



The University of Wisconsin Oshkosh

Campus Sustainability Plan

Draft

October 2007

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I. Executive Summary

"Sustainability implies that the critical activities of a higher education institution are (at a minimum) ecologically sound, socially just, and economically viable, and that they will continue to be so for future generations. A truly sustainable college or university would emphasize these concepts in its curriculum and research, preparing students to contribute as working citizens to an environmentally sound and socially just society. The institution would function as a sustainable community, embodying responsible consumption of food and energy, treating its diverse members with respect, and supporting these values in the surrounding community."

Association of University Leaders for a Sustainable Future (www.ulsf.org)

"Education for sustainability is a lifelong learning process that leads to an informed and involved citizenry having the creative problem-solving skills, scientific and social literacy, and commitment to engage in responsible individual and cooperative actions. These actions will help ensure an environmentally sound and economically prosperous future."

The Presidents Council on Sustainable Development (www.ffof.org/pcsd)

A. RATIONALE FOR A CAMPUS SUSTAINABILITY PLAN

The rationale for developing a campus sustainability plan includes consideration of the current state of the world, and the role that a large institution can play in shaping the future. Environmental issues and their social impacts and causes have precipitated debates about how a healthy, prosperous and just future will be produced. Universities already play unique roles in educating society and conducting research, and large universities such as UW Oshkosh can demonstrate facilities management at a scale relevant to urban communities. Thus, UW Oshkosh can lead and help develop sustainable practices by educating and by example. The challenges imposed by a small land area, urban setting, large commuting population, importing of materials and energy, and exporting nearly all wastes, are relevant to surrounding communities and many like them around the world. Over the last five years, the institution has created campus master plans, conducted an environmental audit, and made material investments in infrastructure, staff and infrastructure. The university today is recognized as a leader in operations, teaching, and campus events related to sustainability. In addition, UW Oshkosh has institutional vision and mission statements that support the inclusion of sustainability as an institutional goal. But the university had not developed a campus sustainability plan to help coordinate and guide further transitions.

B. CHANCELLOR'S CHARGE

On October 2nd, 2006, Chancellor Wells established a Campus Sustainability Team and charged it with the responsibility of developing an integrated Campus Sustainability Plan (CSP) which would guide the University in an effort to be a leader in responsible environmental stewardship, education, outreach and research. The twenty three members of the team comprise a wide spectrum of students, faculty and staff and were selected because of their expertise and commitment to work together toward sustainability goals.

C. INTENT

The Campus Sustainability Plan is a dynamic document intended to provide a roadmap for major

steps toward sustainability over the next five years. Four functional areas (Operations, Teaching, Outreach and Research) and an Organizational Structure section have established a series of goals, objectives and recommendations. The goals of all areas are interconnected and integrated, and individual elements may be referred to in several locations throughout the document.

D. PROCESS

The Campus Sustainability Team formed four squads to generate ideas on the topics of Operations, Teaching, Research and Outreach. These squads generated a wide range of ideas that were summarized into 113 recommendations. A series of online surveys was made available to the entire team, who were asked to rank the recommendations in terms of breadth (how much the campus would be impacted) and depth (would the individuals impacted gain understanding of sustainability). The plan was drafted by a writing committee of volunteers from the team (S. Arndt, D. Barnhill, J. Feldman, M. Lizotte). The draft was circulated to the entire team and two meetings were held to gain input to this document.

E. PLAN HIGHLIGHTS

The plan is arranged in five main sections (Organization, Operations, Teaching Research, and Outreach), with an Introduction, Conclusion, Table of Goals and Recommendations, Glossary, and Appendices. Each of the main sections includes an introduction and long term vision, history, goals and specific recommendations. The operations and teaching sections are divided into subsections to address the large numbers of recommendations generated. Specific recommendations are categorized as either possible today (“immediate consideration”) or requiring more time (“future consideration”, defined as within 5 years). Below we list all the vision and goal statements in the document. Specific recommendations are only provided for immediate organizational needs. The highlights below were selected to give the reader a sense of the magnitude and scope of campus sustainability planning. For more depth and details, readers will need to turn to specific sections of the document outlined below.

E.1. Organization

The goal and recommendations in this section of the plan were deemed crucial to launching a coordinated effort to carry out the campus sustainability plan. Success in all other areas of the plan is dependent upon sound organization and structure. The long-term vision is to have positions, offices, and resources sufficient to support initiatives for, and enhance the importance of, sustainability in all facets of campus life.

Goal: To establish an organization capable of supporting campus sustainability initiatives as soon as is feasible, but within twelve months of the adoption of this plan.

The main recommendations to support this vision and goal are:

- Create a permanent Campus Sustainability Council
- Create a permanent full time position with the title of Campus Sustainability Director.
- Establish Unit Level Sustainability Coordinators from each functional area
- Designate sustainability responsibilities for Administrators
- Establish a Campus Sustainability Fund

A budget of \$150,000 is recommended for launching this important strategic initiative.

E.2. Operations:

The operations section contains eleven sub-sections covering a wide range of activities. The long term vision is that UW Oshkosh will conduct all aspects of campus operations in a fashion that is ecologically sound, socially just, and economically viable. The campus will assume a leadership role in the effort to create a truly sustainable campus with the goal to have a net zero impact upon the climate and environment. The sub-sections and associated goals are:

E.2.a. Electrical Energy Management and Conservation. Goal: To become a national role model for electricity conservation through the rigorous implementation of emerging technology to increase efficiency, and the application of policy-based conservation practices to reduce waste. Our goal is to reduce overall electrical consumption 20% from 2005 levels by 2012.

E.2.b. Campus Heating. Goal: To reduce the annual consumption of fossil fuels for heating by 50% from 2000 levels by 2012.

E.2.c. Sustainable Energy. Goal: UW Oshkosh is pursuing the ambitious goal of becoming 100% independent of fossil fuel energy for electricity, heating and cooling.

E.2.d. Fresh Water Conservation. Goal: To reduce overall water consumption levels by 50% from 2000 levels by 2012.

E.2.e. Storm Water Management. Goal: Reduce the amount of total suspended solids coming off of the campus by 20% before 2008 and 40% before 2013 (from 2006 baseline).

E.2.f. Facilities Planning, Renovations and Construction. Goal: Energy efficient and sustainable design standards shall be utilized on all new construction and applicable renovation projects undertaken after 2007. As of that deadline, all construction and renovations projects shall seek to meet or exceed a LEED “Silver” level of sustainability.

E.2.g. Transportation. Goal: To reduce automobile trips to campus by 20% by 2012, through incentives and improvements in sustainable alternatives.

E.2.h. Purchasing. Goal: Develop and follow sustainability-focused purchasing policies in more than 50% of spending for campus materials and equipment by 2012.

E.2.i. Solid Waste Management. Goal: Reduce production of municipal solid waste by 30% from 2000 levels by 2012.

E.2.j. Food Services. Goal: Minimize the environmental and social impacts of operations (including indirect impacts of suppliers) while continuously providing a variety of nutritious and sustainably-grown foods.

E.2.k. Grounds Maintenance. Goal: Increase biodiversity and usable green space of the campus while reducing dependence on fossil fuels, other extracted minerals, chemical fertilizers and pesticides.

E.3 Teaching

The long-term vision is to link the university's formal teaching mission and informal teaching opportunities to develop understanding, attitudes and habits that promote sustainability. This section of the plan suggests a variety of ways that UW Oshkosh can improve the way that it teaches sustainability, both inside the classroom and outside of it.

E.3.a Curriculum. **Goal:** Sustainability should be a recognized, emphasized, and common theme across colleges, departments and general education initiatives. Students should have extensive and diverse opportunities to study sustainability in their coursework.

E.3.b. Extra-curricular Awareness Raising Across Campus. **Goal:** To raise awareness of students and staff through participation in campus sustainability activities that take place outside of the formal classroom. Doing so will increase our chances of generating a campus-wide commitment to sustainability.

E.3.c. Campus Events. **Goal:** To offer a large number and wide variety of well-attended events that teach and promote sustainability, and to coordinate and promote those events.

E.3.d. Internships, Service Learning, Volunteering. **Goal:** To expand the opportunities for students to garner hands-on experience in a wide range of sustainability initiatives by increasing the number of available internship, service learning, and volunteer experiences.

E.4. Research

The long term vision is that scholarly activities by faculty, staff and students generate and test ideas for creating a sustainable future. This section of the plan is primarily a vision of how to create future opportunities.

Goal: To develop and maintain research and scholarship that supports campus sustainability efforts, contributes to the professional development of staff, and challenges students to apply their emerging skills and knowledge.

E.5. Outreach

The long term vision is that the university is well-known throughout the region and country as a source of information and inspiration about sustainability. This part of the plan focuses on ways of sharing knowledge with the broader community.

Goal: To develop and maintain sufficient outreach efforts so that the sustainability lessons learned by UW Oshkosh are known, appreciated, understood, and used by the public.

F. CONCLUSION

A concluding section looks at the most significant recommendations from different perspectives, which may help guide decision making and investment at the highest levels of the institution.

The first perspective is time, discussing the recommendations that can be completed in the short-term from those requiring more time. The second perspective is to categorize recommendations in action-related terms of: Studies Needed, Plans and Policies, Awareness Raising, Staffing, and Buildings and Grounds. Finally, the conclusion discusses the expectations for success based on the current momentum to build a sustainable institution in a sustainable community in a sustainable world.

II. Introduction

Experts in various disciplines and arenas have shown that human impacts on the environment are creating situations that lower the capacity of Earth to support humanity and other life forms, and that in certain key arenas the situation is likely to deteriorate. Efforts to mitigate the problem have revolved around the concept of humanity living in a sustainable fashion.

Although there are various definitions of sustainability, the basic meaning is living in a way that ensures that future generations enjoy the benefits of a healthy environment and social well-being. Sustainability is not limited to environmental concerns but rather integrates three dimensions: ecological integrity, social justice, and economic well-being. It is also not limited to merely preserving resources. It also includes positive steps toward ecological, social, and economic health.

UW Oshkosh has been making significant steps towards a sustainable future. Over the last five years, the institution has created campus master plans, conducted an environmental audit, and made material investments in staff and infrastructure. The university today is recognized as a leader in operations, teaching, and campus events related to sustainability. But the university has not developed a campus sustainability plan to help coordinate and guide further transitions.

In higher education, the notion of sustainability has special meanings. University Leaders for a Sustainable Future (ULSF) has stated that: "Sustainability' implies that the critical activities of a higher education institution are (at a minimum) ecologically sound, socially just, and economically viable, and that they will continue to be so for future generations. A truly sustainable college or university would emphasize these concepts in its curriculum and research, preparing students to contribute as working citizens to an environmentally sound and socially just society. The institution would function as a sustainable community, embodying responsible consumption of food and energy, treating its diverse members with respect, and supporting these values in the surrounding community."

As this definition suggests, there are various aspects to sustainability in higher education. Four dimensions are often highlighted: teaching, research, operations, and outreach, with the notion of sustainability having different nuances in each. The Presidents Council on Sustainable Development has added that "Education for sustainability is a lifelong learning process that leads to an informed and involved citizenry having the creative problem-solving skills, scientific and social literacy, and commitment to engage in responsible individual and cooperative actions. These actions will help ensure an environmentally sound and economically prosperous future." Education for sustainability, then, seeks to empower students with a deep sense of environmental and social citizenship and with the knowledge and skills needed to work effectively for sustainability. Sustainability in research involves gaining expertise and communicating new ideas that enable society to create a sustainable future. Sustainability in operations involves minimizing our ecological footprint and ensuring an economically and socially just community on campus. Sustainability in outreach includes sharing that knowledge with the broader community, as well as obtaining financial resources necessary to do all of these goals.

Team Creation

On October 2, 2006, Chancellor Wells established a Campus Sustainability Team and charged it with the responsibility of developing an integrated Campus Sustainability Plan (CSP) which would guide the University in an effort to be a leader in responsible environmental stewardship, education, outreach and research. The full text of the Chancellor's Charge memo is attached in Appendix A, and specific elements, Team Goals, and Plan Goals are listed below:

Chancellors Charge

The Campus Sustainability Plan will:

- ❖ Indicate how the plan is an outgrowth of UW Oshkosh's Governing Ideas, an endorsement of Earth Charter, and a recognition of the university's responsibility to work toward a sustainable future.
- ❖ Help ensure that our campus sustainability is comprehensive, including operations, teaching, research, and outreach.
- ❖ Make substantive recommendations for achieving sustainable operations and sustainability education based on environmental audits and needs assessments.
- ❖ Increase the sense of environmental and social citizenship of UW Oshkosh as a whole and as one goal of our students' education.
- ❖ Cultivate awareness and appreciation on campus of sustainability, its relevance throughout the university, our responsibility to promote it.
- ❖ Be distributed for consideration by governance groups, vice chancellors and deans.

Team Goals

In accomplishing the team charge, the Team will pursue the following goals:

- ❖ Maximize campus ownership of the planning process and the resulting plan;
- ❖ Involve internal and external University constituents in the on-going operational planning and refinement process;
- ❖ Analyze the current level and significance of sustainability in operations, teaching, research, and outreach;
- ❖ Analyze the resources being used for campus sustainability and estimate additional resources needed;
- ❖ Clarify the notion of campus sustainability, learning from how other campuses and organizations conceptualize sustainability and put sustainability into practice; and
- ❖ Establish criteria for UW Oshkosh to be a model institution dedicated to sustainability.

Sustainability Plan Goals

The proposed goals should:

- ❖ be easy to measure, so as to hold UW Oshkosh accountable for progress
- ❖ avoid confusion with broad strategies and action plans
- ❖ align with, or minimize conflicts with, other university strategic and operational plans
- ❖ share responsibility and benefits with the whole University
- ❖ be engaging and strategic
- ❖ demonstrate a grounding in baseline data and needs assessments
- ❖ apply both internally and externally to university-related activities.

Team Membership

Twenty six members of the campus community participated in the plan development. The Campus Sustainability Team comprises a wide spectrum of students, faculty and staff who were selected because of their expertise and commitment to work together toward sustainability goals. Listed below are the members who have served on the Campus Sustainability Team:

Steven Arndt (Co-Captain, Facilities Management)
David Barnhill (Environmental Studies)
Michael Burayidi (Geography & Urban Planning)
James DeDecker (student)
Iryna Depenchuk (student)
Cathy Deringer (Grounds Crew, Facilities Management)
Jessi Dresen (student)
Steve Dunn (Business Administration)
Jim Feldman (Environmental Studies)
Tom Fojtik (Residence Life)
Marcy Hauer (Chemistry Stockroom)
Chuck Hermes (Facilities Management)
Jim Johnson (Purchasing)
Tamara Jones (student)
Jacob Jungers (student)
Michael Lizotte (Co-Captain, Aquatic Research Laboratory)
Colleen McDermott (Biology & Microbiology)
Greg Olson (student)
MaryBeth Petesch (COEHS)
Dan Potratz (student)
Andy Robson (L & S Dean's Office)
Olesya Savchenko (student)
Adam Stern (student)
Dani Stolley (Foundation)
Marty Strand (University Dining)
Mark Streufert (Facilities Management)
Abby VanStraten (student)
Michelle Wentz (Residence Life)

Plan Development Process

The Campus Sustainability Plan (CSP) was developed as a result of a year long effort by team members. Listed below are highlights of that effort:

October 2006: Chancellor's charge to the team

November 2006 to February 2007: Team divides into four squads based upon Operations, Research, Teaching and Outreach components of the plan. Squads meet on a regular basis to research, analyze and develop potential recommendations for the plan.

April-May 2007: Team performs and on-line ranking exercise of assembled recommendations.

June 2007: Team co-chairs meet with Chancellor to provide a status update on the plan.

June – August 2007: Writing team begins work on the creation of a draft plan with a completion date of late August 2007. The writing team is composed of the following individuals: Steven Arndt, Michael Lizotte, David Barnhill, and Jim Feldman.

August –November 2007: Draft plan reviewed by various governance groups, and other entities. Plan placed on the web for public comment. Revisions to plan based upon feedback from campus community.

January 2008: Anticipated completion of revisions. Final version of plan placed on the web.

Plan Organization

The Campus Sustainability Plan contains an Executive Summary, an Introduction, five sections containing specific recommendations (Organization, Operations, Teaching, Outreach and Research) and a Conclusion. The recommendation sections are organized in a similar fashion, starting out with a long term vision, an introduction, major goal, history of campus activity, and an action plan. The action plan contains recommendations for achieving the stated goals. These recommendations are categorized as either for immediate consideration or for long term consideration. The appendices contain more detailed information regarding components of the plan.

III. Organization

A. Introduction. To be effective in making sustainability a more significant part of the campus, we need to formalize and institutionalize the university's commitment to sustainability by creating structures and positions that assist in the development, coordination, and oversight of the sustainability initiative. The Campus Sustainability Team considers the recommendations in this section of the plan to be crucial to launching a coordinated effort to carry out the campus sustainability plan. Success in all other areas of the plan is dependent upon sound organization and structure.

B. Long-term vision: To have positions, offices, and programs sufficient to support initiatives for, and enhance the importance of, sustainability in all facets of campus life.

C. Goal: To establish an organization capable of supporting campus sustainability initiatives as soon as is feasible, but within twelve months of the adoption of this plan.

D. History: In recent years, sustainability efforts at UW Oshkosh have been supported by various individuals, offices, and programs, from the Chancellor to student volunteers. A Campus Sustainability Intern position was started in 2005 with financial support from Johnson Controls, which focused on auditing the energy and water use on campus (the position is no longer active). The ES Program established a Green Events Coordinator in 2006 to coordinate sustainability events on campus. In 2006 the Chancellor established the Campus Sustainability Team to create a sustainability plan for the campus. However, this work has generally been done by individuals on top of a full slate of other duties and obligations, making support of sustainability conflict with regular job performance. In addition, we have proceeded without someone who coordinates and has expertise in all the aspects of sustainability. As a result, there is inadequate development and coordination of all the various aspects of sustainability on campus.

E. Action plan recommendations.

In order to adequately carry out the ambitious goals contained in this plan, the following organizational changes should be implemented:

- *Create a permanent Campus Sustainability Council, with representation from across campus, to continue to advise campus leaders on sustainability initiatives.*
- *Create a permanent full time position with the title of Campus Sustainability Director. This individual will be tasked with responsibility for coordination across all sustainability related activities. The individual will possess an advanced degree in an appropriately related field and have expertise in energy, environmentalism, ecology and sustainability.*
- *Establish Unit Level Sustainability Coordinators from each functional area. Coordinators will be trained in sustainability initiatives and policies and act as a local resource and sounding board for sustainability related matters.*

- *Designate sustainability responsibilities for Administrators to institutionalize the university's commitment to sustainability.*
- *Establish a Campus Sustainability Endowment Fund to provide a method for donors to contribute to sustainability and to provide a reliable and continuing source of funds for the future.*

These five recommendations would combine to provide the attention, effort, and resource gathering needed to accomplish specific recommendations listed elsewhere in this plan.

F. Organizational Relationships

While the CST generated many specific ideas about how the organizational recommendations might be implemented (see Appendix C) several are critical to understand how the recommendations are linked:

1. Campus Sustainability Council

The council is advisory to the Chancellor and the Campus Sustainability Director. The leadership of the council could be shared (e.g. co-chaired) by staff with demonstrated commitment to sustainability representing both teaching and operational aspects of the university. The goal would be to provide a balanced, well-informed, and objective leadership for this administration-advising body.

The council makes recommendations to the Chancellor on:

- priorities for sustainability plan goals
- soundness of an annual plan and budget drawn up by the Campus Sustainability Director
- campus wide sustainability procedures and policies
- membership in off-campus sustainability organizations or initiatives
- performance of the director.

2. Campus Sustainability Director

The director could have other stand-alone duties, such as:

- foster coordination and communication between individuals and units
- collect and manage data vital to implement and assess the Campus Sustainability Plan, including an annual environmental audit
- assist and support efforts of students by supervising interns and collaborating with student groups
- seek funding and manage grants and contracts
- lead on sustainability training, outreach and publicity (e.g. website, presentations, press releases, events)
- assist faculty teaching by providing information and sharing expertise
- facilitate collaboration with other universities and outside organizations
- assist with sustainability research
- teach a course in sustainability.

3. Campus Sustainability Coordinators

The coordinators would extend the director's capacity to inform the campus community and receive feedback by:

- transferring information to and from major functional areas of the campus
- receiving more training to be able to serve as resource specialists.

4. Administrators

Administrators could call on the director and council to develop and implement strategies for meeting sustainability goals in the area of responsibility. The director, council, coordinators and administrators could all play roles in creating and fostering alliances with surrounding communities, groups and businesses.

G. Funding Options

The human resources described above will need financial and institutional support. The recommendation to establish a fund would provide one instrument for focusing resources, e.g. by collecting donations, revenues, or cost-savings. This would be in addition to using existing means to procure funding through the state, grants, and contracts. Discussions could also be undertaken with the UW Oshkosh Foundation and student organizations about ways they might wish to contribute to fundraising. Regardless of which funding sources are identified, the human resources are a prerequisite to being able to request and manage any financial and institutional resources.

H. Budget Recommendation

An appropriate level of funding will be required for successful implementation of Campus Sustainability Plan. To support the human resources listed above, UW Oshkosh will need to establish an office for the director (space, equipment, supplies, and clerical support). Student assistants would be extremely valuable given the scope (e.g., auditing, planning, outreach) and the importance of student involvement and engagement. The director should have a travel and conference budget (for themselves and campus representatives) and should be provided with funds to host meetings, workshops and training sessions for the campus community. Council chairs (or the units they are re-assigned from) should also be compensated.

Listed below is the recommended budget for the first year of this initiative:

Salaries

Salaries (1 FTE Director, 0.5 FTE Program Assistant)	\$90,000
Student Assistants	\$21,000

Office Start-up (one-time cost)

Equipment and Website Development	\$5,000
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Supplies and Expenses

Consumables	\$2,000
Travel and conference attendance	\$6,000
Memberships	\$2,000
Hosting Programs and Workshops	\$14,000
Compensating units for council chair time	<u>\$10,000</u>
TOTAL	\$150,000

While the budget recommendation is significant, it is by no means out of line for implementing such a major initiative. This initial budget recommendation is considered the minimum funding level necessary to launch this strategic initiative. It is highly probable that additional resources may become necessary to support the initiative in future years. This first Campus Sustainability Plan is not intended to assess costs, benefits, or sources of funding for each recommendation; however, these dimensions should be considered carefully for any and all initiatives the university chooses to implement.

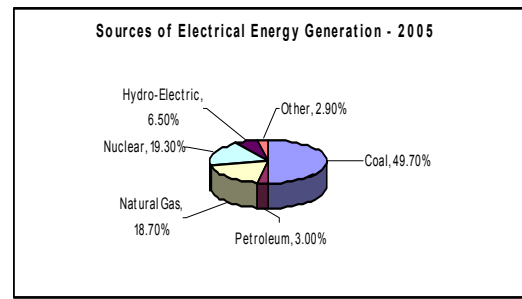
IV. Operations

The operations section of the plan contains eleven sub-sections covering a wide range of activities.

Long Term Vision: UW Oshkosh will conduct all aspects of campus operations in a fashion that is ecologically sound, socially just, and economically viable. The campus will assume a leadership role in the effort to create a truly sustainable campus with the goal to have a net zero impact upon the climate and environment.

A. Electrical Energy Management and Conservation

1. Introduction: One aspect of life in the developed world is a reliance on electrical energy characterized by extremely high levels of electricity energy consumption, as compared to developing countries. The majority of electrical power generated in the United States (and Wisconsin) is from burning fossil fuels, such as coal, natural gas and oil, to create electrical energy. The bi-products of the combustion process are indisputably linked to the growing problems of air pollution and global climate change. Another major fraction of electricity is generated by nuclear power plants, with growing, unmet needs for proper disposal of nuclear wastes. While a shift to sustainable sources of energy will eventually mitigate some of these problems, immediate efforts can also be taken to reduce the consumption of electricity on campus.



Sources of Electricity in U.S

2. Goal: To become a national role model for electricity conservation through the rigorous implementation of emerging technology to increase efficiency, and the application of policy-based conservation practices to reduce waste. Our goal is to reduce overall electrical consumption 20% from 2005 levels by 2012.

3. History: UW Oshkosh has a significant record of achievement related to electricity conservation.

a. Wisconsin Energy Initiative (WEI) – UW Oshkosh participated in a statewide energy efficiency program called the Wisconsin Energy Initiative (WEI). The program teamed state agencies with energy companies and involved the performance of a series of energy efficiency retrofits to existing facilities. (See Appendix D for details)

b. Other renovations projects funded through the state All Agency program have contributed to energy conservation:

- (1) Replacement of old, inefficient building chiller systems with a central chilled water plant in 2001 and 2006. This plant serves the major core of the campus.
- (2) Replacement of the old inefficient chiller system serving the main dining facility, Blackhawk Commons, in 2006.

c. Energy Management Practices: The facilities management department has aggressively managed the energy consumption within existing facilities by:

- (1) Utilizing the computer energy management system to schedule the heating and cooling of facilities based on occupancy and use. This is particularly important on weekends, evenings and during summer school.
- (2) Programmed thermostats to provide temperatures of 69 degrees in the winter and 74 degrees in the summer.

d. Awards and Recognition: The University of Wisconsin Oshkosh received an EPA Energy Star award in 2005 for devising a method to place computers into a sleep mode when not in use.

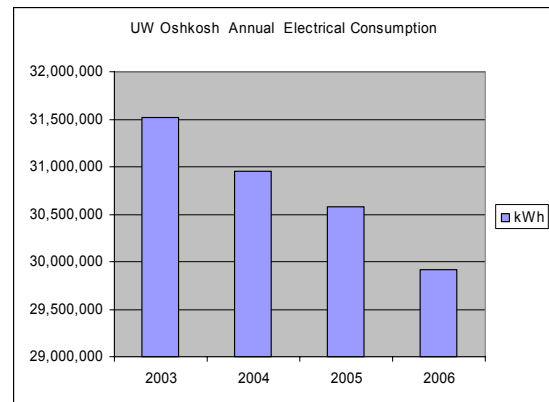


4. Results.

From 2003 to 2006, UW Oshkosh has reduced its annual electrical consumption from 31.5 million kWh to 29.9 million kWh, which equates to a **5% drop** during that time period.

By reducing electrical consumption by this amount, the following emissions are avoided on an annual basis over as compared to emissions in 2003:

Carbon Dioxide: 1,200 tons
 Sulfur Dioxide: 10 tons
 Nitrous Oxide: 4 tons



5. Recent State Government Initiatives

Wisconsin Executive Order 145, April 11, 2006, directs state agencies to:

- a. meet electricity efficiency (per square foot) goals of a 10% reduction from FY05 energy consumption levels by FY08, 15% reduction by FY09, and 20% reduction by FY10.
- b. establish programs for energy analysis of state owned buildings and identify reduced energy use.
- c. permit performance contracting for energy and operational cost savings.
- d. ensure that new state facilities are constructed to be 30% more energy efficient than commercial code.

As a result of this executive order, UW Oshkosh is currently working with three other state campuses (UW Stevens Point, UW Green Bay, and UW River Falls) and officials from the Department of Administration to develop a Request for Proposals (RFP) for Energy Conservation Services and Guaranteed Energy Savings Projects. The goal of this effort is to retain an Energy Services Company (ECO) at each campus that will perform an energy audit and then implement energy savings projects. The recommendations in this plan will be shared with the audit team for inclusion in the report findings.

6. Action Plan

The 20% energy reduction mandate contained in Executive Order 145 provides the rationale, support and justification for the specific action plan goals contained in this section. This action plan is divided into two sections based upon priority. (See Appendix E for details and

justification for these proposals)

Immediate Consideration:

- *Review, verify and update campus audit data. Identify the campus facilities with the highest electrical energy consumption per square foot.*
- *Provide facility electrical usage feedback and education to campus users.*
- *Phase in the replacement of old, energy in-efficient equipment with Energy Star rated items. Require all new purchases of certain high energy consuming devices (i.e. refrigerators) to be Energy Star Rated.*
- *Establish guidelines for the connected (plug) load in all campus facilities.*
- *Turn off unnecessary lights during non teaching periods.*
- *During low useage periods (summer, interim, weekend) consolidate classroom useage to the most energy efficient buildings that meet course requirements.*
- *Permanently reduce light levels in hallways/corridors of all academic buildings by 20%.*

Future Consideration (within 5 years):

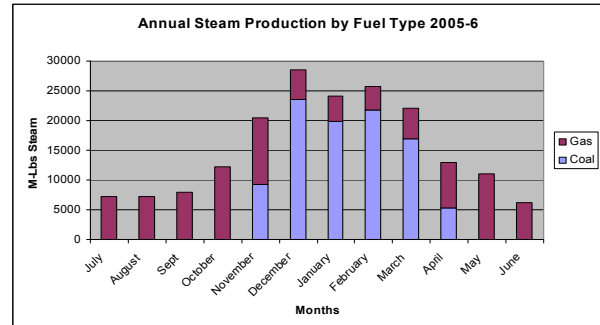
- *Convert pneumatic control systems to direct digital control (DDC).*
- *Convert or replace energy inefficient facility HVAC systems.*
- *Initiate studies of more efficient lighting options (e.g. LED) to estimate when retrofiting will be feasible.*
- *Determine the viability of installing a Thermal Ice Storage Facility.*
- *Install green roofing to reduce summer heat loading during renovations of existing buildings and as part of new construction.*

B. Campus Heating

1. Introduction: The Heating Plant, located on the north side of the campus, provides steam to all campus buildings throughout the year for heat, hot water and process uses at Blackhawk Commons and the Halsey Science Complex. The primary fuels for making steam are low-sulfur coal and natural gas. These fossil fuels are a significant contributor of greenhouse gases. Coal is the primary source for creating steam in the winter months while natural gas is the primary fuel used to provide steam over the warmer periods. Wisconsin Dept. of Natural Resources permit requirements stipulate the burning of a 10% mix of natural gas along with the coal during the winter months. The graph provides an illustration of the typical fuel consumption pattern for the heating plant.



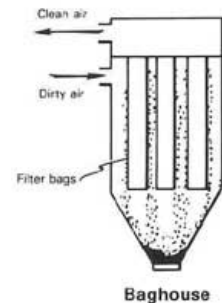
2. Goal: To reduce the annual consumption of fossil fuels for heating by 50% from 2000 levels by 2012.



3. History: Over the last six years, there have been a number of major renovations to the heating plant that have had a positive impact upon operational efficiency and environmental quality.

a. Controls Upgrade: In 2001 the controls system for the heating plant was upgraded to modern, digital based technology that allow for more precise control and monitoring of the combustion process.

b. Baghouse: In 2002, an environmental controls system, or baghouse was added to the heating plant exhaust system. Baghouses are fabric collectors that use filtration to separate dust particulates from dusty exhaust gases. They are one of the most efficient and cost effective types of dust collectors available and can achieve a collection efficiency of more than 99% for very fine particulates.



c. New natural gas boiler: In 2004, the existing 40 year old 15,000 lb/hr natural gas boiler was replaced with a new 25,000 lb/hr natural gas unit. This upgrade in capacity allowed for a better match of summer steam demand to available production capability.

In addition to the above mentioned facility upgrades at the heating plant, the following changes were made to improve the efficiency of the heating process:

d. Beginning in 2003, Facilities Management began to aggressively schedule the energy management system with the goal to heat and ventilate buildings only as necessary.

e. In 2005, mechanical technicians lowered and calibrated thermostats campus wide. In the process, they discovered and corrected numerous operational problems that were causing

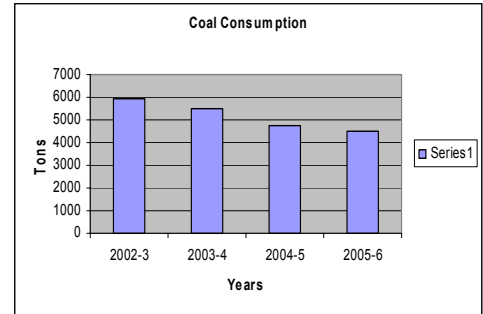
wasteful and uncomfortable levels of heating and cooling.

f. On an annual basis, steam traps are inspected and repaired. In 2005, as part of the Wisconsin Energy Initiative, the campus replaced and upgraded a significant portion of the campus inventory of steam traps.

4. Results

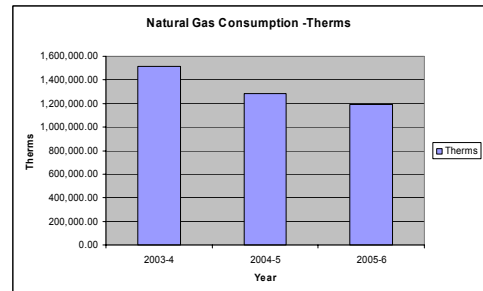
a. Coal Consumption

Annual coal consumption has dropped from 5,927 tons over the heating season of 2002-3 to 4,494 tons in 2005-6. This equates to a **24%** drop over four years. In addition, the exhaust from the heating plant is free from fine dust particulate that causes respiratory irritations and illness. This analysis factors in variations due to climate fluctuations. All of the reductions can be attributed to actual conservation/efficiency measures as opposed to a reduction based upon milder winter temperatures.



b. Natural Gas Consumption:

Annual natural gas consumption has dropped from 1,511,303.50 therms in 2004 to 1,192,987.2 therms in 2006. This equates to a **21%** drop in consumption over three years.



5. Action Plan: In order to achieve the stated goal to reduce the annual consumption of coal and natural gas by 50% from 2000 levels by 2012, a concerted effort must be made to significantly reduce our heating demand and consumption patterns. UW Oshkosh has already demonstrated that conservation works. This action plan is divided into two sections based upon priority. The following items are recommended (See Appendix F for details and justification):

Immediate Consideration:

- *Review, verify and update campus audit data. Identify the campus facilities with the highest thermal energy consumption per square foot.*
- *Provide facility thermal energy usage feedback and education to campus users.*
- *During low useage periods (summer, interim, weekend) consolidate classroom useage to the most energy efficient buildings that meet course requirements.*

Future Consideration (within 5 years):

- *Install solar hot water heaters at appropriate locations throughout the campus. Suggestions include Albee Hall and the Residence Halls.*
- *Install alternative heating and cooling systems at facilities not connected to the central system.*
- *Assess the possibility of burning alternative biomass fuels at the campus heating plant.*
- *Replace old, drafty single pane windows with high efficiency, low e, double or triple pane windows at the Clow Classroom and Faculty Tower Complex.*

C. Sustainable Energy

1. Introduction: Sustainable energy sources are those whose stock is rapidly replenished by natural processes, and which aren't expected to be depleted within the lifetime of the human species. Sustainable energy sources do not involve combustion of fossil fuels and therefore do not contribute directly to global warming or other degradation to the environment. They also avoid the use of nuclear fuels, and usually avoid direct production of toxic wastes. Sustainable energy technologies vary greatly in terms of embodied energy used and pollution emitted in building and maintaining equipment, or in the production of biofuels. Thus institutions need to proceed with caution and thorough studies before adopting and choosing amongst these new technologies.



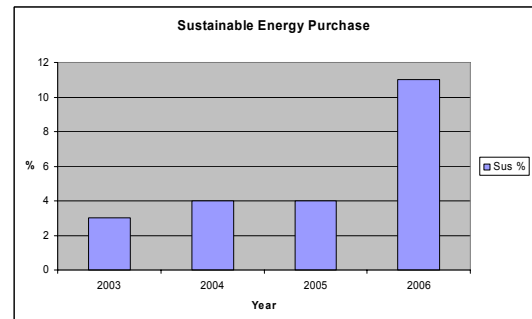
2. Goal: UW Oshkosh is pursuing the ambitious goal of becoming 100% independent of fossil fuel energy for electricity, heating and cooling.

3. History: UW Oshkosh has a significant record of achievement as a leader in the promotion and use of sustainable energy.



a. Sustainable Power Purchase

- (1) In 2003, UW-Oshkosh became the first Wisconsin university to join the Environmental Protection Agency's Green Power Partnership after it signed an agreement with its local utility, Wisconsin Public Service (WPS) Corp., to make renewable energy at least 3 percent of its annual energy purchase.
- (2) In 2004, UW –Oshkosh increased its commitment to at least 4 percent of its annual energy purchase.
- (3) In 2006, UW – Oshkosh increased its commitment once again to purchasing 11 percent of its annual energy from renewable sources (approximately 3.3 million kWh).



b. Awards and Recognition:

- (1) 2003 EPA Leadership Award: The eleventh university nationwide to be presented with this national award and the first Wisconsin university to join the Environmental Protection Agency's (EPA) Green Power partnership, receiving the EPA's Green Power Purchaser Award in 2003.
- (2) 2003-2004 National Wildlife Federation Campus Ecology Recognition Award
- (3) UW Oshkosh ranks 23rd among all US colleges and universities using renewable energy, and, for the past four consecutive years, has led all state agencies in the purchase of alternative energy.

4. Related Legislation

a. Wisconsin, 2005 Act 141, enacted into law on March 17, 2006, directed the Dept. of Administration to:

- (1) set energy standards for all energy consuming equipment purchased by state agencies.
- (2) develop energy standards for construction of state buildings.
- (3) establish goals for certain state agencies to purchase at least 10% of their total electricity from renewable energy sources by December 31, 2008, and at least 20% by December 31, 2011.

b. On September 27, 2006, Governor Doyle selected four campuses (including UW Oshkosh) to take part in a pilot program to become energy independent of fossil fuels by 2012. Upon completion, the schools will be the first state owned facilities capable of acquiring or producing renewable energy equivalent to their consumption.

5. Action Plan

Based upon the Governor's directive, UW Oshkosh has an overall goal of becoming 100% independent of carbon based fossil fuel energy by 2012. The campus, in consultation with the three other state universities, is working with the Department of Administration and our local utility company, Wisconsin Public Service Corp., to develop a plan to achieve this goal. Campus Sustainability Team has prepared the following list of recommendations for generating sustainable energy on campus that will contribute to achieving this goal (See Appendix G for justifications for these proposals).

- *Install integrated photovoltaic panels (solar panels) where feasible*
- *Study the feasibility of installing a biomass production facility to provide on-campus electrical generation*
- *Study the feasibility of installing biodiesel peak load shaving generators*
- *Evaluate the potential for the use of pressure reducing steam turbines in the campus central plant or at individual buildings, for electrical generation*
- *Explore the possibility of installing a small, demonstration wind turbine on campus.*

D. Fresh Water Conservation

1. Introduction: Water conservation refers to reducing use of fresh water, through technological or social methods. The goals of water conservation efforts include:

- **Sustainability** – To ensure availability for future generations, the withdrawal of fresh water from the ecosystem should not exceed its natural replacement rate.
- **Energy Conservation** – Water pumping, delivery and wastewater treatment facilities consume a significant amount of energy.
- **Habitat Conservation** – Minimizing human water use helps to preserve fresh water habitats for local wildlife and migrating waterfowl, as well as reducing the need to build new dams and other water diversion infrastructure.

Water used at UW Oshkosh is from Lake Winnebago, one of the largest lakes in the world. Thus, the campus does not have a major sustainability issue in terms of water supply. However, the water used at UW Oshkosh is processed by the City of Oshkosh to drinking water standards, an expensive process given how little of the water use is for human consumption. Thus, there is also a **financial benefit** to water conservation measures that provides a major incentive to conserve on the use of municipal drinking water to flush toilets, bathe, clean, and irrigate plants.

2. Goal: To reduce overall water consumption levels by 50% from 2000 levels by 2012.

3. History

a. 2000-2001: Water conservation measures:

- (1) Replaced 1,005 older 4.18 gallon per flush (gpf) toilets with 1.6 gpf toilets.
- (2) Installed low-flow faucet restrictors on sinks throughout the campus.

These efforts resulted in savings of over **11 million** gallons per year.

b. 2004-5: Replaced natural grass football field at Titan Stadium with an artificial grass surface that requires no irrigation. This effort resulted in an estimated savings of **0.85 million** gallons per year.

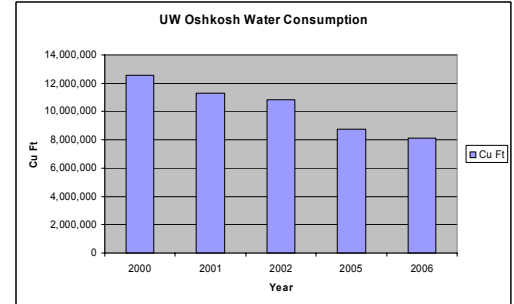
c. 2005-6: Water conservation measures

- (1) Retrofitted water-cooled systems at Blackhawk Commons, Scott and Gruenhagen with air cooled equipment
- (2) Replaced 63 older 4.18 gpf toilets with 1.6 gpf toilets
- (3) Installed 5 waterless urinals

These efforts resulted in savings of 6 million gallons per year.

4. Results

a. The cumulative effect of these efforts resulted in a **35%** drop in water consumption between 2000 and 2006. . These improvements now save UW Oshkosh over \$100,000 per year in water costs. In 2000, annual water consumption for the campus was 12,559,490 cubic feet. In 2006, that annual consumption level dropped to 8,143,000 cubic feet. The graph below illustrates this achievement:



5. Action Plan:

In order to meet the stated goal of reducing water consumption by 20% from 2006 levels by 2012, the following additional steps should be taken:

Immediate Consideration:

- *Review, verify and update campus audit data. Identify the campus facilities with the highest fresh water consumption per square foot.*
- *Provide water usage feedback and education to campus users.*
- *Publicize and encourage student, faculty, and staff to report water waste on campus.*

Future Consideration (within 5 years):

- *Install next generation waterless or low flow urinals in appropriate locations throughout the campus. It is estimated that each waterless urinal eliminates the consumption of over 45,000 gallons of water annually.*
- *Install the next generation of low flow toilets throughout the campus. Extreme low flow/dual flush toilets are now being manufactured that utilize less than 1.3 gallons per flush.*
- *Plan and plant landscaping so that water for irrigation may be acquired from storm water basins or ponds rather than using municipal drinking water.*
- *Reduce irrigation needs through landscape design, composted mulch, and other programs designed to conserve water in places where municipal drinking water is the only available water source.*

E. Storm Water Management

1. Introduction: Storm water runoff is coming under increasing scrutiny as both a source of pollutants to lakes and streams, and as a cause of depleted groundwater resources. Commercial parcels typically create more runoff per square foot than most other land uses, due mostly to large areas of impervious surfaces such as roofs and parking lots

2. Related Legislation

In February of 2007, UW Oshkosh submitted an application to receive a Wisconsin Pollutant Discharge Elimination System (WPDES) permit that governs the discharge of storm water from campus into the local storm water sewer system. The need for this permit developed in response to several Federal and State regulations pertaining to protection of clean water, including the Federal Clean Water Act 1972 and Wisconsin DNR Regulations NR 151, NR 216, and NR 116. The goals are derived from the requirements stipulated by the DNR as a result of regulations and WPDES permit requirements.

3. Goal: Reduce the amount of total suspended solids (TSS) coming off of the campus by 20% before 2008 and 40% before 2013. (2006 baseline)

4. History

Prior to the enactment of the WPDES permit requirements, the University of Wisconsin Oshkosh had undertaken the following steps related to storm water management:

- a. Developed a storm water management plan (currently in final draft status, awaiting DNR approval).
- b. Performed routine semi – annual cleaning of parking lots.
- c. Performed routine litter patrols of the campus
- d. Required the mandatory installation of silt fences around construction sites.

5. Action Plan: As has been the case with other sections, this action plan is divided into items that should receive immediate consideration and items that require a longer time horizon. In order to accomplish the goals listed in section C, the following recommendations should be enacted:

Immediate Consideration:

- *Consider a reduction in the use of ice melting salts on sidewalks and roads. Increase the use of sand to mitigate slipping hazard.*
- *Disconnect roof drains from storm water systems and divert water to ponds and other storm water retention devices.*
- *Install educational and informational signage designating all rain gardens constructed and stencil appropriate “no waste dumping” near all storm water inlets.*
- *Conduct ongoing stormwater public education and outreach program. Schedule public education events to coincide with Earth Charter Community Summit and Earth Day activities. The campus will develop a web page devoted to Storm Water Management education.*

- *Partner with the City of Oshkosh on permit conditions wherever and whenever possible. For instance the University will take responsibility for public education and outreach and the City will take responsibility for illicit discharge detection and elimination.*
- *Promote and incorporate environmentally sensitive site development throughout all campus planning and design activities.*
- *Implement DOA-DSF erosion control standards for all capital projects (new construction and maintenance and renovation) and report all incidents to the DOA-DSF Project Manager and/or Construction Representative.*
- *Implement DOA/DSF civil engineering and sitework design guidelines for all capital projects (new construction and maintenance and renovation)*

Future Consideration (within 5 years)

- *Create Biofilters at all existing storm drains to filter storm water as necessary to reduce suspended solids.*
- *Consider the installation of green roofing to mitigate storm water runoff on existing buildings and as part of new construction.*
- *Install underground cisterns to collect rooftop rain water for later use in irrigation.*
- *Monitor the development of porous pavements. When a suitable product comes available, install and test on campus.*



F. Facilities Planning, Renovations and Construction

1. Introduction: Construction and renovation projects impact campus sustainability in numerous ways. While the work is occurring, the university is responsible (directly or indirectly) for causing major increases in the use of materials, the energy used by construction equipment, air pollution from equipment, disturbance of soils, sediment runoff to local waterways, and generation of solid waste. Decisions made in the design and building phases will strongly affect these impacts, and will continue to affect the energy and maintenance costs of the building throughout its lifetime. The complexity of construction create multiple chances for setbacks to campus sustainability, but the opportunity to replace and repair poorly designed buildings can also allow for major improvements in campus sustainability.

The impact of sustainability upon the building design and construction process includes recent development of rating systems. The Leadership in Energy and Environmental Design (LEED) Green Building Rating System, established in 1994, provides a framework of design standards for assessing building performance through a variety of environmental indicators.

The LEED rating system addresses six major areas:

- Sustainable Sites
- Water Efficiency
- Energy and Atmosphere
- Materials and Resources
- Indoor Environmental Quality
- Innovation and Design Process



LEED recognizes achievements and promotes expertise in green building design and construction through a comprehensive system offering project certification, professional accreditation, training and practical resources.

LEED certification of construction projects is based upon a scoring system with a set of required “Prerequisites “ and a variety of “Credits” in the six major categories listed above. Buildings can qualify for four levels of certification:

- Certified - 40 to 50% of non-innovation points
- Silver – 50-60%
- Gold – 60-80%
- Platinum – over 80%

LEED certification is obtained after submitting an application documenting compliance with the requirements of the rating system.

2. Goal: Energy efficient and sustainable design standards shall be utilized on all new construction and applicable renovation projects undertaken after 2007. As of that deadline, all construction and renovations projects shall seek to meet or exceed a LEED “Silver” level of sustainability.

3. History

a. Several recent construction projects have been constructed in accordance with LEED design standards. These projects include the Renovations to Taylor Hall, the construction of the Student Recreation and Wellness Center, and the South Campus Parking Ramp.

b. The program design guidelines for the New Academic Building contain very aggressive energy goals. An excerpt is listed below:

“In order to support the Governor’s stated goal “to identify and implement technologies capable of replacing external power supplies currently serving their locations”, and in order to explore the physical, functional and cost implications of such a goal, the A/E will be expected to develop a program and conceptual design alternatives that will significantly reduce energy loads, increase operational efficiency and incorporate renewable energy sources, in addition to meeting the sustainable design goal of achieving a performance level equivalent to a LEED silver rating.”

4. Related Legislation

a. Wisconsin, 2005 Act 141, enacted into law on March 17, 2006, included a provision to “develop energy standards for construction of state buildings.”

b. On August 1, 2006 the DOA Division of State Facilities released a document entitled “Sustainable Facilities Guidelines” that applies for the design of all new state facilities. The guidelines are based on the LEED Rating System and

“...are designed to promote and ensure that state facilities are constructed and renovated in a sustainable manner, starting with initial project planning and continuing through occupancy and operation”

5. Action Plan As has been the case with other sections, this action plan is divided into items that should receive immediate consideration and items that require a longer time horizon.

Immediate Consideration:

- *Obtain funding for LEED certification for all building and renovation projects after 2007.*
- *Design and build all new facilities and perform all renovations to LEED Silver standards.*

Future Consideration (within 5 years)

- *Monitor the development of other sustainability and energy efficiency construction guidelines (i.e Energy Star, ASHRAE, Building Code) Adopt best practices regarding sustainable building design and construction as they develop.*
- *Pursue LEED EB certification for all existing buildings.*

G. Transportation

1. Introduction: Conventional transportation systems, based largely upon the internal combustion engine, are major contributors to both global climate change and local air pollution. Sedentary lifestyles, supported by automobile commuting, are considered a leading contributor to an obesity epidemic in the US. Acknowledgement of this problem has led to the development of several strategies for creating healthier and more fuel-efficient transportation systems.



Transportation is often neglected in campus planning (with the exception of automobile parking), though a few urban campuses have found ways to influence student and staff choices. Given that automobile transportation is the leading means by which an American burns fossil fuels and emits toxic air pollutants, university efforts that can help staff and students adopt less harmful transportation options will reduce the amount of pollution indirectly caused by a campus. For many commuting students, the costs of maintaining and using an automobile for transportation may be the second highest cost of college attendance after tuition (equalling the cost of dorm housing); thus, transportation options may impact classroom success, retention and graduation rates for students with financial difficulties (e.g. working long hours or unable to pay tuition). UW Oshkosh is the second smallest campus in the UW system, and parking lots seriously diminish aesthetics and green space. Transportation also provides a significant opportunity to build stronger links to the City of Oshkosh, which can play a major role by providing public transportation and improving the infrastructure and traffic enforcement that enable and encourage pedestrian and bicycling options.

The campus also maintains a wide range of vehicles for business use (automobiles and trucks), transporting groups (buses), deliveries, teaching and research including automobiles, trucks, vans, buses and boats.

2. Goal: To reduce automobile trips to campus by 20% by 2012, through incentives and improvements in sustainable alternatives.

3. History

a. The 1999 campus master plan acknowledges the need to make the campus more pedestrian and bicycle friendly. The plan calls for re-routing traffic around the perimeter of the campus, closing Algoma Boulevard, and creating a pedestrian mall.

b. A comprehensive parking plan was developed in 2003-4 to address a perceived shortage of on-campus parking spaces. While the plan does not promote sustainable transportation practices, it provides a precedent for future planning activities. This plan advocated the construction of two parking ramp buildings, and the conversion of current parking lots to be converted into green space. The first parking ramp is under construction in 2007.

c. In 2003, UW Oshkosh began contracting with the Oshkosh Transit System to allow all students, Faculty, and Staff to ride the city public bus system for free with a campus identification card.

d. In 2006, the university made a decision to convert the campus fleet to E-85 compliant vehicles. All new vehicle purchases will be able to operate on E-85, an ethanol based fuel. The older, gasoline only vehicles will be phased out over time.

e. In 2006, the Facilities Department switched to a 10% biodiesel/90% diesel fuel mix for all vehicles and equipment that operate on diesel.

f. Many new bike racks have been purchased and installed throughout campus over the past several years.

g. A ride sharing board is in use at Dempsey Hall.

4. Action Plan . In order to accomplish the goals listed in this section, the following recommendations should be enacted:

Immediate Consideration:

- *Create a comprehensive Campus Transportation Plan to balance the needs of all commuters to campus. Partnership with the City of Oshkosh is essential. Rising use and parking of bicycles and mopeds should be addressed.*
- *Designate a Director of Transportation Services. This should be more than a title change for the Director of Parking, as “parking problems” will become one of many equally important factors in a sustainable transportation plan.*
- *The parking fee price structure should be reviewed and revised to reflect the true costs of parking and/or market rates (e.g. responsive to supply and demand) and avoid subsidizing automobile drivers. There should be substantial financial savings for commuters who carpool.*
- *A significant amount of Compact car parking spaces (e.g. 25%) should be designated in every parking lot. They should be located at the preferred spots near building entrances.*
- *Create incentives such as preferential parking for hybrid, high efficiency and biodiesel vehicles.*
- *All campus vehicle purchases shall be fuel efficient and environmentally friendly. For now, that means the campus is limited to the purchase of E-85 compliant, high miles-per-gallon vehicles. The State of Wisconsin limits purchases to American-made vehicles, thus the most efficient vehicles and hybrids on the market cannot be acquired. If and when state policies change, the campus should revise this recommendation.*
- *Establish incentives to encourage students to not bring a vehicle to campus. One suggestion was that a student who elects not to bring a vehicle to campus would get his/her first choice in the selection of a residence hall.*
- *Develop an education program geared to all campus constituents regarding the true cost of automobile ownership. More than just the purchase price – fuel, maintenance, insurance, registration fees, impact on the environment.*
- *The health dimensions of transportation choices and the benefits of walking and biking for exercise should be emphasized to students, faculty and staff through education and incentive programs.*

Future Consideration (within 5 years):

- *A substantial research initiative must be launched to improve the understanding of the travel behavior and demand of the campus population. This information will impact planning priorities and focus areas for campus improvements. Transportation behavior and choices will be strongly influenced by the availability of housing, shops and entertainment on and near the campus.*
- *Purchase electric powered Cushman/Mule and pedal-powered vehicles wherever feasible for on-campus travel.*
- *Explore the possibility of providing specialized shuttle bus services at particular times of the year. For example, bus service to Outagamie Airport could be provided at the Winter Recess and at the beginning and end of each school year.*
- *Establish standards for sidewalk width that accommodate the large numbers of socializing students/staff and bicycles. Most campus and intra-campus city sidewalks are too narrow for more than two-way, single-file traffic.*
- *Create adequately designed bike lanes on campus and on adjoining city streets.*
- *Explore the possibility of establishing a campus, shared use bicycle program.*

H. Purchasing

1. Introduction: Purchasing - the acquisition of goods and services on the best possible terms, has historically been based on two criteria, price and quality, with the view to maximizing benefits for the procuring organization. Sustainable, or “green” purchasing broadens this framework to ensure that quality criteria includes minimal adverse environmental and health impacts. In making a sustainable purchasing decision, the entire life cycle costs (financial, environmental, and social) of the product are taken into consideration. The life cycle takes into account extraction, production, manufacturing, distribution, operation, maintenance and disposal. Many “green” products are competitively priced with their conventional counterparts, are of comparable quality, and have one or more of the following attributes:



- High Content from Post-Consumer Recycled Materials
- Low Embodied Energy (consumed to extract, manufacture, distribute and dispose)
- Recyclable
- Non-toxic
- Energy Efficient
- Durable and/or Repairable
- Produced in an Environmentally- and Socially-Sustainable Manner

2. Goal: Develop and follow sustainability-focused purchasing policies in more than 50% of spending for campus materials and equipment by 2012.

3. History:

At the present time, the campus purchasing process is quite de-centralized, with departments and individuals making independent purchasing decisions. Although there are proscriptive state purchasing guidelines, including directions on which vendors are to be utilized for specific products, there is no major emphasis on sustainable purchasing.

a. The following items are currently purchased with recycled content in accordance with the state contract guidelines:

- * Toilet Paper
- * Copier paper
- * Computer Monitors
- * Photo Copiers

b. Over the past several years, incandescent lights have been replaced with compact fluorescents fixtures in many of the Residence Halls.

c. Custodial Services began purchasing environmentally safer cleaning chemicals in 2006.

d. Food vendors, campus retail stores, and Dining Services have made some sustainable products (e.g., fair trade, organic, local, cruelty-free, etc.) available for sale and special events.

4. Action Plan In order to accomplish the goals listed in this section, the following recommendations should be enacted:

Immediate Consideration:

- *Develop a sustainability-based purchasing policy that stimulates the purchase of cost competitive (based on broad accounting standards, e.g. life cycle analysis) products and services. Products and services covered by this policy would have a reduced effect on human health and the environment compared to competing products or services that serve the same purpose.*
- *Produce and annually update a “green” guide to purchasing that provides a list of recommended environmentally friendly products or services. The guide should cover a wide variety of materials and equipment, including Energy Star-rated office equipment, kitchen equipment, laundry equipment, and vending machines.*
- *Establish a sustainability purchasing committee with the mission to research attributes of current campus purchasing patterns, identify alternatives, and to make recommendations. The committee should revisit and update their recommendations on an annual basis, or as necessary.*
- *The UW Oshkosh Purchasing Department should track and record sustainable purchasing efforts and prepare a report highlighting performance on an annual basis.*
- *Educate the campus community about sustainability purchasing programs and policies.*
- *Collaborate with UW System on pilot projects that demonstrate sustainable purchasing policies, particularly when state policies interfere with best practices; continuously, share the information with UW System, other institutions, and vendors to improve state policies and preferred vendor contracts.*
- *Make sustainable products and services easily available in convenience or “captive audience” situations (e.g. less harmful detergents in dorm laundry rooms, sustainable choices in dining halls and vending machines, etc.)*

Future Considerations (within 5 years):

None noted

I. Solid Waste Management

1. Introduction: Solid waste is generated by every part of the campus. It includes materials purchased by the university, materials carried in from off-campus, and materials grown on campus. Solid waste from UW Oshkosh is destined for landfills, and is currently trucked long distances because of a tri-county landfill agreement.



The amount of solid waste produced can be cut in a number of ways that can be categorized by the “3R’s”: Reduce, Re-use, or Recycle. Reduce refers to conservative practices that cut back the amount of materials used and wasted. Re-use refers to passing along items that can still serve a function, be valued by another user, or have salvageable parts. Recycling is the reprocessing of saving used materials and forming them into new products; composting is a form of recycling for biodegradable materials. To illustrate printing paper solid waste can be cut by double-sided printing (Reduce), saving bad print jobs for scrap paper notes (Re-use) or setting it in the recycling bin when finished. The 3R’s prevent useful material resources from being wasted, reduces the consumption of raw materials, reduces energy usage, and reduces associated greenhouse gas emissions required to generate virgin product.

2. Goal: Reduce production of municipal solid waste by 30% from 2000 levels by 2012.

3. History of Recycling

UW Oshkosh has had an operational recycling program since the early 1980’s. Currently, the campus recycles paper, newspaper, cardboard, printer cartridges, oil, cans, bottles, and scrap metal. UW Oshkosh recycles approximately 10% of its total solid waste stream, which places it at the low end of regional campus recycling efforts.



Recently, campus recycling efforts have been hampered due to contamination of recycled materials with other waste. Where contamination has occurred, the entire load is rejected to the landfill, negating the recycling efforts of most of the campus community.

4. Action Plan

Immediate Consideration:

- *Create a 3-R’s (reduce, re-use, recycle) oversight committee. Membership should include students, faculty and staff. The committee will be tasked with developing policies and programs, provide oversight of 3R’s efforts, and report on recycling performance relative to campus generation of municipal solid waste.*
- *Develop a campus wide education effort geared toward the 3R’s that includes e-mails, posters, and fliers. Inform campus of how they can help the campus reach its goal of a 30% reduction in the campus solid waste output.*
- *Add more recycling receptacles, especially outdoor stations (currently lacking on campus).*
- *Develop infrastructure and confidence in information technologies (e.g. university servers and portable media; backup software) that can reduce printing and photocopying (and their production of waste paper).*

- *To create incentives for students to reduce paper use in computer labs, change printing policies to “pay as you go” cost charging beyond a reasonable number of pages; reduce that level as electronic storage technology improves.*
- *Recycle at all campus events such as athletic competitions, concerts and graduation ceremonies.*
- *Get campus involved in green recycling competitions amongst campus groups or with other institutions, such as a Recycling Olympics.*
- *Develop policies and collection sites for harmful and hazardous consumer wastes (e.g. batteries, electronics, light bulbs, paints/polishes/removers, cleaners, lighters, medicines, etc.)*
- *Enhance Residence Hall recycling and re-use efforts, especially on move-in and move-out days. Provide bins for food, clothing, shoes, furniture, computers, CD’s, paper, cardboard, etc.....*

Future Consideration (within 5 years):

- *Replace single-side printers with double-side printers, and install scanners to replace (some) uses of photocopiers, and thus reduce paper consumption.*
- *Create a campus wide rummage sale to increase re-use.*
- *Eliminate take-away food containers that cannot be recycled or composted (e.g., Styrofoam cups, most plastics, aluminum foil) and replace with recyclable plastics, biodegradable (plant-based) plastics, and unwaxed paper products.*
- *Compost all garden waste.*
- *Institute “pay as you throw” trash removal policies for dormitory residents, retail operations on campus, and other units; may require special equipment (though a low-tech solution is to sell standard bags with tags).*

J. Food Services

1. Introduction: A large expenditure of time, money and energy routinely goes into the growing, harvesting and preparing of food for the campus community. This area of campus operations consumes a significant portion of resources and generates large volumes of waste material. Due to its unique characteristics, this particular area of campus operations is an excellent candidate for the adoption of focused and appropriate sustainable practices. One distinctive aspect is that most of food services are provided through contractors, who could be asked to meet sustainability goals and performance standards. Contract negotiation periods (e.g. 2007-08) are a particularly important time for instituting reforms in dining services.



A wide range of approaches are being developed by producers to sustainably grow food. The American public is familiar with the health and environmental benefits of organic farming (avoiding artificial pesticides and fertilizers). They are less familiar with the benefits of locally-grown (avoiding environmental costs of transportation), humanely-grown (avoiding the diseases, pharmaceuticals, and ethical challenges associated with confined animal factories), or fair-trade (avoiding the oppression or deprivation of farmers and people who work on farms or in food processing factories). Heavy consumption of meat and dairy products deserve special attention in the US, as this activity is a leading source of water pollution (from animal wastes) and habitat loss (most U.S. grain is used for animal feed). The other special consideration for Americans is the rapid rise in the consumption of calories, which requires that more food be grown, processed, transported, and prepared – and is leading to a health crisis of truly large proportions. Thus campus food services have a crucial educational role (positive or negative) in teaching students that food choices matter for health, environment, and society.

2. Goal: Food Services will minimize the environmental and social impacts of their operations (including indirect impacts of suppliers) while continuously providing a variety of nutritious and sustainably –grown foods.

3. History: UW Food Services has already taken some steps towards the attainment of this goal. Listed below are some of the operational practices currently in place:

- a. Food is batch cooked to minimize food waste.
- b. Produce is purchased having already been cleaned. This saves water and keeps the produce fresher.
- c. The campus food committee has an education policy that encourages students to “eat what you want, but clean your plate” i.e., don’t waste food.
- d. The existing refuse/pulper system recycles and minimizes the use of water.
- e. There have been several purchases of new equipment, including a new dish washing machine that uses 30% less water and energy than the old machine.

f. There have been several renovation and improvements to interior lighting that have had a beneficial impact upon energy consumption. For instance, a new timer has been installed on interior lighting. In addition, they have removed and eliminated 60% of interior track lighting throughout the facility. Finally, they replaced halogen lighting to fluorescent lighting over the salad bar because it was heating the lettuce.

g. Fair trade, organic coffee is sometimes sold at the Reeve Memorial Union.

h. Due to a suggestion from a student group, Food Services offered an organic food night as a substitution to a premium food night (typically steak) in the Spring of 2007.

i. The Earth Charter Community Summit and other special events in Reeve Union have been able to order dinners made from fair trade, organic, and/or locally grown foods.

j. UW Food Services has begun to demonstrate an interest in purchasing fair trade, organic foods, and locally-grown foods, when available.

4. Action Plan

Immediate Consideration:

- *The upcoming Dining Contract for campus food services should include sustainability goals, benchmarks, and timetables. Discussions with dining services, Sodexo, and others, suggest this could involve:*
 - *Shell eggs from free range chickens*
 - *Liquid eggs from cage free chickens*
 - *Organic milk from humanely treated cows*
 - *Fair trade coffee*
 - *Biodegradable utensils, flatware, and other disposable items*
- *Increase offerings of well-labeled, sustainably-produced foods (locally grown, organic, fair trade, humanely-grown), including fruits, vegetables, grains, dairy, eggs, and meat. The goal should be to provide an a constant reminder that people have sustainable food choices.*
- *Provide an organic option at all meals.*
- *Institute a “Meatless Monday” or other programs campus-wide to educate students about healthy vegetarian options and potential to reduce their environmental impacts.*
- *Purchase certified sustainable fish, using expertise of organizations such as the Monterey Bay Aquarium’s Seafood Watch Program and the Marine Stewardship Council.*
- *Investigate the purchase of compostable flatware and plates for Reeve Union and Blackhawk Commons.*
- *Purchase and utilize environmentally friendly cleaners and detergents throughout all food service operations.*
- *Develop a plan for the disposal of popular, and possibly sellable, food wastes (e.g., coffee grounds).*

- *Establish a community garden to promote sustainable practices, provide student research opportunities, and promote outreach to wider community. Establish a summer internship in community gardens to maintain the gardens and provide tours and educational opportunities to the community.*

Future Consideration (within 5 years)

- *Engage consultants (e.g., Food Service Technology Center) to provide a thorough review of our food services operations, and to provide recommendations for improvements and advice on the purchase of energy efficient equipment and processes.*
- *Compost appropriate food wastes. This will involve the identification of an appropriate site to conduct composting operations, the establishment of a process to segregate appropriate materials for composting (e.g. minimal meat or oils), and transportation of materials to the site. Investigate the use of vermiculture (worm husbandry). Use compost in campus gardens and greenhouses.*

K. Grounds Maintenance

1. Introduction

The beautifully landscaped grounds of the University of Wisconsin Oshkosh campus support a surprisingly wide diversity of local and regional species. The 170.5 acres of campus grounds provide a pleasing backdrop for educational activity and are a source of great pride for the campus community. The goal of the grounds shop is to provide aesthetically enjoyable outdoor facilities for all students, staff, and visitors. The campus has been one the largest and best maintained waterfront sites, admired even in a city with extensive waterfront parks.



Grounds keeping at UW Oshkosh has many challenges. The task is wide-ranging and seasonal, including: landscape design and installation; tree, shrub, and flower bed maintenance; turf and Athletic Field maintenance; snow and ice removal, sidewalk and roadway maintenance; and material hauling and debris collection. The campus is in a dense urban area, and a significant portion of the campus is former industrial land with degraded soils. The campus is crowded, and heavily traveled; within the UW System, UW Oshkosh has the third largest population (ca. 13,000 students and staff) on the second smallest campus (ca. 130 acres on the main campus), for a ratio of about 100 users per acre. The campus is tri-sected by three busy city streets, that raise air and noise pollution levels, create pedestrian bottlenecks that lead to heavy foot traffic off walkways, and make it difficult for maintenance crews to move vehicles around the campus.

Sustainable grounds landscaping and maintenance practices can have a significant positive impact upon the environment and play a major role in overall campus sustainability efforts.

2. Goal: Increase biodiversity and usable green space of the campus while reducing dependence on fossil fuels, other extracted minerals, chemical fertilizers and pesticides.

3. History

Many sustainable practices have been in use for several years, including:

- a. All diesel tractors operate with 5% bio-diesel.
- b. Leaves are mulched into turf areas in the fall.
- c. All wood landscaping refuse is run through a chipper and converted into mulch for re-use in campus flower beds.
- d. The campus uses an environmentally safer ice melting chemical treatment on sidewalks.
- e. Plantings are appropriate and compatible for this area and environment.
- f. The campuses utilizes compost created at a nearby state facility, Winnebago Mental Health Center, to maintain flower beds.
- g. Educational plantings of diverse plants species and native prairie have been installed.

h. Riverfront native trees and vegetation have been retained and encouraged along the WIOWASH Trail and Shapiro Park on campus.

4. Action Plan

Immediate Consideration:

- *Develop policies to ensure that sustainability is one of the key decision –making components for landscape design, maintenance and management.*
- *Create a composting site and begin to compost appropriate materials on campus.*
- *Test environmentally safer herbicides to determine their effectiveness; if the products work, the campus should discontinue the use of conventional chemical herbicides, such as Roundup.*
- *Create more natural prairie areas such as exist near Halsey Science Building, allowing for aesthetic considerations (e.g. more flowering plants) in some landscape designs.*
- *Replace traditional grass with a newer variety that is drought resistant and requires little mowing (no maintenance lawn).*
- *Increase the amount of perennial planting throughout the campus, to replace plantings of annual plants that require disturbing the soil one or more times a year.*
- *Increase the number of rain gardens to increase groundwater infiltration throughout the campus (which will decrease stormwater runoff).*
- *Increase the planting of native species, and remove invasive non-native species on campus.*
- *Install drip irrigation in all flower beds to reduce water use.*
- *Investigate the possibility of using less ice melt chemicals and more sand to keep walkways safe for pedestrians during winter months.*

Future Consideration (within 5 years):

- *Build a greenhouse facility to propagate plants and increase the amount of available plant material. If a greenhouse was available, the campus would be able to re-use existing plants rather than throw away and purchase new each year. (Greenhouse facilities would support other recommendations in this plan, such as the campus gardens listed under food services and research needs.)*

V. Teaching

The University of Wisconsin Oshkosh is, first and foremost, a teaching institution. In our formal education, we can do much more to ensure that students attending UW Oshkosh have taken classes that provide them with a refined understanding of sustainability, and a concrete set of skills with which to tackle these complex issues.



In the classroom, sustainability has a broad meaning that touches a wide array of disciplines and methodological approaches. It is a big-tent concept that embraces the ideas of financial security, social justice, and environmental responsibility. The Presidents Council on Sustainable Development has stated that “Education for sustainability is a lifelong learning process that leads to an informed and involved citizenry having the creative problem-solving skills, scientific and social literacy, and commitment to engage in responsible individual and cooperative actions. These actions will help ensure an environmentally sound and economically prosperous future.” Education for sustainability, then, provides students with a sense of environmental and social citizenship and with the knowledge and skills needed to work effectively for sustainability. Achieving this goal requires that students encounter the key concepts of sustainability multiple times throughout their college careers, and in a variety of venues. Courses that focus on sustainability should not be limited to a few programs or to a single college; rather, they can and should be taught across all Colleges and Departments.

However, learning does not stop when students leave the classroom. It also takes place in residence halls, guest lectures, campus events, and research experiences. Therefore, this section of the report suggests a variety of ways that UW Oshkosh can improve the way that it teaches sustainability both inside the classroom and outside of it.

Long Term Vision: Link the university’s formal teaching mission and informal teaching opportunities to develop understanding, attitudes and habits that promote sustainability.

A. Curriculum.

1. Introduction: The central act of a university is to offer courses that allow students to expand their knowledge, sharpen their intellectual skills, enrich their lives, and become more effective citizens. A curriculum that engages students in the issues of sustainability can achieve all these goals, and is particularly relevant to developing local and global citizenship in a troubled world.

2. Goal: Sustainability should be a recognized, emphasized, and common theme across colleges, departments and general education initiatives. Students should have extensive and diverse opportunities to study sustainability in their coursework.

3. History: Some departments have for decades been teaching courses that involve issues of sustainability, while other departments have started courses related to sustainability in recent years. Just a few examples include Anthropology 348: Economy, Nature and Culture; Biology 104: Ecosphere in Crisis; Chemistry 103: Environmental Chemistry; Economics 360: Environmental Economics and Policy; English 343: Nature Writing; Geography 314:

Environmental Conservation, Geology 150: Environmental Geology; History 326: American Environmental History; Nursing 361: Human Health & the Environment; Political Science 395: Global Environmental Politics; Religious Studies 362: Religion and Earth Ethics; Social Work 105: Social Work Ethics in a Diverse Society; Sociology 347: World Systems and Global Inequality; Women's Studies 365: Gender and Nature.

Thus various departments already have been addressing issues of sustainability. The number of sustainability courses at UW Oshkosh has grown steadily in the past decade, catalyzed by the development and growth of the Environmental Studies (ES) Program. The Environmental Studies Program was initiated in 1996 as a minor with new courses. In 2002 the program began offering a major in environmental studies, further expanding the presence of sustainability courses on campus. The ES program is an interdisciplinary program and works with many other departments. This collaboration extends to shared courses, comparisons of course content and faculty discussions that have helped make environmental themes more prevalent in UW Oshkosh courses.

4. Action plan recommendations:

UW Oshkosh should expand the number of courses that address sustainability issues (including courses with a section on sustainability and those that make sustainability a primary issue). UW Oshkosh also should help faculty and students to better recognize the sustainability dimension of existing courses.

Immediate Consideration:

- *Provide to faculty multiple avenues, such as faculty colleges, for learning more about the various dimensions and definitions of sustainability and the ways it is relevant to a variety of disciplines.*
- *Assess the existing courses and curriculum for breadth and depth in addressing sustainability issues.*
- *Encourage faculty to highlight the way sustainability is a dimension of courses that they currently teach.*
- *Encourage faculty to include a section on sustainability in existing courses,*
- *Encourage faculty to offer new courses that deal directly with sustainability. One method by which this can be accomplished is through Faculty Development Teaching Grants.*
- *Develop a plan to hire new faculty in a broad range of disciplines with interest and expertise in sustainability.*

Future Consideration (within 5 years):

- *In the longer term, UW Oshkosh should consider way to ensure that every college student encounters the concept of sustainability. This goal could be met by a combination of the recommendations above (immediate consideration). If necessary, some other possible ways to accomplish this long term goal are :*
 - *Make sustainability an aspect of the ongoing Liberal Education Reform Effort.*
 - *Investigate the possibility of introducing a general education requirement that concerns sustainability.*

- *Integrate the concept of sustainability into the First-Year Experience courses that are currently under consideration.*
- *In the longer term, UW Oshkosh should consider ways to ensure that every college student encounters the concept of sustainability. One possible way to accomplish this is to make sustainability an aspect of our Liberal Education Reform, including the possibility of a general education requirement that concerns sustainability.*
- *In order to expand the scholarly depth in the teaching of sustainability, UW Oshkosh should consider the possibility of developing graduate programs in sustainability.*

B. Extra-curricular Awareness Raising Across Campus

1. Introduction: Learning about sustainability can take place outside of the classroom. Events that raise awareness of sustainability can occur in the residence halls, at Reeve Union, in department meetings, faculty colleges, and in many other places across campus. While there are some initiatives of this nature occurring on campus, they could be better organized, coordinated, and publicized, and their number and variety could be increased.



2. Goal: To raise awareness of students and staff through participation in campus sustainability activities that take place outside of the formal classroom. Doing so will increase our chances of generating a campus-wide commitment to sustainability.

3. History: There have been some initiatives of this nature, in a variety of settings, across campus. For example, each year the campus hosts substantial celebrations of the Earth Charter and Earth Week (see the Campus Events section, below). There has also been some activity on sustainability awareness in the residence halls, such as the 2006 ECO Games, which focused on recycling and attendance at related speakers and movies on campus.

4. Action Plan/Recommendations: (See Appendix H for details and justification regarding recommendations)

Immediate Consideration:

- *Develop sustainability programs in the residence halls to reduce solid waste generated during move in and move out days.*
- *Require all residence hall Community Advisors to coordinate one sustainability program each year, providing them with models, contacts, and special funds for these events.*
- *Develop a Student Sustainability Leaders Program in which students serve in paid positions as student sustainability educators.*
- *Inaugurate competitions focused on sustainability amongst campus groups (e.g. dorms, clubs, departments, etc.) and with other institutions.*
- *Provide training for all faculty and staff on the importance of sustainability and the campus's policies and programs.*
- *Include sustainability in the first year experience housing program.*

C. Campus Events

1. Introduction: Extra-curricular campus events can be an effective way for students, faculty, and staff to learn about sustainability and develop a commitment to it. UW Oshkosh offers a rich array of campus events, some of which concern sustainability issues, but more could be done.



2. Goal: To offer a large number and wide variety of well-attended events that teach and promote sustainability, and to coordinate and promote those events.

3. History: Over the years, the university has offered events that were at least indirectly related to sustainability, even if the idea was not explicitly involved in the events or their promotion. Over the last decade, students, faculty, and staff have helped create events directly and explicitly related to sustainability. The annual Earth Charter Community Summit in October has become the largest Earth Charter event in the country. Every April, the university sponsors an Earth Week celebration. A Fair Trade Festival occurs a week after Thanksgiving. The College of Business has offered Green Business Symposium. This strong tradition of such campus events at UW Oshkosh forms the foundation for even more sustainability activities.

4. Action plan recommendations.

Immediate Consideration:

- *Ensure that current sustainability events have adequate support and are promoted appropriately. Seek to make the events even more attractive to the greater Oshkosh community.*
- *Use other major events (e.g., athletic competitions, concerts, ceremonies) as opportunities to demonstrate sustainability through waste reduction, recycling, etc., and to promote sustainability in general.*
- *Have a campus-wide sustainability calendar that is widely available on and off campus.*

Future Consideration (within 5 years):

- *Host state, national, or international conferences*

D. Internships, Service Learning, Volunteering

1. Introduction: One of the best ways that we can ensure that our students are aware of sustainability issues and able to tackle these complex problems when they enter the workforce is to provide them with hands-on experience in sustainability. Many advantages will accrue from increasing the opportunities for our students to have outside-the-classroom, skill- and resume-building experiences that focus on sustainability. This will better serve our students, strengthen our relationships with the community, focus our research agenda on sustainability, and create a mechanism to devote increased time and labor to sustainability initiatives.



2. Goal: To expand the opportunities for UW Oshkosh students to garner hands-on experience in a wide range of sustainability initiatives by increasing the number of available internships, service learning, and volunteer experiences.

3. History: Across campus, there has been a wide variety of opportunities for students to pursue student internships, service learning, and volunteering. Departments such as Biology have offered various internships analyzing environmental problems. Several students in 2003 completed a campus environmental audit, which won recognition from the National Wildlife Federation's Campus Ecology Program. From 2005 to 2007, Johnson Controls supported a Campus Sustainability Coordinator internship to monitor energy use on campus. A Green Events Coordinator was established in 2006. Student environmental groups such as the Student Environmental Action Coalitions have been major players in campus events. However, there is no centralized coordination of these opportunities, which could be promoted as diverse ways students can actively pursue sustainability on and off campus.

4. Action Plan:

Immediate Consideration:

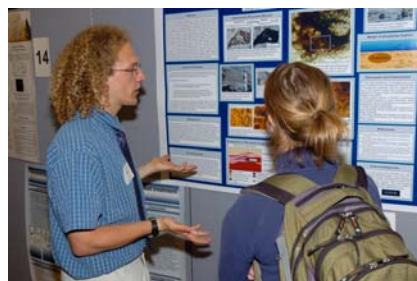
- *Survey existing internships, service learning, and volunteer opportunities to determine which ones are related to sustainability.*
- *Revive and expand the UW Oshkosh environmental audit and the internship associated with it. This would provide more information to support sustainability initiatives and give students valuable experience.*

Future Consideration (within 5 years):

- *Develop an internship program specifically related to sustainability, including internships both on and off campus.*
- *Develop new service learning opportunities related to sustainability, in particular those that cross departments and divisions.*
- *Encourage departments and student organizations to develop new volunteer opportunities directly related to sustainability.*
- *Utilize UW Oshkosh's off-campus properties as a way to provide internship and research opportunities for our students.*

VI. Research

A. Introduction: As noted in the Chancellor’s charge to the Campus Sustainability Team, a university has “a unique role as an institution that develops expertise in the science, technology, and policies of sustainability as well as in the philosophical basis for sustainability.” Ongoing research is an important means of developing such expertise and ideas.



One of the core values of UW Oshkosh is “Social

Awareness and Responsiveness . . . that educators and students should explore and engage the challenges that confront regional, national and global communities, using their intellectual and creative capabilities to understand, investigate and solve problems.”

The Research section of this plan is primarily a vision of future opportunities. Some areas of current research (e.g. ecology, business operations, environmental history) are critical for defining the need for sustainable institutions and communities. However, the university currently carries out very little research with direct applications to creating a sustainable institution. Thus, the research capacity of the university would need to expand in particular strategic directions to have direct impacts on the institution and to provide students with a more complete picture of sustainability.

As a large university with substantial research capacity, UW Oshkosh is capable of supporting significant applied, theoretical, and creative scholarship for developing a sustainable society. Certain facilities and academic areas have existing, if untapped, potential for immediate use in sustainability research, while some key fields of study are constrained by a lack of specific infrastructure or expertise.

Long Term Vision: Scholarly activities by faculty, staff and students generate and test ideas for creating a sustainable future.

B. Goal: To develop and maintain research and scholarship that supports campus sustainability efforts, contributes to the professional development of staff, and challenges students to apply their emerging skills and knowledge.

C. History: UW Oshkosh has a significant faculty, staff and facility resources in a number of disciplines relevant to sustainability, including the natural sciences (biology, chemistry, geology, microbiology), social sciences (anthropology, geography, economics, political science, sociology), applied professions (business, public administration, urban planning), humanities (e.g. communication, history, philosophy, religious studies), and interdisciplinary programs (environmental studies). With respect to sustainability research, many other departments and programs cover disciplines relevant to sustainability (e.g. physics, psychology, education), but have not recruited faculty who study sustainability-related topics.

Faculty in some fields (particularly the sciences) have received substantial grants and contracts from external funding sources to conduct their research, equip facilities, and pay staff and students. However, the goals of faculty research are primarily driven by personal curiosity,

opinions of disciplinary peers, and/or the mission of the funding agency; thus their research agenda is rarely focused on institutional goals or needs such as sustainability. This situation is not particular to UW Oshkosh, and would be found at any university supporting research and scholarship.

There are institutional sources that have funded research related to sustainability. The university supports a large significant Faculty Development Fund that primarily funds faculty research projects. These projects are defined by the interests of the proposing faculty, who must convince their university peers (rarely disciplinary peers) that it is solid scholarship. Faculty Development funding has been used to study local ecosystems and communities, work with local companies on managing their operations, and to train staff and students. The university has also supported student research to compile the UW Oshkosh Environmental Audit. UW System grants have also been acquired by staff and faculty for research related to solid waste management.

D. Action Plan

Recommendations for specific research topics, particularly studies relevant to campus operations (e.g., composting, landscaping, energy efficiency, transportation options, etc.) have been covered in other sections of this plan. The recommendations below focus on general ways to encourage research in sustainability.

Immediate Consideration:

- *Develop and maintain a sustainability research clearinghouse website, including communication tools and databases for expertise (on campus and; collaborators), project ideas and problem-posing (campus and community), ongoing and /past research, and funding sources.*
- *Develop garden and greenhouse facilities on-campus for use in research projects (Note: a similar recommendation for operational and teaching uses are listed above).*
- *Increase dissemination of research findings through public meetings)*

Future Consideration (within 5 years):

- *Add faculty expertise in relevant engineering fields (could be associated with other UW campuses or colleges)*
- *Develop a Geographical Information System (GIS) database for campus property*
- *Develop awards and rewards for best sustainability research*
- *Purchase/lease off-campus land for research activities not compatible with the small, crowded main campus due to space, noise, odor, safety, and other concerns (e.g. Campus Farm and Technology Site).*

VII. Outreach

A. Introduction:

Outreach has several functions. First, it is the means by which UW Oshkosh can more widely share its knowledge of sustainability. The UW Oshkosh Vision statement includes the goal of being “a national model as a responsive, progressive and scholarly public service community known for its accomplished record of engaging people and ideas for common good.” UW Oshkosh also has endorsed the Earth Charter, which states that “we must decide to live with a sense of universal responsibility, identifying ourselves with the whole Earth community as well as our local communities.” Increased outreach efforts can benefit a public in need of sustainability education, operational examples, and leaders. Thus outreach has the potential to educate citizens about how they might improve their lives and communities, and about how the university can serve as a model and testing site for possible solutions.



Second, outreach is critical for UW Oshkosh to become better known in Wisconsin and across the country. The reputation of UW Oshkosh as a leader in sustainability has grown rapidly, but public perceptions continue to lag behind campus accomplishments.

Third, outreach helps us obtain the resources necessary to accomplish all campus sustainability goals, by informing donors, investors, partners, legislators, and other parties capable of assisting the university.

Long Term Vision: UW Oshkosh is well-known throughout the region and country as a source of information and inspiration about sustainability.

B. Goal: To develop and maintain sufficient outreach efforts so that the sustainability lessons learned by UW Oshkosh are known, appreciated, understood, and used by the public.

C. History: UW Oshkosh has a significant record of achievement in three areas of outreach related to sustainability: events, website publication of their Environmental Audit, and publicizing the purchasing of electricity from alternative energy sources.

The Oshkosh Earth Charter Community Summits (see www.uwosh.edu/earthcharter), have been hosted by UW Oshkosh annually since 2001. Numerous fairs, panel discussions, speakers, movies, plays, and dinners have highlighted sustainability themes. Ranking as the largest event of its kind since its inception, the 6 to 10 day event is cited as a national model. In 2005, the summit included hosting a statewide sustainability conference. UW Oshkosh has also hosted Earth Day and Earth Week activities each spring since the 1970's. While their focus has been primarily on educating the UW Oshkosh students and staff, events have been open to the public. Thus UW Oshkosh currently maintains major week-long efforts to schedule events each fall and spring semester.

An Environmental Audit of the campus was completed in 2003 and developed into a website

(see www.uwosh.edu/environmentalaudit) to increase university staff and public awareness of campus sustainability issues. This resource has proven useful for campus planners and for students studying campus environmental issues.

Beginning in 2003, UW Oshkosh has gained recognition as a national leader in green power, being the largest purchaser of alternative energy in Wisconsin (currently 23rd in the nation), starting with 3% of electricity and increasing to the current 11%.

These and other achievements have been recognized by several awards, including the EPA Green Power Purchaser Award (2003, one of 11 nationally, first in Wisconsin), National Wildlife Federation Campus Ecology Award (2004), and the EPA Energy Star Award (2005).

D. Action Plan

It is important to note that the CST defines the audience for outreach as those outside the immediate campus community. Informal education of UW Oshkosh students was considered under a broad definition of Teaching, while staff training was considered part of Operations.

Immediate Consideration:

- *Raise UW Oshkosh profile as a leader in sustainability with consistent representation at local, regional and national meetings and conferences related to sustainability.*
- *Establish a physical location for sustainability staff and their activities, including outreach (e.g. a Center for Sustainability).*
- *Review materials currently used to promote UW Oshkosh and its programs for potential to add sustainability information, messages, appeals, images, etc.*
- *Create presentation materials (e.g., booth display, posters, Powerpoint files) summarizing campus sustainability efforts, and train staff who will represent the university.*
- *Continue and strengthen the current practice of major, week-long campus events each semester to promote sustainability on campus (Earth Charter Community Summit; Earth Week).*
- *Create a university website on sustainability activities, highlighting the campus but considering use by the broader community.*

Future Consideration (within 5 years):

- *Develop and install signs (black & yellow UW Oshkosh style) designating sustainability-related places, structures, etc. (e.g. alternative fuel storage; environmental parks; raingardens; off-campus preserves, etc.)*
- *Develop and install kiosks and other illuminated information sources on structures and walkways describing either green technology or sustainability concepts, particularly along routes frequented by the public (e.g., riverfront trail; sports complexes, student union).*
- *Develop consistent format and branding for sustainability promotional materials (e.g., brochures, leaflets, handbills, table-tents, banners, stencils, websites) and initiate use for general awareness and specific events*

VIII. Conclusions

The preceding sections are organized to present the recommendations in terms of current UW Oshkosh organization and staff responsibilities. The outline above will serve the university well if it should decide to work and invest heavily in a few areas (e.g. electricity, or formal teaching), but less well if efforts are necessary across many or all these topics. Given the large number of recommendations presented, it is difficult to grasp the overall magnitude of the task of creating a more sustainable campus. Thus, there remains a need to analyze the recommendations in ways that will help decision makers compare recommendations on similar timescales and that require similar actions. (Note: shorter descriptions of recommendations are used below to help the reader glimpse how the “trees” might be seen as “forest”).

A. SHORT-TERM RECOMMENDATIONS

Most of the specific recommendations of the Campus Sustainability Team could be implemented immediately and completed in one year if resources are available. Short term recommendations will need to be prioritized to determine which will actually be attempted in the coming year, and which might be postponed. Because of their central role in catalyzing campus sustainability and providing accountability, a set of organizational recommendations will strongly influence how the sustainability plan could be carried out:

- *Create a permanent Campus Sustainability Council*
- *Create a permanent full time position for a Campus Sustainability Director*
- *Establish Unit Level Sustainability Coordinators from each functional area*
- *Designate sustainability responsibilities for Administrators*
- *Establish a Campus Sustainability Fund*

The remaining short-term recommendations need to be considered carefully in terms of implementation. The categories below should not be read as a strict chronological or priority order (e.g. that all studies should be completed before starting any awareness-raising). There are issues identified (e.g. purchasing, transportation; formal courses) where it would be prudent to complete a study before developing a policy or plan, but where some obvious initiatives could be implemented. For example, a single year could include a 6-month purchasing guidelines study followed by a 6-month policy development process, while a separate project works with an intern to develop a sustainable purchasing guide and website based on current contracts and vendors. Specific short-term recommendations for the campus include:

Studies Needed: One conclusion from drafting the first campus sustainability plan is that we lack basic information about the institution – information necessary to make plans and policies in many areas. About 20% of the recommendations generated were for studies on the current state of sustainability at UW Oshkosh. While UW Oshkosh has conducted an Environmental Audit, the audit achieves the detail needed for planning in only a few operational areas (e.g. energy and water use), and is weak in other operational areas and in Teaching, Research and Outreach. The most challenging and necessary studies would be on the topics of:

- *solid waste production*
- *transportation*
- *purchasing guidelines*
- *efficient lighting options*

- *current sustainability teaching*

If we could first know where we are, and whither we are tending, we could better judge what to do, and how to do it.

-- Abraham Lincoln

Plans and Policies: Many campus sustainability issues are fairly well understood, but lack plans or policies with sufficient specificity or established lines of responsibility. These include issues that have been the subject of previous study (e.g. electricity and water consumption) and those where solutions are well known from the experience of other institutions. The most immediate needs for general plans and policies are for:

- *a policy for campus food services (re: upcoming Dining Contract negotiations)*
- *a policy for sustainability training for staff and students*
- *a campus purchasing policy*
- *planning for transportation.*

There was also strong support for more targeted policies and plans to:

- *consolidate classroom use to energy efficient buildings*
- *extend the winter recess period to reduce campus energy use.*
- *encourage commuters to use fuel-efficient vehicles*
- *certify campus construction projects by sustainability criteria*
- *propose energy efficiency projects and energy standards for new construction*
- *increase student opportunities for sustainability-related experiences*

The difficulty lies, not in the new ideas, but in escaping the old ones, which ramify, for those brought up as most of us have been, into every corner of our minds.

John Maynard Keynes.

Awareness-Raising: This category included recommendations related to formal and informal teaching, as well as outreach. In deference to the formal policies for implementing major changes in formal teaching, curriculum recommendations have been listed below as long-term issues that require studies, plans and policies before implementation can proceed. However, the following recommendations could start soon:

- *raise student awareness and participation in efforts to create a sustainable campus through residence hall activities, peer education, orientation, and events.*
- *Provide sustainability training for all faculty and staff*
- *develop faculty awareness and expertise for formal teaching of sustainability*
- *providing utilities usage feedback and education to campus users*
- *raise the profile of UW Oshkosh through representation at local-to-national levels*
- *build a community garden*
- *continue and strengthen the major, week-long campus events each semester*

- *Develop and maintain a sustainability research clearinghouse website*
- *build a campus sustainability website meeting staff, student and community needs*

Staffing: All staffing recommendations of the CST were considered significant, and nearly all could be started immediately. Recommendations for a Council, Director, and administrative responsibility were listed as top short-term recommendations above; other recommendations to provide UW Oshkosh with staffing support:

- *increase internships to support and assess campus sustainability efforts*
- *designate student sustainability leaders for UW Oshkosh associated residences (on- and off-campus)*
- *designate an administrator to oversee all Transportation Services.*

Buildings and Grounds: Many significant recommendations were generated in this category, but nearly all should be considered long-term goals. Progress in the following could be made in the short term:

- *reduce electricity use in light levels in hallways and corridors*
- *schedule off-peak classes and events in energy-efficient buildings*
- *establish landscaping practices that favor the use native plants, perennial plants, and non-chemical methods for pest management and ice removal.*

If one way be better than another, that you may be sure is Nature's way.

-- Aristotle

B. LONG-TERM RECOMMENDATIONS

Given sufficient time (such as five years) and resources, UW Oshkosh could achieve the following goals:

Plans and Policies: Planning and policymaking in certain sustainability areas will clearly require more time to produce and implement. This is particularly true for issues that require major discussions amongst the faculty regarding formal teaching, issues that present a challenge to all of society such as high rates of material and energy consumption, and for establishing a means of funding sustainability investments at a state institution that is subjected to short-term (i.e. biennial) budgeting. The strongest recommendations are for:

- *a policy to maximize the number of students taking formal sustainability courses*
- *a plan to develop graduate programs in sustainability*
- *a plan to increase recycling and re-use.*
- *a plan to purchase or produce all electricity from renewable sources*
- *a plan to reduce overall energy consumption*

Awareness-Raising: Some forms of awareness-raising will require investments in facilities, staff, materials, and incentives. The highest recommendations were to:

- *build kiosks and signs to explain campus sustainability infrastructure and actions*
- *develop awards and rewards for sustainability research.*

Staffing: While most staffing recommendations could be started immediately, one would

clearly require more time to plan and implement:

- *add expertise in fields of engineering relevant to sustainability.*

Since UW Oshkosh has no school, department or faculty positions associated with engineering, this would require major discussions with UW System and possibly collaborations with other UW institutions.

Buildings and Grounds: Many of the recommendations for buildings and grounds are considered long-term goals because they depend on major investments, state budget approvals, or might be best achieved under upcoming refurbishment and construction projects. Long-term planning should focus on improvements that would:

- *reduce water use through upgrades to bathroom fixtures.*
- *Build a greenhouse for landscaping, dining, research, and teaching use*
- *install rain gardens for natural-looking stormwater drainage*
- *establish a physical location for sustainability staff and activities*
- *provide adequate bicycle lanes and bicycle parking*
- *generate hot water using solar water heaters*
- *Purchase/lease off-campus land for research activities.*

C. EXPECTATIONS FOR PROGRESS

In order for UW Oshkosh to demonstrate, maintain, and build its capacity to educate, lead and inspire, it must take seriously the challenge of becoming sustainable in environmental and social terms, in addition to paying attention to the financial bottom line. While early efforts at UW Oshkosh have produced financial savings and national recognition, the institution needs to recognize that sustainability remains a challenging standard that no university has yet achieved.

The four dimensions originally conceived for a sustainability plan are in very different stages of development. Operations is very advanced in certain areas, with support from state initiatives (e.g. energy), which should give us confidence about future success in areas that are less well-developed. By building on the momentum of past successes, it is reasonable to envision the following progression to a sustainable UW Oshkosh:

- achieve substantial and widely understood operations and policies
- develop extensive and intensive sustainability teaching through faculty/staff professional development and hiring of scholars
- increase capacity for sustainability research and outreach

This progression should not be interpreted as discrete, sequential steps, but as overlapping waves that provide the impetus and means to build a sustainable institution in a sustainable community in a sustainable world.

IX Table of Goals and Recommendations

ORGANIZATION

Goal: To establish an organization capable of supporting campus sustainability initiatives as soon as is feasible, but within twelve months of the adoption of this plan. The main recommendations to support this vision and goal are:

- *Create a permanent Campus Sustainability Council, with representation from across campus, to continue to advise campus leaders on sustainability initiatives.*
- *Create a permanent full time position with the title of Campus Sustainability Director. This individual will be tasked with responsibility for coordination across all sustainability related activities. The individual will possess an advanced degree in an appropriately related field and have expertise in energy, environmentalism, ecology and sustainability.*
- *Establish Unit Level Sustainability Coordinators from each functional area. Coordinators will be trained in sustainability initiatives and policies and act as a local resource and sounding board for sustainability related matters.*
- *Designate sustainability responsibilities for Administrators to institutionalize the university's commitment to sustainability.*
- *Establish a Campus Sustainability Endowment Fund to provide a method for donors to contribute to sustainability and to provide a reliable and continuing source of funds for the future.*

OPERATIONS

A. Electrical Energy Management and Conservation

Goal: To become a national role model for electricity conservation through the rigorous implementation of emerging technology to increase efficiency, and the application of policy-based conservation practices to reduce waste. Our goal is to reduce overall electrical consumption 20% from 2005 levels by 2012.

Immediate Consideration:

- *Review, verify and update campus audit data. Identify the campus facilities with the highest electrical energy consumption per square foot.*
- *Provide facility electrical usage feedback and education to campus users.*
- *Phase in the replacement of old, energy in-efficient equipment with Energy Star rated items. Require all new purchases of certain high energy consuming devices (i.e. refrigerators) to be Energy Star Rated.*
- *Establish guidelines for the connected (plug) load in all campus facilities.*
- *Turn off unnecessary lights during non teaching periods.*
- *During low useage periods (summer, interim, weekend) consolidate classroom useage to the most energy efficient buildings that meet course requirements.*
- *Permanently reduce light levels in hallways/corridors of all academic buildings*

by 20%

Future Consideration (within 5 years):

- *Convert pneumatic control systems to direct digital control (DDC).*
- *Convert or replace energy inefficient facility HVAC systems.*
- *Initiate studies of more efficient lighting options (e.g. LED) to estimate when retrofitting will be feasible.*
- *Determine the viability of installing a Thermal Ice Storage Facility.*
- *Install green roofing to reduce summer heat loading during renovations of existing buildings and as part of new construction.*

B. Campus Heating

Goal: To reduce the annual consumption of fossil fuels for heating by 50% from 2000 levels by 2012.

Immediate Consideration:

- *Review, verify and update campus audit data. Identify the campus facilities with the highest thermal energy consumption per square foot.*
- *Provide facility thermal energy usage feedback and education to campus users.*
- *During low useage periods (summer, interim, weekend) consolidate classroom useage to the most energy efficient buildings that meet course requirements.*

Future Consideration (within 5 years):

- *Install solar hot water heaters at appropriate locations throughout the campus. Suggestions include Albee Hall and the Residence Halls.*
- *Install alternative heating and cooling systems at facilities not connected to the central system.*
- *Assess the possibility of burning alternative biomass fuels at the campus heating plant.*
- *Replace old, drafty single pane windows with high efficiency, low e, double or triple pane windows at the Clow Classroom and Faculty Tower Complex.*

C. Sustainable Energy

Goal: UW Oshkosh is pursuing the ambitious goal of becoming 100% independent of fossil fuel energy for electricity, heating and cooling.

Future Consideration (within 5 years):

- *Install integrated photovoltaic panels (solar panels) where feasible*
- *Study the feasibility of installing a biomass production facility to provide on-campus electrical generation*
- *Study the feasibility of installing biodiesel peak load shaving generators*
- *Evaluate the potential for the use of pressure reducing steam turbines in the campus central plant or at individual buildings, for electrical generation*
- *Explore the possibility of installing a small, demonstration wind turbine on campus.*

D. Fresh Water Conservation

Goal: To reduce overall water consumption levels by 50% from 2000 levels by 2012.

Immediate Consideration:

- *Review, verify and update campus audit data. Identify the campus facilities with the highest fresh water consumption per square foot.*
- *Provide water usage feedback and education to campus users.*
- *Publicize and encourage student, faculty, and staff to report water waste on campus.*

Future Consideration (within 5 years):

- *Install next generation waterless or low flow urinals in appropriate locations throughout the campus. It is estimated that each waterless urinal eliminates the consumption of over 45,000 gallons of water annually.*
- *Install the next generation of low flow toilets throughout the campus. Extreme low flow/ dual flush toilets are now being manufactured that utilize less than 1.3 gallons per flush.*
- *Plan and plant landscaping so that water for irrigation may be acquired from storm water basins or ponds rather than using municipal drinking water.*
- *Reduce irrigation needs through landscape design, composted mulch, and other programs designed to conserve water in places where municipal drinking water is the only available water source.*

E. Storm Water Management

Goal: Reduce the amount of total suspended solids (TSS) coming off of the campus by 20% before 2008 and 40% before 2013. (2006 baseline)

Immediate Consideration:

- *Consider a reduction in the use of ice melting salts on sidewalks and roads. Increase the use of sand to mitigate slipping hazard.*
- *Disconnect roof drains from storm water systems and divert water to ponds and other storm water retention devices.*
- *Install educational and informational signage designating all rain gardens constructed and stencil appropriate "no waste dumping" near all storm water inlets.*
- *Conduct ongoing stormwater public education and outreach program. Schedule public education events to coincide with Earth Charter Community Summit and Earth Day activities. The campus will develop a web page devoted to Storm Water Management education.*
- *Partner with the City of Oshkosh on permit conditions wherever and whenever possible. For instance the University will take responsibility for public education and outreach and the City will take responsibility for illicit discharge detection and elimination.*
- *Promote and incorporate environmentally sensitive site development throughout all campus planning and design activities.*

- *Implement DOA-DSF erosion control standards for all capital projects (new construction and maintenance and renovation) and report all incidents to the DOA-DSF Project Manager and/or Construction Representative.*
- *Implement DOA/DSF civil engineering and sitework design guidelines for all capital projects (new construction and maintenance and renovation)*

Future Consideration (within 5 years)

- *Create Biofilters at all existing storm drains to filter storm water as necessary to reduce suspended solids.*
- *Consider the installation of green roofing to mitigate storm water runoff on existing buildings and as part of new construction.*
- *Install underground cisterns to collect rooftop rain water for later use in irrigation.*
- *Monitor the development of porous pavements. When a suitable product comes available, install and test on campus.*

F. Facilities Planning, Renovations and Construction

Goal: Energy efficient and sustainable design standards shall be utilized on all new construction and applicable renovation projects undertaken after 2007. As of that deadline, all construction and renovations projects shall seek to meet or exceed a LEED “Silver” level of sustainability.

Immediate Consideration:

- *Obtain funding for LEED certification for all building and renovation projects after 2007.*
- *Design and build all new facilities and perform all renovations to LEED Silver standards.*

Future Consideration (within 5 years)

- *Monitor the development of other sustainability and energy efficiency construction guidelines (i.e. Energy Star, ASHRAE, Building Code) Adopt best practices regarding sustainable building design and construction as they develop.*
- *Pursue LEED EB certification for all existing buildings.*

G. Transportation

Goal: To reduce automobile trips to campus by 20% by 2012, through incentives and improvements in sustainable alternatives.

Immediate Consideration:

- *Create a comprehensive Campus Transportation Plan to balance the needs of all commuters to campus. Partnership with the City of Oshkosh is essential. Rising use and parking of bicycles and mopeds should be addressed.*
- *Designate a Director of Transportation Services. This should be more than a title change for the Director of Parking, as “parking problems” will become one of many equally important factors in a sustainable transportation plan.*

- *The parking fee price structure should be reviewed and revised to reflect the true costs of parking and/or market rates (e.g. responsive to supply and demand) and avoid subsidizing automobile drivers. There should be substantial financial savings for commuters who carpool.*
- *A significant amount of Compact car parking spaces (e.g. 25%) should be designated in every parking lot. They should be located at the preferred spots near building entrances.*
- *Create incentives such as preferential parking for hybrid, high efficiency and biodiesel vehicles.*
- *All campus vehicle purchases shall be fuel efficient and environmentally friendly. For now, that means the campus is limited to the purchase of E-85 compliant, high miles-per-gallon vehicles. The State of Wisconsin limits purchases to American-made vehicles, thus the most efficient vehicles and hybrids on the market cannot be acquired. If and when state policies change, the campus should revise this recommendation.*
- *Establish incentives to encourage students to not bring a vehicle to campus. One suggestion was that a student who elects not to bring a vehicle to campus would get his/her first choice in the selection of a residence hall.*
- *Develop an education program geared to all campus constituents regarding the true cost of automobile ownership. More than just the purchase price – fuel, maintenance, insurance, registration fees, impact on the environment.*
- *The health dimensions of transportation choices and the benefits of walking and biking for exercise should be emphasized to students, faculty and staff through education and incentive programs.*

Future Consideration (within 5 years):

- *A substantial research initiative must be launched to improve the understanding of the travel behavior and demand of the campus population. This information will impact planning priorities and focus areas for campus improvements. Transportation behavior and choices will be strongly influenced by the availability of housing, shops and entertainment on and near the campus.*
- *Purchase electric powered Cushman/Mule and pedal-powered vehicles wherever feasible for on-campus travel.*
- *Explore the possibility of providing specialized shuttle bus services at particular times of the year. For example, bus service to Outagamie Airport could be provided at the Winter Recess and at the beginning and end of each school year.*
- *Establish standards for sidewalk width that accommodate the large numbers of socializing students/staff and bicycles. Most campus and intra-campus city sidewalks are too narrow for more than two-way, single-file traffic.*
- *Create adequately designed bike lanes on campus and on adjoining city streets.*
- *Explore the possibility of establishing a campus, shared use bicycle program.*

H. Purchasing

Goal: Develop and follow sustainability-focused purchasing policies in more than 50% of spending for campus materials and equipment by 2012.

Immediate Consideration:

- *Develop a sustainability-based purchasing policy that stimulates the purchase of cost competitive (based on broad accounting standards, e.g. life cycle analysis) products and services. Products and services covered by this policy would have a reduced effect on human health and the environment compared to competing products or services that serve the same purpose.*
- *Produce and annually update a “green” guide to purchasing that provides a list of recommended environmentally friendly products or services. The guide should cover a wide variety of materials and equipment, including Energy Star-rated office equipment, kitchen equipment, laundry equipment, and vending machines.*
- *Establish a sustainability purchasing committee with the mission to research attributes of current campus purchasing patterns, identify alternatives, and to make recommendations. The committee should revisit and update their recommendations on an annual basis, or as necessary.*
- *The UW Oshkosh Purchasing Department should track and record sustainable purchasing efforts and prepare a report highlighting performance on an annual basis.*
- *Educate the campus community about sustainability purchasing programs and policies.*
- *Collaborate with UW System on pilot projects that demonstrate sustainable purchasing policies, particularly when state policies interfere with best practices; continuously, share the information with UW System, other institutions, and vendors to improve state policies and preferred vendor contracts.*
- *Make sustainable products and services easily available in convenience or “captive audience” situations (e.g. less harmful detergents in dorm laundry rooms, sustainable choices in dining halls and vending machines, etc.)*

I. Solid Waste Management

Goal: Reduce production of municipal solid waste by 30% from 2000 levels by 2012.

Immediate Consideration:

- *Create a 3-R’s (reduce, re-use, recycle)oversight committee. Membership should include students, faculty and staff. The committee will be tasked with developing policies and programs, provide oversight of 3R’s efforts, and report on recycling performance relative to campus generation of municipal solid waste.*
- *Develop a campus wide education effort geared toward the 3R’s that includes e-mails, posters, and fliers. Inform campus of how they can help the campus reach its goal of a 30% reduction in the campus solid waste output.*
- *Add more recycling receptacles, especially outdoor stations (currently lacking on campus).*

- *Develop infrastructure and confidence in information technologies (e.g. university servers and portable media; backup software) that can reduce printing and photocopying (and their production of waste paper).*
- *To create incentives for students to reduce paper use in computer labs, change printing policies to “pay as you go” cost charging beyond a reasonable number of pages; reduce that level as electronic storage technology improves.*
- *Recycle at all campus events such as athletic competitions, concerts and graduation ceremonies.*
- *Get campus involved in green recycling competitions amongst campus groups or with other institutions, such as a Recycling Olympics.*
- *Develop policies and collection sites for harmful and hazardous consumer wastes (e.g. batteries, electronics, light bulbs, paints/polishes/removers, cleaners, lighters, medicines, etc.)*
- *Enhance Residence Hall recycling and re-use efforts, especially on move-in and move-out days. Provide bins for food, clothing, shoes, furniture, computers, CD’s, paper, cardboard, etc.....*

Future Consideration (within 5 years):

- *Replace single-side printers with double-side printers, and install scanners to replace (some) uses of photocopiers, and thus reduce paper consumption.*
- *Create a campus wide rummage sale to increase re-use.*
- *Eliminate take-away food containers that cannot be recycled or composted (e.g., Styrofoam cups, most plastics, aluminum foil) and replace with recyclable plastics, biodegradable (plant-based) plastics, and unwaxed paper products.*
- *Compost all garden waste.*
- *Institute “pay as you throw” trash removal policies for dormitory residents, retail operations on campus, and other units; may require special equipment (though a low-tech solution is to sell standard bags with tags).*

J. Food Services

Goal: Food Services will minimize the environmental and social impacts of their operations (including indirect impacts of suppliers) while continuously providing a variety of nutritious and sustainably –grown foods.

Immediate Consideration:

- *The upcoming Dining Contract for campus food services should include sustainability goals, benchmarks, and timetables. Discussions with dining services, Sodexo, and others, suggest this could involve:*

- *Shell eggs from free range chickens*
- *Liquid eggs from cage free chickens*
- *Organic milk from humanely treated cows*
- *Fair trade coffee*
- *Biodegradable utensils, flatware, and other disposable items*

- *Increase offerings of well-labeled, sustainably-produced foods (locally grown, organic, fair trade, humanely-grown), including fruits, vegetables, grains, dairy, eggs, and meat. The goal should be to provide an a constant reminder that people have sustainable food choices .*
- *Provide an organic option at all meals.*
- *Institute a “Meatless Monday” or other programs campus-wide to educate students about healthy vegetarian options and potential to reduce their environmental impacts.*
- *Purchase certified sustainable fish, using expertise of organizations such as the Monterey Bay Aquarium’s Seafood Watch Program and the Marine Stewardship Council.*
- *Investigate the purchase of compostable flatware and plates for Reeve Union and Blackhawk Commons.*
- *Purchase and utilize environmentally friendly cleaners and detergents throughout all food service operations.*
- *Develop a plan for the disposal of popular, and possibly sellable, food wastes (e.g., coffee grounds).*
- *Establish a community garden to promote sustainable practices, provide student research opportunities, and promote outreach to wider community. Establish a summer internship in community gardens to maintain the gardens and provide tours and educational opportunities to the community.*

Future Consideration (within 5 years)

- *Engage consultants (e.g., Food Service Technology Center) to provide a thorough review of our food services operations, and to provide recommendations for improvements and advice on the purchase of energy efficient equipment and processes.*
- *Compost appropriate food wastes. This will involve the identification of an appropriate site to conduct composting operations, the establishment of a process to segregate appropriate materials for composting (e.g. minimal meat or oils), and transportation of materials to the site. Investigate the use of vermiculture (worm husbandry). Use compost in campus gardens and greenhouses.*

K. Grounds Maintenance

Goal: Increase biodiversity and usable green space of the campus while reducing dependence on fossil fuels, other extracted minerals, chemical fertilizers and pesticides.

Immediate Consideration:

- *Develop policies to ensure that sustainability is one of the key decision –making components for landscape design, maintenance and management.*
- *Create a composting site and begin to compost appropriate materials on campus.*
- *Test environmentally safer herbicides to determine their effectiveness; if the products work, the campus should discontinue the use of conventional chemical herbicides, such as Roundup.*

- *Create more natural prairie areas such as exist near Halsey Science Building, allowing for aesthetic considerations (e.g. more flowering plants) in some landscape designs.*
- *Replace traditional grass with a newer variety that is drought resistant and requires little mowing (no maintenance lawn).*
- *Increase the amount of perennial planting throughout the campus, to replace plantings of annual plants that require disturbing the soil one or more times a year.*
- *Increase the number of rain gardens to increase groundwater infiltration throughout the campus (which will decrease stormwater runoff).*
- *Increase the planting of native species, and remove invasive non-native species on campus.*
- *Install drip irrigation in all flower beds to reduce water use.*
- *Investigate the possibility of using less ice melt chemicals and more sand to keep walkways safe for pedestrians during winter months.*

Future Consideration (within 5 years):

- *Build a greenhouse facility to propagate plants and increase the amount of available plant material. If a greenhouse was available, the campus would be able to re-use existing plants rather than throw away and purchase new each year. (Greenhouse facilities would support other recommendations in this plan, such as the campus gardens listed under food services and research needs.)*

TEACHING

A. Curriculum

Goal: Sustainability should be a recognized, emphasized, and common theme across colleges, departments and general education initiatives. Students should have extensive and diverse opportunities to study sustainability in their coursework.

Immediate Consideration:

- *Provide to faculty various avenues, such as faculty colleges, for learning more about the various dimensions and definitions of sustainability and the ways it is relevant to a variety of disciplines.*
- *Assess the existing courses and curriculum for breadth and depth in addressing sustainability issues.*
- *Encourage faculty to highlight the way sustainability is a dimension of courses that they currently teach.*
- *Encourage faculty to include a section on sustainability in existing courses,*
- *Encourage faculty to offer new courses that deal directly with sustainability. One method by which this can be accomplished is through Faculty Development Teaching Grants.*
- *Develop a plan to hire new faculty in a broad range of disciplines with interest and expertise in sustainability.*

Future Consideration (within 5 years):

- *In the longer term, UW Oshkosh should consider ways to ensure that every college student encounters the concept of sustainability. One possible way to accomplish this is to make sustainability an aspect of our Liberal Education Reform, including the possibility of a general education requirement that concerns sustainability.*
- *In order to expand the scholarly depth in the teaching of sustainability, UW Oshkosh should consider the possibility of developing graduate programs in sustainability.*

B. Extra-curricular Awareness Raising Across Campus

Goal: To raise awareness of students and staff through participation in campus sustainability activities that take place outside of the formal classroom. Doing so will increase our chances of generating a campus-wide commitment to sustainability.

Immediate Consideration:

- *Develop sustainability programs in the residence halls to reduce solid waste generated during move in and move out days.*
- *Require all residence hall Community Advisors to coordinate one sustainability program each year, providing them with models, contacts, and special funds for these events.*
- *Develop a Student Sustainability Leaders Program in which students serve in paid positions as student sustainability educators.*
- *Inaugurate competitions focused on sustainability amongst campus groups (e.g. dorms, clubs, departments, etc.) and with other institutions.*
- *Provide training for all faculty and staff on the importance of sustainability and the campus's policies and programs.*
- *Include sustainability in the first year experience housing program.*

C. Campus Events

Goal: To offer a large number and wide variety of well-attended events that teach and promote sustainability, and to coordinate and promote those events.

Immediate Consideration:

- *Ensure that current sustainability events have adequate support and are promoted appropriately. Seek to make the events even more attractive to the greater Oshkosh community.*
- *Use other major events (e.g., athletic competitions, concerts, ceremonies) as opportunities to demonstrate sustainability through waste reduction, recycling, etc., and to promote sustainability in general.*
- *Have a campus-wide sustainability calendar that is widely available on and off campus.*

Future Consideration (within 5 years):

- *Host state, national, or international conferences*

D. Internships, Service Learning, Volunteering

Goal: To expand the opportunities for UW Oshkosh students to garner hands-on experience in a wide range of sustainability initiatives by increasing the number of available internships, service learning, and volunteer experiences.

Immediate Consideration:

- *Survey existing internships, service learning, and volunteer opportunities to determine which ones are related to sustainability.*
- *Revive and expand the UW Oshkosh environmental audit and the internship associated with it. This would provide more information to support sustainability initiatives and give students valuable experience.*

Future Consideration (within 5 years):

- *Develop an internship program specifically related to sustainability, including internships both on and off campus.*
- *Develop new service learning opportunities related to sustainability, in particular those that cross departments and divisions.*
- *Encourage departments and student organizations to develop new volunteer opportunities directly related to sustainability.*
- *Utilize UW Oshkosh's off-campus properties as a way to provide internship and research opportunities for our students.*

RESEARCH

Goal: To develop and maintain research and scholarship that supports campus sustainability efforts, contributes to the professional development of staff, and challenges students to apply their emerging skills and knowledge.

Immediate Consideration:

- *Develop and maintain a sustainability research clearinghouse website, including communication tools and databases for expertise (on campus and; collaborators), project ideas and problem-posing (campus and community), ongoing and /past research, and funding sources.*
- *Develop garden and greenhouse facilities on-campus for use in research projects (Note: a similar recommendation for operational and teaching uses are listed above).*
- *Increase dissemination of research findings through public meetings)*

Future Consideration (within 5 years):

- *Add faculty expertise in relevant engineering fields (could be associated with other UW campuses or colleges)*
- *Develop a Geographical Information System (GIS) database for campus property*
- *Develop awards and rewards for best sustainability research*
- *Purchase/lease off-campus land for research activities not compatible with the small, crowded main campus due to space, noise, odor, safety, and other concerns (e.g. Campus Farm and Technology Site).*

OUTREACH

Goal: To develop and maintain sufficient outreach efforts so that the sustainability lessons learned by UW Oshkosh are known, appreciated, understood, and used by the public.

Immediate Consideration:

- *Raise UW Oshkosh profile as a leader in sustainability with consistent representation at local, regional and national meetings and conferences related to sustainability.*
- *Establish a physical location for sustainability staff and their activities, including outreach (e.g. a Center for Sustainability).*
- *Review materials currently used to promote UW Oshkosh and its programs for potential to add sustainability information, messages, appeals, images, etc.*
- *Create presentation materials (e.g., booth display, posters, Powerpoint files) summarizing campus sustainability efforts, and train staff who will represent the university.*
- *Continue and strengthen the current practice of major, week-long campus events each semester to promote sustainability on campus (Earth Charter Community Summit; Earth Week).*
- *Create a university website on sustainability activities, highlighting the campus but considering use by the broader community.*

Future Consideration (within 5 years):

- *Develop and install signs (black & yellow UW Oshkosh style) designating sustainability-related places, structures, etc. (e.g. alternative fuel storage; environmental parks; rain gardens; off-campus preserves, etc.)*
- *Develop and install kiosks and other illuminated information sources on structures and walkways describing either green technology or sustainability concepts, particularly along routes frequented by the public (e.g., riverfront trail;)*

X. Glossary

- **Alternative Energy:** Energy sources different from those in widespread use at the moment, which are referred to as conventional. Alternative energy sources include solar, wind, wave, tidal, hydroelectric, and geothermal. Although each has its drawbacks, none of these energy sources produces significant air pollution, unlike conventional sources.
- **Bio-Diesel:** A type of biofuel that can be used in place of diesel fuel in modified engines. Biodiesel (fatty acid alkyl esters) is a cleaner burning diesel replacement fuel produced (by transesterification) from natural, renewable sources such as new and used vegetable oils and animal fats. A common form of biodiesel is rapeseed methyl ester (RME), which is derived from rapeseed oil.
- **Biofiltration:** A pollution control technique using living material to capture and biologically degrade process pollutants. Common uses include processing waste water, capturing harmful chemicals or silt from surface runoff, and microbotic oxidation of contaminants in air.
- **Biomass:** Refers to living and recently dead biological material which can be used as fuel or for industrial production. Most commonly, biomass refers to plant matter grown for use as biofuel, but it also includes plant or animal matter used for production of fibres, chemicals or heat. Biomass may also include biodegradable wastes that can be burnt as fuel.
- **British Thermal Unit(BTU):** Any of several units of energy (heat) in the HVAC industry, each slightly more than 1 kJ. One BTU is the energy required to raise one pound of water one degree Fahrenheit, but the many different types of BTU are based on different interpretations of this “definition”. The power of HVAC systems (the rate of cooling and dehumidifying or heating) is sometimes expressed in BTU/hour instead of simply watts
- **Chiller:** A device that removes heat from a liquid via a vapor-compression or absorption refrigeration cycle. This cooled liquid flows through pipes in a building and passes through coils in air handlers, fan-coil units, or other systems, cooling and usually dehumidifying the air in the building. Chillers are of two types; air-cooled or water-cooled. Air-cooled chillers are usually outside and consist of condenser coils cooled by fan-driven air. Water-cooled chillers are usually inside a building, and heat from these chillers is carried by recirculating water to outdoor cooling towers.
- **Composting:** The controlled aerobic decomposition of biodegradable organic matter, producing compost. The decomposition is performed primarily by aerobic bacteria, helped by larger creatures such as ants, nematodes and oligochaete worms.
- **Connected Load:** The sum of the ratings of the electricity consuming apparatus connected to a generating system.
- **Controller:** A device that controls the operation of part or all of a system. It may simply turn a device on and off, or it may more subtly modulate burners, compressors, pumps, valves, fans, dampers, and the like. Most controllers are

- automatic but have user input such as temperature set points, e.g. a thermostat. Controls may be analog, or digital, or pneumatic, or a combination of these.
- **Ethanol:** Also known as *ethyl alcohol* or *grain alcohol*, a colorless liquid that is produced by the fermentation and distillation of starch crops, such as corn, barley, that have been converted into simple sugars. Its chemical formula is C_2H_5OH . Ethanol can also be produced from cellulosic biomass such as trees and grasses and is called bioethanol. It is most commonly used to increase octane and improve the emissions quality of gasoline and is also used as an alternative fuel.
 - **E-85:** Ethanol can be blended with gasoline to create E85, a blend of 85% ethanol and 15% gasoline. E85 and blends with even higher concentrations of ethanol, E95, for example, qualify in the US as alternative fuels under the Energy Policy Act of 1992 (EPAct). Vehicles that run on E85 are called flexible fuel vehicles (FFVs) and are offered by several vehicle manufacturers.
 - **Energy Audit:** A survey that shows how much energy is used in a facility. It helps identify inefficiencies and ways to use less energy. A energy audit will pinpoint where a facility is losing energy and determine the efficiency of a facilities heating and cooling systems.
 - **Geothermal energy:** Heat from the Earth's interior that is a potential source of energy. The commonest way of capturing the energy from geothermal sources is to tap into naturally occurring hydrothermal convection systems where cooler water seeps into the Earth's crust, is heated, and then rises to the surface. When heated water is forced to the surface, it is straightforward to capture that steam and use it to drive generators.
 - **Geothermal Heat Pump:** A type of heat pump that uses the ground, ground water, or ponds as a heat source and heat sink, rather than outside air. Ground or water temperatures are more constant and are warmer in winter and cooler in summer than air temperatures. Geothermal heat pumps operate more efficiently than conventional or air-source heat pumps.
 - **Green Power:** A popular term for energy produced from clean, renewable energy resources.
 - **Greenhouse Gases:** Those gases, such as water vapor, carbon dioxide, tropospheric ozone, methane, and low level ozone that are transparent to solar radiation, but opaque to long wave radiation, and which contribute to the greenhouse effect.
 - **Green Roofing:** A **green roof** is a roof of a building that is partially or completely covered with vegetation and soil, or a growing medium, planted over a waterproofing membrane. It may also include additional layers such as a root barrier and drainage and irrigation systems. The term "green roof" may also be used to indicate roofs that utilize some form of "green" technology, such as solar panels or a photovoltaic module. Green roofs are also referred to as eco-roofs, vegetated roofs, living roofs, and greenroofs.
 - **HVAC:** An acronym that stands for "**heating, ventilation, and air conditioning**". HVAC is sometimes referred to as "climate control" and is particularly important in the design of medium to large industrial and office buildings such as sky scrapers and in marine environments such as aquariums,

where humidity and temperature must all be closely regulated while maintaining safe and healthy conditions within.

- **Kilowatt (kW):** A standard unit of electrical power equal to 1000 watts, or to the energy consumption at a rate of 1000 joules per second.
- **Kilowatt Hour (kWh):** A unit or measure of electricity supply or consumption of one thousand watts acting over a period of one hour. The kWh is a unit of energy. $1 \text{ kWh} = 3600 \text{ kJ} = 3412 \text{ Btu}$.
- **Leadership in Energy and Environmental Design (LEED):** A list of standards and certification scheme for environmentally-sustainable construction developed by the US Green Building Council (USGBC). The Leadership in Energy and Environmental Design (LEED) Green Building Rating System is presently the most popular and respected guide for green building in the United States. It evaluates environmental performance from a whole-building perspective over a building's life cycle, providing a definitive standard for what constitutes a "green building."
- **Light Emitting Diode (LED):** A semiconductor light source. LEDs can produce a very bright light for a small amount of power. They are used in many applications e.g. car break lights, traffic lights, but white coloured LEDs are a relatively new technology.
- **Low emissivity (low-E) Glass:** Glass that has a low-emissivity coating applied to it in order to control heat transfer through windows. Windows manufactured with low-E coatings typically cost about 10–15% more than regular windows, but they reduce energy loss by as much as 30–50%.
- **Methane:** A colorless, odorless, tasteless gas composed of one molecule of carbon and four of hydrogen, which is highly flammable. It is the main constituent of natural gas that is formed naturally by methanogenic, anaerobic bacteria or can be manufactured, and which is used as a fuel and for manufacturing chemicals.
- **Photovoltaic:** Pertaining to the direct conversion of light into electricity. The word "photovoltaic," first used in about 1890, is a combination of the Greek word for light and the name of the physicist and electricity pioneer Alessandro Volta. So, "photovoltaic" can be translated literally as "light-electricity." The conversion of sunlight to electricity using photovoltaic (PV) cells, also known as solar cells, is based on the photoelectric effect discovered by Alexander Bequerel in 1839. The photoelectric effect describes the release of positive and negative charge carriers in a solid state when light strikes its surface.
- **Solar Hot Water Heating System:** Solar water heating systems include storage tanks and solar collectors. There are two types of solar water heating systems: active, which have circulating pumps and controls, and passive, which don't. Most solar water heaters require a well-insulated storage tank. Solar storage tanks have an additional outlet and inlet connected to and from the collector. In two-tank systems, the solar water heater preheats water before it enters the conventional water heater. In one-tank systems, the back-up heater is combined with the solar storage in one tank.
- **Thermal Ice Storage:** Refers to a number of technologies that store energy in a thermal reservoir for later reuse. They can be employed to balance energy demand

between day time and night time. The thermal reservoir may be maintained at a temperature above (hotter) or below (colder) than that of the ambient environment. The principal application today is the production of ice, chilled water, or eutectic solution at night, which is then used to cool environments during the day.

- **Wind Turbine:** A wind energy conversion device that produces electricity; it typically has one, two, or three blades. Wind turbines can be classified into the vertical axis type and the horizontal axis type. Most modern wind turbines use a horizontal axis configuration with two or three blades, operating either downwind or upwind.

APPENDIX A.

Chancellor's Charge Memo



To: Campus Sustainability Team Members:
Steven Arndt (Co-Captain, Facilities Management)
David Barnhill (Environmental Studies)
Michael Burayidi (Geography & Urban Planning)
James DeDecker (student)
Cathy Deringer (Grounds Crew, Facilities Management)
Jessi Dresen (student)
Steve Dunn (Business Administration)
Jim Feldman (Environmental Studies)
Tom Fojtik (Residence Life)
Marcy Hauer (Chemistry Stockroom)
Chuck Hermes (Facilities Management)
Jim Johnson (Purchasing)
Tamara Jones (student)
Jacob Jungers (student)
Mike Lizotte (Co-Captain, Biology and Microbiology)
Colleen McDermott (Biology & Microbiology)
Greg Olson (student)
Dan Potratz (student)
Andy Robson (L & S Dean's Office)
Dani Stolley (Foundation)
Marty Strand (University Dining)
Mark Streufert (Facilities Management)
Michelle Wentz (Residence Life)

From: Richard H. Wells, Chancellor, and Lane Earns, Provost

Re: Campus Sustainability Team Charge, Goals, Roles and Responsibilities

Date: October 2, 2006

Over the last year, different groups of faculty, staff, students and individuals have asked that we have a more coordinated effort across campus on sustainability. A small group composed of David Barnhill, Steven Dunn, Dani Stolley, Steve Arndt, Jim Feldman, Nancy Hintz, Mike Lizotte, Andy Robson and Tom Sonnleitner worked with Provost Lane Earns and me to develop the Campus Sustainability Team Charge, Goals, Roles and Responsibilities for the team. We greatly appreciate the work they have done in preparing the following document.

It is our pleasure to provide confirmation of your assignment to the Campus Sustainability Team. It is important to note that this is not a committee or task force. Rather, it is a group of people selected because of their expertise and commitment to work together toward sustainability goals as they hold themselves mutually accountable. All team members will be expected to serve for a minimum of two years. Given that several members of the team have job descriptions directly related to the team's goals, they would remain on the team as long as they work at UW Oshkosh. Student intern(s) will be assigned to the team. The Campus Sustainability Team will have an external advisory group with which it will consult. It will devise a plan to ensure a sense of ownership and participation in the planning processes among relevant staff, student and faculty members.

Rationale for a Campus Sustainability Team

- ❖ **The current situation.** Experts in various disciplines and arenas have shown that human impacts on the environment are creating situations that lower the capacity of Earth to support humanity and other life forms, and that in certain key arenas the situation is likely to deteriorate.
- ❖ **Current trends in human consumption and the use of resources are not sustainable.** Unsustainable societies are creating situations that promote wars, make it difficult to achieve social and economic justice, and increase challenges and risks for future generations seeking a high quality of life.
- ❖ **The environment and society.** Ecological integrity is interrelated with various aspects of human welfare. This welfare depends on a healthy, sustainable environment, and deterioration in social conditions leads to environmental degradation.
- ❖ **The responsibility of universities.** The university is a member of the social and ecological community, and shares a responsibility to be a positive force in preserving and enhancing environmental and social well-being. More importantly, it has a unique role as an institution that develops expertise in the science, technology, and policies of sustainability as well as in the philosophical basis for sustainability. In addition, it is the principal site for teaching future leaders who will play pivotal roles in creating a sustainable society. All academic disciplines are relevant to sustainability, having distinctive resources for cultivating sustainability. As Georgia Tech University has said: “sustainability is everyone’s responsibility, and . . . each discipline, inter-discipline, and profession has a particular contribution to make” (Clough et al, “Sustainability and the University”). Various international bodies have signed declarations affirming this responsibility of universities, including the United Nations, which has declared that 2005-2014 is the Decade of Education for Sustainable Development.
- ❖ **The responsibilities of the University of Wisconsin Oshkosh.**

- As one of the largest institutions in the city and state, the unsustainable practices of UW Oshkosh have major implications for creating environmental impacts and resource depletion. Because of its small land area, the campus imports nearly all its energy and materials, and exports practically all its wastes. With many faculty, staff, and students commuting to campus, the university's environmental impact is indirectly multiplied by the need for transportation and off-campus housing. To lessen its impact on surrounding communities and ecosystems, the university has a responsibility to reduce direct and indirect consumption of resources and production of wastes. Sustainability can also be approached by using resources from renewable sources, and limiting wastes to re-usable or recyclable forms. The financial responsibilities of the institution to the state and to paying students also support the reduction of wasteful practices.

- The university has professed institutional values that support the attainment of a sustainable campus. The UW Oshkosh **Vision** includes the goal of being “a national model as a responsive, progressive and scholarly public service community known for its accomplished record of engaging people and ideas for common good.” One of our sets of **Core Values** is “Social Awareness and Responsiveness. We believe that educators and students should explore and engage the challenges that confront regional, national and global communities, using their intellectual and creative capabilities to understand, investigate and solve problems. Social awareness will allow us to respond to domestic and international needs for equitable and sustainable societies.” By endorsing the **Earth Charter**, UW Oshkosh has committed itself to the principles of ecological integrity, social and economic justice, and democracy, nonviolence, and peace. The Charter states that “we must decide to live with a sense of universal responsibility, identifying ourselves with the whole Earth community as well as our local communities.”

- ❖ **Other colleges and universities.** Few other colleges and universities have established comprehensive sustainability programs. Such an approach to campus planning, particularly if progress is measured and substantial, would place UW Oshkosh in the vanguard of institutions demonstrating that sustainable operations are achievable, that sustainability education impacts college graduates, and that universities can lead surrounding communities to a sustainable future.

Sustainability in Higher Education: Definition and Conceptual Framework

Although there are various definitions of sustainability, the basic meaning is living in a way that ensures that future generations enjoy the benefits of a healthy environment and social well-being. Sustainability is not limited to environmental concerns but rather integrates three dimensions: ecological integrity, social justice, and economic well-being. It is also not limited to merely preserving resources. It also includes positive steps toward ecological, social, and economic health.

In higher education, the notion of sustainability has special meanings. The University Leaders for a Sustainable Future (ULSF) has stated that: "Sustainability' implies that the critical activities of a higher education institution are (at a minimum) ecologically sound, socially just, and economically viable, and that they will continue to be so for future generations. A truly sustainable college or university would emphasize these concepts in its curriculum and research, preparing students to contribute as working citizens to an environmentally sound and socially just society. The institution would function as a sustainable community, embodying responsible consumption of food and energy, treating its diverse members with respect, and supporting these values in the surrounding community."

As this definition suggests, there are various aspects in sustainability in higher education. Four dimensions are often highlighted: teaching, research, operations, and outreach, with the notion of sustainability having different nuances in each. The teaching dimension is frequently referred to as "education for sustainability." According to UNESCO, education for sustainability is a "dynamic concept that encompasses a new vision of education that seeks to empower people of all ages to assume responsibility for creating a sustainable future."

The Presidents Council on Sustainable Development has added that "Education for sustainability is a lifelong learning process that leads to an informed and involved citizenry having the creative problem-solving skills, scientific and social literacy, and commitment to engage in responsible individual and cooperative actions. These actions will help ensure an environmentally sound and economically prosperous future." Education for sustainability, then, seeks to empower students with a deep sense of environmental and social citizenship and with the knowledge and skills needed to work effectively for sustainability.

Sustainability in research involves gaining expertise and communicating new ideas that enable society to create a sustainable future. Sustainability in operations involves minimizing our ecological footprint and ensuring an economically and socially just community on campus. Sustainability in outreach includes sharing that knowledge with the broader community, as well as obtaining financial resources necessary to do all of these goals.

UW Oshkosh already is considered a national model in terms of several aspects of sustainability. In order to build towards a truly sustainable institution, we need a comprehensive plan that gives direction for specific actions in education, research, operations, and outreach.

The Charge for the Team

The team is charged with devising an integrated Campus Sustainability Plan (CSP), which would serve as a component of several key operational plans. The CSP will:

- ❖ Indicate how the CSP is an outgrowth of UW Oshkosh's Governing Ideas, an endorsement of Earth Charter, and a recognition of the university's responsibility to work toward a sustainable future.
- ❖ Help ensure that our campus sustainability is comprehensive, including operations, teaching, research, and outreach.
- ❖ Make substantive recommendations for achieving sustainable operations and sustainability education based on environmental audits and needs assessments.
- ❖ Increase the sense of environmental and social citizenship of UW Oshkosh as a whole and as one goal of our students' education.
- ❖ Cultivate awareness and appreciation on campus of sustainability, its relevance throughout the university, our responsibility to promote it.
- ❖ The Team will report to the Provost and Vice Chancellor submitting annual reports in May of the Team's progress in planning and moving forward recommended programs to improve campus sustainability as well as the university's progress in campus sustainability. The Provost will distribute the report for consideration by governance groups, vice chancellors and deans.

Team Goals

In accomplishing the team charge, the Team will pursue the following goals:

- ❖ Maximize campus ownership of the planning process and the resulting plan;
- ❖ Involve internal and external University constituents in the on-going operational planning and refinement process;
- ❖ Analyze the current level and significance of sustainability in operations, teaching, research, and outreach;
- ❖ Analyze the resources being used for campus sustainability and estimate additional resources needed;
- ❖ Clarify the notion of campus sustainability, learning from how other campuses and organizations conceptualize sustainability and put sustainability into practice; and
- ❖ Establish criteria for UW Oshkosh to be a model institution dedicated to sustainability.

The Campus Sustainability Plan (CSP)

The CSP will provide information and analysis concerning the current status of the four dimensions of sustainability on campus and will describe and prioritize options for making progress towards sustainability goals. These options will be formulated as strategies and action steps that can be measured and assessed. Those aspects of the plan that require approval by specific areas of the university (e.g., curriculum) will be submitted to those areas via the Provost (e.g., faculty governance) for consideration and approval.

To evaluate the overall success of the campus-wide effort, we need to analyze at the beginning and at later stages:

- ❖ Resources and energy used, and wastes produced, disposed, recycled and re-used on campus and for university-dependent activities (such as transportation and off-campus housing). We can measure these parameters by continuing and expanding the Campus Environmental Audit.
- ❖ The awareness among students, faculty, staff, and the wider community of sustainability in general and of UW Oshkosh sustainability efforts and achievements. We can measure this by polling these groups to learn: “Has the awareness of sustainability increased due to UW Oshkosh efforts?”
- ❖ The breadth and integration of sustainability efforts on campus. We can measure this by asking: “Have we involved all relevant sectors of university and improved the integration of their efforts?”
- ❖ The degree of involvement of external stakeholders. We can measure this by asking: “Is the breadth and involvement of external stakeholders adequate for the planning and implementation of the CSP?”
- ❖ The resources we have for implementing the plan. We can measure this by asking: “Are the amount and types of resources adequate for the planning and implementation of the CSP?”

Goals of Sustainability Plan

1. be easy to measure, so as to hold UW Oshkosh accountable for progress,
2. avoid confusion with broad strategies and action plans,
3. align with, or minimize conflicts with, other university strategic and operational plans,
4. share responsibility and benefits with the whole University,

5. be engaging and strategic,
6. demonstrate a grounding in baseline data and needs assessments, and
7. apply both internally and externally to university-related activities.

The Promise to Support the Team

We are asking team members to take on very challenging tasks and to provide leadership in the development and execution of a Campus Sustainability Plan. However, assistance exists in the following forms:

1. Existing well-developed and ever-improving university strategic and operational plans, processes, actions and successes;
2. The involvement and support of the university community and its internal and external leaders;
3. Valuable information obtained through the campus-wide environmental audit, updated annually.
4. Membership in institutions supporting campus sustainability (such as Campus Ecology and the Association for the Advancement of Sustainability in Higher Education);
5. On-campus consultant visitations, as needed;
6. Support for team members and others for professional development programs in the area of campus sustainability, including attendance at conferences;
7. Course release or equivalent time release from current duties for the Chair of the CST.

TIMELINE to be used the Campus Sustainability Team:

Task	Date
Select and Charge Team	September 27, 2006
Lay the foundation: draft preliminary plan outline	October 5, 2006
Launch Sustainability Team; name CSP writing committee	October 12, 2006
Review CSPs from other institutions	November 2, 2006
Meet with/get feedback from UW Oshkosh and external stakeholders	December 7, 2006
Complete research on possible UW Oshkosh CSP strategies	February 9, 2007
Complete initial draft CSP and distribute to external advising committees	March 9, 2007
Present draft plan (revised) to campus community	April, 2007

Complete CSP and submit to Provost	July, 2007
Provost distributes CSP to governance groups, vice chancellors, and deans for review and feedback	August, 2007
Provost submits plans, feedback summary and recommended 1 and 5 year implementation priorities to Chancellor	October 2007
CSP annual report summaries included in University's Strategic Plan and Annual Report	Ongoing

APPENDIX B

Campus Sustainability Team Survey

Online Survey Results

The 113 recommendations were broken into 6 surveys, which were completed by 13 to 17 members of the CST. The format was that each recommendation was followed by two questions, with 5 possible rank choices each. The rankings were compiled into the following high and low categories:

BROAD: “All” + “Nearly All”

Narrow: “Some” + “Few”

DEEP: “Paradigm-shift (started or confirmed) in attitude or practice”
+ “Will gain new perspective of change behavior”

Shallow: “Will merely notice a difference, or only weakly influenced to act”
+ “Will not notice or act”

There were 35 recommendations that did not show a majority (= or >50% of surveys) in any of these categories. The central rankings (“Most” for breadth and “Will make an impression or consider action”) may have been popular, or the CST members were highly varied in their responses.

The other 78 recommendations had majorities in one or more of the 4 categories listed above. The table below suggests how these majority opinions might be expressed in the CST Report:

MAJORITY OF CST RANKINGS AS:	POSSIBLE CONSIDERATIONS:
BROAD plus DEEP	Very Strong emphasis in report. (18 recommendations)
BROAD DEEP NARROW but DEEP	Emphasize in report. (37 recommendations)
BROAD but SHALLOW	<i>Emphasize if easy to accomplish?</i> (1 recommendation under “Buildings”)
NARROW NARROW plus SHALLOW SHALLOW	<i>Evaluate Critically; drop as final recommendations.</i> (22 recommendations)

The following tables show majority opinions of BROAD, narrow, DEEP, and/or shallow for each recommendation. The numbers are percent, and narrow and shallow are

presented as negative values. The recommendations are highlighted in bold if BROAD and/or DEEP, larger font if both, and in italics if deemed narrow or shallow.

STUDIES NEEDED (24 items)

BROAD	narrow	DEEP	shallow	RECOMMENDATION
				Assess the existing courses and curriculum for breadth and depth in addressing sustainability issues.
	-53		-35	<i>Assess the number of students taking one or more classes that address sustainability</i>
	-80		-43	<i>Develop a Geographical Information System (GIS) database for campus property</i>
				Initiate studies of alternative electricity generation technologies (photovoltaic, wind, biomass) to estimate when they will become feasible investments
				Initiate studies of alternative heating and cooling technologies (biomass-burning boilers, ground source heat pumps) at existing facilities that are not connected to the central heating/cooling system (Foundation Center, Cub Foods, Old Credit Union, Ceramic Lab, Aquatic Research Lab, and Titan Stadium)
53		41		Initiate studies of more efficient lighting options (e.g. LED) to estimate when retrofitting will be feasible
				Initiate studies of “green roof” technology (e.g. thin beds of prairie plants -- to cool buildings and mitigate storm water runoff) to determine feasibility for existing buildings new construction
53		18		Initiate studies of porous pavements (allow stormwater to soak into the ground for filtration instead of running into streams and lakes) for products suitable for campus needs on walkways and parking lots.
53		71		Initiate studies of commuting students and staff to understand their needs, preferences, commuting costs, transportation options, parking habits, vehicle size, and parking cost sensitivity (e.g. relative to fuel and other costs)
				Review bus transit to understand commuter needs and desires for hours of service, routes, seasonality, intermodal links (to airports, intercity bus/rail, bike trails), considering whether the University can augment or replace city bus services (e.g. shuttle bus/van, chartered buses for holidays and move-in/out, etc.)

47		71		Develop a “green guide to purchasing” to provide lists of the top recommended products (e.g. Energy Star rated office, laundry, vending, and kitchen equipment) that are updated regularly
				Evaluate existing food service operations for energy and water use (e.g. by the Food Service Technology Center of California)
				Study the feasibility of composting the amount and types of food waste produced
	-65		-35	<i>Study options to sell or donate valued food wastes (coffee grounds, oils, etc.).</i>
	-50		-12	<i>Determine how campus gardens might supply food (types, amounts, cost effectiveness) and recycle food wastes</i>
	-53		-41	<i>Study the feasibility of installing a bio-digester to process food wastes producing methane that can be burned for heat and/or electricity generation</i>
56		69		Study campus solid waste production and recyclable, re-usable and compostable content to develop a plan to decrease solid waste production by addressing which materials to target, how and where to collect (e.g. more receptacles; outdoor recycling stations), education (e-mails, posters, and fliers) and events (campus wide rummage sale; residence hall move-out day collections/donations; recycling Olympics)
	-59		-30	<i>Determine appropriate giveaway and other trade show type items suitable for promoting sustainability, considering image, material use, waste, utility, and desirability</i>
				Review materials currently used to promote UW Oshkosh and its programs for potential to add sustainability information, messages, appeals, images, etc.
	-88		-25	<i>Determine which branches and affiliates of UWO that engage in outreach can best contribute to outreach about campus sustainability (e.g. Continuing Education, Center for Community Partnerships, Alumni Relations, UWO Foundation, Science Outreach, etc.)</i>
				Determine the feasibility of mandating the purchase of environmentally-friendly cleaning products, considering cost, effectiveness and hygiene standards
				Study options for food service purchasing based on sustainable farming and fishing practices.

				Study the effectiveness of environmentally-friendly herbicides under campus conditions, with a goal of eliminating the use of chemical herbicides such as Roundup
66		50		Assess the possibility of burning alternative fuels at the campus heating plant.

PLANS AND POLICIES (31 items)

BROAD	narrow	DEEP	shallow	RECOMMENDATION
86		66		Incorporate sustainable operations training into faculty/staff/student orientations, annual/periodic reviews, reminders, and retraining
38		50		Add a regular section on sustainability to the UWO Annual Report
	-56		-6	<i>Discuss and set policies and procedures for determining when and how UW Oshkosh engages in sustainability-related campaigns, signs petitions, joins groups, etc. (e.g. Cool Cities Campaign, Campus Climate Challenge, etc.)</i>
37		56		During low usage periods (summer, interim, weekend), consolidate classroom usage to the most energy efficient building(s) that meet course requirements
56		44		Establish campus standards for sidewalk and path widths that accommodate students and bicycles (many campus sidewalks, and all city sidewalks, are too narrow) for use in all new construction and renovation
63		75		Develop a Campus Transportation Plan that encourages more efficient transportation options (pedestrian, bus, bike, mopeds/scooters/motorcycles, car/vanpools, etc.) and discourages wasteful single-occupant car/truck commuting
56		69		Establish incentives for students and staff to refrain from bringing cars/trucks to campus (e.g. preferred housing; bike storage; waive fees; downtown promotions, frequent flyer miles, cash, etc.)
38		63		Revise parking fee price structure to reflect market value (land use, competition), provide incentives to carpool, and generate revenue that covers construction, upkeep, improvements, and related costs (e.g. snowplowing, stormwater management, law enforcement, landscaping, electricity, parking office staff, etc.)

38		69		Encourage commuters to use more efficient vehicles by designating parking spaces for compact cars, bikes, and motorbikes at preferred locations (central lots, near building entrances, first floor of parking structures, etc.)
25		69		Establish campus vehicle and fuel storage guidelines that emphasize environmental responsibility in future purchases; current options favor E-85 compliant high MPG vehicles (hybrid vehicles could be more or equally responsible, but current state restrictions against purchasing non-American brands severely limits the range of vehicles available)
50		74		Develop a sustainability-based campus purchasing policy, including a long-term vision and definitions regarding green purchasing (e.g. a “beginner’s guide to green purchasing”)
44		56		Environmentally Responsible Purchasing Standards (ERPS) should be developed for major areas of purchasing (e.g. standards for energy efficiency, water use, pollution output, recycled content; disposal costs, health risks, etc.)
20	-53	56	-19	Set campus policy and process for seeking and funding LEED certification for building construction and refurbishment
50		69		Develop campus policies and processes for reviewing and implementing energy efficiency projects/retrofits as new products/technologies emerge
55		75		Mandate that all new construction be built in an aggressively energy-efficient manner, which today would mean 50 kBtu/sf (ca. 50% of typical construction
				Specify “green”, but fire-retardant, carpet and upholstery products in construction and refurbishment
6	-69	56	-19	Develop a plan to increase utilization of hazardous materials (e.g. used in scientific, artistic or other endeavors) for course-related activities rather than storage or disposal
40		63		Develop campus policies and processes for reviewing and implementing green cleaning products as they become available
38		56		Require that contracted food service, custodial, or laundry services use green supplies
94		75		The campus will purchase or produce 100% of its electricity needs through renewable sources by 2012

87		81		Reduce overall energy consumption by 20% (from fiscal year (FY) 2005 levels) by FY2010
19	-56	50	-12	Plan and plant landscaping so that water for irrigation may be acquired from storm water basins or ponds
56		69		Double recycling to 20% of solid waste by 2010
31		56		Maximize the number of students taking one or more classes that address sustainability -- incrementally through increased course offerings, degree requirements, marketing, etc.
69		75		Maximize the number of students taking one or more classes that address sustainability -- through a General Education requirement for sustainability or environmental awareness
44		63		Provide students with more courses clearly focused on sustainability, in general and from relevant disciplinary perspectives (could be new courses or modifications to existing courses).
13	-87	69	-12	Develop graduate programs in sustainability (could be interdisciplinary; dept. or college; certificate or degree)
25	-56	81	-6	Increase the opportunities for our students to have outside-the-classroom, skill- and resume-building experiences with local businesses, non-profits, community organizations, etc. through internships, volunteering, service learning, and faculty-supervised research projects
75		40		Seek to extend the winter recess period one additional week to reduce the campus heating requirement and conserve energy
50		31		Adopt a campus wide sustainability mission statement
	-50		-25	<i>All future purchases of campus vehicles shall have features that lower environmental impacts (e.g. appropriate size, fuel efficiency, biofueled, electric, fuel-celled, hybrid, etc.)</i>

AWARENESS-RAISING (20 items):

BROAD	narrow	DEEP	shallow	RECOMMENDATION
				Raise student awareness and participation in UWO green campus initiatives through programming in the residence halls (e.g. activities, competitions, move-in/move-out waste reduction campaigns, etc.)
				Raise student awareness and participation in UWO green campus initiatives through peer educators
	-61		-7	<i>Develop a more centralized way of finding and publicizing volunteer opportunities in sustainability projects and organizations (on-campus and off)</i>
13	-53	53	-13	Raise UW Oshkosh profile as a leader in sustainability with consistent representation at local, regional and national meetings and conferences related to sustainability
				Develop posters about sustainability practices, initiatives, goals, projects, etc. for placement in campus work, play, and residence buildings and use at off-campus events
				Develop format and branding for sustainability promotional materials (brochures, leaflets, handbills, table-tents, banners, stencils, websites, etc.) and initiate use for general awareness and specific events
				Create presentation materials (booth display, posters, Powerpoint files) summarizing campus sustainability efforts, and train staff who will represent the university
				Publish and promote an Annual Energy Report linked to a campus-wide discussion of conservation, consumption trends, investment choices, future plans, and the importance of staff/student cooperation and innovation
				Educate students and staff about the full costs of bringing a vehicle to campus (purchase price, fuel, repairs, insurance, registration, tax, campus land use, pollution, etc.) to provide perspective on parking fee rates
73		73		Provide utilities (water, electricity, heat) usage feedback and education to campus users – with awareness, people can make better decisions about their use
				Publicize, encourage, and educate students and staff to report water waste on campus
	-74		-33	<i>Conduct storm water public education and outreach program</i>
7	-73	60	-13	Develop awards and rewards for best sustainability research

	-73		-20	<i>Increase the awareness and teaching use of off-campus university properties (Allen Marsh, High Trestle Woods, assorted park lots north/west of campus and at the stadium)</i>
				Continue current practice of major, week-long campus events each semester to promote sustainability on campus (Earth Charter Community Summit; Earth Week)
	-43		-50	<i>Develop a campus-wide sustainability calendar to promote and organize event schedules</i>
	-78		-42	<i>Increase dissemination of research findings through public meetings (each semester, if possible)</i>
				Use major campus events (athletic competitions, concerts and graduation ceremonies) as opportunities to demonstrate aggressive waste reduction and recycling
				Create a university website on sustainability activities, highlighting the campus but considering use by the broader community
	-71		-29	<i>Develop and maintain a sustainability research clearinghouse website, including communication tools and databases for expertise (on campus; collaborators), project ideas and problem-posing (campus and community), ongoing/past research, and funding sources.</i>

STAFFING (8 items):

BROAD	narrow	DEEP	shallow	RECOMMENDATION
59		79		Formalize and institutionalize the university's commitment to sustainability by designating appropriate sustainability responsibilities at all levels of Administration
44		56		Establish administration position and office in charge of Transportation Services (superceding parking administration) to allow the university to plan and encourage sustainable transportation
56		63		Formalize and institutionalize the university's commitment to sustainability by designating a sustainability coordinator/officer (eg. to assist with research project development and funding; coordinate outreach efforts; etc.)
20	-60	53	-13	Add faculty expertise in relevant engineering fields (could be associated with other UW campuses or colleges)
38		69		Train and designate student sustainability leaders in all UWO-associated student residences (each dorm, fraternities/sororities, future riverfront living/learning community off-campus; student commuter group; etc.)
13	-63	81	-0	Expand current student internships for Green Events Coordinator and Environmental Audit to support campus sustainability in other areas (outreach materials, toxic waste management, operations analysis, transportation, garden management, upkeep of off-campus UWO preserves, etc.)
50		69		Support development, implementation, and constant updating of sustainable purchasing plans and product recommendations through staffing and/or a service committee
67		73		Establish a permanent sustainability committee and subcommittees.

BUILDINGS AND GROUNDS (22 items)

BROAD	narrow	DEEP	shallow	RECOMMENDATION
100		57		Permanently reduce light levels in hallways/corridors of all buildings by 20%.
				Install pre-rinse, low-flow water faucets at Blackhawk Commons
67		47		Winter maintenance of pavement should refrain from using ice melting chemicals (e.g. salt) whenever sand can produce safe conditions
13	-60	67	-7	Develop Garden/Farm/Greenhouse sites, on and off-campus for landscape plant propagation, food production, composting, vermiculture, alternative energy projects, etc.; purchase/lease of campus land may be necessary for activities not compatible with the small, crowded main campus
				Create more natural-looking prairie areas for landscaping (but with greater emphasis on aesthetically-pleasing flowers than currently found at the science-oriented prairie site near Halsey Science Building)
36		54		Replace traditional grass with a newer variety that is drought resistant and requires little mowing (“no maintenance” lawn), thereby reducing water and energy use
				Use more perennial plants (multi-year) in place of annual plants that require more labor, water, energy, soil disturbance, and pest control
22		62		Install rain gardens, where appropriate, to provide more natural-looking stormwater drainage features
				Favor native species in campus landscaping, and remove invasive non-native species
	-57		-43	<i>Install drip irrigation in all flower beds to conserve water</i>
				Develop and install signs (black & yellow UWO style) designating sustainability-related places, structures, etc. (e.g. alternative fuel storage; environmental parks; raingardens; off-campus preserves, etc.)
				Develop/install kiosks and other illuminated information sources on structures and walkways describing either green technology, or sustainable ideology, particularly along routes frequented by the public (e.g. riverfront trail; sports complexes, student union, etc.)
14	-57	57	-14	Establish a physical location for sustainability staff and their activities, including outreach (e.g. a Center for Sustainability)

53	-39	15	-62	<i>Convert all pneumatic control systems to Direct Digital Control for mechanical control systems for many buildings to open and close valves</i>
				Install a thermal ice storage facility to lower the cost (not consumption) of electricity for air conditioning (by creating and storing ice overnight when the demand and cost for electricity is lowest) -- ice is then melted during the daytime to cool buildings
93		64		Install next-generation bathroom fixtures (extreme low flow/ dual flush toilets, waterless or low-flow urinals) throughout the campus
				Reduce irrigation needs through landscape design, composted mulch, and other practices designed to conserve water (and the energy needed to pump water)
	-62		-46	<i>Install Biofilters (plant beds) at all existing storm drains to filter storm water</i>
	-69		-30	<i>Disconnect roof drains from storm water system and divert to underground cisterns (for later use in irrigation), ponds, raingardens and biofilters</i>
14		57		Bike lanes should be created on campus and on adjoining city streets following national guidelines (current lanes are too narrow)
14	-57	50	-7	Provide adequate bicycle parking for commuters and bike storage for residents at appropriate locations throughout the campus
43		50		Generate a significant portion of hot water on campus using solar water heaters.

OTHER PRACTICES (7 items)

BROAD	narrow	DEEP	shallow	RECOMMENDATION
	-62		-31	<i>Provide electric-powered Mule vehicles to replace current gas-fueled models for on-campus transport</i>
	-69		-31	<i>Provide pedal vehicles (bicycle, tricycle) for use by facilities workers and other service personnel who routinely travel from building to building with small loads</i>
46		62		Replace non-recyclable and non-renewable food service items (e.g. petroleum-based plastics, aluminum foil) with renewable, plant-based, compostable products (plant-based plastics, paper)
	-62		-23	<i>Eliminate the use of solvent-based paints and finishes and move to water-based finishes</i>
8		54		Provide resident students with options to purchase green laundry supplies
54		46		Engage Oshkosh Student Association in discussions about the use of segregated fees for supporting campus sustainability efforts
62		77		Establish a permanent fund (or funds) for sustainability-related activities, operations, and research

APPENDIX C

Organization Details

ORGANIZATION

A. Campus Sustainability Council

The purpose, function, and composition of the Campus Sustainability Council might include:

- The council is advisory to the Campus Sustainability Director and the Chancellor.
- The charge of the council is to advise and make recommendations to the Chancellor on sustainability initiatives and to help prioritize and monitor sustainability plan goals.
- The Chancellor should appoint members of the faculty, staff, students and administration to the council, based upon a demonstrated interest and commitment to sustainability. Council members should serve for a term of two years, with some members serving more than one term.
- Advise the Chancellor on the soundness of the annual plan and budget drawn up by the Campus Sustainability Director.
- Provides guidance in the creation and fostering of alliances, in recommending membership in environmental organizations, and in developing ties with businesses and other outside entities.
- Recommends campus wide procedures and policies related to sustainability.
- Recommends establishment of related subcommittees.
- The Campus Sustainability Director would serve as an ex officio member of the council.
- Co-chaired by a representative from the teaching staff (faculty or academic staff) and from non-academic staff. Both would receive compensation or revised duties for these additional responsibilities. Co-chairs would plan and facilitate meetings, and organize and coordinate tasks.

B. Campus Sustainability Director

The role of the Campus Sustainability Director is as contained in the following set of bullet points:

- Ensures effective coordination and communication between individuals and units involved in sustainability.
- Collects and manages data vital to continual implementation and assessment of the Campus Sustainability Plan.
- Assists and supports efforts of student environmental groups.
- Updates and manages the environmental audit report.
- Facilitates collaboration with other universities, environmental groups, and outside organizations.
- Applies for and manages grants and contracts associated with campus sustainability and resource conservation.
- Oversees internships in sustainability on and off campus.
- Advises students and faculty concerning sustainability
- Supports, coordinates and participates in research activities associated with sustainability.
- Prepares annual report to the Chancellor regarding status of plan implementation.
- Manages campus sustainability website and links to other related sites.
- Coordinates campus outreach efforts. Publicizes campus accomplishments, coordinates campus events.
- Serves as Ex-officio member of the Campus Sustainability Council.

C. Unit Level Sustainability Coordinator(s)

- There will be Unit Level Sustainability Coordinators from each functional area of the campus.
- Coordinators are trained in campus sustainability initiatives and policies, and act as a local resource and sounding board for sustainability related matters.
- Coordinators will be existing employees and assignment will be a collateral duty, or an addition to current job responsibilities.
- Coordinators will periodically receive information pertaining to various sustainability initiatives and will be expected to share that information with their respective units.

D. Administration Responsibilities

The responsibilities of Administrators to support campus sustainability should be considered in the following ways:

- specific sustainability items in job descriptions for administrative positions
- assessment of sustainability objectives in annual planning for administrative units
- considerations of sustainability goals and implementation plans in annual budget discussions.
- Aligning office management practices with sustainability initiatives.

E. Sustainability Fund

A sustainability fund or funds could be created to address:

- Donations to be collected by the UW Oshkosh Foundation
- A specific capital campaign, or strengthening the sustainability dimensions of other capital campaigns (e.g. New Academic Building)
- A rotating fund that can capture cost savings and revenues for later investment in new initiatives.
- Targeted faculty chairs, scholarships, internships, and student research funds to reward and encourage sustainability-related activity on the campus.

APPENDIX D

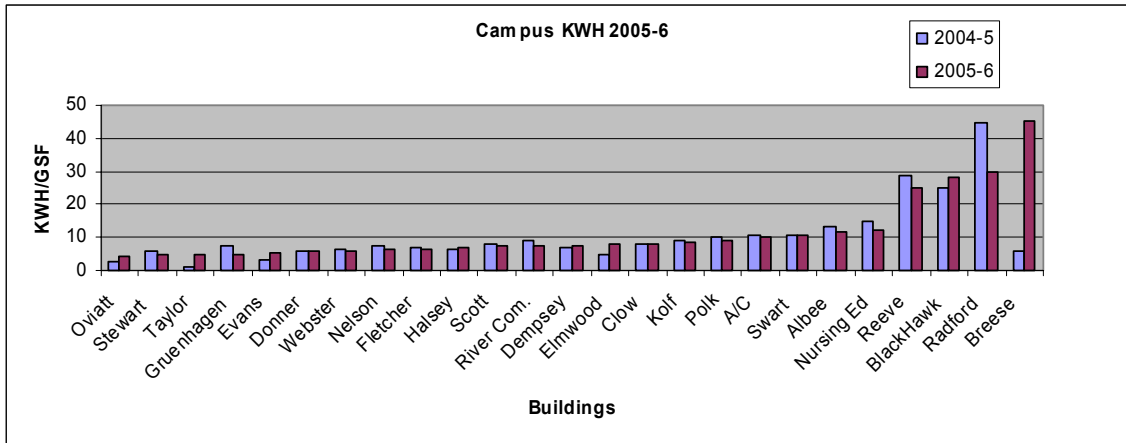
Wisconsin Energy Initiative

Wisconsin Energy Initiative:

Wisconsin Energy Initiative (WEI) – UW Oshkosh participated in a state wide energy efficiency program called the Wisconsin Energy Initiative (WEI). The program teamed up state agencies with energy companies and involved the performance of a series of energy efficiency retrofits to existing facilities. The work was performed utilizing a process known as performance contracting, whereby all work was performed and paid for up front by the contractor, and involves annual payments back to the contractor based on verified energy savings. Listed below is a summary of the projects that were performed:

Wisconsin Energy Initiative (WEI)
a) Phase I (1992)
<ul style="list-style-type: none">- Campus Energy Audit- Campus wide lighting retrofits (replaced T-12 florescent lighting with magnetic ballasts to T-8 florescent fixtures with electronic ballasts)
b) Phase II (2000)
<ul style="list-style-type: none">- Water Conservation (replaced 1009 toilets with low flow models)- DDC Conversion of Air Handling Units (replaced pneumatic controls)- Lighting Upgrades (occupancy sensors, outdoor lighting controls)- Steam trap repairs- Control Modifications (metaysys control for converters and pumps).
c) Phase III (2006)
<ul style="list-style-type: none">- Lighting Upgrades (High efficiency lighting in Kolf and Albee Halls)- Lighting controls (daylighting control in Reeve Union)- Condensor water reset control upgrade- Metaysys control upgrade from Arcnet to Ethernet- Hot water heating system schedule (reset during warm weather)- Steam trap repair/replacement- Water cooled refrigeration retrofit of Blackhawk Commons- Water to air cooled condensing unit retrofit at Scott and Gruenhagen Halls- Campus DDC electrical and steam condensate meter installation- Vending Machine Control

Of particular note was the installation of direct digital control (DDC) based electrical and steam condensate meters throughout the campus in 2006. The performance of this project has created the capability to perform a detailed analysis of energy and steam consumption for individual campus facilities. The energy consumption data developed as a result of this analysis has helped to identify buildings that should be the highest priority for future energy upgrades. Shown below is a graph of the efficiency (annual electricity consumption per square foot of space) of all major campus buildings that was derived from this data.



APPENDIX E

Electrical Section Details and Justification

Immediate Consideration (0-1 years):

- *Review, verify and update campus audit data. Identify the campus facilities with the highest electrical energy consumption per square foot.*
Justification: *Future energy saving retrofits should be prioritized to the buildings consuming the most power.*
- *Provide facility electrical usage feedback and education to campus users.*
Justification: *Feedback concerning electrical consumption can have a positive behavioral effect on building occupants.*
- *Phase in the replacement of old, energy in-efficient equipment with Energy Star rated items. Require all new purchases of certain high energy consuming devices (i.e. refrigerators) to be Energy Star Rated.*
Justification: *Newer equipment is much more energy efficient.*
- *Establish guidelines for the connected (plug) load in all campus facilities.*
Justification: *It may be surprising to discover that items plugged into facility electrical outlets can collectively consume large quantities of power. A disturbing trend of increasing electrical consumption in the Residence Halls can be directly attributed to an increase in the connected load installed by UW Oshkosh (e.g. large refrigerators in each room) plus the demands of incoming students (e.g. battery chargers). Shown below is an example of that increase at Evans Hall. The university should develop guidelines for equipment installed by UW Oshkosh and for acceptable use of electricity, to conform with the campus goals to reduce overall consumption to true needs.*

Evans Hall KWH			
Month	2004-5	2005-6	2006-7
July	14,700	9,163	10,214
August	27,620	9,163	9,402
September	13,360	14,460	24,525
October	27,300	31,240	31,529
November	10,340	38,020	28,671
December	8,423	22,220	25,603
January	8,449	36,100	22,443
February	12,320	29,860	28,699
March	9,922	12,820	26,088
April	7,896	41,560	27,981
May	8,805	12,000	23,620
June	9,504	10,252	11,519
Total			
KWH	158,639	266,858	270,294
GSF	49,548	49,548	49,548
KWH/GSF	3.20	5.39	5.46

- Turn off unnecessary lights during non teaching periods.
Justification: During periods when classes are not in session, such as Sundays, late December and early August, efforts should be taken to minimize consumption of electrical power for lighting. For instance, lighting levels can be reduced in hallways, corridors and stairwells to minimum levels needed for safety.
- During low usage periods (summer, interim, weekend) consolidate classroom usage to the most energy efficient buildings that meet course requirements.
Justification: During periods when classes are not in session, such as Sundays, late December and early August, efforts should be taken to minimize consumption of electrical power for lighting. For instance, lighting levels can be reduced in hallways, corridors and stairwells to minimum levels needed for safety.
- Permanently reduce light levels in hallways/corridors of all academic buildings by 20%
Justification: Most academic building hallways are significantly over-lit. Reduction of light levels by 20% will save energy without impacting health, safety or function. . Specific lighting standards based on safety should be determined to explore full potential savings.

Future Consideration (2-5 years)

- Convert pneumatic control systems to direct digital control (DDC).
Justification: Most of the campus building environmental control systems rely on 1950's era pneumatic technology to control the movement of valves. This technology utilizes compressed air to provide the energy to operate valves and other devices. An electrical compressor runs occasionally to restore air pressure. Unfortunately, pneumatic systems are prone to leakage, and then compressors run wastefully in an effort to restore pressure. Direct Digital Control (DDC) technology is much more energy efficient, and provides greater control and feedback to energy management systems. This project was submitted as part of the 2007-09 All Agency Request.
- Convert or replace energy inefficient facility HVAC systems
Justification: Several older campus facilities have antiquated heating/ventilation and air conditioning systems. For instance, Swart Hall, a large academic building constructed in 1921, has one heating and cooling zone for the entire building. In order to provide heat to one office or classroom, the entire building must be heated. Newer facilities have multiple zones, with variable air volume systems and variable speed motors to allow for more energy efficient heating and cooling. Note: Projects have been submitted to replace the HVAC systems in Swart Hall and Clow Classroom Facility as part of the 2007-09 All Agency Request.
- Initiate studies of more efficient lighting options (e.g. LED) to estimate when retrofitting will be feasible.
Justification: Light emitting diodes (LED) lamps consume less than a quarter of the electricity that fluorescent lighting does, and the lamps last about ten times longer. There are several commercial applications of this technology readily. UW Oshkosh is currently in the process of replacing all fluorescent facility exit signs with LED exit signs. UW Oshkosh is also currently testing a prototype LED exterior wall pack type fixture. Rapid advances in LED technology will lead to other commercial applications in the foreseeable future, and UW Oshkosh should implement this technology when and where feasible.

- *Conduct feasibility study to determine the viability of installing a Thermal Ice Storage Facility.*

Justification: *Thermal ice storage is a technology that reduces electrical costs by shifting space cooling activities to off-peak times when the cost of electricity is cheaper. Water is chilled or ice is made during the night to either replace or augment building cooling equipment during the day. Thermal ice storage, by itself, is not an energy savings technology; it is a cost savings technology. By shifting chilling activities to off peak times, when demand and energy rates are reduced, significant dollar savings can be realized. However, UW Oshkosh should explore whether cost savings from this technology is a good use of taxpayer resources can be used to make investments in true energy conserving retrofits.*

- *Install green roofing to reduce summer heat loading during renovations of existing buildings and as part of new construction.*

Justification: *Green roofing offers the potential to reduce summer heat load and reduce storm water runoff.*

Appendix F
Campus Heating Details and Justification

Immediate Consideration (0-1 years)

- *Review, verify and update campus audit data. Identify the campus facilities with the highest thermal energy consumption per square foot.*
Justification: *Future thermal saving retrofits should be prioritized to the buildings consuming the most power.*
- *Provide facility thermal energy usage feedback and education to campus users.*
Justification: *Feedback concerning heat/thermal consumption can have a positive behavioral effect on building occupants.*
- *During low useage periods (summer, interim, weekend) consolidate classroom useage to the most energy efficient buildings that meet course requirements.*
Justification: *Efficient scheduling of academic facilities can have a significant impact upon the overall consumption of electricity and other utilities, including heat. Efficiencies can be achieved during low useage periods, such as for evening classes, weekend classes or summer school, by clustering all classes in the fewest number of buildings. A scheduling policy should be developed that considers such clustering as one important element in classroom selection. (Note: This is a duplicate of the recommendation in the electrical section, but it is equally relevant to conservation and efficiency within the heating plant).*

Future Consideration (2-5 years)

- *Install solar hot water heaters at appropriate locations throughout the campus. Suggestions include Albee Hall and the Residence Halls.*
Justification: *Solar Hot Water heaters are a clean, renewable, environmentally friendly option for augmenting the supply of hot water used for domestic needs (showers, heating pool water, sinks etc...).*

A study was done in 2006 regarding the installation of three roof mounted flat plate solar hot water collectors on the roof of Albee Hall. The designed system would have displaced approximately 3,257 therms of natural gas per year. The capital cost was then estimated at \$44,800 with an eight year payback period. Over the 20 year service life of the solar collector, the expected savings in averted natural gas costs was estimated at \$136,289 in 2006 dollars. The solar hot water system would have averted the following pollutants on an annual basis:

<i>CO2</i>	<i>29,270 lbs</i>
<i>VOC's</i>	<i>1 lb</i>
<i>Nitrogen Oxide</i>	<i>38lbs</i>
<i>Carbon Monoxide</i>	<i>6lbs</i>

Besides Albee Hall, other suitable locations for solar hot water heaters include Blackhawk Commons, and the Residence Halls. If solar hot water heaters are deployed to the maximum extent possible throughout the campus, the demand for fossil fuel-based steam generation could be reduced by several percent.

- *Install alternative heating and cooling systems at facilities not connected to the central*

system.

Justification: Foundation Center, Cub Foods, Credit Union, Ceramics Lab, Aquatic Research Lab, Titan Stadium) Two possible sources include:

(1) BioMass Boilers: Biomass, in the energy production industry, refers to living and recently dead biological material which can be used as fuel. Most commonly, biomass refers to plant matter grown for use as biofuel, but it also includes plant or animal matter used for production of chemicals or heat. A biomass boiler produces heat through the burning of biomass fuel such as wood pellets or corn kernels.

(2) Ground Source Heat Pumps: A geothermal exchange heat pump, also known as a ground source heat pump or GSHP, is a heat pump that uses the Earth as either a heat source, when operating in the heat mode, or a heat sink when operating in the cooling mode. All geothermal heat pumps are characterized by an external loop containing water or a water/antifreeze mixture (propylene glycol, denatured alcohol, or methanol), and a much smaller internal loop containing refrigerant. Both loops pass through a heat exchanger. Air source heat pumps use the same principle but extract the heat from the air, rather than the ground. As such their installation is much simpler and cheaper.

The six facilities not connected to the central campus utility system provide an opportunity to test out the viability of alternative, environmentally friendly heating and cooling systems. This inventory of buildings is currently provided with separate natural gas and electric services. A conversion to either of the above mentioned heating sources will likely reduce the annual heating and cooling costs associated with the operations of these facilities.

- Assess the possibility of burning alternative biomass fuels at the campus heating plant.
Justification: In recent years, several campuses have experimented with burning alternative fuels in campus heating plant boilers. Such fuels as switch grass, oat husks, and tree waste have been successfully utilized in other parts of the country. Biofuels are an improvement over coal or natural gas as they can come close to being carbon neutral (depending on any fossil fuel use in transport or production of biofuels) because the amount of carbon added to the atmosphere is later consumed in the process of growing the next agricultural crop for fuel. Important considerations when assessing the viability of burning a bio-mass based fuel is the availability and dependability of a locally grown fuel supply (long-distance transport using fossil fuels would defeat the purpose) and increased storage needs (Biofuels contain less energy per volume than fossil fuels, and so a much larger volume of fuel is required to provide the equivalent heat load). In Oshkosh, agricultural products or wastes are the most likely local biomass feedstocks that could be feasible for biofuel use.

APPENDIX G
Sustainable Energy Details and Justification

- *Install integrated photovoltaic panels (solar panels) where feasible*
Justification: *The campus should pursue the installation of photovoltaic panels to existing and new buildings when and where feasible. Photovoltaic (PV) technology converts light energy into direct current (DC) electricity, while having little or no emissions to the environment. Currently, the technology is relatively expensive as compared to other traditional method of generating electricity. However, costs are dropping rapidly, and are expected to drop very quickly in the next few years as new production facilities begin to meet purchase orders that currently exceed production capacity. The costs of fossil fuel electricity generation continues to rise, and recent analyses predict that photovoltaic could become the less expensive option by ca. 2012 in the upper Midwest.*

An additional benefit of photovoltaic technology is the capacity to reduce peak electrical demand, and thereby reduce annual electrical costs. Photovoltaic panels are most effective on sunny summer days when electricity demand is high, so even a limited installation can have a positive impact on reducing, or shaving the campus peak electrical demand. The annual peak electrical demand has a significant impact upon the electrical rate the utility company uses to charge the university for power. The degree to which photovoltaic panels can reduce this peak demand can create major cost savings for the university, which should be factored into any cost comparisons amongst new technologies and the status quo.

- *Study the feasibility of installing a biofuel production facility to provide on-campus electricity generation*
Justification: *Biomass technology offers another sustainable path to the on-site generation of electrical power. Biomass-based electricity production involves converting selected food wastes into methane gas, which can then be burned to operate an electrical generator. The campus is currently in negotiations with a firm that is capable of providing the necessary equipment and is willing to manage the process. If feasible, a test facility will be placed into operation later this year. A full scale facility could be in operation as early as next year.*
- *Study the feasibility of installing biodiesel generators*
Justification: *Biodiesel is a renewable fuel with lower impact on the environment than petroleum-based diesel. Biodiesel generators configured to operate on commercially available biodiesel could be used to generate electricity on campus. As an example of scale, the total university electricity demand (ca. 3-4 MW) could be met by the larger diesel-electric generator sets on the market today (up to 5 MW). Problems with biodiesel supplies (quantity and quality) will probably preclude generating all UW Oshkosh electricity by this technology in the next 5-10 years. On smaller scales, or as a first use on campus, biodiesel generators could be used for electrical peak load shaving has the potential of significantly lower the cost to purchase electrical power. The campus should consider the purchase of diesel electrical generators and strategically operate them in August and September as necessary to reduce the total peak electrical demand. Diesel generators can also be used as co-generators (providing heat along with electricity) if there are periods when cold-weather peak demand can be reduced. The design team involved in the New Academic Building is considering the incorporation of such a generator as part of that project.*



- *Install pressure reducing steam turbines for electricity generation.*
Justification: *The campus is served by a central heating plant that distributes steam to all buildings for heating in the winter months. The steam is generated at 100 pounds per square inch (psi) and is reduced at each building to 5 psi, which is the optimal pressure for heating purposes. The steam flows through a pressure reducing valve at each building to make the conversion from 100 psi to 5 psi. Steam reducing valves should be replaced with mini steam turbine electrical generators. While the potential electrical production capacity is relatively small, it would re-capture some of the energy used to create the steam pressure.*
- *Install wind turbines.*
Justification: *Small wind turbines, capable of generating 100-300 kW are available commercially. One or more small turbines would augment campus power requirements and provide a hands-on educational opportunity for students. Larger wind turbines might be feasible at less developed campus properties such as the UW Oshkosh stadium complex, or an off campus farm recommended elsewhere in this plan.*

APPENDIX H
Extra Curricular Awareness Raising Across Campus

Immediate Consideration (0-1 year)

a. Develop sustainability programs in the residence halls to reduce solid waste generated during move in and move out days. Other campuses have successfully reduced waste and increased recycling by stationing student volunteers, recycling centers, and easily-accessed resources at the residence halls during the concentrated periods in which students move into and out of the halls. This would provide an opportunity to get students thinking about sustainability from the day that they arrive on campus. Partnerships could be formed with local second-hand stores and electronics recycling facilities, if they exist.

b. Require each residence hall Community Advisors to coordinate one sustainability program each year, providing them with models, contacts, and special funds for these events.

c. Develop a Student Sustainability Leaders Program in which students serve in paid positions as student sustainability educators. Some campuses have success programs where students educate other students on the importance of sustainability and the campus's commitment to it. A group of students would apply for a (typically paid) position as a student educator; those students would receive training on awareness raising activities, ongoing campus initiatives, and so on. The sustainability educators would then conduct programs in residence halls and classrooms to raise awareness of sustainability. An alternative model would be to designate student sustainability leaders in all UWO-associated student residences (each residence hall, fraternity, sorority), who would be given the means to conduct programs.

d. Inaugurate competitions focused on sustainability amongst campus groups (e.g. dorms, clubs, departments, etc.) and with other institutions. Following models employed at other campuses, in 2006 five students put together ECO Games residence hall competitions focused on sustainability. Students and floors earned points for recycling, for attending campus events, and for floor-programs focused on sustainability. The students and the floors that earned the most points received prizes. Prizes were donated by a variety of sources: The College of Letters & Science, The Environmental Studies Program, the University Book Store, and United Students in Residence Halls. This program could be institutionalized and expanded. Another version of this would be to participate in Recyclemania, a nationwide residence-hall recycling competition.

e. Provide training for all faculty and staff on the importance of sustainability and the campus's policies and programs. This could occur at the college level or the department level for faculty, academic staff, and program assistants, or through workplace training.