being handled privately is actually a violation since a permit is required by DEP for composting materials from a commercial enterprise (like Sodexo); post-consumer waste is the bulk of food waste but is also the most labor intensive component for salvaging this resource; cessation of food waste composting has resulted in loss of a “green attitude” on campus since food waste composting is a natural focal point for students (in classes and others of the college community) to relate to; in addition to dining facility food waste, there is other waste that needs to be addressed – food in residence hall rooms and (especially coffee grounds and tea bags) in most campus offices.

**Yard waste (leaves and branches)** – Handled cooperatively between the Borough of New Wilmington and Physical Plant. Leaves now collected (PPO staff sweeps to the street and the Borough truck vacuums the leaves); they are transported by Borough personnel to Westfield Behavioral (a leaf composting farm near Pulaski). Branches are stored and then chipped by Physical Plant. Problems identified: no record is kept of the quantity and the organic materials are removed from College without being returned to the earth on the campus (a lost resource for the College).

**Pondweed from Brittain Lake** – Contracted out to JEEMCO for “harvesting” once or twice a season between June and October and transported to the Field Station for composting; this is still being done and is an ecologically sound procedure as an alternative to treatment of the Lake with herbicides; loads of harvested pondweed are counted and wet weight is estimated. Problems identified: lack of personnel to properly compost the pondweed; permit has expired for handling this resource (and at the moment is being done illegally).

**Electronic waste** – Old computers, monitors, cell phones, etc. are collected about two times a year by personnel from Audio-Visual Services and disposed of by a registered and reliable company for recycling. Problems identified: the service represents a cost to individual budgets and some departments are reluctant to spend money for disposal; far too many computers and monitors are disposed of in the dumpsters.

**Scrap metals** – Collected by Borough of New Wilmington if metals are taken to the Borough garage near the campus. Problems identified: extra effort required to transport scrap metals off campus and service is generally not known on campus outside of Physical Plant and Field Station.

**Dry cell batteries** – Collected on campus by Audio Visual Services and with the cooperation of the Chemical Hygiene Office are recycled through a local battery company. Problems identified: not widely used by most students who may not know about the operation.

**Athletic shoes** – Collected on campus by Circle K Service Club and the local Kiwanis Club; used athletic shoes of any brand are transported to the Field Station, processed by removing metal and sent at no cost to the club or college to Nike Corp. in Oregon where they are recycled. Problems identified: not widely used by most students who may not know about the operation.

**Pharmaceuticals** – No attention has been drawn to what is being done in the Health Center with dated and/or contaminated prescription drugs.

Quantity of solid waste: Apart from the composting operation between 2005 and 2009 we have no hard data on quantity of solid waste that is handled in one way or another. The data for disposal of general waste by dumpsters and compactor could be accumulated. The cost of disposal by dumpster/compactor (as of 2008) is $78 per ton.

The cost of adding food waste composting and a comprehensive scheme for campus solid waste is primarily personnel. The equipment (purchased in 2005 with a grant from Pennsylvania’s DEP) and space at the Field Station for composting are there.

**Appendix 1**

Current Sustainability Initiatives and Programs at Westminster College

**Outdoor Resources**

1. Westminster College Field Station
2. The Field Station’s Microforest has been in existence for close to a decade and is used to grow native trees as a demonstration project for the community. Some native species grown in the College’s nursery at the Field Station are transplanted on the main campus.
3. Composting, once done at the Field Station, is currently on hold.
4. Solar Cell technology employed on roof of Field Station to generate electricity
5. Brittain Lake – Used both as a recreational source and environmental laboratory for the curriculum

**Community**

1. Sustainability in Motion under the aegis of the Chemistry Department serves the surrounding k-12 educational systems
2. New Wilmington Farmer’s Market – Literature Booth (Spring ’11)
3. “Do It In The Dark” – A two week energy conservation challenge to students in the residence halls sponsored by the Sierra Student Coalition (SSC) ’08-‘09
4. Shredded paper accepted from community by Field Station for composting
5. Sodexo Food Services food donations to local food banks
6. Weekend “conscious shopping” outings to the Silk Road and the local Green Market (Green Party)

Awareness-focused events:

1. *Reverse Trick-or-Treating (*Green Party*)*
2. *Green Moments* (“Future Focus and Sustainability” spotlight at each weekly meeting) (Green Party)
3. *Change 4 Change* Campaign (Green Party)
4. Kashi *Go-Lean* Treat Giveaways (Green Party)
5. Participation in and promotion of *America Recycles Day* (Green Party)
6. Get Real: *Go Green* workshop (Student Affairs)
7. *Annual Earth Day* *5k Run/Walk*. All proceeds donated to the Field Station for environmental education camps for underprivileged children and beautifying the Field Station (SSC)

**Service**

1. SGA is considering the creation of an Executive Committee position, *Green Chair*
2. Student In Free Enterprise (SIFE) – A sustainability project is in the works. Competition was slated for March ’11. SIFE hosted an *Environmental Forum* in 2010.
3. 1,000 biodegradable cups were donated to Club Room by the Green Party
4. *The Global Gift Market*, an annual event now in its fifth year, was established to raise global awareness of hunger and stewardship of the Earth (YPS, etc.)

**Recycling & Purchasing**

1. Audio Visual Services’ has initiated the *Project Green AV* Program: Battery and electronics recycling program; consumer guidance regarding technology sustainability initiatives and responsible recycling; technology recycling assessment; bi-annual *Technology Recycling drives*; *safe lamp & media* (VHS, DVD, flash) disposal; *gently used* equipment donation program and equipment salvage; *paperless office* program; shipping and disc case reuse program; *wattage counter* program to enable others to monitor energy consumption of their electronics
2. A campus-wide newspaper recycling program is being conducted by the Student Government Association (SGA)
3. Printer ink cartridge recycling (Recycling Center) program is being conducted by the Student Sierra Coalition
4. A cell phone collection bin is available in MCC. Discarded phones are donated to the community by SSC
5. Food waste composting (no longer done, but worth reinvigorating) – Field Station
6. Coffee grounds are recycled by Sodexo Food Services (SFS). Campus members may take home bags of coffee grinds issued by SFS at no charge
7. The campus recycles all white paper in campus offices and departments
8. All discarded campus paper is regularly shredded and recycled by Tri-County Industries and Cintas Inc.
9. Brittain Lake is combined twice per year. Pond weed harvested is taken to the Field Station for composting
10. Used cooking oil is recycled by SFS
11. The *Reusable Mug Program* has been initiated by SFS
12. The Physical Plant Office (PPO) and SFS Recycles and composts mattresses, glass, cans, plastic, aluminum, aerosol cans, cardboard, batteries, oil, antifreeze, tires (SFS and PPO)
13. Old drawing paper used in the Art Department is shredded or reused. Unusable drawing paper is shredded and taken to the Field Station for composting (Art Dep’t)
14. All scrap canvas is reused in collage projects (Art Dep’t)
15. Reusable coffee cup sleeves were sold at Jazzman’s Café by the Green Party in 2010

**Contamination**

1. Oil paints have been replaced by new “water-based” oils in all Art Department classes. Solvents are no longer used by the Art Dep’t
2. Hazardous waste minimization, inventory and centralization program was established in 2008 for all academic departments. Inspections are every 3 years. (Chemical Hygiene Officer)
3. Hazardous waste from biology and chemistry labs is inventoried and removed from campus, according to EPA regulations in lab-packs at least quarterly by a certified Hazardous Waste removal vendor.
4. To limit or reduce the amount of hazardous waste generated in the lab, waste generation is a factor which is considered when lab experiments are chosen. For this reason, many experiments requiring toxic materials have been eliminated or modified. Consequently, many of the labs generate no hazardous waste. Additionally, mercury thermometers have been replaced by alcohol thermometers to reduce mercury waste. Hazardous and non-hazardous materials are not mixed, to avoid contamination of large quantities of materials. For aqueous waste containing metals, the metals are precipitated from the solutions (when applicable) before disposal, which can reduce the weight of the waste significantly.
5. Some microscaling of experiments has been done, both to reduce hazardous waste and the amount of chemicals purchased.
6. Universal Precautions are strictly adhered to in the use and disposal of syringes, biological contamination, body fluid clean-up and disposal, and other OSHA biohazard requirements on the campus. In addition to the Chemical Hygiene Officer’s oversight of specific academic areas, the Student Health Center, Physical Plant, Food Services, and the Athletic Trainers’ Office keep and follow formalized policies and procedures to ensure OSHA compliance.

**Energy – Waste and Water**

1. The Chapel is on a light timer system and uses high efficiency lights. Chapel Office administrators have gone “virtually paperless”
2. Ozone Cup – Residence Life energy conservation program
3. Koi and Israeli carp (300) were introduced into Brittain Lake to reduce pond weed in 1990
4. One hot water storage tank (1,000 gal.) was relined in Galbreath Hall to improve its thermal envelope
5. Old Main’s sanitary sewer line was replaced
6. Heating control upgrades were done at McGill Library, Old Main, Browne Hall, Eichenauer Hall, Orr Auditorium, Ferguson Hall, Thompson Clark Hall, Russell Hall, McKelvey Campus Center
7. Backflow preventers have been installed in all campus buildings to prevent backflow water contamination
8. PPO has replaced existing incandescent light fixtures with energy efficient CFL bulbs across campus
9. Ecologically friendly bulbs are being purchased by PPO
10. Unbleached paper towels are now purchased by PPO
11. Hand dryers were installed in 2010 in Russell and Jeffers residence halls to conserve paper products
12. No oil based cleaning products are used by PPO
13. PPO carefully selects fertilizers and pesticides to reduce runoff and ground contamination
14. PPO has increased the number of trees planted each year on campus
15. Storm water management improvements have been made across campus in the past five years
16. New construction and renovation programs have included the installation of energy efficient windows and doors as budgets have allowed, including the installation of energy efficient windows in all residence halls
17. Furnaces have been replaced in several buildings (see attachment)
18. 90% of all underground steam lines have been replaced on the main campus between 1990 – 2007
19. Toilet and urinal flushometers have been replaced with low flow units in various buildings on campus
20. Sinks and showers have flow restrictors that were installed in campus buildings between 1992 – 2009
21. A campus-wide EPA audit was conducted on campus in 2008
22. PPO has halted the use of oil-based paints and now uses only water-based paint
23. PPO lowered the heating set point at 68 degrees and raised the cooling set point to 72 degrees in all campus buildings
24. Bat houses were installed at Hillside Hall to mitigate the “bat problem” within the hall while allowing bats to live outside the buildings – preempting eradication
25. PPO built a goose fence to deter geese from gathering and defecating on the grounds to the west of Brittain Lake
26. Reusable paperless coffee sleeves will be sold in 2011 to replace the cardboard sleeves distributed by the Sierra Student Coalition
27. Sodexo for coffee and tea purchases (Green Party)

**New Construction and Renovation of Buildings**

1. Berlin Village town houses are all outfitted with geothermal HVAC systems
2. Berlin Village is equipped with a storm water management and retention system that allows for more efficient water runoff control from parking areas and buildings
3. Galbreath Hall’s steam plant boiler room had blow down drains introduced in 2008 to eliminate boiler runoff into McClure’s Run
4. McClure Run was renovated in 2008. Vegetation propagation and water runoff controls have enhanced its overall water quality and welfare. It has been established as a “wetland” by the State of PA

**Appendix 6**

**The President’s Sustainability Initiative:**

**Supporting Sustainability at Westminster College**

A draft proposal by Helen M. Boylan,

Associate Professor of Chemistry & Chair of Environmental Programs

**Overview**

The President’s Sustainability Initiative (PSI) at Westminster College is to be an internally funded, relatively low-cost program that provides various groups on campus the incentive to develop and implement environmentally friendly practices on campus. Each semester, a call for proposals will be released campus-wide. Groups will be encouraged to submit a brief description of their plan for a sustainability initiative and a budget up to $1,000 to implement the plan. Two or three proposals will be funded each semester. Upon completion of the project and submission of a brief project report, each group will be awarded a $250 prize for successful completion of their initiative.

**Eligibility**

Any “group” on campus would be eligible to apply for the PSI program. “Groups” include approved student organizations, greek organizations, academic departments, staff organizations, administrative offices, physical plant departments, classes, or basically any cohort of people on campus that come together with a unified plan.

**Initiatives**

Sustainability has many definitions and a broad scope. Any initiative that addresses the “wellbeing of the natural world and the responsible use of natural resources” will be considered. Initiatives could include educational programs, physical/structural/logistic modifications, clean-ups/recycling plans, composting, etc. Creative approaches welcome!

**Logistics**

A Sustainability Council, consisting of representatives from administration, faculty, staff, physical plant, and students, will meet once each semester to rank the proposals based on impact, merit, and responsible use of funding. These rankings will be forward to the President’s Cabinet who will ultimately decide which proposals to fund.

Administrative support for this program will be provided by the Environmental Programs secretary, with additional hours budgeted into her time each semester.

**Appendix 7**

**Westminster College Greenhouse Gas Emissions Inventory**

Westminster College (WC), a private liberal arts college of approximately 1,450 full time students and another 300 part time/summer session students, located in New Wilmington, Pennsylvania, conducted its first greenhouse gas (GHG) inventory during the 2009-2010 school year. The GHG inventory was completed based on data from the 2008-2009 fiscal year.

A greenhouse gas (GHG) is an atmospheric gas that contributes to the greenhouse effect by absorbing infrared radiation produced by solar warming of the earth’s surface. While GHGs do occur naturally in the atmosphere, elevated levels have been observed in recent decades and have been attributed to human activities. These activities are generally related to the burning of fossil fuels, which release GHG’s, to produce anything from electricity to household products. Inventorying an institution’s emissions allows for gaining an understanding of the various GHG emissions and provides a way for setting a goal to reduce these emissions.

**Method**

A GHG emissions calculator provided by Clean Air Cool Planet (http://www.cleanair-coolplanet.org/) was used to inventory Westminster’s emissions. Table 1 illustrates the sources we used to gather the necessary information to complete our GHG inventory.

Table 1: Information for GHG inventory

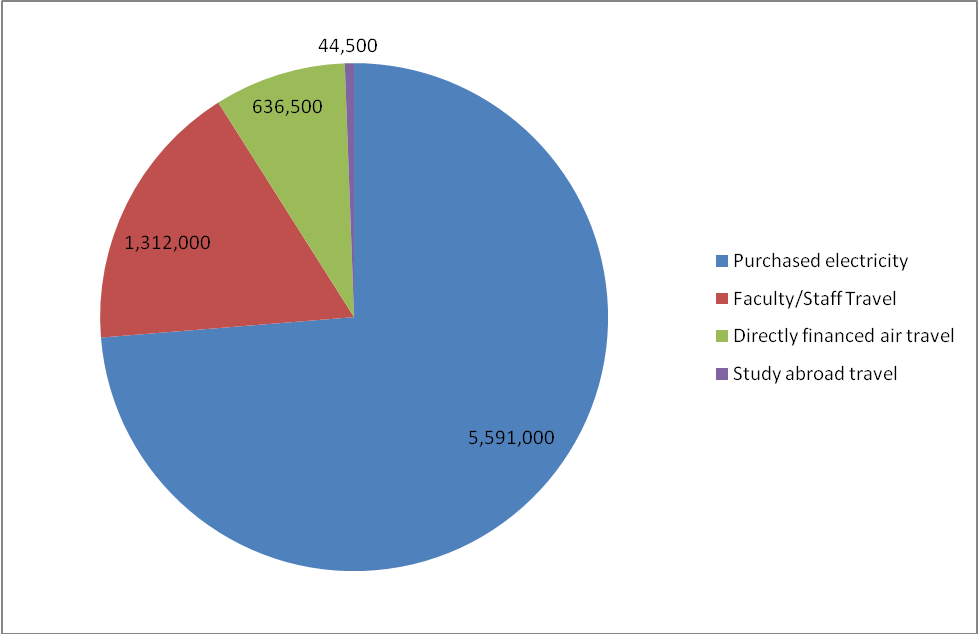
|  |  |  |
| --- | --- | --- |
| **Information Required** | **Source** | **Related To:** |
| Faculty, staff, and student numbers | Registrar’s Office | Demographics |
| Building square footage and undeveloped land acres | Physical Plant Office | GHG emissions and offsets |
| Electrical, water, sewage, and natural gas consumption data | Monthly utility statements (Business Office) | Emissions from Utilities |
| Faculty, staff, and student zip codes for commuting to and from campus | Business Office | Emissions from Travel |
| Athletic travel for all sporting events | Athletic Department | Emissions from Travel |
| Travel by college fleet vehicles | Physical Plant Office | Emissions from Travel |
| Study abroad air miles | Academic Affairs Office | Emissions from Travel |
| Faculty, staff, and student travel | Travel habits survey | Emissions from Travel |
| Travel reimbursement miles | Business Office | Emissions from Travel |
| Fertilizer, refrigerant, and other chemical consumption | Physical Plant Office | Additional sources of emissions |

The Clean Air Cool Planet calculator converted the data we entered using standard mathematical models into emissions of various GHGs such as carbon dioxide, methane, and nitrous oxide. For example, the data we provided was converted into total metric tons of CO2 emitted by various sources.

**Results**

Figure 1 summarizes the most common sources of Westminster’s CO2 emissions. This graph demonstrates that most CO2 emissions are produced from purchased electricity. This result was expected because electricity in Western Pennsylvania is produced mainly from the burning coal which releases significant amounts of CO2.

**Figure 1**: Estimated metric tons of CO2 emitted from various sources at WC for 2008-2009



The Clean Air Cool Planet calculator also provides demographic data emissions estimates, such as CO2 metric tons emitted per student. We calculated that each Westminster student emitted approximately 8.8 metric tons of CO2 for the 2008-2009 school year. We then compared this emissions number to other schools similar in size and location. Table 2 illustrates CO2 emissions per student for select schools in our region that have published their GHG inventory results. This table implies that Westminster ranks comfortably in the middle in terms of CO2 emissions per student. Furthermore, an analysis of the 10 schools in the President’s Athletic Conference (PAC), the conference in which Westminster competes athletically, revealed that Westminster is the the only school in the PAC to complete a GHG inventory; three other schools are in the process of completing their GHG inventories. Out of these schools, Westminster is the only one to voluntarily complete this project; the remaining schools were required to do so because they are a signatory of the President’s Climate Committtment.

**Table 2**: CO2 emissions per student across various institutions

|  |  |  |  |
| --- | --- | --- | --- |
| **School** | **Total Students** | **Total Square Footage** | **CO2 Emissions per Student** |
| Juniata College | 1,453 | 880,000 | 7.1 metric tons |
| Mount Union | 2,101 | 1,069,725 | 8 metric tons |
| Allegheny College | 2,151 | 1,194,175 | 8.2 metric tons |
| **Westminster College** | **1,721** | **903,177** | **8.8 metric tons** |
| Chatham College | 1,625 | 943,000 | 11.2 metric tons |
| Oberlin | 2,744 | 2,640,040 | 15.3 metric tons |

**Conclusion**

Overall, the completion of Westminster College’s first GHG inventory was a huge success. Westminster ranks well against other schools similar in size and location, and is the only school in the PAC to voluntarily complete a GHG inventory. This research can serve as a model for other schools working on a GHG inventory. Westminster can use this data in future work to set a GHG emissions reduction goal. Together, we can all work toward environmental initiatives to ensure that our planet is sustainable for years to come.

**Acknowledgements**

It is important to note this project was a group effort and could not have been completed without first seeking approval of the Administration whom supported and helped gather the necessary information from various sources on the Westminster College campus.

If you would like a complete report of the GHG inventory findings, please contact Dr. Helen Boylan, Associate Professor of Chemistry, at [boylanhm@westminster.edu](mailto:boylanhm@westminster.edu).

**Appendix 3(a)**

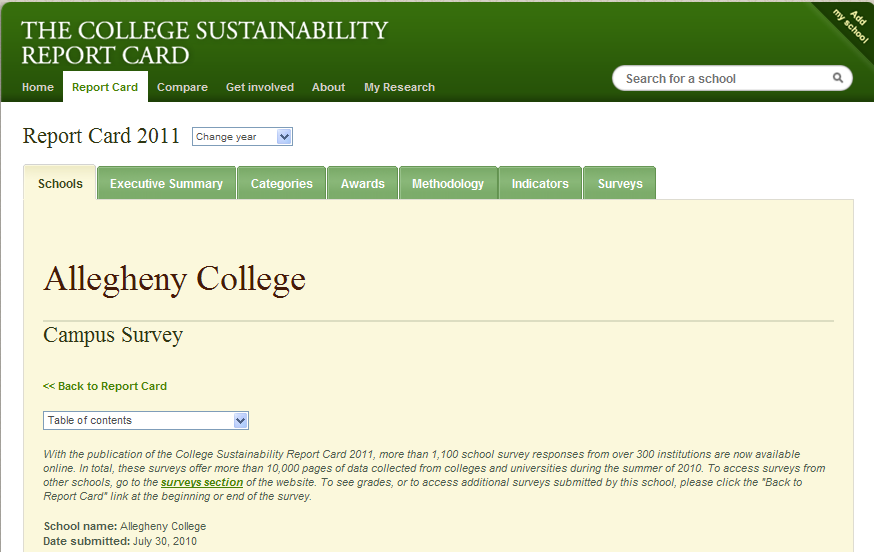
|  |  |  |
| --- | --- | --- |
| **The Sustainability Tracking, Assessment & Rating System (STARS)** |  |  |

STARS was born of the need to address all dimensions of sustainability, including health, social, economic and ecological factors, which encompass all sectors and functions of a campus, such as curriculum, facilities, operations and collaboration with communities. In 2006 the AASHE brought together different higher education stakeholders in order to initiate the collaborative process required to develop such a system known as STARS.  
  
STARS is a "voluntary, self-reporting framework for recognizing and gauging relative progress toward sustainability for colleges and universities" (AASHE, 2010). The objectives of STARS are to:

* Provide a framework for understanding sustainability in all sectors of higher education.
* Enable meaningful comparisons over time and across institutions using a common set of measurements developed with broad participation from the campus sustainability community.
* Create incentives for continual improvement toward sustainability.
* Facilitate information sharing about higher education sustainability practices and performance.
* Build a stronger, more diverse campus sustainability community.

The program is open to any institution of higher education in the United States or Canada, ranging from community colleges to research universities, and is designed for both institutions that are in the process of initiating their sustainability programs and those already considered leaders in the field of sustainability (AASHE, 2010).  
  
STARS is a rating system, not a ranking system, where levels of achievement (a *rating*) are highlighted rather than the numerical score. In contrast, a ranking system typically implies a survey performed by a third party, with campuses ranked from best to worst according to a numerical score.  
  
One of the advantages of a rating system is that it allows for more in-depth questions. A rating system provides a clear strategic plan for a campus to reach a benchmark level, while a ranking system does not provide a clear target (a campus doesn't know in advance what its final outcome in the rankings will be). A rating promotes change more effectively, as institutions strive toward the highest level of achievement, rather than simply focusing on surpassing other institutions. In a rating system the top classification could potentially be unfilled as institutions work toward it.

**Appendix 3(b)**



**Appendix 3(c)**

Association of

U N I V E R S I T Y L E A D E R S

F O R A S U S T A I N A B L E F U T U R E

**Sustainability Assessment Questionnaire (SAQ) for Colleges and Universities**

The Sustainability Assessment Questionnaire (SAQ) is designed to assist you in assessing the extent to which your college or university is sustainable in its teaching, research, operations and outreach. “Sustainability” implies that the major activities on your campus are ecologically sound, socially just, economically viable and humane, and that

they will continue to be so for future generations. Academic institutions vary considerably in how they approach sustainability: some concentrate on minimizing their ecological impact through changes in operations; others emphasize sustainability in the curriculum.

This survey of sustainability at your college or university asks you to give impressions of your institution’s accomplishments on seven critical dimensions of higher education: 1. Curriculum; 2. Research and Scholarship; 3. Operations; 4. Faculty and Staff Development and Rewards; 5. Outreach and Service; 6. Student Opportunities; 7. Administration, Mission and Planning. The SAQ is designed to stimulate discussion and further assessment by campus representatives who are knowledgeable about and responsible for the activities mentioned in each section.

If you wish to guide the process yourself, we suggest the following: 1. Assemble 10-15 representatives from critical campus constituencies, including students, faculty, staff, and administration; 2. Review the purpose and objectives of the exercise, the nature of sustainability in higher education, etc.; 3. Take about 30 minutes for each person to fill out the questionnaire individually or for small groups to work on specified sections; 4. Facilitate a discussion in which the whole group reviews the questionnaire section by section and gathers impressions; 5. Brainstorm possible next steps to strengthening sustainability on your campus. Note: The exercise could take 2-3 hours or more, and may be best carried out over two sessions.

Directions: Please read through the definitions of sustainability and education for sustainability (p.3) and review the questions prior to completing the questionnaire. This will give you a sense of how we understand “sustainability.” Then answer each question to the best of your ability. Remember that this questionnaire is seeking your impressions

on each dimension, so you need not have detailed information on all courses offered, transportation and recycling programs, etc., in order to complete it. If you lack enough information for a reliable impression, please indicate that you don’t know the answer to that question.

It is important to recognize that most institutions will not “score high.” Very few, if any, institutions embody sustainability on all these dimensions. Sustainability is not yet a major focus of the academic disciplines or the wider economy in which higher education functions. Thus it is difficult for any college or university to be very advanced in implementing sustainability.

Thank you.

**Definitions of sustainable development, sustainability and education for sustainability:**

 Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. (Brundtland Commission (United Nations), 1987)

 Sustainability is an evolving paradigm for planning and decision-making. Sustainability is a promise. It is a dynamic condition, which requires a basic understanding of the interconnections and interdependency among ecological, economic, and social systems.” (The Sustainability Education Center, 2002)

 Historically, the term “sustainable” arose among those with environmental concerns, and most of the literature and assessment instruments reflect this emphasis. However, it is increasingly recognized that sustainability cannot be achieved without addressing social justice issues. There can be no sustainable communities and institutions without social justice. So too is humane consideration toward the whole community of life an essential part of true sustainability. An academic institution committed to sustainability should help

students understand the roots of today’s injustices and motivate them to seek justice and humaneness in full integration with understanding the roots of environmental degradation and modeling environmentally sustainable practices. (John B. Cobb Jr., “Sustainability and the Liberal Arts” conference, 1998)

 Education for sustainable development is a dynamic concept that utilizes all aspects of public awareness, education and training to create or enhance an understanding of the linkagesamong the issues of sustainable development and to develop the knowledge, skills, perspectives and values which will empower people of all ages to assume responsibility for creating and enjoying a sustainable future. (From the UNESCO Decade of Education for Sustainable Development website, 2005)

 The concept of sustainability – which, at a minimum, addresses how humans can live on the planet over time in a manner that protects cultural and biological diversity, recognizes and appreciates ecological limits, offers just and accountable governments and economies for all, and draws on the human capacity for adaptive learning and innovation – offers a tremendous challenge for education. It requires educational institutions to rethink their missions and to

re-structure their courses, research priorities, community outreach, and campus operations.

By preparing students – and the whole campus community – to be more adept decision makers in the increasingly complex, dynamic, and uncertain future that we all face, integrating sustainability into all of the major activities of educational institutions also presents a tremendous opportunity. (Glasser & Calder, 2005)

**Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Position: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Institution: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

CURRICULUM

1. Indicate the extent to which your institution offers courses which address topics related to sustainability. (Such topics could include globalization and sustainable development; environmental policy and management; environmental philosophy; nature writing; land ethics and sustainable agriculture; urban ecology and social justice; population, women and development; sustainable production and consumption; and many others.)

[Please circle the appropriate number on this and the following questions]:

0 (don’t know) 1 (none) 2 (a little) 3 (quite a bit) 4 (a great deal)

Please list any courses you are aware of in which such topics are taught:

2. What courses do you regard as essential that are not being taught?

3. Indicate the extent to which sustainability is a focus woven into traditional disciplinary education in science, math, literature, history, the arts, etc.?

0 (don’t know) 1 (none) 2 (a little) 3 (quite a bit) 4 (a great deal)

Please comment on how this is done:

4. Are undergraduates required to take a course on issues related to the environment or

sustainability?

\_\_\_\_\_\_ No \_\_\_\_\_\_ Yes If yes, please describe:

5. The shift to sustainability requires critical thinking about the role of the institution in its social and ecological systems. Circle which of the following your institution (through individual, group or departmental efforts) attempts to teach its students:

a - how the campus functions in the ecosystem (e.g. its sources of food, water, energy, as well as the endpoint of waste and garbage)

b - a sense of place: the natural features, biota, history and culture of the region

c - the institution’s contribution to a sustainable economy and sustainable local communities

d - how the institution views and treats its employees (such as staff and faculty involvement in decision-making, their status and benefits)

e - the basic values and core assumptions that shape the content and methods of the academic disciplines

Comments:

RESEARCH AND SCHOLARSHIP

6. a) Estimate the amount of faculty research or scholarship being done in the various disciplines in the area of sustainability (for example, renewable energy, sustainable building design, ecological economics, indigenous wisdom and technologies, population and development, total environmental quality management, etc.).

0 (don’t know) 1 (none) 2 (a little) 3 (quite a bit) 4 (a great deal)

Please list any faculty research or scholarly activities you are aware of related to sustainability:

b) Estimate the amount of student research or scholarship being done in the various disciplines in the area of sustainability.

0 (don’t know) 1 (none) 2 (a little) 3 (quite a bit) 4 (a great deal)

Please list any student research or scholarly activities you are aware of related to sustainability:

7. a) What percentage of faculty members teach or do research on sustainability issues?

\_\_\_\_\_\_ %

b) What percentage of faculty members do you estimate would be interested in teaching and

research on sustainability issues?

\_\_\_\_\_\_ %

8. Does your institution have established multidisciplinary and interdisciplinary structures (such

as an institute or center) for research, education and policy development on sustainability

issues?

\_\_\_\_\_\_ No \_\_\_\_\_\_ Yes If yes, please describe

OPERATIONS

9. The chart below lists some of the operational practices emphasized by institutions moving

toward sustainability. Please complete the chart, adding a check (√) for prime project areas

and for more information needed, and indicating the extent to which your institution has

implemented these practices using the following scale:

0 – don’t know; 1 – none; 2 – a little; 3 – quite a bit; 4 – a great deal.

Building construction and renovation based on green design principles (LEED, etc.)

Energy conservation practices (including lighting, heating, cooling, ventilation, windows, etc.)

Waste reduction practices (such as ecommunications, double-sided copying, “waste free lunch” program, etc.)

Recycling of solid waste (including paper, plastic, metal, e-waste, etc.)

Sustainable food program (such as local,organic, and/or fair trade food)

Water conservation practices (including efficient toilets, minimal irrigation, harvested rainwater,

etc.)

Sustainable landscaping (emphasizing Integrated Pest Management practices, native plants,

biodiversity, minimizing lawn, etc.)

Sustainable transportation program (including bicycle/pedestrian friendly systems, car pools,

bus pass programs, biodiesel projects, etc.)

Green purchasing from environmentally and socially responsible companies (products are

non-toxic, water and energy conserving, etc.)

Reduction of toxic materials and radioactive waste

Environmental or sustainability assessments /audits

Others (please specify):

10. What do you see when you walk around campus that tells you this is an institution committed

to sustainability?

11. To what extent are your operations practices integrated into the educational and scholarly

activities of the school?

0 (don’t know) 1 (none) 2 (a little) 3 (quite a bit) 4 (a great deal)

Please provide examples of this integration:

FACULTY AND STAFF DEVELOPMENT AND REWARDS

12. a) To what extent does criteria for hiring recognize faculty member contributions to

sustainability (in scholarship, teaching, or campus and community activities)?

0 (don’t know) 1 (none) 2 (a little) 3 (quite a bit) 4 (a great deal)

Describe how such considerations are weighed in these decisions:

b) To what extent do criteria for tenure and promotion recognize faculty member

contributions to sustainability?

0 (don’t know) 1 (none) 2 (a little) 3 (quite a bit) 4 (a great deal)

Describe how such considerations are weighed in these decisions:

13. To what extent do criteria for hiring and promotion recognize staff member contributions to

sustainability (in regular responsibilities and campus and community activities)?

0 (don’t know) 1 (none) 2 (a little) 3 (quite a bit) 4 (a great deal)

Describe how such considerations are weighed in these decisions:

14. To what extent does your college or university provide significant faculty and staff

development opportunities to enhance understanding, teaching and research in sustainability?

0 (don’t know) 1 (none) 2 (a little) 3 (quite a bit) 4 (a great deal)

Please describe recent faculty or staff development opportunities in these areas:

OUTREACH AND SERVICE

15. A sustainable institution supports sustainable community development in its local area and in

the surrounding region through projects and partnerships with primary and secondary schools, local governments and businesses. It may also seek international cooperation in solving global environmental justice and sustainability challenges through conferences, student/faculty exchanges, etc. To what extent is your institution involved in sustainable development work through formal partnerships or relationships at regional, national or international levels?

0 (don’t know) 1 (none) 2 (a little) 3 (quite a bit) 4 (a great deal)

Please describe:

16. What local sustainability related community service, service learning and/or internship

programs exist at your institution?

STUDENT OPPORTUNITIES

17. Institutions committed to sustainability provide students with specific opportunities and

settings. Please check (√) which of the following are present on your campus:

\_\_\_\_\_\_ Student Environmental Center

\_\_\_\_\_\_ Ecology House or Sustainable Dormitory

\_\_\_\_\_\_ Orientation program(s) on sustainability for students

\_\_\_\_\_\_ Student Group(s) with an environmental or sustainability focus

\_\_\_\_\_\_ Other: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

18. How does your college or university encourage students to consider sustainability issues

when choosing a career path? [Please check (√) below where applicable]

\_\_\_\_\_\_ job fairs and career counseling focused on work in sustainable enterprises

\_\_\_\_\_\_ pledge of social and environmental responsibility

\_\_\_\_\_\_ other: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

19. To what extent are student groups across campus directly involved in sustainability

initiatives?

0 (don’t know) 1 (none) 2 (a little) 3 (quite a bit) 4 (a great deal)

Describe which groups are most involved and how:

ADMINISTRATION, MISSION AND PLANNING

20. To what extent do the formal written statements describing the purposes and objectives of the

units listed below reflect a commitment to sustainability? (Such statements include policy

and planning documents, annual reports, brochures, catalogues, etc.)

[Please rate using the following scale: 0 – don’t know; 1 – none; 2 – a little; 3 – quite a bit;

4 - a great deal]

\_\_\_\_\_\_ the institution as a whole

\_\_\_\_\_\_ your college or division

\_\_\_\_\_\_ your unit/department

\_\_\_\_\_\_ other units within the institution (please define: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)

Comments: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

21. Institutions committed to sustainability create certain positions and committees, as well as

engage in certain practices, which reinforce this commitment. Please check (√) which of the

following are present on your campus:

\_\_\_\_\_\_ Environmental Council or Task Force

\_\_\_\_\_\_ Environmental Coordinator- ( )student or ( )staff member

\_\_\_\_\_\_ Dean of Environmental Programs or Director of Sustainability Programs (a high level officer responsible for these activities)

\_\_\_\_\_\_ Energy Officer

\_\_\_\_\_\_ Green Purchasing Coordinator

\_\_\_\_\_\_ Institutional Declaration of Commitment to Sustainability/Environmental Responsibility

\_\_\_\_\_\_ Orientation programs on sustainability for faculty and staff

\_\_\_\_\_\_ Socially responsible investment practices and policies

\_\_\_\_\_\_ Regularly conducted environmental audits

\_\_\_\_\_\_ Other: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

22. How is a concern for, and commitment to, sustainability given broad visibility on your

campus (for example, with guest speakers, conferences, Earth Day celebrations, etc.)? Please

describe key events that have happened in the past year:

23. a) Please describe the greatest strengths of your institution in terms of sustainability.

b) Please describe the greatest weaknesses of your institution in terms of sustainability.

24. a) Please describe the key factors that support the advancement of environmental and

sustainability issues on your campus?

b) What factors do you think account for resistance to or lack of responsiveness to these

concerns?

25. a) What “next steps” are planned at your college or university to strengthen your

commitment to sustainability (such as an energy conservation initiative, a sustainable food

program, a course requirement on sustainability, or a new strategic plan reflecting

sustainability)?

b) What “next steps” do you feel ought to be taken?

Please add any additional comments below:

***Sustainability Assessment Questionnaire***

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Appendix 3(d)

**ARCHIBUS® Applications**

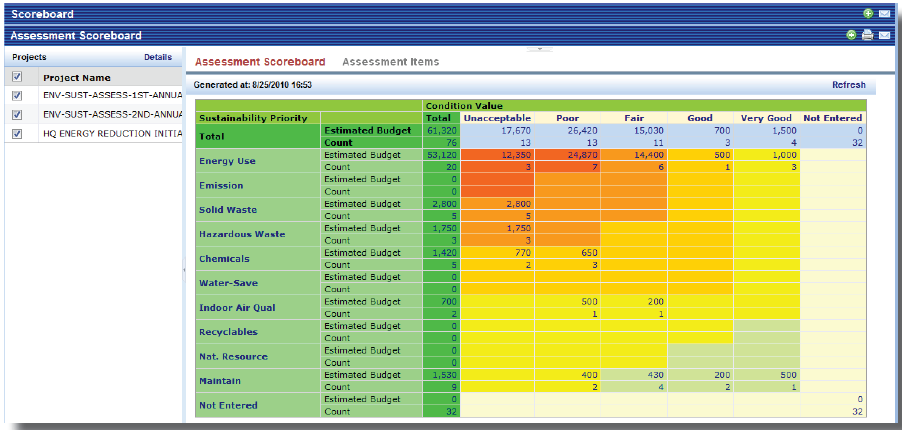
**Environmental Sustainability Assessment**

**Measure performance indicators and mitigate risk to Establishes proactive sustainability processes that can improve operational efficiencies, enhance stakeholder work environments, and boost asset value**

**• Identifies which assets should be repaired, renovated or replaced to achieve environmental efficiency goals or support an existing LEED™ rating program**

**• Improves capital budgeting and planning capabilities by tracking costs and budgets associated with environmental deficiencies**

**• Increases efficiency of sustainability efforts by integrating assessment with work order management and by using a unified data repository**



<http://www.archibus.com/index.cfm/pages.content_application/template_id/835/section/Environmental%20Sustainability%20Assessment/path/1.3.29.101/menuid/101>

Appendix 3(e)

**CAMPUS SUSTAINABILITY ASSESSMENTS**

**Online Resources**

**Campus Sustainability Assessment Framework**

http://syc-cjs.org/gitp/en/framework.htm

The Greening the Ivory Towers Project uses Canada’s first Campus Sustainability Assessment

Framework ***(CSAF)*** to identify the performances of the campuses activities and practices. The CSAF was developed through the academic research of Lindsay Cole, M.Sc. and a co-research team consisting of university faculties, students and administrators, and government representatives from all over Canada.

**Campus Sustainability Assessment Project**

http://csap.envs.wmich.edu/pages/res\_csa.html

Whether you're looking for actual assessment tools or simply researching literature on the subject, the Campus Sustainability Assessment Project is an excellent resource. It provides an extensive, searchable record of assessment projects throughout the United States, and beyond, identified through literature searches, web searches, and interviews and correspondence with campus leaders. The database notes the documentation of over 1,100 assessment projects, and select projects from 11 other countries. The database documents project and institution characteristics and attempts to provide current contact information and web links, where available.

**Campus Sustainability Snapshot**

http://www.njheps.org/assessment/guide.htm

The New Jersey Higher Education Partnerships (NJHEPS) Campus Sustainability Snapshot accepts the widely-held view that "sustainability" is the fulfillment of present needs without compromising the ability of future generations to meet their needs. With this in mind, developers have selected ten areas to assess that have large potential impacts on sustainability, depending on an institution's choices. Indicators include solid waste, energy, water/sewage, food service, new structures, procurement and curriculum.

**Ecological Footprint**

http://www.redefiningprogress.org/footprint/

Redefining Progress's Ecological Footprint Analysis measures the amount of renewable and nonrenewable ecologically productive land area required to support the resource demands and absorb the wastes of a given population or specific activities.

**Greenhouse Gas Inventory Guide**

http://www.lclark.edu/~seed/ghginventoryguide.pdf

As the creator Julian Dautremont-Smith notes in the guide’s introduction, a serious effort to reduce greenhouse gas emissions requires establishing baselines from which to measure progress and to provide a foundation for meeting and setting targets. This guide presents an invaluable resource for those interested in greenhouse gas reductions.

**Sustainability Assessment Questionnaire (SAQ)**

http://www.ulsf.org/programs\_saq.html

The SAQ is a qualitative questionnaire designed to help you assess the extent to which your college or university is sustainable. It aims to: raise consciousness and encourage debate about what sustainability means for higher education practically and philosophically; give a snapshot of the state of sustainability on your campus; and promote discussion on next steps for your institution. The SAQ is used in a 3-4 hour exercise with a group of approximately ten representatives including staff, students, faculty and administrators.

**Sustainability Pathways Toolkit**

http://www.goodcompany.com/campus/assessmentinfo.htm

Good Company offers comprehensive campus assessments that provide a clear view to the road to sustainability. Independent assessments provide meaningful snapshots of campus performance that include stakeholders, reduce costs, increase effectiveness of planning and communication, and align values with actions. Good Company's Sustainability Pathways Toolkit can be customized to meet each campus' specific needs.

**Organizations**

**EFS West**

http://www.efswest.org

The Education for Sustainability Western Network (“EFS West”) is a professional association of

individuals and institutions working to make sustainability a central focus of higher education in the western U.S. and Canada. The network was founded in 2001 as a partnership with Second Nature. Using existing indicators and assessment tools, EFS West will work with member institutions to develop a regional assessment framework to be used in creating a Campus Sustainability Report Card for the western region. The report card will include both comparable and campus-specific data. While the report card is one goal, another is to foster a participatory process on each campus to develop meaningful sustainability indicators. The process itself will stimulate learning and understanding of what sustainability is all about, something that is hard to get across without hands-on experience.

**Good Company**

http://www.goodcompany.com/about/index.htm

Good Company is a research and consulting firm that helps clients measure, manage, and market their social and environmental performance. We help clients identify risks and opportunities that address both short-term challenges as well as long-term value creation.

**New Jersey Higher Education Partnership for Sustainability**

http://www.njheps.org/assessment.htm

The New Jersey Higher Education Partnership for Sustainability (NJHEPS) is a consortium of 37 New Jersey higher education institutions. Its mission is to transform the higher education community to consistently practice sustainability and to more effectively contribute to the world’s emerging understanding of sustainability, through teaching, research, outreach, operations, and community life.

**Redefining Progress**

http://www.rprogress.org/newabout/index.shtml

Redefining Progress (RP) works with a broad array of partners to shift the economy and public policy towards sustainability. The Sustainability Indicators Program – which includes the Ecological Footprint – documents where people really stand with respect to natural and social limits, and helps businesses and communities and governments analyze their progress toward sustainability.

**Second Nature**

http://www.secondnature.org

Since 1993, Second Nature has been dedicated to accelerating a process of transformation in higher education. We assist colleges and universities in their quest to integrate sustainability as a core component of all education and practice in order to make human society healthy, fair, economically secure and ecologically thriving for all current and future humans and other species. Anthony Cortese, President of Second Nature, visits campuses across the U.S. empowering and consulting with higher education stakeholders to move from good intentions to concrete actions.

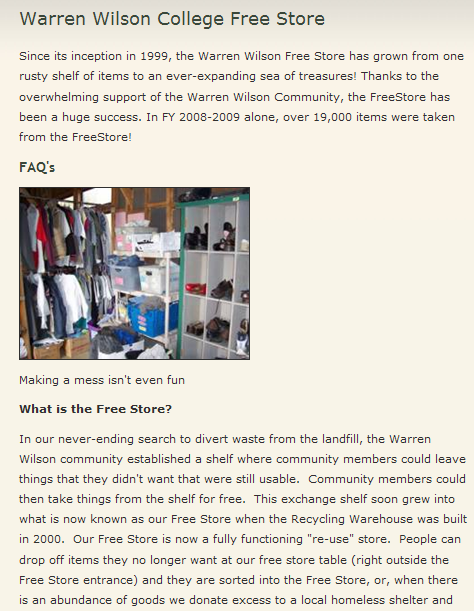
**University Leaders for a Sustainable Future**

http://www.ulsf.org

The mission of the Association of University Leaders for a Sustainable Future (ULSF) is to make

sustainability a major focus of teaching, research, operations and outreach at colleges and universities worldwide. ULSF pursues this mission through advocacy, education, research, assessment, membership support, and international partnerships to advance education for sustainability.

Appendix 10



<http://www.warren-wilson.edu/~recycle/freestore.php>

**Appendix 2**

