

DISCOVERY ILLUMINATES EVERYONE



Annual Report to
President Eric W. Kaler and the Board of Regents on

University of Minnesota Sustainability

[2011- 2012]

December 2012

UNIVERSITY OF MINNESOTA
Driven to DiscoverSM

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Campus Reports

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U of MN Sustainability Team "Connects" in Urban Advance, Twin Cities 2012



2012 System and Campus Sustainability Reports

Introduction

“Sustainability is a continuous effort integrating environmental, social, and economic goals through design, planning, and operational organization to meet current needs without compromising the ability of future generations to meet their own needs.

Sustainability requires the collective actions of the University of Minnesota (University) community and shall be guided by the balanced use of all resources, within budgetary constraints.

The University is committed to incorporating sustainability into its teaching, research, and outreach and the operations that support them.”

—University of Minnesota Board of Regents Policy: *Sustainability and Energy Efficiency*, 2004

When the Regents of the University of Minnesota adopted a policy on sustainability in 2004, they were, in many ways, “ahead of their time” and they were certainly out in front of many of the nation’s institutions of higher learning. This policy lays the foundation and sets the bar high for a system-wide approach to one of the most important issues of the 21st century, creating a sustainable future that encompasses environmental, social and economic goals.

The policy is truly system wide; more importantly, the application and implementation of this policy touches every campus and every unit of the University of Minnesota. It reflects an understanding that the University of Minnesota campuses are as diverse as the state. The people, places, and priorities each reflect a convergence similar to the four biomes of Minnesota—prairie, deciduous forest, boreal forest, tall grass aspen forest. Our relationship to these places, the rivers that flow through them, the lakes, and the wetlands links us to past generations and connects us to the future. Stewardship of our environment—both natural and built—serves as one element for integrating sustainability into the broader mission of the University.

This year, 2012, marks the 150th anniversary of the Morrill Act and the land grant university system that it established. Like its counterparts in other states, the University of Minnesota has celebrated this act and has recast it for the present and the future. From its origins as a land grant institution in the 19th century, the University of Minnesota has excelled in research and practical studies in agriculture, science and engineering, while at the same time recognizing the importance of the study of the liberal arts for citizens of a democracy. The University's recent focus on sustainability is linked directly to this comprehensive land grant mission.

The campus of the University of Minnesota, Twin Cities sits on land near a place called "bdote" and considered the center of the earth, where Dakota people began.

"Bdote" in Dakota language is a sacred place "where two waters join."

*- Bdote memory map conversations,
Telling River Stories, River Life Project*

For example, landscape health, whether on farms, in forests, prairies, waterways or rural or urban centers, connects the land grant legacy to sustainability. The increasing complexity of global challenges faced by humanity demands a turn toward interdisciplinary perspectives and an exploration of how systems work: the University of Minnesota has embraced this approach. Increasingly, our areas of inquiry include holistic consideration of how our actions impact the ecological systems that sustain us, how people are affected by those actions in communities near and far, and how our economic structures support the health and well-being of all people.

As the University seeks solutions to global challenges in food, agriculture, freshwater, energy and human development, a sustainability mindset allows us to prioritize consideration of future generations and leads us to focus on an understanding of unexpected consequences of our decisions and our behavior. The Regents 2004 policy reflects the earlier teachings of indigenous peoples, who instruct us to think out seven generations—to consider how our actions today will impact human beings seven generations from now. Inherent in these ideas is the need for an inclusive approach to our teaching, research and outreach mission, an approach that is considerate of the manner in which decisions and action impact all peoples, not only today, but also in the future.

The Board of Regents Policy: *Sustainability and Energy Efficiency*, provides guiding principles to help us move thoughtfully together while ensuring that campus priorities are met and the university's mission accomplished. As stated in the two previous annual reports, the comprehensive nature of the Regents policy supports decisions that will help create vibrant and healthy communities for the people of the state of Minnesota.



The annual report to the Board of Regents constitutes a summary and highlights of the U of M system work on sustainability.

Because sustainability matters.....

This report builds upon previous collaborative work. Again this year, the committee reached the overarching conclusion that *sustainability matters*.

It matters economically—*sustainability efforts pay*. This is evident in operational excellence, energy cost reductions; in cost avoidance; and in carbon footprint reductions.

Sustainability efforts unify: this is evident in the cross campus research, learning and student engagement. It is evident through the many partnerships formed to advance this work.

Sustainability efforts inspire and transform--they provide a framework for collective and creative endeavor, research and outreach activities. They provide a way for the University to connect to its relevant constituents and communities in new and creative ways and in a variety of geographic settings--urban and rural. These efforts transform our campuses and our students. Our alumni also tell in their own words how they were affected.

These sustainability efforts provide a renewed framework to enhance how the university fulfills its land grant mission, and thereby provide a means for the university to contribute to the growth and development of communities and business across the state. This is shown in the sampling of partnerships each campus identified.

Broadly speaking, the umbrella of sustainability provides a space under which individuals and groups who represent quite different perspectives can stand. Issues like local control and self-sufficiency, energy independence, and national security cross political and economic boundaries. The university provides a gathering place for engagement and civil discourse that is, perhaps, unparalleled in contemporary American society.

We applaud the great leadership our university community of faculty, students and staff show in their work every day as they grapple with the natural tension of change. This report is a glimpse of what has happened in the past year at each campus and with highlights how we are beginning to work together as a system.

Jacqueline Johnson, Chancellor, U of M, Morris, Co-chair
Pamela Wheelock, Vice President, University Services, Co-chair
Amy Short, Sustainability Director, University Services

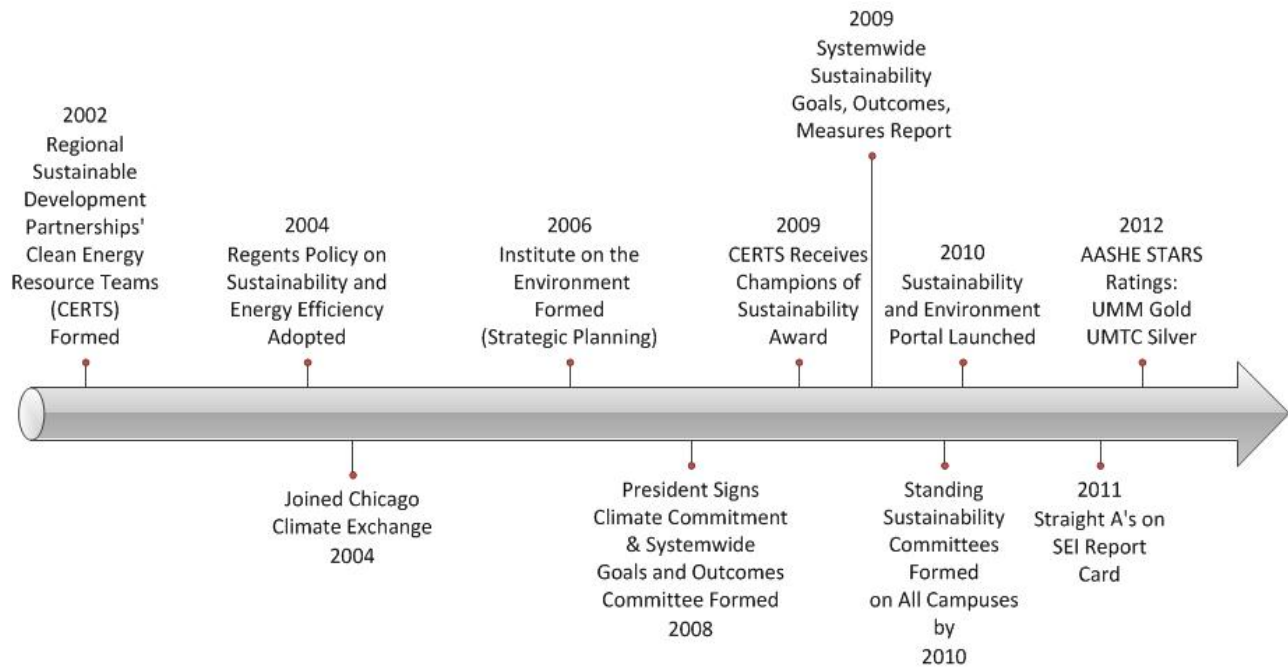
For the University of Minnesota,

Sustainability Matters because....

- *Sustainability Pays*
- *Sustainability Unifies*
- *Sustainability Inspires and Transforms*

Background and Context

The University of Minnesota Strategic Sustainability Committee represents a model for system thinking, system work, and tracking system progress. This is illustrated in the document that follows. A timeline of the key recent sustainability milestones are shown below:



- In 2004, Regents adopt comprehensive sustainability policy ahead of their time in terms of the national landscape of higher education. The policy commits to integrate sustainability across the mission of the university (Appendix A).
- In 2008, the Systemwide Sustainability Goals and Outcomes Committee was charged by then President Robert Bruininks, to propose goals and measures aligned with the guiding principles for the University of Minnesota to implement with Regents policy (Appendix B).
- In 2009, the report *University of Minnesota Systemwide Sustainability: Goals, Outcomes, Measures, Process* was presented to the Board of Regents. This report outlined an ambitious path toward becoming a more sustainable university and included goals and measures as a way to connect many individual efforts.
- In 2009, the University of Minnesota became a charter member in Association for the Advancement of Sustainability in Higher Education Sustainability and Tracking Reporting System (AASHE STARS).
- In 2010, a standing systemwide sustainability committee was charged by President Robert Bruininks, chaired by VP O'Brien and Chancellor Johnson, and composed of representatives from all campuses of the U and from all constituencies--staff, faculty and students.
- This is the third report of the committee's work and progress presented to the Board of Regents. The report covers progress achieved from October 2011 to October 2012.

The Regents policy, goals report and relationships nurtured through these institutional structures are an inspirational model for other universities across the country. The collective work is notable because it is inclusive of all areas of the university's mission *across all University of Minnesota campuses* and has led to a unique collaboration which is the envy of peer institutions. The systemwide *University of Minnesota Strategic Sustainability Committee* and campus sustainability committees are also finding inspiration through these systemwide contacts.

A strong foundation has been laid to help the university understand how to begin to measure this complex, interwoven concept of sustainability.

The University of Minnesota was chartered as a land grant institution, and as outlined in the Introduction above, many of the efforts across the U of M in relation to sustainability today harken back to that legacy, including the original mission and the efforts of the agricultural boarding schools that were once present on the Crookston and the Morris campuses and whose legacy remain today in the form of outreach centers and experiment stations. In some ways, these efforts bring us full circle, encouraging us to think about the relationship between place and educational program; between place and research; allowing the university to use the full force of its resources to improve communities and empower individuals across the state; encouraging us to consider the ways in which we use the natural resources abundant in our particular regions effectively and efficiently, and thereby avoid costs and save money. Finally, what we do today provides a means by which we can reconnect to our local communities, local foods and materials, which, in a way, links us even more strongly than ever before to traditions that were in practiced in this state for thousands of years.

What we do today, as stewards, is our legacy to future generations. Examples that speak to this land grant mission and our stewardship for future generations are present throughout this report.

National context:

The U of M Regents were ahead of their time when, in 2004, they adopted a systemwide sustainability policy. The policy states that sustainability is broadly defined as

“...a continuous effort integrating environmental, social, and economic goals through design, planning, and operational organization to meet current needs without compromising the ability of future generations to meet their own needs.”

The U of M's work on sustainability has unfolded in a context of national interest and activity. The U has been aligned with that interest from its beginnings and has also been a leader in the national effort. In 2007, an affiliation of university college presidents and chancellors was formed--the American College and University Presidents' Climate Commitment (ACUPCC). The U of M Morris is a charter signatory of that group, and, in 2009, then President Robert Bruininks signed the commitment on behalf of the entire

“In my inaugural address I challenged the University to re-invent the land grant vision of the nineteenth century to meet the global needs of the twenty-first century. Developing, disseminating, and demonstrating sustainable pathways to prosperity are critical parts of meeting this challenge.”

*President Eric W. Kaler
Climate Action Plan
December 2011*

university system. According to the annual report, the President's Climate Commitment now includes over 664 presidents and chancellors representing nearly 5.4 million students nationwide.

The commitment requires participating schools to track and publicly report carbon emissions and develop plans aimed at their reducing their environmental impact. This report includes summaries of the progress made at all the U of M campuses in this effort.



The University's campuses participate in another tracking and rating system; this one developed by the Association for the Advancement of Sustainability in Higher Education (AASHE) called STARS (Sustainability Tracking and Reporting System). This tracking system was developed at the request of institutions seeking a common metric and language for sustainability in higher education. Nearly 70 institutions participated in the year-long pilot before the STARS program launched in January 2010. The Twin Cities, Morris and Duluth campuses are Charter Participants. STARS allows campuses to track and report progress in a broad array of areas-including administration and planning, curriculum, green building efforts, energy conservation, research, dining, etc. This report includes information from each of the campuses of the U of M system who participate in STARS. Chancellor Johnson serves on the boards for both ACUPCC and AASHE. Beth Mercer Taylor, Sustainability Education Coordinator at the Twin Cities campus, is on the Education Technical Committee for AASHE STARS.



The University of Minnesota also follows the State of Minnesota B3 standards and participates in the National Council of Green Buildings LEED ranking system on a case by case basis. Minnesota B3 standards and other design related programs like Leadership in Energy and Environmental Design (LEED) are intended to transform buildings to become more efficient, to be healthier, and to be designed with considerations of local site characteristics. A summary of buildings which have been evaluated in these programs are described in the report.

Work of the Committee: During the past year, the work of the systemwide sustainability committee continued in part by five working groups focused on student engagement, energy, academics and curriculum, communications; and procurement. Each group developed its own statement of mission and purpose in line with the committee's broader charge along with measures of success. The working group contributions and recommendations are reported in a subsequent section.

Highlights

System

The University of Minnesota Strategic Sustainability Committee is a representative group of faculty, students and staff. The committee's current membership is shown in Appendix C. This committee and workteams are a cohesive and energetic group committed to making a difference and encouraging use of the principles of sustainability to help create a stronger institution. Within our large decentralized university, many efforts are independently underway which support the Regents policy. This committee seeks to identify and support effective, flexible institutional structures that help advance sustainability across the university system.

This year was one of transition, as Vice President O'Brien retired. Vice President O'Brien was a strong advocate of sustainability and leader, and co-chair to the systemwide sustainability committee. Vice President Pamela Wheelock is now the President's designated university officer responsible for sustainability across the system.

Each summer the sustainability professionals gather at a different campus to learn about the unique campus features and sustainability initiatives underway, share information, and assess progress. Last year the group's "Prairie Advance" was hosted by Professor Dan Svedarsky and student interns at UMC. This year the "Urban Advance" was hosted by Beth Mercer Taylor (Institute on the Environment), Shane Stennes and Amy Short (University Services) and student interns at the Twin Cities campus.

Committee Workteams

During this year the U of M Strategic Sustainability Committee identified key areas that could benefit from a systemwide focus. Workteams were formed from the committee members to take these ideas and move them into action plans. Below are a few of the actions.

- ❖ Curriculum and Academic (Nick Jordan, chair; Beth Mercer-Taylor, staff)
 - The Curriculum and Academic Workteam determined that an initial 'high-impact' pilot project will be to convene and facilitate a working group of faculty and academic leaders to jointly define promising models/vehicles/approaches to increase the scale and scope of sustainability education at the U. One role of the workteam was to help identify programs underway and provide them more visibility across the system. The workteam believes the U of M can draw on its unique assets (land-grant, research, multi-campus etc.) to become a national leader in sustainability education. The existing Sustainability Studies Minor and other Interdisciplinary Minors along with programs like the Resilient Communities Project, have laid the groundwork.
 - Representatives for the Curriculum and Academic group are also part of the UMTC Sustainability Faculty Network which is described in the UMTC Sustainability report.
 - The initial report from the workteam has been completed to be distributed to the committee for review. Members of the working group that prepared the report are included in Appendix C.

University of Minnesota 2011-2012 Campus Sustainability

❖ Communications (Ann Freeman, chair; Amy Short, staff)

- The Systemwide Sustainability Communications Committee was charged this year and is chaired by Ann Freeman with communication representation from all campuses. The list of committee members is located in the Appendix.
- A communication plan was developed with strategies to better highlight the work being accomplished across the campuses. Conversations with each campus sustainability office were held to identify best practices, needs and focus areas reporting on sustainability-related matters in existing communications such as the Brief, a regular weekly U of M news digest.
- An Environment and Sustainability portal was developed and launched in August 2012 with resources from the Institute on the Environment. As part of the report, the systemwide communications committee determined that the portal format is important to sustainability-related communications. Recommendations include updating the portal, transitioning to a user-friendly web interface and dedicating resources to maintain it. An interim systemwide communications work team, led by Chris Kelleher, Communications Specialist, Facilities Management - University Services is working to update portal content.
- During the past year each campus and U of M systemwide sustainability initiative continued to improve online presence both on website materials and through social media.



❖ Renewable Energy /Energy Conservation (Jerome Malmquist, chair; Shane Stennes, staff)

- Find practical approaches to increase renewable energy use on campus and better understand opportunities for advocating for policies. Share technical and research opportunities using campus as a living laboratory. A proposal for a linkage committee, or task group that helps identify and provide expertise for energy related operations projects was developed by the team and members are being identified. The energy workteam is working to find the most effective way to engage faculty and other resources in campus energy challenges.
- A resource cataloging renewable energy technology across the system was completed and is presented in Appendix D.

❖ Purchasing (Leslie Bowman, chair; Mindy Granley, staff)

- Leverage purchasing across our system for bigger impact and cost savings related to green products and energy efficient equipment.

During 2012, a system-wide survey on sustainability purchasing was conducted by the Systemwide Sustainability Committee Workteam in partnership with University Purchasing to help prioritize products of interest and opportunity. Professor Deniz S. Ones and her research team in the Twin Cities Department of Psychology assisted with results analysis. The purpose of the survey was to gain an understanding of behaviors and priorities of University purchasing professionals from a wide variety of departments and offices, and explore possible barriers to purchasing more sustainable products. There was a large interest in this topic; response rate was 17.7%. Some of the key findings from the survey based upon analysis by Professor Ones, Rachel Klein and Brenton M. Wiernik are in Appendix E. Next steps are to work with

University of Minnesota 2011-2012 Campus Sustainability

Purchasing to identify ways to integrate the findings into existing sustainability and purchasing initiatives.

- Members of the workteam also participated in a Big Ten Stewardship Conference calls related to Energy Star laboratory equipment.

❖ Student Engagement (Linda Kingery, chair; Troy Goodnough, staff)

- The student engagement workteam is working to define how students can encounter sustainability every day; identify and provide student leadership opportunities.
- A second systemwide sustainability student leadership workshop was hosted in Duluth and Cloquet. Students, staff and faculty were present. Student lightning talks highlighted student and student worker projects. Opportunities for informal networking were also provided. The following page provides a snapshot of the U of M Systemwide Student Engagement Leadership Forum, SELF sustain.

The University's reputation as a sustainability leader continues. In addition to key research areas of energy technologies, environment, policy, agriculture, water resources, biofuels, global land use, transportation and many other areas, our campuses have been given high marks and recognition. Our sustainability staff are recognized for their knowledge and expertise. Students and staff from our campuses continue to represent the University at the annual AASHE conference – the largest international higher education gathering of sustainability professionals. University sustainability staff receive increasing requests from faculty, community organizations and even international visitors to provide campus and community group presentations, campus sustainability tours, participate in benchmarking activities, and represent the university in community sustainability-related planning.

Spotlight on Sustainability

SELF sustain Student Event

In late October, 50 students, faculty, and staff from the University of Minnesota system gathered in Duluth to have a sustainability conversation. The event was the second annual **Student Engagement Leadership Forum on Sustainability, or SELF sustain**. The first day, the team gathered at UMD for student lightning talks, and a campus sustainability tour. That evening, the group traveled to the Cloquet Forestry Center for sustainability conversation around a campfire. Day two of the conference began with a tour of the Forestry Center, and ended with student-led World Café style discussions.

The System-wide Sustainability Committee Student Engagement work team, co-chaired by Linda Kingery and Troy Goodnough, led the planning for the event. Also involved were Beth Mercer Taylor, Mary Guzowski, Mindy Granley, Amy Short, Shane Stennes, Stacey Rosana (student), Natalie Brown (student), and Alex Buscher (student). The goals for the event were to:

- Connect students involved in sustainability across the U of M system
- Create a place for students to share about their sustainability work
- Expose students to ideas about the process of creating change
- Expose students to other U of M campuses to develop a deeper sense of place
- Provide dialogue between students and staff about university goals and priorities

SELF sustain 2012 was generously sponsored: University of Minnesota Duluth's Strategic Plan Grant, Regional Sustainable Development Partnerships across the state, Institute on the Environment Mini Grant, Twin Cities University Services, the Student Engagement Work Group of the U of M Systemwide Strategic Sustainability Committee, Chancellor's Offices at Morris and Crookston, and Campus Sustainability Offices.

Friday, October 26, 2012

- **25 student sustainability presentations**
- UMD Campus Sustainability Tour + meals with local foods included
- Teambuilding and **sustainability conversations** around the campfire at the Cloquet Forestry Center

Saturday, October 27, 2012

- Cloquet Forestry Center tour given by Carrie Pike, Interim Director
- **World Café** student-led conversations



"The SELF sustain event served as a message to the attendees: the U supports not only sustainability, but **student-led sustainability**. I reaffirmed my belief that there is a dire need for older students to mentor in the next generation of student leaders."

Naomi Wente, Morris

"The SELF sustain forum is my assurance and hope that what we are doing will change our world."

- Daniel Skoglund, Rochester



SELFsustain 2012 participants pose for a photo on the UMD campus

Student Lightning Talk Presentations

Morris

Making Dirt at UMM, *Alicia Beattie*
Green Reinvestment Fund, *Bryce Blankenfeld*
Nature Quest Camp, *Laura Anne Hunt*
Sustainability as a Bridge: Connecting Campus to the Community, *Naomi Wentz*
Trash Talkers, *Laura Yourd*

Crookston

GreenStep Cities, *Tashi W. Gurung*
A Look at Local Food, *Alex Buscher*
Bike Loan Program at UMC, *Jeanne Collins*
Electronics Recycling, *Laura Gabrielson*
Local Foods for Campus, *Abbey Winemo*

Duluth

Integrating Sustainability into Courses at UMD, *Carl Berwald*
Soda and Water Vending on Campus, *Judy Bruer*
Making Mt. Bike Trails Sustainable, *Garrett Copeland & Eric Lemke*
Net Impact Duluth, *Samuel Knuth*

Adopt a River, "Tischer Creek", *Richard Skibsted & Andrew Godeen*
Stormwater: Now You Know, *Erica Evert*
A Summer with Seeds of Success, *Lanae Smith*
Student Sustainability Internships at UMD, video by *Jonathon Argall*

Twin Cities

Sustainable Blogs: Informing Others About Sustainability, *Dominique Boczek*
Sustainability at Universities Around the World: Lessons from Rio +20, *Emma Wright*
Describing Biodiversity in a Tropical Forest Ecosystem, *Gaurav Kandlikar*
Supporting and Strengthening Student Work Through Statewide Networks, *Christy Newell*
Greenhouse Gas Inventory at UMTC for 2011, *Valerie Skinner*
Sustainable Food Systems: Classroom to Field, *Eric Sannerud*

Rochester

Rochester Student led Sustainability, *Daniel Skoglund*

"SELFsustain was a really great way to connect with other campus cultures and **gain exposure to different leadership styles, structures and ideas**. My favorite event was the chance to connect at the campfire."

Judy Bruer, Duluth

"The SELFsustain conference was a great success because **students generated all the content** and were treated as the experts they are."

-Eric Sannerud, Twin Cities

"The event is a great tool for **learning what others are doing**: what has worked and what hasn't. When projects are conducted at other campuses, leaders will be able to know the best way to set it up."

Samuel Knuth, Duluth

"This reminds me of Thanksgiving. We at SELFsustain are like a family, talking about what we are doing on our campuses so we can share and learn together. **We need to work together to bring changes to our campuses** and that is exactly what SELFsustain does." *Tashi Gurung, Crookston*

Campus Sustainability Recognized At U of M

2012

- UMM Welcome Center receives LEED Gold
- AASHE STARS: UMM Receives Gold, UMTC Receives Silver
- UMTC, UMM and UMD inclusion in the Green Colleges Guide
- UMD Bagley Outdoor Classroom listed in American Institute of Architects 2012 Top Ten Green Projects
- UMM recognized by U.S. Secretary of Energy for video about campus and community renewable energy
- UMM faculty members awarded 2012 American Chemical Society Award for incorporating sustainability in curriculum
- UMM faculty received the only U of M Outstanding Community Service Award in 2012 for work in preservation, biodiversity, local foods/healthy eating initiative and community planning.

2011

- UMD, UMM and UMTC named to Princeton Review's 311 Green Colleges
- UMTC receives straight A's on the Sustainable Endowments Institute Sustainability Report Card
- UMTC becomes a Founding Circle Member of the Billion Dollar Green Challenge
- UMM receives 2011 Minnesota Construction Association's Special Recognition Award for the Welcome Center
- UMTC received a Silver Rating from the League of American Bicyclists.
- UMTC Donhowe is the first U of MN campus building to be rated as an Energy Star Building by the United States Environmental Protection Agency
- UMC chosen to partner with Otter Tail Power for a Campus Energy Challenge
- UMD James I. Swenson Civil Engineering Building earns LEED Gold and a Distinguished Building Honor Award by the American Institute of Architects, Chicago chapter
- Architecture Minnesota January/February 2011 issue features campus green buildings: UMD's Bagley Nature Area Classroom and James I. Swenson Civil Engineering Building, UMTC's Science Teaching and Student Services and Wallin Medical Biosciences Building, and UMM's Welcome Center. Also UMTC partnership District Alliance
- Between 2009 and 2011, Institute on the Environment's Momentum received 30 awards locally and nationally.

2010

- UMTC, UMM, UMD are AASHE STARS charter members. UMTC receives Silver Rating
- UMTC Science Teaching & Student Services building awarded LEED Gold Certification by U.S. Green Building Council
- UMTC Parking and Transportation named Transit System of the Year by Minnesota Public Transit Association
- UMD Bagley Outdoor classroom awarded LEED Platinum Certification by U.S. Green Building Council and Minnesota Chapter of the American Institute of Architects Honor Award
- UMD Swenson School of Engineering awarded LEED Gold Certification U.S. Green Building Council
- David Tilman, Regents Professor of Ecology, College of Biological Sciences, was awarded the 2010 Heineken Prize for Environmental Sciences from the Royal Netherlands Academy of Arts and Sciences.

2009

- UMC Center for Sustainability's Director, Professor Dan Svedarsky, represents The Wildlife Society at the United Nations Conference on Climate Change
- TCF Bank Stadium awarded LEED Silver Certification by U.S. Green Building Council

2008

- University of Minnesota Regional Sustainable Development Partnerships Clean Energy Resources Teams (CERTS) receives the Champion of Sustainability in Communities Award from the Sustainable Endowments Institute
- UMD Labovitz School of Business and Economics awarded LEED Gold Certification by U.S. Green Building Council
- UMM was selected as one of 12 campuses for analysis by the Rocky Mountain Institute, and is featured in their publication: "Accelerating Campus Climate Initiatives: Breaking Through Barriers" as a campus leader.
- UMM receives American Council on Renewable Energy Excellence Award.

2007

- Numerous recognitions for UMTC Parking and Transportation between 1997 and 2010:
- Minnesota Association of Government Communicators Award and Commuter Choice Award for Outstanding Promotion for a Large Organization of Excellence for response to the 35W bridge collapse.
- 2005-2010 Fleet Equipment Magazine 100 Best Fleets in North America Award (one of just two universities in the country to receive the designation)
- 2004-2009 U.S. EPA and DOT designation of "Best Workplaces for Commuters" award.
- 2001 National Wildlife Federation Achievement in recognition of leading transportation programs

Measurement of Progress

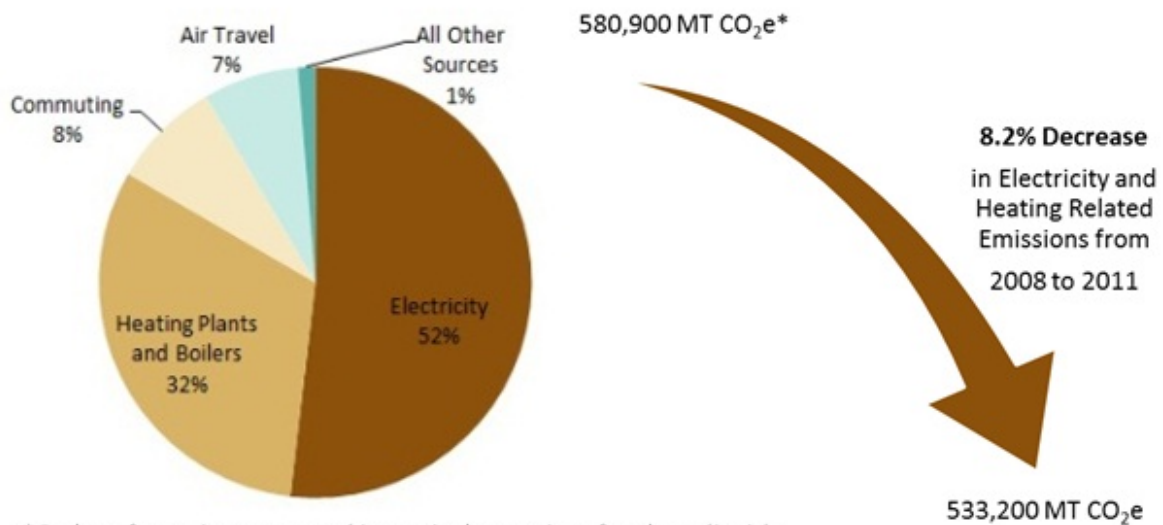
System

Climate Action Planning

During recent years, all campuses developed a climate action plan. This is a significant effort at all campuses, with widespread impacts. The process of identifying and reviewing projects that impact the footprint have helped the campuses prioritize actions taking into account both ROI and carbon reduction. Many projects have positive benefits of avoided operating costs. These plans are typically closely tied to the energy and utility planning because the largest contributor to the campus carbon footprint is energy use. These plans will influence our work into the future.

Reduction in energy use leads to reduction in footprint for University of Minnesota System (expressed in CO₂ equivalents)

Systemwide Carbon Footprint: Sources and Trend



Carbon Footprint 101: The pie chart in the image above shows the sources of greenhouse gases systemwide. These emissions are expressed in units of carbon dioxide equivalents. Some compounds like refrigerants have a higher greenhouse gas impact than carbon, but it helps to have a common unit of measure. In this chart, for all University campuses, 51% of the carbon emissions (footprint) are from electricity purchased; 32% are from on-campus heating plants. The change in these energy-related greenhouse gas emissions is shown to the right. Conservation and energy efficiency continue to have a significant impact on emissions. An 8.2% total decrease in energy related emissions has been made systemwide since 2008. The data from each campus is presented in the campus reports.

The following chart shows the goals and targets for the University of Minnesota system and depicts the timeframe for achieving these reductions. A depiction of the overall impact of these targets is shown in the above graph:

Campus	Greenhouse Gas Emission Inventory (Data year)	Initial Greenhouse Gas Emissions Reported (Metric Tons CO2 equivalent)	Gross Square Footage Campus (Appx.)	Climate Neutrality Target and Climate/Energy Action Plan Status
Crookston	Complete (2009)	12,500	774,000	Climate Neutrality Target 2030
Duluth	Complete (2009)	56,500	3,416,240	25% by 2020 relative to 2007 baseline Climate Neutrality Target 2050
Morris	Complete (2007) Complete (2009)	Scope 1 & 2 13,248 (2008) 12,969 (2009) 13,272 (2010) 8,883 (2011)	961,804	Relative to 2007 baseline: 70% Reduction in Scope 2 emissions by 2012 30% Reduction in total emissions by 2012 70% Reduction in total emissions by 2014 Climate Neutrality Target 90% by 2015
Rochester	Complete (2009) In process (2010)	200 Est (1000)	56,000 (2009) 560,000 (2011)	2% Reduction by 2013
Twin Cities	Complete (2008) Complete (2010)	643,000 587,147	22,553,090	50% Reduction by 2021 Climate Neutrality Target 2050

Background: As described above, in 2008 President Bruininks signed the ACUPCC which commits the University to achieve climate neutrality as soon as possible. Jacqueline Johnson, Chancellor at the Morris campus was a charter signatory, signing before March 2007. This commitment is aligned closely with the direction already set by Energy Management Department goals, work undertaken as participants in the Chicago Climate Exchange, the Board of Regents Policy: *Sustainability and Energy Efficiency*, as well as work of the Institute of the Environment and energy-focused research at IREE (Initiative on Renewable Energy and the Environment). University presidents around the country united around the scientific consensus regarding the anticipated serious adverse impacts of global warming. The commitment acknowledges the important role for universities to play in research, education, and modeling solutions to help achieve significant reductions in greenhouse gas emissions, especially those associated with energy use. Over 600 institutions have become signatories.

The University of Minnesota campuses completed plans that include conserving energy, installing renewable energy options, and generating energy through onsite energy production. There are student and community groups with interests in specific aspects of our climate action plan, for example, the use of

coal as a flexible fuel source. The process for developing climate action plans included public forums and opportunity for public input. The path to achieving climate neutrality has regulatory, policy, budgetary and personal implications that will require innovative research and creative solutions over many years. Source and more details found at: <http://acupcc.aashe.org/>

Green Building Highlights

Energy conservation and building design for energy efficiency are critical elements of energy and climate action planning. Space utilization and reducing the number of buildings on campus is part of our conversation in how to reach these goals.

When new buildings are needed, how we build them is important.

On the Twin Cities campus alone, building space has grown by nearly 20 percent in the past ten years, while maintaining a fairly flat carbon footprint. This has been done through dedicated energy conservation programs and ensuring new buildings are as energy efficient as possible. The State of Minnesota requires higher energy standards for bonded buildings. These standards, targeted to the unique regional cold weather conditions, are called B3 standards and generally require buildings to perform at least 30 percent better than a building built to code. The B3 standards (Sustainable Buildings 2030) were developed at the University of Minnesota's Center for Sustainable Building Research.



A third party verification system called Leadership in Energy and Environmental Design (LEED) developed by the US Green Building Council (USGBC) has received high visibility and attention around the country as a way to demonstrate adherence to green building standards. Many states without their own standards have adopted LEED as their system for green building construction. At the University of Minnesota, a case by case decision has been made for LEED certification based upon local campus situations. Cost is one consideration to consider when applying for LEED certification. Moving forward, the University of Minnesota intends to better communicate our state and university building standards to individuals, media and survey institutions that are familiar with LEED.

The buildings on the University campuses are our legacy to future generations. How we approach the building design have operational impacts for years to come. According to the EPA, buildings use 40 percent of the energy in the US. Transformation toward a more sustainable future includes our relationship with our built environment and energy used. Minnesota B3 standards and other design related programs like LEED are intended to transform buildings to become more water and energy efficient, to

become healthier for building occupants and to be designed with considerations of local site characteristics.

The table below was updated to present buildings on the campuses that have been designed for higher efficiency and to meet B3 and LEED standards.

University of Minnesota Builds Green Buildings			
<u>Campus</u>	<u>Building name</u>	<u>Square footage</u>	<u>Features/ details</u>
Crookston	Evergreen Hall	53,400	First LEED-certified residence building in U of M system
Duluth	Life Sciences	86,000	LEED – Silver
	Labovitz School of Business and Economics	76,000	LEED – Gold. First LEED certified new higher education building in the state of MN.
	Swenson Civil Engineering	46,600	LEED –Gold
	Bagley Outdoor Classroom	1,985	First LEED-Platinum building in the U of M System. Also followed Passivhaus energy efficiency standard
Morris	Welcome Center	16,300	LEED-Gold; National Register of Historic Places
Rochester	318 Commons (Includes Student Housing)		City Partnership through combined University and Commercial Space in city for positive community impacts
Twin Cities	TCF Stadium	890,000	LEED - Silver; First collegiate or professional LEED stadium in the country
	Science Teaching and Student Services	120,000	LEED – Gold
	Donhowe Building	91,000	First building in the system to earn ENERGY STAR, performing in the 90 th percentile
	Education Sciences Building	62,000	ENERGY STAR building, earning a rating of 93
	Akerman Hall Renovation	17,000	B3 standards met
	Center for Magnetic Resonance Research Renovation & Addition	62,000	B3 standards met
	Folwell Hall Renovation	115,000	B3 standards met
	Hanson Hall	130,000	B3 standards met
	Mayo Garage – NMR Relocation	68,000	B3 standards met
	Medical Biosciences Building	68,500	B3 standards met

Adaptive Reuse and Decommissioning Buildings

Adaptive reuse, or repurposing buildings for a new use, is an important way to transform our campus while honoring our history. The University, through the regular capital planning and facility condition assessment processes, is working to identify high cost and programmatically obsolete buildings that should be considered for decommissioning. Evaluation criteria include:

- The building has significant facility condition deficiencies
- The cost to renovate is near to or exceeds the cost to replace the facility
- The current facility does not allow efficient space utilization
- The building is not of major historical significance for University
- The current building does not provide flexibility of use.

For those that pass the analysis, buildings may be renovated and repurposed to fulfill the university mission and for operational efficiency. Reusing an existing building is often viewed as more sustainable. It can mean less waste from demolition and energy efficient features can be added to the building. A few buildings that have been “reused” or “repurposed” are listed below.

Examples: Adaptive Reuse in Existing University of Minnesota Buildings

<u>Campus</u>	<u>Building name</u>	<u>Square footage</u>	<u>Former use</u>	<u>Current use</u>	<u>Features/details</u>
Twin Cities	Education Sciences Building	62,000	Minerals Research Lab	Offices for education and human development	Built 1922, renovated 2007
	Folwell Hall	113,000	Offices and classrooms	Offices and classrooms	Built 1901, renovated 2011
	Jones Hall	29,000	Architecture, classrooms, offices, studio arts department (1940's)	Admissions and a Computer Language Lab	Built in 1901, Renovated in 2006
	Nicholson Hall	73,000	Offices and classrooms	Offices and classrooms	Built 1890, renovated 2005
	Northrop Auditorium	195,000	Auditorium	Renovated auditorium, classrooms, offices, and Honors Department.	Built in 1928. Renovation underway. Slated to open in 2013.
	Pomeroy Center	7,000	Dairy Barn	Alumni and Student Learning Center	Built 1907, renovated 2008
	Walter Library	237,000	Library	Digital Media Center	Built 1922, renovated 2001
	Morris	Welcome Center	16,300	Iron Works, offices.	Admissions, External Relations, and the Center for Small Towns

The University has identified obsolete buildings and has been working to remove these buildings from its space inventory.

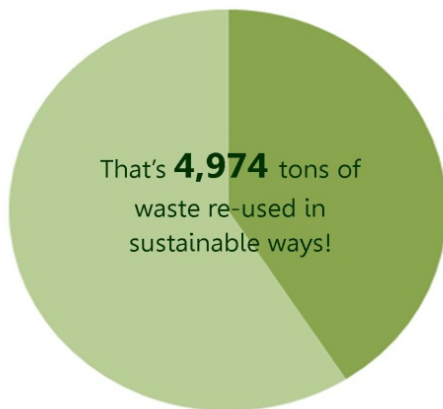
RAZED		
Building	GSF	Date
NORRIS GYMNASIUM	64,510	2012
1701 UNIVERSITY AVE SE	38,590	2011
722 FULTON ST SE	5,157	2011
BERRY HOUSE	4,004	2011
WEIGLEY HOUSE	4,004	2011
KLAEBER COURT	14,870	2011
LANDCARE BUILDING	46,107	2011
VETERINARY ANATOMY	14,901	2011
WESBROOK HALL	10,164	2011
MUSIC EDUCATION	7,231	2010
TANDEM ACCELERATOR	33,375	2010
SCIENCE CLASSROOM BUILDING	47,522	2009
PLANT PATHOLOGY FIELD LAB	1,759	2008
ANIMAL WASTE FACILITY	6,656	2007
BROODER HOUSE	11,301	2006
HOG BARN 1	3,185	2006
HOLMAN BUILDING	48,137	2006
POUCHER BUILDING	49,745	2006
POULTRY I HOUSE	6,733	2006
TURKEY RESEARCH	3,432	2006
UNIVERSITY PRESS BUILDING	22,062	2006
NORTHWEST GREENHOUSE	23,770	2005
ART BUILDING	66,137	2004
Source FCA Data, 2012	533,352	

Minnesota GreenCorps

In 2009, the University of Minnesota, Morris campus and the Minnesota Pollution Control Agency (MPCA), in partnership with AmeriCorps and ServeMinnesota launched a new program to protect and preserve Minnesota's environment while developing the next generation of environmental professionals. Minnesota GreenCorps, an environmentally focused AmeriCorps program administered by MPCA, helps communities conserve energy, reduce waste, and, through proper recycling and conservation education, reduce the amount of toxic chemicals discarded. GreenCorps positions have been located on the Crookston, Morris, Duluth and Twin Cities campuses. Other groups like the Clean Energy Resource Teams were also provided Green Corps resources. These environmental professionals, new graduates and some undergraduates are working on campus initiatives and in the surrounding communities and towns – supporting the education and outreach mission of our universities. GreenCorps experience on our campuses is a useful transition for new graduates from college to more permanent employment.

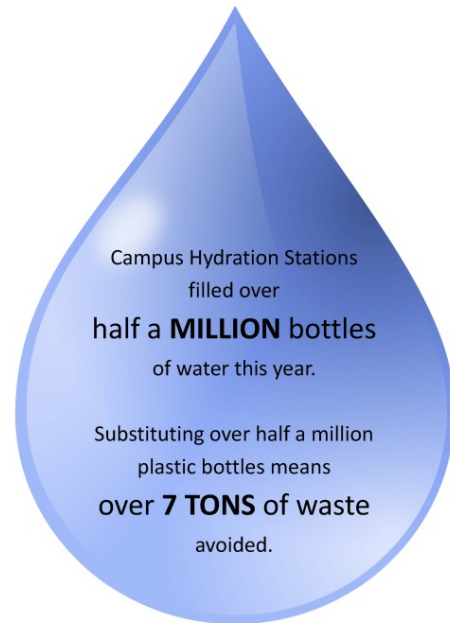
<http://www.pca.state.mn.us/index.php/view-document.html?gid=15590>

Reduce, Reuse, Recycle... means Waste Reduction across the system!



That's **4,974** tons of waste re-used in sustainable ways!

Over 40% of the University's waste products are recycled, composted, reused, donated, re-sold, or otherwise diverted.



Campus Hydration Stations filled over half a **MILLION** bottles of water this year.

Substituting over half a million plastic bottles means over **7 TONS** of waste avoided.

Additional Measures and Progress – Research and Education

This annual report has a strong emphasis on operations. As indicated in earlier reports to the Regents, in many ways, this information is easier to measure and report. Like other campuses around the country, gathering comprehensive information to report on areas of research and education that integrate sustainability concepts is a challenge, in part due to our size and decentralized nature, in part due to the absence of clear and simple systems for “counting” curriculum and co-curriculum initiatives, and in part due to the absence of agreed upon categories for coding sustainability research. Even with these challenges, there is considerable evidence to demonstrate the presence of curriculum, co-curriculum, research and outreach activities related to sustainability in the University of Minnesota system.

We are improving our methods for quantifying and tracking this information in order to participate, report and work to improve AASHE STARS metrics. UMD, UMM and UMTC campuses are participating in AASHE STARS.

In initial data gathering at the Twin Cities, Duluth and Morris campus in 2012, it was determined:

- 351 faculty members engaged in sustainability research.
- 266 academic departments are involved in sustainability
- 118 departments offer sustainability-related undergraduate courses.

Each campus provides highlights of research, education and outreach unique to their location in the following reports.



Leadership Guiding Principles

Spotlight: Institute on the Environment Points of Progress

At the Institute on the Environment, we have our head in the sky but our feet on the ground. We dream of transforming the world. Then we work to turn that dream into reality by strategically supporting individuals and programs with high potential for making tangible contributions to solving global grand challenges. We do so with the recognition that no one venture is likely to singlehandedly change the game – but that many, working together, will help shape the scaffold from which we can build a brighter future for our planet.

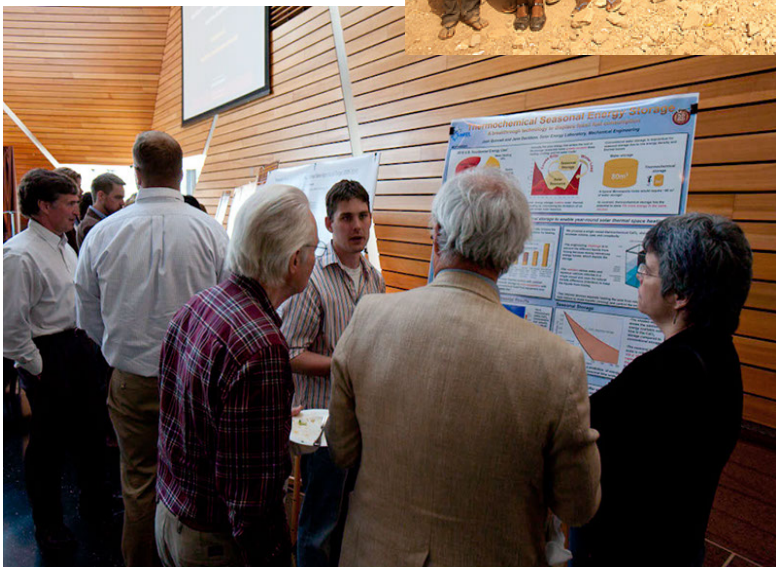


Consider some of the specific points of progress IonE affiliates have made in recent months as they work to transform the world, one innovation at a time.

- **Natural Capital Project** researchers have contributed to a number of high-profile publications in Science, PNAS, Frontiers of Ecology and Environment, and other journals, along with a book on natural capital published by Oxford University Press and a chapter in a recent World Bank publication on inclusive wealth.
- The **NorthStar Initiative for Sustainable Enterprise's** Solutions Summit 2012 brought together 225 individuals, including keynote speaker Paul Hawken and speakers from 3M, Nestle Waters North America, The Nature Conservancy, TruthStudio and Tunheim Partners, to identify and advance strategies for solving sustainability challenges.
- **Terra Populus** received a five-year, \$8 million grant from the National Science Foundation funding in September 2011 to create a global integrated data set to support research on human-environment interaction.
- **Momentum** has established content-sharing and event partnerships with Fortune, National Geographic, the Aspen Institute, Minnesota Public Radio, Living Green Magazine, the Utne Reader and others.



- The **Global Great Lakes** program developed a hydrodynamic model for the Duluth-Superior Harbor that informs decisions about restoration of degraded sites in the harbor and design of scientific monitoring.
- In Fall 2012 **Acara** launched the Dow Sustainability Innovation Student Challenge Award, encouraging students to do innovation and research to develop sustainable interdisciplinary solutions to social, economic and environmental problems.
- IonE resident fellow Aaron Doering (College of Education and Human Development) led “**Earthducation**” expeditions to Burkina Faso, Norway, Australia and South America exploring the link between education and sustainability.



Photos: permission by Institute on the Environment

Alumni Updates

How do we measure the impact of the University of Minnesota? Some things are easier to calculate, like energy use, educational and research outcomes or economic impacts. For instance, every dollar invested in the U of M generates \$13.20 in the Minnesota state economy. But how do we measure the impacts our graduates have on sustainability in our global society?

The impact of U of M graduates involved in sustainability reaches beyond the university, into our local communities, and even to the world. While living and studying on the U of M campuses, some students get involved in student groups to connect and encourage change. Some students are employed or have internships contributing to campus operations, educational programs, and events. Because of the University of Minnesota's commitment to sustainability, the student sustainability experience has inspired and transformed the lives of our students, and led many towards a career path in a sustainability-related field.

As part of the 2012 report, each campus sustainability office contacted recent graduates for a snapshot of how their experiences at the university impacted their lives and their career trajectory.

Profiles for the following alumni follow:

<u>Student</u>	<u>Campus</u>
Erick Elgin	U of M Crookston
Christopher Waltz	U of M Crookston
Sam Domeier	U of M Duluth
Stacy Gerths	U of M Duluth
Hannah (Schoof) Bauer	U of M Duluth
Christopher Droske	U of M Morris
Rebecca Lindquist	U of M Morris
Andrew Pearson	U of M Twin Cities
Chris Peters	U of M Twin Cities
Elizabeth Turner	U of M Twin Cities

Recent Alumni Updates

Crookston

Erick Elgin

Natural Resources: Water Resource Management and Natural Resource Management, Spring 2009

Involvement in UMC Sustainability

- Co-lead an effort that created a LEED certified building on the UMC's campus (2008-2009)
- Co-wrote a grant to promote education about sustainability on the UMC campus (2008)
- Housing Design Committee for Evergreen Hall (the new LEED certified building) (2009)

Extracurricular participation at UMC

Student representative to the Board of Regents of the University of Minnesota (2008/2009), executive board member for UMC's student government (2008/2009), member of the student services fees committee and the Environmental health, safety, energy management and civil defense committee, UROP (2007/2008), UTOP (2008/2009), member of the Natural Resources Club and Student Chapter of The Wildlife Society (2006-2009), tutor (2007/2008), and Crookston Student Association representative for the Natural Resources Club (2007).



How have your U of M experiences related to sustainability impacted your career trajectory?

I've not pursued a career in sustainability directly, but I work in the area of invasive aquatic species ecology. I worked in a regional capacity with The Nature Conservancy, then in the laboratory of the world renowned Dr. David Hodge at Notre Dame, and now as a graduate student at the University of Calgary. My sustainability-related experiences at UMC have guided my understanding on how people and the environment are truly intertwined. This simple element has influenced my work and research ever since.

How have your U of M experiences related to sustainability impacted your personal life?

I haven't given up the fight. I continue to take recyclables out of the trash and lecture whoever may be around me about how ridiculous this behavior is; just as I did in Crookston. I continue to promote LEED certified buildings and educate myself and others about simple sustainable practices that everyone can do on a daily basis.

Key sustainability related highlights from courses, co-curricular activities, student work and/or research while at Crookston?

I initially did not want to get involved in any leadership roles on campus. However, I believed, and still believe, that the status quo can always be set higher. Through all the experiences that I was privileged to be a part of, it was the relationships I built with friends, professors, UMC staff, and the Crookston community that had the most profound effect on me. I learned when people can work together, anything can be accomplished.

Recent Alumni Highlights

Crookston

Christopher J. Waltz

Wildlife Management, Spring 2009
Biotechnician, US Fish and Wildlife
Energy Conservation Specialist, MN GreenCorps
Northwest Coordinator, U of M's Clean Energy
Resource Teams
Energy Advisor, Franklin Energy Services (current)



Involvement in UMC Sustainability

President, student chapter of The Wildlife Society, 2009
Co-chaired UMC's first Sustainability Committee, 2009
Founded and chaired Crookston Students for Sustainable Development, 2009
Coordinated UMC's first Greenhouse Gas Inventory Report

How have your U of M experiences related to sustainability impacted your career trajectory?

My UMC experiences directly impacted my career trajectory, allowing me to connect the dots between how our energy and resource consumption affects wildlife management. These experiences changed me from a path of habitat management to a path of energy management. Our resource consumption has a direct impact on wild things and I felt, with the help of UMC relationships built over time, I could have more of an impact as a person working on energy issues.

How have your U of M experiences related to sustainability impacted your personal life?

I continue to promote sustainability at every turn. Franklin Energy, the Energy Efficiency and Renewable Energy consulting company I work for, has a sustainability committee of which I am a member. My wife and I burn wood for heat, recycle, and did some insulation work on our house.

I didn't always know that I wanted to be a leader, but at times, we have to stand up for what we believe is right. I really didn't get involved 'hook line and sinker' until my senior year at UMC. From my first leadership experience in planning a club trip to getting involved with a new LEED dorm project, it didn't just happen. I learned and grew as an individual and as a member of society, equally through my out-of-classroom activities as well as the classroom. The relationships I built with my roommates, fellow classmates, UMC Faculty and staff have had one of, if not the, most important influences on my life. Not everything in life is learned in a book but it's the relationships that last a lifetime.

Key sustainability related highlights from courses, co-curricular activities, student work and/or research while at UMC?

Playing key role in helping launch student-led sustainability initiatives at UMC; Evergreen Hall – first LEED certified residence hall in U of MN system, completion of first UMC Greenhouse Gas Inventory, first UMC MN GreenCorps Energy Conservation specialist, and Otter Tail Power Company/UMC Energy Conservation Challenge.

Recent Alumni Highlights

Duluth

Sam Domeier

B.A. in Political Science, with a Minor in Environmental Studies, awarded May 2010

Extracurricular participation at UMD: Intramural Soccer, Intramural Basketball, Intramural Broomball, Intramural Water Polo

Minnesota GreenCorps Energy Conservation Member, September 2010 – August 2011 *Focused on Energy Conservation, Sustainability*



How have your U of M experiences related to sustainability impacted your career trajectory?

As a Political Science major and Environmental Studies minor, my undergraduate B.A. degree had a great impact on my career trajectory. After graduation, I spent time working with the UMD Office of Sustainability as a Minnesota GreenCorps Energy Conservation Member, responsible for the research, creation, implementation, and coordination of energy conservation and education programs at UMD. In my current role, I work with a major utility's Energy Efficiency Marketing department in Minneapolis. I support multiple energy efficiency programs and manage many special marketing projects. I recently accepted an offer to work with that same utility's Renewable Energy department in Denver, Colorado.

How have your U of M experiences related to sustainability impacted your personal life?

Working with the UMD Office of Sustainability opened my eyes to the world around us. Sustainability issues are some of the most important issues facing our world today, and without a willingness to change our way of thinking concerning the environment, we may be putting ourselves and future generations in harm's way. Practicing sustainability is the only way that we will be able to continue enjoying our natural environment for years to come. Individual behaviors, attitudes, and choices are vital components in the reduction of our energy use and carbon output, and if we each take small actions every day, the results will add up.

Key sustainability related highlights from courses, co-curricular activities, student work and/or research while at UMD?

As an undergraduate student at UMD, I had the opportunity to explore many areas related to sustainability. As part of my Environmental Studies senior seminar course, I drafted a proposal that looked at creating a large scale sustainable garden on the UMD campus. The GREENS (Growing Resources for Economic and Environmental Neighborhood Sustainability) project focused on providing a number of different benefits to society, the environment, and local economy. As a Minnesota GreenCorps Energy Conservation Member at UMD, I managed a number of different projects, including the UMD foot warmer pilot program, refrigerator exchange program, and energy pledge initiative. It is great to know that the Sustainability Office and the UMD campus are so committed to sustainability and the future of our environment.

Recent Alumni Highlights

Duluth

Stacy Gerths

Graduation Date Dec. 2011

Involvement at UMD Sustainability 2008-2011

Area of Focus: Green Revolving Fund, Bike Fest, Sustainability Coalition



How have your U of M experiences related to sustainability impacted your career trajectory?

Without my involvement with the sustainability efforts at UMD I would have left UMD very narrow minded. I graduated with a business degree but my work with sustainability on campus educated me that sustainability and business work great together and it *should* work together. I learned how to speak business, but yet use the concept of sustainability to help break down the silos between. I was and still am inspired to bring creativity and my passion for the environment to my business career. I am currently working at Caribou Coffee Corporation training to become a manager and I am very excited to exercise the idea of sustainability at my work place especially with a company that will support it.

How have your U of M experiences related to sustainability impacted your personal life?

With my work on the Green Revolving Fund I learned a great deal about myself and I acquired a lot of great skills and experience. When I was busy with college stress and pressures I needed to learn how to prioritize my life I learned how important it is to stick with something you believe in and be dedicated. It took until my senior year to really get the Green Revolving Fund in action, which was 3 years! Through that process I was able to meet some of UMD's fantastic staff and learn a lot about the university operations and business aspects. My personal life has been changed through those experiences and I have become more confident, motivated and focused on what really matters to me. I also learned that if you don't ask it will always be a no, and there are a lot of people in this world that care and want to make a difference. It is important to surround yourself with positive people like that and will help you stay motivated in your goals.

Key sustainability related highlights from courses, co-curricular activities, student work and/or research while at UMD?

The SDROP independent study allowed me to work on the Green Revolving Fund with Mindy Granley and was a great support to help make it successful. The Student Sustainability Coalition group was a great resource and help with the Bike to School Fest. My experience working with the sustainability efforts at UMD helped me realize what an amazing school UMD is. There are many schools in this state that do not give their students as much individual support as UMD did for me. I was not pushed away nor did I ever feel like I was pressing on closed doors. I was able to meet and work with some very respectful people at the University and felt like I was a voice that they listened too. I really hope that the students at UMD get to take advantage of all the opportunities that UMD has for them and all the support they will receive.

Recent Alumni Highlights

Duluth

Hannah (Schoof) Bauer

Health Education: Community Health
July 2010

UMD Office of Sustainability Intern
January - May 2010

Eta Sigma Gamma; Student Health Advisory
Committee



How have your U of M experiences related to sustainability impacted your career trajectory?

My experiences have not directly impacted my career trajectory, but I strive to incorporate sustainable practices such as eliminating excessive electricity usage and paper waste into my employment duties. It is my hope that this also sets a positive example for my co-workers.

How have your U of M experiences related to sustainability impacted your personal life?

I do my best to continue forming habits that support sustainability and look for new ways to live in an environmentally-friendly manner. At home, my husband and I are conscious of not wasting resources such as energy, water, paper, food, etc. We rely mostly on human-powered transportation such as walking or biking for everyday travel. Our bike touring trailer works well for buying and transporting groceries, and we are both fortunate to live within walking distance of work when the winter weather here in Sault Sainte Marie, MI prohibits safe biking. One area in which I am working to improve is the purchasing of in-season and local foods. In line with this goal, I have been experimenting with container gardening as a way to produce some of my own food while living in an apartment.

Key sustainability related highlights from courses, co-curricular activities, student work and/or research while at UMD?

As part of my internship experience with the UMD Office of Sustainability, I developed and promoted an energy pledge for UMD students in conjunction with the Sustainability Fair. The pledge was a way for students living both on and off campus to think about their daily energy usage and how it could be reduced. I also researched energy saving practices for laboratories and created educational materials to share those findings with faculty and students. Special highlights for me included assisting with events such as the UMD Bike to School Fest and the Edible Garden projects, and writing about various sustainability topics for the office blog. Additionally, as part of the Community Health Methods course required for my major, my group members and I completed a large project focusing on student on-campus recycling.

Recent Alumni Highlights

Morris

Christopher Droske

B.A. Chemistry, 2011

GreenCorps member (Energy Conservation Specialist); SUN-E group member – helped obtain funding for solar thermal panels at UMM RFC

Tennis, Orchestra, Chemistry Club



How have your U of M experiences related to sustainability impacted your career trajectory?

My time in Morris shaped my career direction. Morris provided a perfect opportunity to see many types of renewable energy technologies, along with opportunities for hands on involvement. The solar thermal panels for the Regional Fitness Center's pool were one of the first projects I got involved with. This project exemplified sustainability in two ways; not only would the heat for the pool be provided from a renewable source, but the panels were manufactured locally in nearby Starbuck, MN by Solar Skies. Through this project, I also got grant writing experience. Both my education at UMM and service with the MN GreenCorps lead me to find a job matching my technical background; I am currently working in the energy efficiency industry.

How have your U of M experiences related to sustainability impacted your personal life?

Energy has been the focus in both my work and personal life since my time in Morris. A few of the things I've done in the last year are participate in a CSA, invest in utility renewable energy credits, and learn proper techniques for hyper-milling.

"After just one year in Morris, I strove to incorporate sustainability into my studies, my work, and my life."

Key sustainability related highlights from courses, co-curricular activities, student work and/or research while at Morris?

Nancy Carpenter's course, *The Chemistry of Sustainable Energy*, was one of the greatest courses in becoming introduced to the methodology behind renewable energy development. A few highlights were learning the efficiency of various production cycles, helping to bust myths regarding popular "silver bullet" technologies, and even having the opportunity to create our own solar cell!

Recent Alumni Highlights

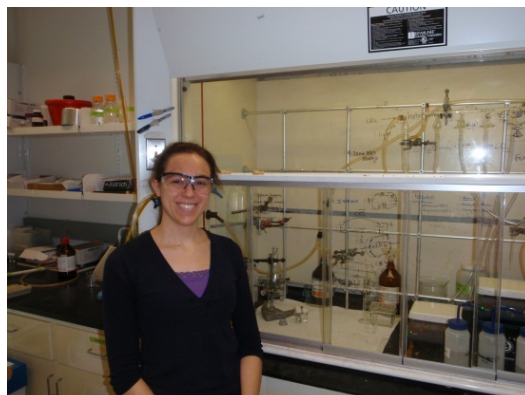
Morris

Rebecca Lindquist

B.A. Chemistry and Anthropology, 2011

Biodiesel chemistry research, co-lead of UMM Organic Gardening Club

Organic Gardening Club, Undergraduate Research Symposium Committee, UROP proposal review committee, Lutheran Campus Ministry, Karate club, Muge Archaeological Fieldschool in Portugal, peer tutor



How have your U of M experiences related to sustainability impacted your career trajectory?

My first research experience on biodiesel at UMM encouraged me to pursue a chemistry career in research related to sustainability. The environment at Morris encourages students to understand sustainability as more than just a technological, political, economic, environmental, or cultural problem, but rather as something much more complex that includes all these factors. I am now a second year graduate student pursuing a Ph.D. in chemistry in the Wasielewski group at Northwestern University, doing research on solar-driven water oxidation catalysis.

“The environment at UMM encourages students to understand sustainability as more than just a technological, political, economic, environmental, or cultural problem, but rather as something much more complex that includes all these factors.”

How have your U of M experiences related to sustainability impacted your personal life?

I came to UMM already valuing sustainability, but being exposed to so many programs and discussions related to sustainability, and surrounded by people who also value it, reinforced sustainability as a value in my life. It informs my day to day decisions, including food, transportation, what I buy or don't buy, what I use or don't use. I value the community of UMM even more after leaving and seeing that such value for sustainability is not as common outside of it.

Key sustainability related highlights from courses, co-curricular activities, student work and/or research while at Morris?

Besides my research and experience with the Organic Gardening Club, I took some key courses that helped me build my view of sustainability that I hold today. My anthropology courses helped me to see the cultural connections in our need for a more environmentally sustainable and socially responsible community (whether that community be Morris, the U.S., or the world). The professors at UMM are incredibly supportive, and Morris would not be such a strong university for sustainability and driving students to pursue careers and lifestyles related to sustainability without them.

Recent Alumni Highlights

Twin Cities

Andrew Pearson

Bachelor of Individualized Studies (BIS), College of Liberal Arts, Spring 2011.

Major combined Sustainability Studies, Communication Studies, and Environmental Sciences, Policy, and Management.



How have your U of M experiences related to sustainability impacted your career trajectory?

I knew I wanted to do environmental work upon entering college, but my experiences at the U of M helped to both broaden and refine my goals. Both my classes and my extracurricular experiences helped give me a well-rounded understanding of current topics in sustainability -- it's hard to overstate the importance of that. I gained more of an appreciation for large systems-level sustainability work, particularly around climate change, and I am more drawn to a career in that field now than I was before. To be honest, the environmental / sustainability sector is both very diverse and very rapidly changing right now, and this doesn't make for a solid or well-defined career path. One of the best things to come out of my U of M experience was a heightened sense of groundedness and adaptability to let me take the right job opportunities as they come along.

How have your U of M experiences related to sustainability impacted your personal life?

I met a few of my close friends at the U of M because we were all interested in sustainability issues, and we've stayed close now that we've graduated. It's sometimes difficult to separate work and personal life in this context, because I'm usually involved with various environmental projects or issues on a volunteer basis in addition to whatever paid work I'm doing.

Key sustainability related highlights from courses, co-curricular activities, student work and/or research while at UMTC?

There were many great experiences! Here are two highlights. In late 2010, I had the privilege of taking a class on climate change from Sen. Ellen Anderson and Rep. Kate Knuth, two of Minnesota's foremost environmental legislators, and got to travel with them to the United Nations climate conference that year in Mexico with a small group of other students. Seeing international climate negotiations firsthand, meeting wonderful people from all over the world, and traveling with knowledgeable policymakers was an experience I never thought I'd have! It deepened my commitment to be involved in climate work.

In 2009, my good friend Rob Bauer and I started a project called the Power Police, in partnership with several student organizations (notably MPIRG, EcoWatch, and the Active Energy Club) and the U of M's department of Energy Management. The Power Police project connected students to University faculty and staff to make energy-saving changes in offices and workstations. This program became excellent experience for us on a personal level as well as an innovative model on the national level -- as far as we're aware, this was the first time that such a program had been tried. Rob and I presented the program at the Association for the Advancement of Sustainability in Higher Education conference in Denver, traveling out with several U of M sustainability leaders. I especially appreciated the support from University administration in bringing the Power Police program to its full potential and being so open to implementing a student-driven idea.

Recent Alumni Highlights

Twin Cities

Chris Peters

Civil Engineering, May 2009
Sustainability Studies Minor

Greenhouse Gas Emissions Inventories
Greenhouse Gas Emissions Reduction Strategy
Renewable Energy

Solar Decathlon – Solar Array Design Team



How have your U of M experiences related to sustainability impacted your career trajectory?

I had the opportunity to generate the Twin Cities campus and Systemwide greenhouse gas inventories while at the U of M. After graduating, I decided to start my own business doing greenhouse gas inventories. I was able to leverage the experience I gained from the U of M, which allowed me to do the greenhouse gas inventories for one technical college in Wisconsin and one textile supplier in New Jersey. This led me into my current position as an Engineer at AECOM, one of the top engineering consulting firms in the world, where I am working on sustainability and remediation projects. I produced the Wisconsin Forest Sector Assessment for Sustainability, and I am currently assessing a \$2 billion water pipeline project for sustainability using the ENVISION sustainability infrastructure assessment tool.

“I am currently assessing a \$2 billion water pipeline project for sustainability”

How have your U of M experiences related to sustainability impacted your personal life?

My experiences at the U of M have made me more conscience of the impact I can have on the world. The biggest change I see in how I think about sustainability now is that I am able to think about my own actions in a broader context. I can examine how my consumer purchases affect different companies, communities, and countries. I can also see how the choices of where I live and how I live have implications for our global community and even for future generations.

Key sustainability related highlights from courses, co-curricular activities, student work and/or research while at the Twin Cities campus?

One of my favorite experiences at the U of M was working on the solar decathlon project. It was amazing to see so many different teams with different backgrounds come together to design one pretty amazing building. I was fortunate to be on the solar array design team. Through this, I was able to learn a lot about solar energy and I had the chance to meet some of my electrical and mechanical engineering classmates. I also really enjoyed my experience doing the Twin Cities and Systemwide greenhouse gas inventories as a senior. Getting to take a project from start to finish and really being able to own it as my own project, gave me a taste of what working in a career setting would be like. It also led me down the career path I am on today.

Recent Alumni Highlights

Twin Cities

Elizabeth Turner

Masters of Architecture, College of Design, 2011

Master of Science in Architecture: Sustainable Design (expected January 2013)



How have your U of M experiences related to sustainability impacted your career trajectory?

I currently work at LHB, an architecture and engineering firm with a focus on sustainable design. The majority of the work I do is directly related to my coursework and research positions at the University of Minnesota, from modeling building energy consumption and analyzing energy use data, to assisting with higher education design and campus plans. Had I not pursued the Sustainable Design degree, I wouldn't have my current job. Most importantly, I wouldn't have the background knowledge or skills necessary to work towards reducing greenhouse gas emissions through increasing the energy efficiency of buildings.

How have your U of M experiences related to sustainability impacted your personal life?

I grew up turning off lights and composting, and I was an avid bus commuter before my time at the U. My experience in sustainability coursework at the University of Minnesota, however, has helped me to move from following generic "best practices" to actually analyzing my environmental impact and prioritizing lifestyle changes. For example, during an energy audit of my house for a MS in Sustainable Design course, I estimated the electrical consumption for all appliances and discovered that our internet-based landline phone was consuming a surprisingly large amount of energy. The result was eliminating our landline phone. On a larger scale, we replaced our water heater with an efficient tankless model. Combined with taking shorter showers and washing my hair every-other day, it's been exciting to track the decrease in our natural gas use. Unexpected side effect? My hair is softer and less frizzy without all that excessive washing!

Key sustainability related highlights from courses, co-curricular activities, student work and/or research while at UMTC?

I was fortunate to be a Research Assistant for the Salovich Zero+ Campus Design Project; a collaboration between U of M disciplines and departments to integrate campus energy and water management across site and building with the goal of designing the campus to be a net producer, rather than net consumer, of resources (<http://zeropluscampus.umn.edu/>). Through the project, I worked with University staff engaged in leading campus initiatives, led a student initiative to design a landscape installation, and presented the project at the conference for the Association for the Advancement of Sustainability in Higher Education (AASHE). These experiences inspired me to write my MS-Sustainable Design thesis on integrating sustainability planning into the campus planning process.

Sustainability Partnerships

Sustainability integration across the multitude of programs and vastly different spaces of the University of Minnesota occurs with the support from both internal U of M colleagues and the support from external and community partnerships. Some partnerships are new and others are longstanding. For example, we witness the work of U of M Extension to build social capital for resilient communities, or the work of the Regional Sustainable Development Partnerships to build sustainable and healthy food systems in rural communities, or the work of the Clean Energy Resource Teams (CERTs) to engage communities in conserving resources and building their energy futures. Institute on the Environment bridges all the campuses with their grant programs and focus on interdisciplinary education and research.

Campus sustainability programs are fortunate to foster many unique external partnerships across the state that share the commitment to sustainability.

Business Partnerships contribute to the University's sustainability efforts through purchase of more sustainable products, support of research related to sustainability and overlapping environmental issues and direct partnerships.

- Business partnerships include the rebate programs through the energy providers to our campuses, grants such as the Dow Sustainability Challenge, or using the University as a living laboratory to test water efficient sprinklers from Toro. Business partnerships at the new Rochester campus are supporting housing, dining and other campus services.

Business partnerships and other support are vital to research. IonE has received significant private support, including corporate and foundation gifts from the Alton Foundation, Blandin Paper Company, The Caldrea Company, Cargill, General Mills, Gordon and Betty Moore Foundation, 3M, Mosaic and Stratford Companies as well as contributions from generous individual benefactors.

Partnerships with regulatory agencies encourage environmental stewardship and sharing practices. The University also supports agency initiatives to encourage science-based solutions and bring to the knowledge and service of the University's faculty in to solve complex environmental problems.

- GreenStep Cities, Green Corps, and MNTap are examples of programs and partnerships between the university and the Minnesota Pollution Control Agency. These programs have provided training and learning opportunities for the next generation of environmental professionals.

Partnerships with organizations that support sustainability initiatives related to protecting our natural resources help the local environments in which the University delivers our mission and provide connections to community leaders. We are often able to coordinate efforts and resources with these partners to achieve greater success.

- One example of a Natural Resource Partnership included the University River Life program and National Park Services. The Gopher Rangers were formed as a result of a Welcome Week Sustainability event and improves access for U of M students into the work of the Park Service at the Mississippi National River and Recreation Area near the Twin Cities Campus.

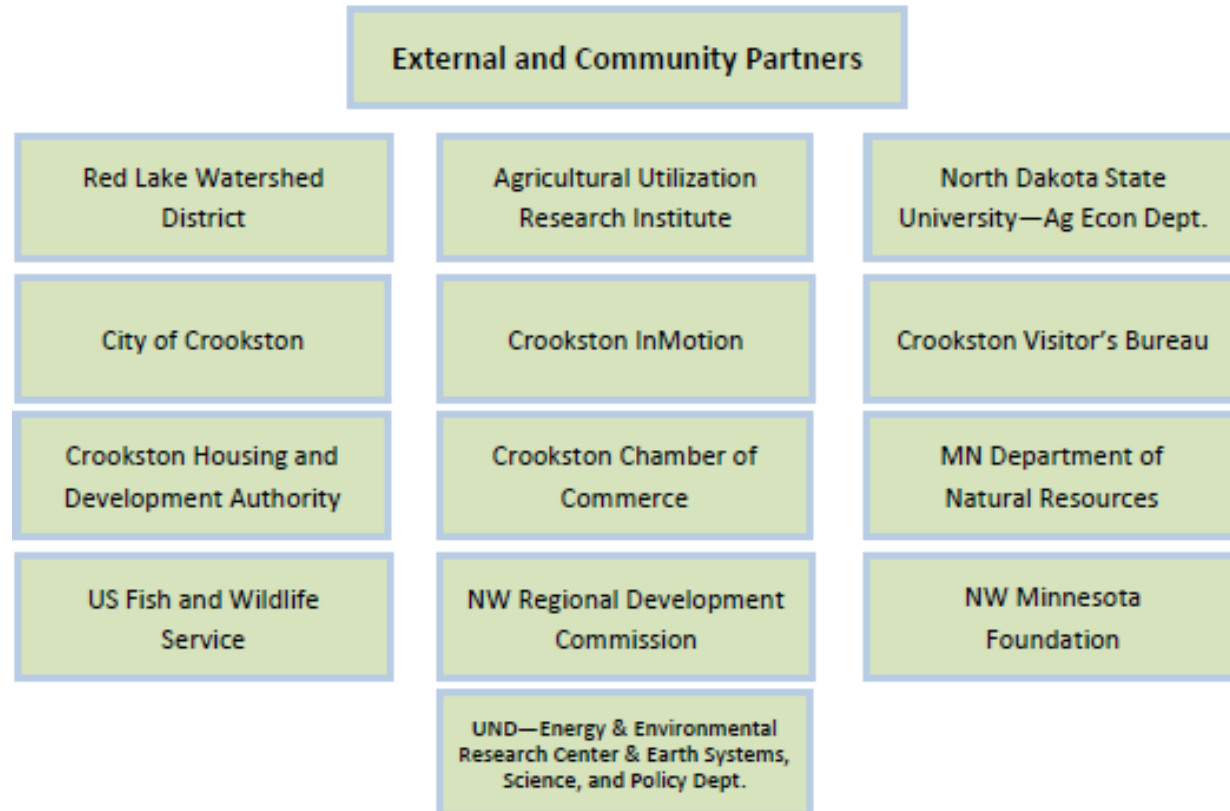
Community Partnerships exist in all of the U of M locations. The local and neighborhood organizations are often the key grass-roots organizations interested in sustainable practices. Faculty and students have opportunities to participate in the essential planning elements of starting sustainable practices.

- Community Partnerships include the Duluth Sustainability Planning Committee, Crookston's CommUniversity, and Morris Healthy Eating Initiative.

On the following pages, each campus provides a glimpse of a few of the key partnerships they maintain.

Campus Sustainability Partnerships

Crookston



Campus Sustainability Partnerships

Duluth



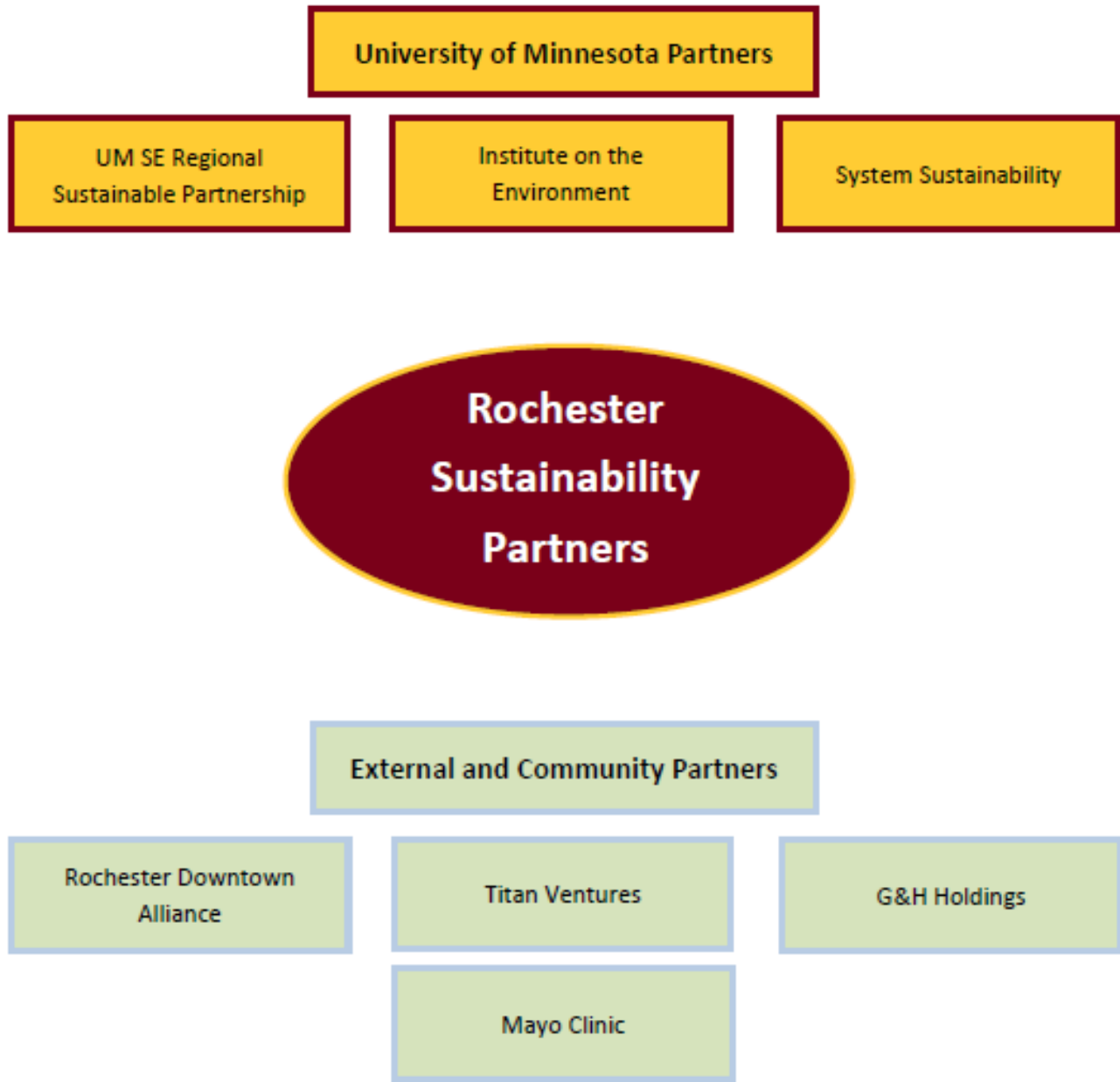
A central graphic consisting of a dark red oval with a yellow border. Inside the oval, the text "Duluth Sustainability Partners" is written in white, bold, sans-serif font, centered both horizontally and vertically.



Campus Sustainability Partnerships

Morris



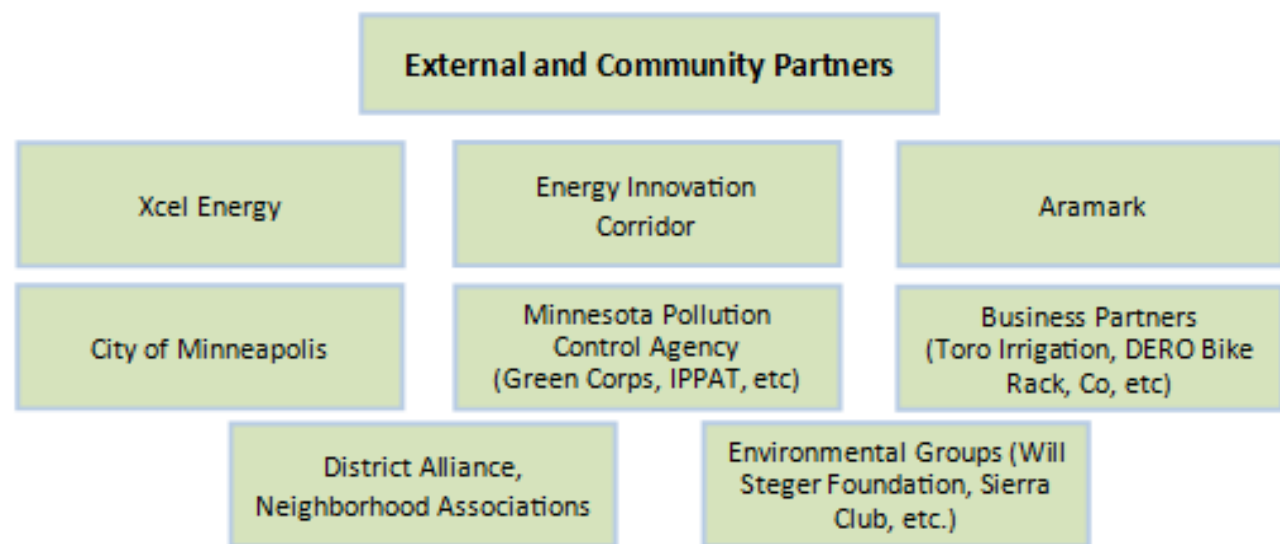


Campus Sustainability Partnerships

Twin Cities



A central dark red oval with a yellow border containing the text "Twin Cities Sustainability Partners" in white.



Campus Reports

University of Minnesota, Crookston

Introduction

Crookston

The Crookston campus is located in the Red River Valley, a prime agricultural region of northwest Minnesota. The first development was as an agricultural experiment station in 1895 followed by the establishment of a residential, agricultural high school in 1905. In 1966, the high school phased out and a two-year technical college was established, building on the experiential learning tradition. The experiment station continues to be co-located with UMC and is now called the Northwest Research and Outreach Center of the College of Food, Agriculture, and Natural Resource Sciences; conducting research and outreach in agronomy, soils, plant pathology, and natural resources. The technical college transitioned to a baccalaureate institution in 1993 with a current enrollment of 1,114 on-site, degree-seeking students and 678 online, degree seeking students (who use less energy than on-site students) for a total of 1,792 students. Nearly 8% of the student body are international students representing 30 countries which broadens the goal perspective of the campus. There is an active service learning program on campus which engages students with the broader community and makes education real.

Strong support for campus and regional sustainability initiatives has been provided by Linda Kingery, Executive Director, Northwest Regional Sustainable Development Partnership (NWRSDP). In 2009, funding was secured from NWRSDP, a CERTS grant, the Chancellor's office, and the NW Minnesota Foundation to support the U of MN's Center for Sustainable Building Design to cooperatively prepare a climate neutrality plan ("[Action Plan for Climate Neutrality and Sustainability](#)"). This provides a functional, "strategic plan" for campus sustainability activities with a special focus on energy. This was completed in June of 2010 and updated on 15 May 2012. The initial Greenhouse Gas Inventory was completed for the campus in 2009 and updated on 30 December 2011. Chancellor Chuck Casey established the **Center for Sustainability** (CFS) in 2009 coinciding with the fall dedication of Evergreen Hall as the first LEED-certified residence hall in the U of MN system. Also in 2009, UMC was chosen to partner with Otter Tail Power Company in a Campus Energy Challenge with the objective of reducing campus energy use by 10-15% over a 1 ½-year period. UMC was named a host site for the inaugural GreenCorps program in and has hosted three, 11-month personnel commencing in 2010. The student-led, Crookston Students for Sustainable Development (CSSD) was organized in 2009 and led the passage of a *Green Fee* of \$ 2.00 per student in 2009 and which was increased to \$ 4.00 in 2011. This supports student sustainability assistants, guest speakers, and other green initiatives for the campus. The **Campus Master Plan** was revised in 2010 and includes sustainability related guidelines.

People care about something, if:

- *They feel it is of consequence*
- *They feel it affects them*
- *They believe they can do something*

Source: Larry Kruckenberg, Wyoming Game and Fish Department

Campus Sustainability Highlights

Crookston

Sustainability initiatives launched at the system level of the University and implemented locally helped move the Crookston campus into the collegiate sustainability game. Early actions have matured somewhat and the CFS and the NWRSDP now provide a visible focal point on campus for discussions, seminars, and other initiatives about the connections between academics, student services, and facilities. Especially significant is the heightened awareness within the Crookston and regional community as a result of the synergy between UMC and the NWRSDP sustainability actions. These include:

- Promotion of the “CommUniversity” concept by the CFS and active involvement by the campus in a community development planning initiative known as *Crookston InMotion*. This has been aided by hosting of three GreenCorps specialists in Energy Conservation, Stormwater Management, and Green Outreach.
- UMC, NWROC, NWRSDP, MN DNR, U.S. Fish and Wildlife Service, Agricultural Utilization and Research Institute, U of MN’s Center for Integrated Natural Resources and Agricultural Management, Northwest Manufacturing, and The Nature Conservancy, are evaluating the regional utilization of various biofuels as a strategy for renewable energy supplies, economic development for smaller communities, and wildlife management in brushlands and wetlands in northwest Minnesota.
- Nature Play Spaces initiative led by NWRSDP, UMC, U.S. Fish and Wildlife Service, State-wide Health Initiative Partnership (SHIP) hosted a regional conference and action workshop. The initiative resulted in nature parks under development in Crookston, Warren, and Fertile.
- NWRSDP’s regional promotion of green communities, local foods/farmer’s markets, and regional sustainability indicators.
- “Sustainability Suppers” funded by a \$ 2,500 IonE mini-grant convened the campus and local community – as well as the University of North Dakota – to brainstorm varied applications of sustainability measures to not only reduce greenhouse gases but improve energy efficiency and profitability of campuses and local industries using the Climate Action Plan as a reference point. A “Summer Student Sustainability Seminar Series” was launched in 2012 to provide a forum for interns and field researchers of CFS and NWRSDP to present on their work and learn from each other. This educational program bridged into the Student Engagement forum held at UMD in October of 2012 and will continue through the academic year at UMC.



Chancellor Fred Wood with summer sustainability student intern seminar.

- The Director of the CFS, Dan Svedarsky, has become a significant voice within the wildlife profession as to sustainability and energy connections to natural resource management at the local level, biofuels and wildlife relationships at regional scales, and applications of mitigation and adaptation strategies with regard to global climate change. Svedarsky was the official representative of The Wildlife Society at the U.N. Conference on Climate Change in Copenhagen in December of 2009. Along with the Deputy Commissioner of the Minnesota Department of Natural Resources, Svedarsky presented a paper on *Resource management in an energy constrained future in the U.S.* at the 4th International Wildlife Management Congress in Durban, South Africa in July 2012.

Accomplishments, Future Goals and Focus Areas

Crookston

1. Leadership and Modeling

CSSD and the CFS in close collaboration with the NWRSDP aspire to be a campus and community model to stimulate interdisciplinary and integrative thinking and action about sustainability. Sustainability is an ideal umbrella to connect all disciplines as well as operational services as we strive to prepare students in a “living laboratory” setting for the world after college. These connecting principles are well stated in the Regent’s policy of 2004, U of MN Systemwide Sustainability Goals and Outcomes document of 2009, UMC Action Plan for Climate Neutrality and Sustainability, and the UMC Campus Master Plan.

Local Foods. Of particular note, Linda Kingery and Vice Chancellor for Student Affairs, Peter Phaiah, along with student researchers, lead a planning effort related to local food initiatives on the Crookston campus serviced by Sodexo. For Sodexo’s *dining services operations*, the following are being proposed: Promote *recycled and reusable beverage containers*, composting of waste food, and convert waste vegetable oil to biodiesel for energy. To increase the visibility of connecting land and food, on-campus gardens and edible landscaping are essential. On-campus production is the easiest local food for Sodexo to purchase and use in its dining services operations. Already, the UM Crookston greenhouse has produced some tomatoes for the cafeteria. The *Cornercopia* garden in St Paul and the student-run garden at the Morris campus serve as useful models. Next steps are to identify a project manager/champion and a site for the garden. *Policies on the procurement of local food and the development of a campus food hub* on campus are complex. It starts with clear expectations from the campus and University system laying out goals for procuring local food that is grown by production methods that protect soil, water, and biological diversity, and benefit the local economy. These expectations align well with the Regent’s Policies for Sustainability and Purchasing from Small Businesses. Susan Hallquist, a second year law student on the TC campus, developed recommendations to help with negotiations for creating clear expectations and performance standards. <http://z.umn.edu/policyandprocurement> [*Leadership and modeling goals 1, 3, 4, 5,]*

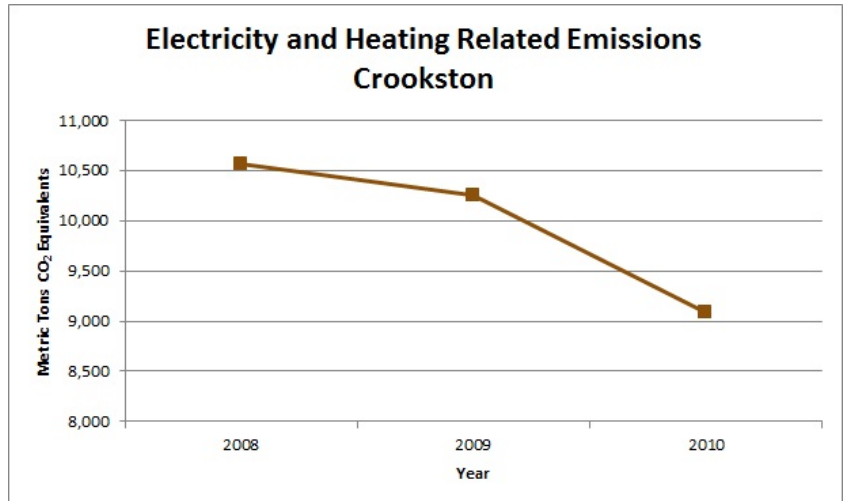
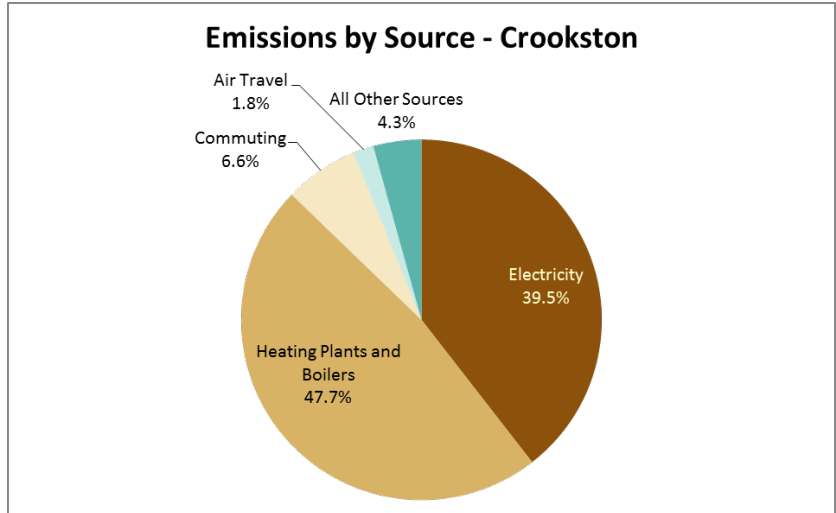
Goals:

- Continue to promote existing University policy guidelines which embrace sustainability concepts to increase overall efficiency of effort and resources across the campus community and enhancement of the student educational experience.

- Increase the regional reputation and visibility of the campus as a “go-to” place for knowledge and demonstration of green technologies and job training, and examples of energy efficiency.

2. and 3. Operational and Energy Efficiency Improvements

The Crookston campus continues to clarify energy use data in the midst of new construction, retrofitting laboratories and classrooms in older buildings, addition of energy monitoring equipment, and personnel transitions. Dan Svedarsky of the CFS and Rich Connell, the new Director of Facilities and Operations, work closely together in planning and implementing campus energy and sustainability initiatives. The engagement of UMC with Otter Tail Power Company in the energy challenge program was helpful to increase campus energy use awareness but we continue to be a work in progress. Energy conservation gains on some fronts are sometimes offset by modifications which increase energy use such as, increasing the amount of cooled campus spaces or adding highly ventilated laboratory space. Otter Tail provided technical expertise and equipment, facilitated informational sessions with the campus community, and provided over \$ 82,000 in rebates for equipment retrofits. These funds will provide modest seed money for further investments in sustainability projects; a revolving fund of sorts. Comparing carbon footprint data from the initial Greenhouse Gas Inventory Report in May of 2009 to the update of 31 December 2011 indicates an improvement in energy use per FTE but increased energy use on a square foot basis (Table 1.)



[Operations goals 1, 3. Energy efficiency goals 1, 2, 3]

Table 1. Carbon footprint of the University of Minnesota, Crookston. 2008 and 2011. (ACUPCC data)

Fiscal year	Net emissions (Metric tons CO ₂ e)	Gross square feet	Metric tons CO ₂ /1,000 sq ft	Enrollment	Metric tons CO ₂ /FTE
2007-2008	12,494	773,959	16.1	1142	10.9
2010-2011	12,848	605,806	21.2	1436	8.9

Accomplishments:

- Completed a comprehensive heating plant study that took an in-depth look at steam generation for space heating. A component of this study, funded by a \$4,000 CERTS grant, evaluated the potential of incorporating biomass into the fuel mix using locally available feedstock.
- Otter Tail Power Company provided “Smart Meters” for 10 buildings to complement the installation of internet cables and sensors to provide remotely accessed energy use data via the internet which are displayed on the campus web site (“Power Profiler”) as well as facilitate the in-progress development of an energy dashboard in the Student Center. The dashboard will provide real time data to UMC stakeholders for operational and long term decision making.
- A new residence hall is being built to B3 standards with two raingarden features for storm water management. Raingardens are being designed and will be installed by the CFS and UMC faculty and student expertise. Otter Tail Power selected UMC as their first customer to receive energy planning assistance for the new residence hall under their Commercial Design Assistance program.
- There is a campus-wide initiative to plant many new trees along with a student led effort to take better care of the existing trees with a wood-mulching program to protect and nourish the existing stock. These will sequester carbon, provide some edible fruits, save energy by ameliorating wind action, and provide additional identification materials to reduce field trip travel. This is part of the Wangari Matthai Memorial Orchard implementation.
- Many classrooms, office areas, and student commons have been retrofitted with new LED lighting for energy conservation. Currently in the planning stage, is the replacement of all campus exterior street lights with LED units to reduce electrical consumption by 55%.



CSSD students planting another apple tree as part of the Wangari Matthai Memorial Orchard.



Installing the RFID bicycle monitoring unit along the UMC and community bike path.

- A radio frequency identification device (RFID) has been installed near the beginning of the bike path to Crookston to monitor bicycle trips to the city (about 1.5 mile). This will record gasoline saved, CO2 not produced, human calories burned, and serve as an incentive to reduce automotive travel to Crookston and increase exercise.
- Hydration stations have been installed in Hill Hall, Owen Hall, the Library, and Student Center to promote water conservation and reduce use of disposable plastic water bottles.

Goals:

- Continue to ask the question, before implementing new or retrofit construction and maintenance practices, “**What are the short-term and long-term energy (and therefore financial cost) implications?**”
- Continue to work with Otter Tail Power and Facilities Management personnel in fine-tuning operational systems to improve energy efficiency and conservation.
- Complete the touch-screen, energy dashboard to provide real time data on energy and perhaps other resource use information.
- Engage students in sustainability related research projects.
- Continue to expand sustainability connections to the local community with regard to energy use and explore biomass utilization options in the region for possible use in UMC’s heating plant.

4. Research

UMC faculty member, Katy Smith is engaged in greenhouse gas research by evaluating nitrogen gas release from soils in conjunction with the Northwest Research and Outreach Center. She will broaden this work with Dr. Kristie Walker and evaluate turfgrass areas on campus. Former GreenCorps specialist and now UND grad student, Michael Knudson, is surveying stormwater management by small communities in the regional watershed; funded by a \$5,368 Red Lake Watershed District grant to Svedarsky through the NWROC. Svedarsky is part of a regional team evaluating the possible use of cattails and other bioenergy sources in northwest Minnesota; funded by grants from the NW Minnesota Foundation and the IonE’s IREE. Cattail harvest would have concurrent value as wetland management technique. UMC has allocated \$50K per year to fund undergraduate student research projects and some of these have supported sustainability topics. A mini-grant program is being established through CSSD and the Center for Sustainability and will incentivize modest sustainability theme projects; some including research. **[Research goals 1, 2, 3, 4, 5]**



Student researcher evaluating cattails as a possible bioenergy resource for northwest Minnesota.

Goals:

- Continue to promote UMC undergraduate research topics with interdisciplinary, sustainability themes.
- Promote interdisciplinary faculty research which addresses sustainability topics and involves faculty from other campuses and perhaps community people. Faculty and staff on the Crookston campus have a largely untapped potential to learn from each other regarding sustainability.
- Seek additional funding to expand the cattail bioenergy research project to the field scale and test burn the product in UMC’s heating plant.

5. Education and Outreach

The CFS supported the efforts of the NWRSDP, the U.S. Fish and Wildlife Service, and others in sponsoring the Children and Nature Conference which focused on the many benefits of connecting children to nature. As a follow-up, the NWRSDP is co-funding the development of nature adventure parks in Crookston and Warren with assistance from landscape architecture graduate students from the Twin Cities campus, Virajita Singh of the U of MN Center for Sustainable Building Design, UMC landscape architect, Eric Castle, and many volunteers. This provides an excellent example of inter-campus synergy.



Coming along. Development of a nature play space at Castle Park

The CFS provides coordination for the Campus Sustainability Committee, CSSD, student sustainability assistants, and GreenCorps specialists when available. CSSD meets weekly and is co-chaired by student sustainability assistants. Lisa Loegering, Director of Service Learning regularly attends these meeting to connect willing workers with related opportunities in recycling, community clean-ups, etc. The primary community outreach theme is CommUniversity and a \$ 4,000 Community Development Grant co-



Wildlife Observation blind along the CommUniversity Trail

supported the CommUniversity Trail (bench construction, brochure printing, and construction of a wildlife observation blind). The grant also provided partial support for purchase of the RFID unit. The CFS is represented on the Crookston Downtown Revitalization Task Force as well as the Crookston In-Motion community planning initiative. The latter group has developed four “destiny drivers;” one of which relates to sustainability as a guiding principle in community development. Guidelines include the following:

Promote a more walkable and bikeable community with less reliance on the automobile to improve health and reduce resource use. Complete biennial assessment report.

Place a priority on having a vibrant community core and building “from the inside out” to strengthen a sense of community and reduce urban expansion onto good farm land.

Advocate for the production and sale of locally grown food and vegetables through urban gardening and farmer’s markets. This connects people to the land, promotes healthy eating, and stimulates the local economy.

Celebrate our reliance on the conservation of natural resources of soil, water, plants, and wildlife through recycling, discovery park experience, and strengthening our connections to the river by fishing and water-based recreation.

Prioritize the retrofitting, design, and construction of housing which exemplifies forward thinking in energy efficiency, and renewable energy technologies.

The CFS promotes the concept of Senge's Learning Organization as community that learns from each other. To date, this has been expressed by the IonE funded Sustainability Supporters and student interns associated with NWRSDP and CFS. Students enrolled in a Sustainability Studies minor (under discussion) could provide addition momentum for this initiative. **[Education and outreach goals 1, 2, 3]**

Goals:

- Promote the implementation of a minor in sustainability studies.
- Strive to have tangible and highly visible sustainability related projects and equipment on campus to inform and engage the campus community.

6. Communication

The Communications working group of the campus sustainability committee posts press releases to the Sustainability web site and coordinates media events and messages with the University Relations office about speakers, programs, and Otter Tail Power Company events. Once the energy dashboard becomes operational, it will provide a variety of resource use data in a very visible location. **[Communications goals 1, 2, 3,]**

Goals:

- Expand the web site for the Center for Sustainability to be more informative, provide more resources, and be more eye-catching.
- Coordinate sustainability messages to be posted on new informational monitors recently installed on campus.

Action Steps for Campus

Continue to advance campus and community sustainability **partnerships and systems thinking** in energy conservation, green community development planning, renewable biofuel utilization, and local foods as an application of the land grant mission of the University of Minnesota. The greater "campus" would include UMC academics, student services, facilities, NWRSDP, NWROC, Extension, AURI, and the Crookston Housing and Development Authority (CHEDA) office.

Initiate the first UMC campus garden in 2013 as a cooperative venture between the Center for Sustainability, Northwest Regional Sustainable Development Partnership, UMC students, UMC Facilities, and the Department of Agriculture and Natural Resources. Increase the utilization of these campus-produced products by UMC Food Service. Continue conceptual planning for a "Foods for Eating" project which could include a high tunnel and greenhouse complex with hydroponics and fish production similar to the Victus Farm project of UMD's Center for Sustainable Community Development and the city of Silver Bay.





The ZAP Bike Commuter program is a national model for individuals to be recognized for biking to campus! UMTC, UMD, UMC and UMM all have ZAP! Steve Sanders, Sustainable Transportation Coordinator, Parking and Transportation presents at AASHE 2012

University of Minnesota Duluth

Introduction

Duluth

The University of Minnesota Duluth has a student enrollment of over 11,000 and is located at the western edge of Lake Superior in northeastern Minnesota. The area's climate demands a long heating season for the campus heating plant, which is powered by natural gas boilers. The air conditioning season is shorter, but campus chillers are electrically powered. Electricity is supplied by Minnesota Power and mainly generated by coal-fired power plants. Electricity purchases are the largest source of greenhouse gas emissions for the campus; natural gas is second.

After a year of campus conversations, the UMD commitment to sustainability is integrated throughout the 2011 campus [Strategic Plan](#). Beyond planning for campus action, the commitment to sustainability is already shown through the work of UMD staff, faculty, and students. To achieve the goals of the Strategic Plan, action steps were outlined and many have already been achieved.

In teaching, a liberal education requirement focused on sustainability began in Fall 2011. But beyond the sustainability course requirement, faculty across campus are incorporating sustainability into their curriculum. From geography to geology, from art education to anthropology, from economics to environmental science, faculty are seeking ways to integrate sustainability concepts. UMD students continue to seek experiences in sustainability – both inside and outside the classroom – to gain an edge in a global economy where the environment, the economy, and societal needs are increasingly intertwined.

Operationally, UMD has worked hard to reduce waste, conserve energy, and save money. We have committed to the goal of reducing campus emissions by 25% before 2020. Facilities Management staff have upgraded the campus steam system, reduced equipment run-times, installed lighting controls and replacements, continued holiday and weekend conservation efforts, and upgraded building metering. With a 5% reduction between 2007 and 2010, we are on our way; however, a large portion of this reduction was due to the increase in the production of renewable power by our electricity provider. Continued campus efforts to conserve energy, update and operate our buildings more efficiently, and increased renewable energy sources are also needed.

Campus Sustainability Highlights

Duluth

- UMD continues to improve energy efficiency of buildings, earning both energy cost savings and carbon reductions per square foot on campus by 16% since 2007.
- An initial rating for UMD as a reporter school in the Sustainability Tracking, Assessment, and Rating System (STARS) benchmarked UMD, allowing our progress in sustainability on campus to be monitored over time.
- Advancements in sustainability integration into student education include a one class sustainability requirement in the UMD Liberal Education Program, tracking of sustainability-related courses, and faculty research in effective integration

A UMD Student employee thins vegetables at the SAP site at the UMD Farm.



and training of faculty in sustainability at UMD.

- UMD Dining Services and the UMD Sustainable Agriculture Project have partnered to bring thousands of pounds of food grown at the local UMD Farm to serve the campus community.
- LEED buildings at UMD continue to serve as visible teaching tool for sustainability and contribute to increased energy efficiency on campus. In addition, the Bagley Classroom and Civil Engineering have won prestigious awards through the American Institute of Architects.

Accomplishments, Future Goals and Focus Areas

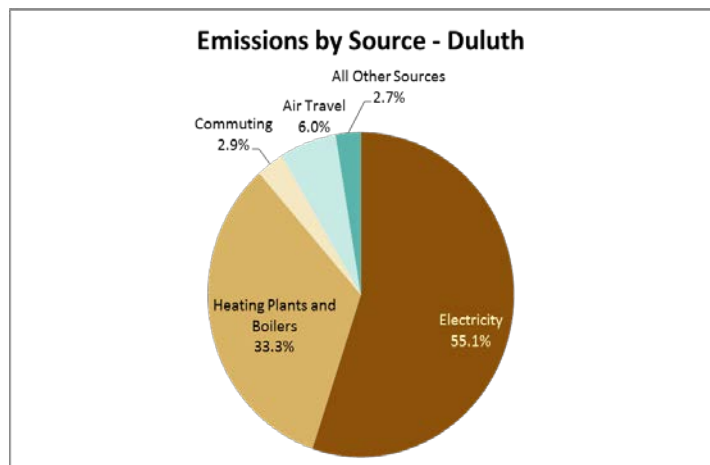
Duluth

1. Leadership and Modeling

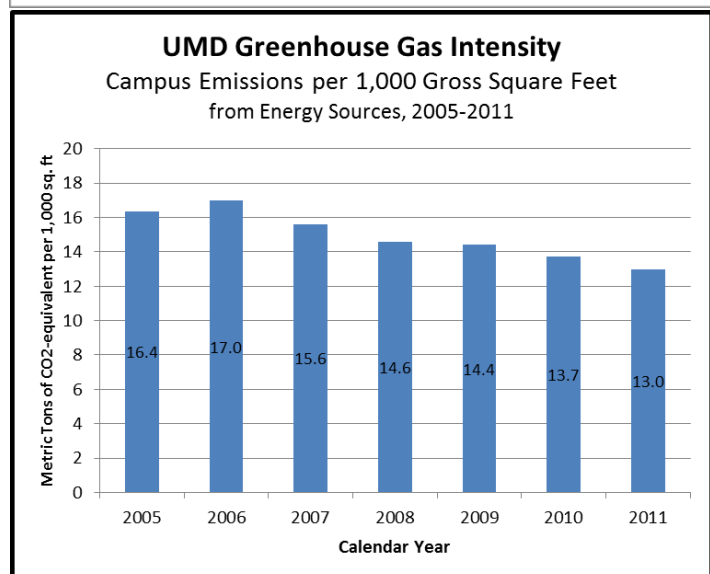
UMD Strategic Plan Implementation of the UMD Strategic Plan continues, and a key focus is Goal 6: *Enhance UMD's infrastructure; technologies; and information, financial, and human resources to support the campus in a sustainable manner.* Updates on action items for Goal 6 are below. [Leadership and Modeling, Goals 1,2,4,5]

- *Expand the campus master plan to incorporate more depth in sustainable planning issues. These should include effective use of green space, community connectivity, alternate transportation (bike and walking paths) and inclusion of outlying properties*

- A public meeting was held on campus October 17, 2012 to reveal the draft Campus Master Plan, including integration of sustainability into the Campus Master Plan. Focus areas included incorporation of green spaces, connecting the campus with the surrounding neighborhoods, and integrating walking and bike connections across campus.

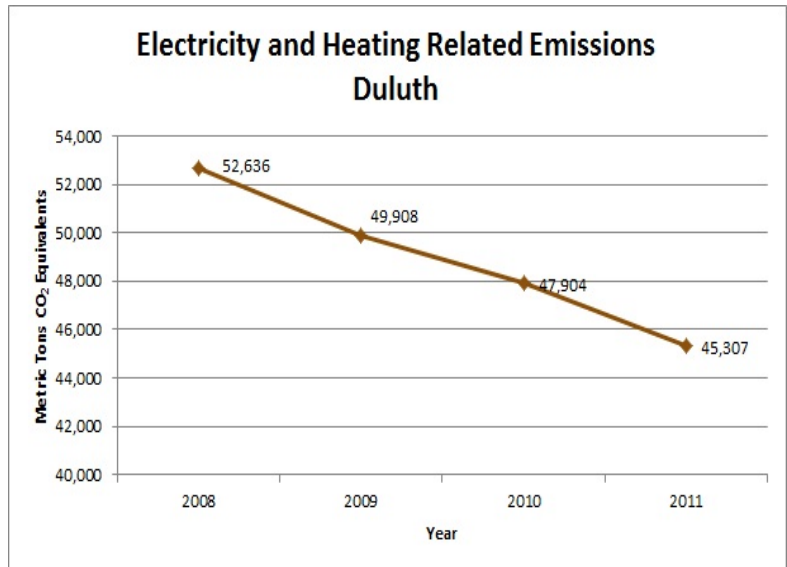


- *Reduce campus greenhouse gas emissions in line with the UMD Energy Action Plan*
 - In 2007, UMD's complete carbon footprint (campus energy use, commuting, solid waste, fleet, air travel, refrigerants, fertilizer use) was 57,561 metric tons of CO₂-e. By 2010, UMD was able to reduce its carbon footprint to 54,557 metric tons of CO₂-e, a decrease of 3,005, representing a 5% drop in



carbon emissions. However, much of this reduction of the UMD carbon footprint was realized through a change in Minnesota Power's fuel-mix, which now produces more electricity through renewable sources.

- Campus emissions from energy uses (electricity and heating) in 2011 were 11% below 2007 levels in 2011. Improvements to our electricity provider's fuel mix have contributed greatly to the reduction in emissions.



In addition, 2011 was a warmer year overall. The gains in energy emission reductions are best shown by looking at the emissions per sq. foot of campus, as despite adding an additional 227,000 square feet since 2007, UMD has still achieved energy emission reductions.

- *Infuse the concept and application of sustainability into our curriculum and co-curriculum, our research activities, and our use of facilities (immediate and ongoing).*
 - Eight Implementation grants were awarded in spring 2011 to support faculty incorporating sustainability into their courses.

Sustainability Across the Curriculum Leadership Workshop, Follow-up Focus Groups and Interviews of UMD Faculty
UMD Sustainability Education and Outreach Initiative
UMD Dining Services Garden at the Sustainable Agriculture Project (SAP@UMD)
Improving undergraduate preservice teachers' knowledge of sustainability, energy, and green food
Transformation of Evolution (Biol 4802) into an active-learning course that teaches concepts of sustainability
Learning It Forward: A sustainability study circle
Sustainable Students: Research to guide community planning
The Synergy of Art and Science: Seeding Sustainability Through Interdisciplinary Global Perspectives Curriculum

- The University of Minnesota Sustainability community convened for the 2nd annual Student Engagement Leadership Forum on Sustainability (SELSustain) in late October, 2012 at the UMD campus. Students from the Twin Cities, Crookston, Morris, Rochester and Duluth campuses prepared five-minute Lighting Talks presentations on over 30 diverse subject areas, representing every campus in the University of Minnesota system. SELFSustain began as an experiment in 2011 at the Morris campus as a way of bringing students together to network and to share with the colleagues in sustainability. The experiment was successful, and the program evolved from a primarily staff-driven event to the model executed in Duluth: a conference that was planned in partnership with staff and students. The long-term goal is that this conference becomes entirely student planned and delivered. *[Leadership and Modeling, Goals 2,3,5]*

- The UMD Sustainability Committee (listed in the beginning of this report) is currently undergoing reconstruction. Although the Committee was essential in driving the campus Energy Action Plan process, a more diverse mix of campus members is needed to meet UMD and Systemwide goals. Working group subcommittees have been formed around the focus areas of the Sustainability and Energy Efficiency policy. The Education and Leadership and Modeling subcommittees have already chosen action steps to implement this school year, and include planning curriculum workshops and creating a sustainability stewardship award for campus member recognition. ***[Leadership and Modeling, Goals 2,5]***
- UMD actively participated on the University's Systemwide Sustainability Committee in 2011, with two student representatives (Lanae Smith, Nate Levendoski), one faculty member (Ken Gilbertson), and one staff member (Mindy Granley). In addition, we have helped on a Systemwide Sustainability Communications working group, and Purchasing, Education, and Student Engagement work teams. ***[Leadership and Modeling, Goals 2,5]***
- The first Food Week event took place at UMD on October 2011. The weeklong event at UMD was in conjunction with the first National Food Day celebration to promote healthy, sustainable, affordable, and fair food systems in America. Champ's Choice was launched to highlight healthier menu options at UMD. The Fall Sustainability Fair during the week offered discussions and presentations that focused on rethinking food systems, along with highlighting the progress of sustainability efforts on campus and in the community. Presentations on the UMD Orchard, a study on food deserts in Duluth, and updates on the UMD Farm were given. Robert Kenner, producer of the documentary *Food, Inc.*, which examines corporate farming in America, gave a talk to cap off the first UMD Food Week. ***[Leadership and Modeling, Goals 2,5]***
- A new student group (Net Impact) was created in fall 2012 at UMD, and is focused on the business and economic aspects of sustainability. Student Environmental Science and Sustainability Coalition groups also continue to be active at UMD. ***[Leadership and Modeling, Goals 2,5]***
- UMD Office of Sustainability is participating in the Duluth Local Energy Action Plan (LEAP) process. Mindy Granley, UMD Sustainability Coordinator, is serving as an energy team lead in the Public Buildings sector. The LEAP plan will be a guide for implementation of energy strategies and actions over the next five years. The City of Duluth's Cities for Climate Protection Advisory Committee has organized the LEAP project. ***[Leadership and Modeling, Goal 3]***
- The UMD Office of Sustainability, along with two interns (Jimmy Peterson, Nick Benz), completed a Reporter School submission to the Sustainability Tracking, Rating, and Assessment (STARS) program. STARS is a transparent, self-reporting framework for colleges and universities to measure their sustainability performance. This benchmark allows UMD to continually track sustainability progress in operations, education, research, and administration.

2. and 3. Operational Improvements and Energy Efficiency

Energy Efficiency Updates

Two studies on the UMD Heating Plant and distribution system have been nearly fully implemented via UMD Facilities Management. Most of the upgrades in the plant and steam system have helped to increase the system’s efficiency. *[Energy Efficiency, Goal 1]*

UMD Steam Study	
Phase 1	Condition assessment of major equipment, reviewed boiler plant capacity versus connected load. Provided a computer model of the steam/condensate distribution system. Currently, all the major heating plant equipment is in good condition with sufficient capacity to reliably serve the connected load in the short term, even if the largest boiler is out of service for maintenance. Several modifications to the steam/condensate distribution system were recommended to improve system balance and load distribution.
Phase 2	Provided a study of three energy conservation/sustainable opportunities: a) boiler feedwater system study, b) steam microturbine study and c) steam supply pressure study. Although the boiler feedwater study concluded that reduction in motor sizes is feasible, the low price of electricity and existing equipment constraints are barriers to adding a steam microturbine or reducing steam pressure across campus.

Energy efficient upgrades to heating, ventilation, air conditioning, and lighting systems have earned UMD rebates in 2011 on several projects. The campus has earned over \$450,000 in energy rebates since 2002, through Minnesota Power’s PowerGrant program. *[Energy Efficiency, Goal 1]*

UMD Energy Efficiency Rebates	
Montague Hall	Energy efficient lighting, heating, ventilation and air conditioning equipment rebates were earned, totaling \$14,206 through Minnesota Power’s Power of One conservation program. The rebate was deposited into the UMD Green Revolving Fund to help fund future energy efficiency projects.
Coleraine Minerals Research Laboratory	Rebate in the amount of \$16,029 was recieved from Minnesota Energy Resources for insulation improvements on two 1950’s era buildings. The Wet and Dry Pilot Plants, which have more than 11,600 sq. ft. of working space, had exterior insulation applied to their roofs to increase the insulation R value from R-1 to R-20. Energy savings are expected to be over 3,244 MMBtu/year, with a 1.4 year simple payback.
Lawrence A. Ianni Residence Hall	Awarded an energy rebate check totalling \$18,183 through Minnesota Power’s Power of One conservation program. Energy-efficient equipment with specific lighting controls, premium motors, variable frequency drives, and energy recovery systems.
Other Buildings	Rebates were also earned in 2011 for Chester Park (ventilation/lighting updates), the Dining Center (LED retrofit), along with other small lighting projects.

Renewable generation at UMD includes a solar photovoltaic array atop Malosky Stadium and a solar photovoltaic array on the Bagley Outdoor Classroom. The estimated number of kilowatt hours generated in 2011 for Malosky was 7,100 kWh (taken from utility operations readings), and the Bagley Outdoor Classroom (metered) was 5,100 kWh. This gives a total of just over 12 megawatt hours of renewable electricity generated on the UMD campus. *[Energy Efficiency, Goal 3]*

The UMD Green Revolving Fund has had success with the first project selected for implementation. A UMD Refrigerator Exchange Program focuses on partnering with departments to replace outdated and inefficient refrigeration equipment. With 33 applications approved, the savings in electricity total 24,744 kWh/year, resulting in a \$1,735 annual electricity cost savings. The annual savings from the program result in a 6 year simple payback. *[Energy Efficiency, Goals 1,2]*

The new UMD Lawrence A. Ianni Residence Hall opened in September 2011 with the capacity for 280 residents. By installing energy-efficient equipment with specific lighting controls, premium motors, variable frequency drives, and energy recovery systems, the residence hall has made a strong statement about integrating sustainable practices across campus. In addition, the building has a well-insulated

building envelope, double-paned windows, and elevators that do not require machine rooms. These energy efficient features use less space and eliminate hazardous elevator fluids. The building's low-flow shower-heads, faucets and toilets reduce water consumption by 38 percent. And more than 20 percent of building materials were sourced locally, creating jobs and reducing the energy consumption associated with long-distance shipping. Ianni Hall is entering the Leadership in Energy and Environmental Design (LEED) Certification process to continue UMD's sustainability efforts. *[Energy Efficiency, Goal 1; Operational Improvements Goals 1,2]*

UMD's James I. Swenson Civil Engineering building (LEED Gold) was awarded a Distinguished Building Honor Award by the AIACHicago, the American Institute of Architects, Chicago chapter. Considerations for the award included that the building was designed to be sustainable and use locally available materials that tie the building to the regions mining history. In addition, the building itself is a demonstration of civil engineering, with oversized scuppers that channel storm water from the roof to French drains, and a precast structural lab with installation materials left in place for learning and other touches. *[Energy Efficiency, Goal 1; Operational Improvements Goals 1,2]*

The Bagley Outdoor Classroom (LEED Platinum) has also won awards, including the [Minnesota Chapter of the American Institute of Architects Honor Award](#) in 2010 and the American Institute of Architects 2012 COTE [Top Ten Green Projects University of Minnesota Duluth – Bagley Classroom Building; Project Overview](#) *[Energy Efficiency, Goal 1; Operational Improvements Goals 1,2]*

- Tours of the Bagley Outdoor Classroom continue to be popular. The classroom is a model and teaching tool for sustainability. Over 40 tours were given at the classroom in 2011 to students, classes, interested community members, and groups from conferences and trades organizations.

UMD Residence Life extended Earth Hour to Earth Week this year, taking the entire last week of March to show UMD's commitment to forward-thinking initiatives towards green lifestyles. The week began with Pledge Day and a pot-your-own plant event on Monday, March 26, 2012. Presentations by the Sustainability Coordinator, Mindy Granley, a tray-free dining day in the Dining Center, and a reusable grocery bag sewing night were all well attended. The week culminated with an Open Mic Night. *[Energy Efficiency, Goal 1,2; Leadership and Modeling, Goal 5]*

Transportation

In May, 2012, UMD installed its first bike RFID reader. UMD's Office of Sustainability has partnered with a number of entities to help deliver this program, including the vendor, DERO, and a number of campus groups, including U of M Wellness, UMD Facilities Management, UMD Human Resources, Equal Opportunity and Employee Wellness, UMD Student Life and U of M Transportation Services. This program was initially rolled out as a way to accurately measure cyclist's rides to campus, but after strong interest



Students make bike-powered smoothies with Bryan French (UMD Office of Sustainability/Facilities Management) during the first

from student groups, it was quickly decided to develop an incentive program to encourage students to ride their bikes to campus as well. The Office of Sustainability, Student Life, and Recreational Sports Outdoor Program secured funding from the Office of the Chancellor to deliver a monthly incentive plan for all students participating in this program. This includes giving away \$100 worth of prizes every month, rewarding the top points-earning rider with a gift card to a grocery store and rewarding the top points-earning team with a pizza party. Future plans include installation of a 3rd RFID reader on campus, and adding a similar incentive program for faculty and staff. *[Operational Improvements, Goal 3; Leadership and Modeling, Goal 5]*

The University of Minnesota Duluth and the Duluth Transit Authority (DTA) are in the 12th year of partnering together to deliver free rides to students, with the U-Pass program. The year 2012 has been the most successful year of ridership since the inception of the program. As of the end of August, 2012, we are trending ahead of all previous years of ridership. Total ridership at UMD has increased steadily since the program began in 2000, with a current tally of 4,736,407 riders, and with the 5 millionth rider projected before the end of the year. Prior to the establishment of the U-Pass in 2000, DTA ridership at UMD averaged about 4,000 riders per month. Today, there are 4,000 riders every two days. The U-Pass program was designed to help reduce on-campus traffic, minimize student parking issues in nearby neighborhoods and to reduce or eliminate the need to create additional on-campus parking facilities. The College of St. Scholastica and Lake Superior College joined the program in 2001 and the University of Wisconsin, Superior joined in 2007. UMD's current contract with the DTA goes through 2017, and it is expected that this popular alternative to driving will certainly continue. UMD bus ridership was up 10 percent during the 2011 calendar year. Increased bus ridership helps reduce the UMD carbon footprint, as commuting emissions are factored into our campus greenhouse gas inventory. *[Operational Improvements, Goal 3; Leadership and Modeling, Goal 5]*

Dining

UMD Dining Services is committed to pursuing more sustainable foods for campus. This includes more local, organic, and free-trade items, along with offering healthier selections for the campus community. To support these goals, Dining Services hired a new Head Chef and ½-time Nutritionist to plan and implement healthier options across the Dining Center, Food Court, and Catering menus. The first visible change in the Food Court that has been very well-received is the addition of a salad bar option. *[Operations, Goals 1, 2]*

Dining Services is partnered with the UMD Sustainable Agriculture Project ([SAP@UMD](#)), which provides a model for a two-fold process of systems change and experiential teaching and learning about food, farming and gardening within a sustainable agriculture framework. This partnership allows the UMD Dining Services a strategic way to integrate minimally processed food into their own system as a step toward procuring a greater percentage of their produce from area farmers. Dining Services hires four students over the course of the growing season to work on the SAP Farm, supporting the development of this unique asset. Secondly, the partnership provides students with opportunities to understand the cycles, patterns and processes of the natural world through sustainable farming, while learning entrepreneurial skillsets based on a social enterprise model. The partnership also provides a demonstration project for the broader region in creative institutional change. In 2011, SAP fields grew nearly 7,000 lbs. of high quality produce, while in 2012 they are approaching 20,000 lbs. *[Operations, Goals 1, 2]*

An April 2011 special dinner highlighted hamburgers made from locally raised beef from Troy Salzer’s Sandy Hills Ranch in Wrenshall, MN. The dinner also served homemade wild rice burgers, and Juneberry-rhubarb crisp. The Juneberries were from trees on the UMD campus. Roasted potatoes and other vegetables from the Fisher-Merritt Farm and from Sandy Hills Ranch, both in Wrenshall, MN. Dining has been very involved in planning Food Week events on campus in 2011 and 2012. *[Operations, Goals 1, 2]*



Champ staffs the compost station at the Summer 2012 All Staff Picnic.

Waste and Recycling

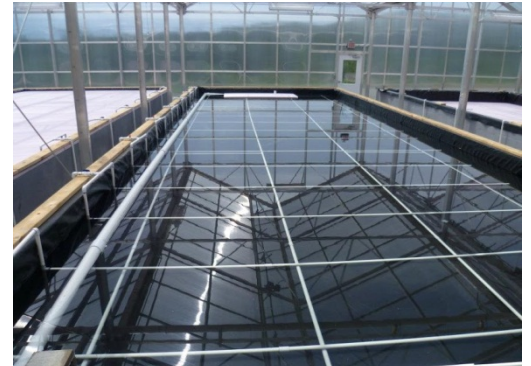
One of the institutional goals for Operational Improvements is to “manage resources for their highest end use by reducing consumption, minimizing waste, and strongly supporting the reuse and highest value recycling of unwanted materials.” The University of Minnesota Duluth has developed a number of waste reduction initiatives which support this goal.

Waste/Recycling Initiatives
A pilot program eliminated desk-side trash pick-up in Darland offices. This increased awareness of waste generation habits, and led to decreased waste and increased recycling. Plans to expand to other buildings are currently being evaluated.
UMD expanded recycling efforts during student move-out events. Students now have a number of options to dispose of their unwanted furniture: 1. page. 2. Furniture pick-up: students arrange to have unwanted furniture picked up from outside their homes. 3. Goodwill Collection- Students deliver furniture, household goods, clothing and other items to a Goodwill truck/trailer on campus. UMD Furniture Swap- set up by a student at UMD, you can swap furniture directly with other UMD students, coordinated through this Facebook responsibly: [Operations, Goal 4; Leadership and Modeling, Goal 5]
The UMD Stores contribute to sustainability in a number of ways, including going bag-free for all of April and May and partnering with Minnesota Power to sell energy efficient lighting and appliances at a discount for students, and then donating revenues to help support the UPass program, which provides free bussing for the UMD community. [Operations, Goal 4; Leadership and Modeling, Goal 5]
Approximately 185 water fountains are installed on campus, and about 11% of these (Qty: 21) are ‘hydration stations’ (combination water bottle filling stations/drinking fountains), with two more currently scheduled for installation. High traffic areas are identified by planners, and as drinking fountains are replaced, when the area in question is a high-traffic area, a hydration station is installed instead of a standard drinking fountain. [Operations, Goals 2,4; Leadership and Modeling, Goal 5]
UMD Catering continues to increase their composting levels at various events, and the UMD coffee shop, Northern Shores Coffee House, has begun a program to compost their coffee cups. [Operations, Goal 4]

4. Research

The [Natural Resources Research Institute](#) (NRRI) was formed with the foundational understanding that Minnesota’s economy is dependent on a healthy environment. Their research helps companies reduce waste, use resources more efficiently, and promote sustainable use of northern Minnesota’s natural resources. The Center for Water and Environment at NRRI has been pivotal in understanding land/water interactions and environmental chemistry, and helping to educate the public on these topics as well. The scientists, engineers and technical staff in the NRRI Center for Applied Research and Technology Development (CARTD) conduct research and development activities on a variety of subjects focused on taking full advantage of the natural resources available in Minnesota and throughout the region. Business services through NRRI include helping start-ups and growing businesses succeed. *[Research, Goals 1, 2, 3]*

Victus Farms Victus Farms (www.victusfarms.org) is a collaborative project between UMD and the City of Silver Bay, MN aimed at developing an integrated fish, plant and algal production system. A groundbreaking ceremony took place on Oct 24, 2011 and one year later, the construction is complete and all living systems are in place. The first produce deliveries have occurred with Duluth restaurants. The project demonstrates an economically viable approach to sustainable food and fuel production. This project provides a tremendous opportunity for on-going applied research aimed at improving production system performance, and education aimed at communicating the importance of sustainable food/fuel production. Students interning at Victus Farms could be the future workforce required to fuel the expansion of the concept. The facility itself includes biomass boilers, water recycling, and Passive Solar design. Future research efforts will also be aimed at minimizing these heating, electricity, water and external feed demands, and ensuring renewable energy sources can cover these needs. *[Research, Goals 1, 2, 3, 5]*



Large pools hold rainwater to be used to grow vegetables at Victus Farm.

5. Education and Outreach

Efforts in education related to sustainability at UMD have been organized into two main categories: Academic/curricular and co-curricular.

Academic Activity

- In fall 2012, new Liberal Education Requirements took effect. All undergraduates are now required to take one course focused on sustainability. The courses that have been approved for this requirement span 16 campus departments. *[Education and Outreach, Goals 1,3]*
- Dr. Geoff Bell (Management Studies) completed a survey of faculty on campus to determine coursework related to sustainability in the Labovitz School of Business and Economics. UMD Office of Sustainability staff also helped identify courses that incorporate sustainability related curricula, resulting in a list of [25-30 courses](#) across many disciplines. This information has been forwarded to academic divisions to raise awareness and support advisement of students interested in sustainability. Dr. Bell is also exploring best practices for faculty in relation to integrating sustainability into the curricula. *[Education and Outreach, Goals 1, 3]*
- Dr. David Syring (Sociology/Anthropology) is on sabbatical this year to focus on the effective practice of sustainability coursework in higher education. He currently is working on focus groups and individual interviews to determine what faculty are doing and what support they need to deliver sustainability education. He is also working on establishing a culture and learning community that supports each other and holds each other accountable for effective practices. Most of his work is building off of Dr. Bell's work. *[Education and Outreach, Goals 1,3]*
- Dr. Ken Gilbertson will be taking the above work (Dr. Syring and Dr. Bell) and developing a training opportunity for faculty to learn strategies for incorporating sustainability education practices in their classes. Planning will begin spring 2013. Training will occur spring semester 2014. *[Education and Outreach, Goals 1, 3]*

- Dr. Tom Beery has conducted interviews and surveys of UMD students to explore ways in which sustainability education can be improved. The completed write up is forthcoming. **[Education and Outreach, Goals 1, 3,4]**
- The former Environmental Studies major has been updated to focus more on sustainability and has a new name: [Environment and Sustainability](#). The program provides a unique interdisciplinary degree in that emphasizes the notion of Sustainable Development. Students examine the environmental (resource depletion and pollution), social and economic problems associated with continued economic expansion on a finite planet, and explore the many emerging solutions for transitioning to a more sustainable future. **[Education and Outreach, Goals 1,3]**
- Internships related to sustainability continue to be a valuable experience for UMD students. The UMD Office of Sustainability hosted two interns in 2011-2012, one to help organize and create a GIS interactive map of campus sustainability features and another to conduct student interviews to gauge attitudes about alternative transportation on campus. **[Education and Outreach, Goals 1,4]**
- A program focused on giving opportunity for UMD students to research sustainability both on campus and in the community is the Sustainable Development Research Opportunity Project ([SDROP](#)) program. There have been 10 students each year working on SDROP projects for the past three years. Examples of projects include Jon Argill working with the City of Duluth on energy planning, and Valerie Hoven working with St. Louis County on their Sustainability Plan. **[Education and Outreach, Goals 1,2,3]**

Co-Curricular Activity

- Faculty & Staff Development: In fall 2011 a book group was hosted by the UMD Office of Sustainability and the Office of Civic Engagement. The group indicated that the conversations should continue, so in the fall of 2012, the Instructional Development Services is hosting “Learning It Forward: A sustainability study circle” (LIF). Funded by a UMD Strategic Initiative Grant, LIF provides a light lunch while faculty and staff compare ideas about how they are incorporating sustainability into classes at UMD. This supports **UMD Strategic Plan Goal 6**, by working to *infuse the concept and application of sustainability into our curriculum and co-curriculum, our research activities, and our use of facilities.* **[Education and Outreach, Goal 3]**
- Resident Development: UMD Residence Life is currently working on developing strategies for implementing a Hall floor focused on sustainability. Josh Buck is the lead on this in Housing and is working closely with the UMD Office of Sustainability. In fall 2013, residents on a themed floor will receive programs and activities that relate to sustainability and learn more about sustainable living. **[Education and Outreach, Goal 3]**
- Dr. David Syring is working with the UMD Library to establish a clearinghouse for



LeAne Rutherford, Instructional Development Service, leads a sustainability discussion during Learning It Forward - made possible by a UMD Strategic Initiative Grant.

sustainability education resources available for faculty, staff, and students. *[Education and Outreach, Goals 1, 3]*

- UMD Continuing Education currently offers two certificate programs related to sustainability: [Food systems](#) and Environmental Education. Courses are offered through the UMD Office of Continuing Education (<http://www.d.umn.edu/ce/>). Noncredit online modules (self-paced / learner led) are also offered on the following topics: Local and Global Food Systems (10 hours), Sustainable Farming and Urban Agriculture (10 hours), Between Farm and Table (10 hours) (urban farming, organic and CSA farms, rooftop gardens, etc.), Between Farm and Table (10 hours) (urban farming, organic and CSA farms, rooftop gardens, etc.) *[Education and Outreach, Goals 1, 3,4]*
- The Sustainable Agriculture Project (SAP) is an interdisciplinary faculty collaborative that provides overall leadership and is housed in the Center for Sustainable Community Development. The SAP “Farm” at the UMD Research and Field Studies Center continues to be a valuable learning experience for UMD students. The project offers many ways to learn about growing food and food systems, including students internships, community connections, and volunteer opportunities. Tours of “the UMD Farm” were offered in August for the community and incoming freshman to UMD. The tour cover the Vegetable Fields, Teacher Training Garden, Ethnobotany Garden, Three Sisters Garden, Community Orchard, Western Honeybee Hives, the Native Pollinator Test Site, and the Field Compost Site. *[Education and Outreach, Goals 1, 2, 3,4]*
- In its third year, the [Edible Landscapes](#) project now boasts 19 different groups involved with 16 campus gardens encouraging healthy eating, providing opportunities for UMD students, faculty and staff to learn about local produce, and providing fresh vegetables to the UMD community. Around 65 volunteers were involved in planting and maintaining the gardens. UMD Facilities Management has made the Edible Garden Project possible through their commitment to sustainability and alternative landscapes. Recently, the project was accepted through the National Wildlife Federation’s Campus Case Studies program, via the Campus Ecology Program. *[Education and Outreach, Goals 1, 3]*

6. Communication

Conservation messages must be both effective and persistent to continue to save energy. Reminders to save energy by turning off lights, shutting down computers, closing and locking windows, and more are sent to the campus community before each break or holiday. Nearly 500 people have signed onto the UMD Energy Pledge (www.d.umn.edu/sustain).

[Communications, Goals 1, 2, 3; Energy Efficiency, Goal 2]

To direct more traffic to the UMD Sustainability website www.d.umn.edu/sustain social media has been a focus of communication efforts this year. Facebook, twitter, Instagram, and a WordPress blog for recent



Natalie Brown (UMD Office of Sustainability student staff) enjoys the Market at UMD while promoting UMD's sustainability efforts.

news are some of the most effective tools our office has used. Social media tracking systems show a large increase in activity and interest in sustainability at UMD. *[Communications, Goals 1, 2, 3]*

The Sustainable Agriculture Project (SAP@UMD) has participated in many projects that connect the community with its activities. In addition to UMD Dining Services, SAP has partnerships with many area grocers and restaurants that also purchase produce from our farm. Other partnerships centered around the SAP field site include the American Indian Garden, collaboration with the Intertribal Agriculture Council on growing produce from generationally kept seed-stocks. The IAC is interested in our project as a model for tribal colleges. The Western Honeybee Apiary is collaboration with the Northeast Beekeepers Association for education and agricultural services around pollination. The Native Pollinator Research Plot, is a partnership with the national organization Xerces Society on strategies for reinstating habitat for native pollinators. The Teacher Training Garden revolves around collaboration with the Duluth Public School system and the Duluth Community Garden Program in which we work with aspiring and existing teachers on utilizing gardening as part of curriculum. *[Communications, Goals 1, 2]*

The third annual Apple Expo, brought together community, students, faculty and staff interested in apple production and consumption at the Seedling Trial Orchard. An Apple Orchard Public Workshop Series generate a great deal of public visibility. These are monthly sessions on variety ID and selection, planting, pruning, grafting, crop and integrated pest management, harvest, etc. The Duluth Community Orchard was planted on the SAP site in May 2012. This orchard was awarded in a social networking contest from the Fruit Tree Planting Foundation, sponsored by Edy's Fruit Bars. *[Communications, Goals 1, 2]*

Action Steps for Campus

Duluth

- Update the UMD Sustainability Tracking, Assessment, and Rating System (STARS) rating to assess progress on campus in operations, education, research, and administration. Use the results to share and highlight campus accomplishments.
- Advance the UMD Strategic Plan and Energy Action Plan goals through better monitoring of utility information from buildings, and a continued focus on energy conservation and efficiency. Complete recommissioning of the UMD Library and other campus buildings. Additionally, investigate opportunities to purchase and/or develop additional renewable energy.
- Continue to support integration of sustainability into curriculum and other educational experiences at UMD.
- Increase communication of sustainability progress to potential future and incoming UMD students.

University of Minnesota, Morris

Introduction

Morris

The University of Minnesota, Morris, is situated in a unique location in west-central Minnesota. The City of Morris is the county seat of Stevens County and is on the Minnesota prairie. The region has many important assets. The soil is young and productive despite the short Minnesota growing season, and if one visits in summer you will see corn and soybeans from horizon-to-horizon in each direction. To reach Morris, one would travel Interstate 94 for about one-and-a-half hours northwest to Sauk Centre, and then travel west on a county road for one hour. From a distance outside of Morris, one would begin to see twin



University of Minnesota wind turbines, situated on a glacial ridge above the Pomme de Terre River, located around the U of M West Central Research and Outreach Center. The region is rich in natural resources, abundant biomass and sun, and winds that spin turbine blades and discourage mosquitoes.

The history of this region and campus are equally rich. Since the late 1800s, this campus has been a place of learning. It began life as an industrial boarding school for American Indians, under the auspices of the Sisters of Mercy. The experiment of integration began to falter in the early 1900s and the federal government stepped in to continue it until about 1910. During the next fifty years, the land and buildings became home to the West Central School of Agriculture, transmitting important skills and knowledge to regional youth for decades. Many graduates of the WCSA are still living in the region and are proud of its heritage. In 1960, the educational experiment in Morris evolved again, and the lands became the University of Minnesota's first and only public liberal arts college. For the past fifty years, the University of Minnesota, Morris has served a dedicated population of students seeking a small, residential college experience with a focus on teaching excellence. Today the Morris campus serves about 1,900 students seeking an undergraduate education. The campus does not offer any masters or doctoral degrees.

The Morris campus has the highest percentage students of color in the U of M system. The Morris student body is 20 percent students of color, 12 percent of whom are American Indian. The Morris student body travels widely and has been nationally recognized for their adventurousness. Our students are serious scholars, with large percentages of the body taking part in undergraduate research, scholarly and creative work and eventually, attending graduate schools to pursue their educations.

In the past decade, the connections between how we live, how we treat our land and natural resources, and how intertwined these considerations are has never been clearer. In our 1973-1975 bulletin, it reads, “UMM is in the continual condition of “becoming,” changing as the vision of its participants changes, reflecting as an institution the ceaseless learning which is life both to community and to educated women and men.” Today this learning has come full circle and connects liberal arts learning to the themes of sustainability. Our new tagline for the Morris campus reads, “A renewable, sustainable education.” As a campus community, the University of Minnesota, Morris is working to infuse our curriculum, co-curriculum and campus life with opportunities to ask big questions, and find big solutions. Together, the history and regional abundance provide a unique opportunity and place for our students to explore these questions, the ethic of sustainability, and their own educational and personal development.

Campus Sustainability Highlights

Morris

- In 2011, **almost 20% of University of Minnesota, Morris (Morris) energy (electrical and thermal) came from renewable sources:** biomass, wind and solar energy, **which is a 33% drop in carbon footprint between 2008 and 2011.**
- Two 1.65MW University of Minnesota wind turbines **provide over 60% of campus electricity on an annual basis.** The first turbine erected was the first large-scale turbine installed at a public university in the U.S. at the U of M West Central Research and Outreach Center. The second turbine was installed in spring 2011 near the first turbine by Morris.
- There are now days at Morris where we obtain all of our electricity and heating/cooling from renewable energy assets. **Our expectation is that 50% of all of Morris campus energy will be from renewable sources in 2012.**
- Morris is an evolving renewable energy destination. We offer opportunities to see, learn about, and experience: solar thermal, solar PV, small- and large-scale biomass gasification, wind turbines, and energy conservation technologies.
- The Morris Welcome Center achieved **LEED Gold certification** in 2012.
- Morris achieved **AASHE STARS Gold rating**, one of only 31 institutions to achieve the rating at the time it was received in 2012.
- Several student gardens exist on campus: Crocus Valley, the student-run organic garden and a Native American Garden, planted in collaboration with several community partners and respected elders. Select produce grown on these plots is being contracted to Dining Services on campus.



- **Morris was the second school the country asked to produce a video by the United States Department of Energy** about campus and community renewable energy efforts. Our efforts were recognized by U.S. Secretary of Energy, Steven Chu.
- Morris was named to Princeton Review’s 311 Green Colleges - 2012 edition. Morris also made a significant jump in Sierra magazine’s “Cool Schools” listing, a ranking of the country’s greenest four-year colleges. Morris reached 47th in the 2012 ranking—after placing 69th in last year’s survey—while earning top scores in two categories. **Morris was the only Minnesota school to make this year’s list.**
- **Three Morris faculty members were awarded the 2012 American Chemical Society Award** for incorporating sustainability into the curriculum.
- Morris faculty member Dr. Margaret Kuchenreuther received the **only University of Minnesota Outstanding Community Service Award (OCSA) given in 2012.** Morris students were also awarded the: **Udall Scholarship, Newman Civic Fellow Award, and National Wildlife Federation Campus Ecology Fellow.**
- **Morris enters its 25th year of producing Prairie Yard and Garden**— providing education in horticulture, landscaping and many gardening topics.
- **Morris continues the Wind-STEP program, funded by National Science Foundation,** providing opportunities for American Indian high school students to learn more about science and math by developing a wind turbine siting plan for their communities.

“In 2011, almost 20% of Morris campus energy...camp from renewable energy sources...”

Accomplishments, Future Goals and Focus Areas Morris

The screenshot shows the Energy.gov website interface. At the top, there is a search bar and navigation links for PUBLIC SERVICES, SCIENCE & INNOVATION, and MISSION. Below the navigation is a large video player showing a group of people in a garden. To the right of the video player, there are three news articles with blue links: "Energy Investments Recognized by U.S. Department of Energy", "U.S. Energy Department Launches 'Clean Energy in Our Community' Video Series", and "Meadville, Pennsylvania's Allegheny College Highlighted by U.S. Energy Department for Its Investments in Clean Energy".

1. Leadership and Modeling

Morris is playing a national leadership role in advancing sustainability, energy production, conservation and policy initiatives. Morris consistently produces student sustainability leaders. The Morris campus strategic and master plans feature sustainability, energy production, conservation, and food procurement components. Morris also has a carbon master plan.

<http://energy.gov/articles/morris-minnesota-creating-sustainable-college-campus-and-local-jobs>

Morris was asked by the United States Department of Energy in fall 2012 to produce a video about campus and community renewable energy efforts. Morris was the 2nd campus in the country asked to participate.

Morris is a charter signatory of the American College and University Presidents Climate Commitment (ACUPCC). Morris was a pilot site and a charter signatory of Association for the Advancement of Sustainability in Higher Education STARS program, a sustainability tracking and rating system. In 2012, Morris qualified for AASHE STARS Gold rating – one of only 31 institutions nationally to earn this when awarded. Morris participated in the Rocky Mountain Institute Advancing Campus Climate Initiatives project and was featured as a campus leader.

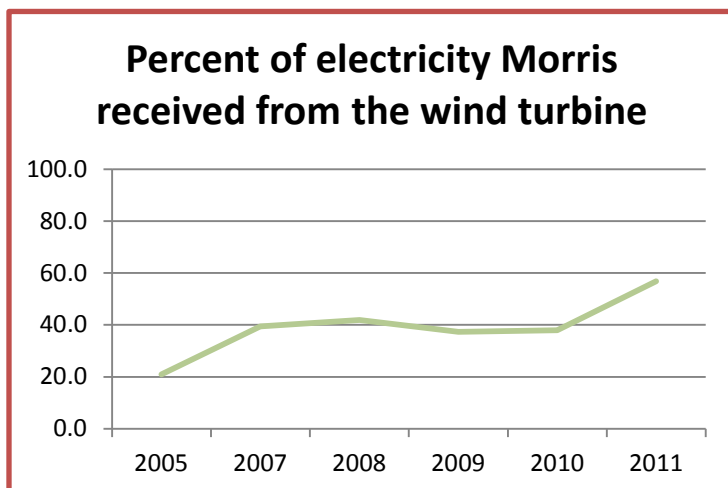
http://www.rmi.org/Content/Files/RMI_AcceleratingCampusClimateInitiatives.pdf

In 2006, Morris hired the first sustainability coordinator in the U of M system. Morris campus Chancellor Jacquie Johnson is a member of the AASHE Board of Directors and ACUPCC Board of Directors. Chancellor Johnson presented before a Senate subcommittee about Morris's carbon-footprint reduction efforts. Vice-Chancellor Lowell Rasmussen recently served as a board member of the American Council on Renewable Energy (ACORE) Higher Education Steering Committee. Morris continues its collaboration with the Minnesota Pollution Control Agency (MPCA) in advancing a new AmeriCorps program in Minnesota, the GreenCorps. Morris is a charter member of the Pride of the Prairie, one of the longest running local food programs in Minnesota Higher Education.

Morris and community partners, including Blue Cross and Blue Shield of Minnesota, are currently advancing the *Morris Healthy Eating Initiative* to bring even more local, sustainable food to the table of students and citizens. These efforts have culminated in a campus student organic garden (Crocus Valley) and a Native American Organic garden. UMM students are driving these initiatives and catalyzing new ones. [*Leadership and Modeling, Goals 1, 2, 3, 4, 5, 6*]

2. and 3. Operational Improvements and Energy Efficiency

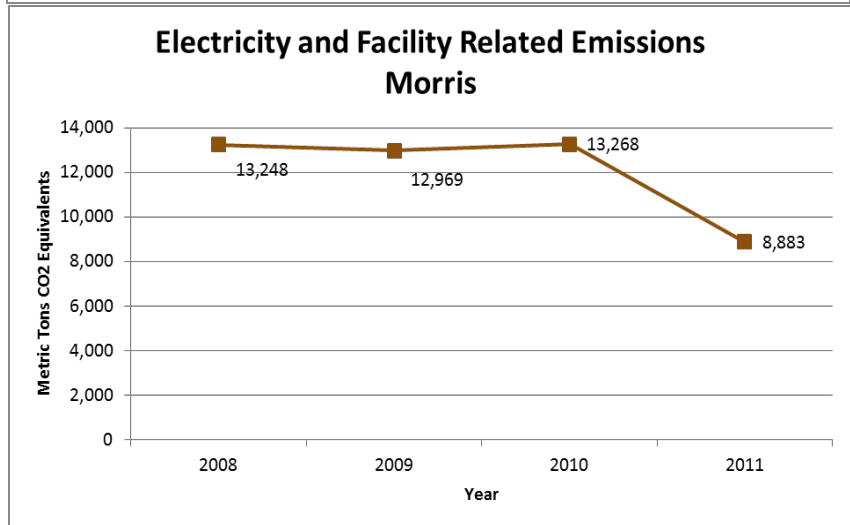
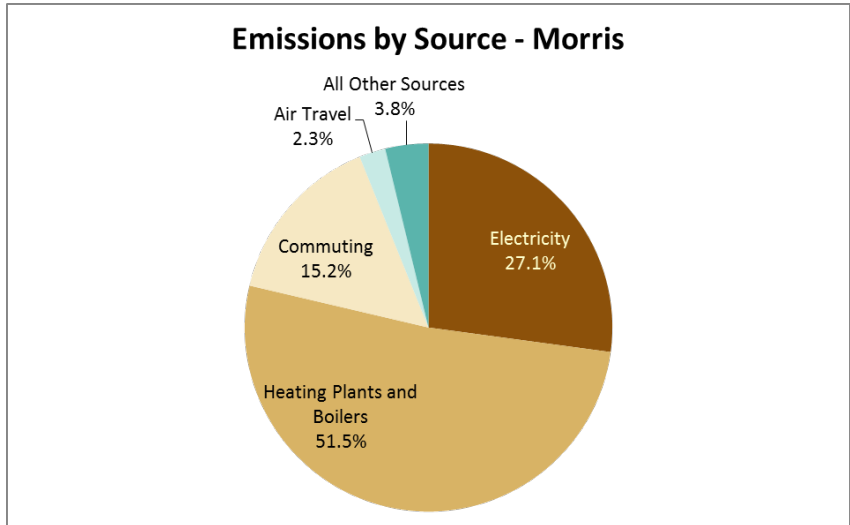
Morris operational work has examined everything from what we eat, to how we heat, to what we drive. At Morris you can see and experience wind, biomass, solar thermal, solar PV systems, and more.



The two University of Minnesota wind turbines will provide over 60 percent of Morris's electricity on an annualized basis for the next 25 years. The turbines produce over 10M kWhrs per year. Morris uses a total of 8.5M kWhrs of electricity each year - 5M kWhrs from wind and 3.5M kWhrs of traditional electricity. Together, the turbines produce more electrical energy than the campus consumes -- over 1.5M kWhrs. If electrical storage options were available, Morris could obtain all its

electricity from wind and sell electricity back to the grid. The Morris campus biomass gasification facility continues to displace fossil-fuel feedstocks with Minnesota-derived biomass, with a goal of offsetting more than 70 percent of the previous natural gas and fuel oil usage. In fact, there are now days at Morris where all electricity and heating/cooling needs are met with renewable energy assets. Between 2008 and 2012, the Morris campus footprint has dropped 33 percent (in Scope 1 and 2 emissions)!

Morris has also worked to increase energy and resource conservation. Between 2007 and 2012, the Morris campus has dropped electrical consumption by over 1M kWhrs. Morris finished an energy service contract (ESCO) in 2011 to improve the campus’s conservation efforts, which include building improvements, equipment upgrades, more efficient lighting and windows, and new renewable energy technologies – with expected savings of 6 percent over the next 15 years. The chart below shows an example of carbon footprint reductions (and electrical savings) created by the ESCO.



Morris continually strives for operational and building improvements. The recently renovated and historic Welcome Center (National Register of Historic Places) received LEED-Gold certification in 2012. Morris is converting the transportation fleet over to hybrids to conserve fuel and lower greenhouse gas (GHG) emissions – currently, over 53 percent of the fleet is hybrid. A green cleaning policy has been instituted at Morris and efforts continue to improve the food system. For example, there are no trays in the dining hall which has eliminated 50 percent of food waste, and Morris continually increases the amount of local food brought to the dining tables. The goal is 50 percent locally-sourced and organic food by 2013.

A Radio Frequency Identification (RFID) Program for cyclists was implemented in 2011. Students worked with administrators and staff to launch a new \$125,000 green reinvestment fund in 2012. In 2011, Zimride ride-sharing software was launched at Morris. Morris had the highest percentage of new riders in the Zimride system, displacing 56 metric tons of carbon dioxide. In 2012, a new on-campus composting

system was initiated, which is now composting pre- and post-consumer food waste from Dining Services. Dining Services has also launched a “to-go” mug and container program to reduce waste. Morris is also building a green residence hall, the Green Prairie Living and Learning Residence Hall. *[Operations, Goals 1, 2, 3, 4 and Energy Efficiency, Goals 1, 2, 3, 4, 5]*

4. Research

Morris faculty and students are engaged in a variety of research areas that connect to our sustainability mission. 23% of Morris faculty members conduct sustainability-related research, including creative and artistic productions. 67% of the academic departments at Morris conduct sustainability-related research, including creative and artistic productions. One faculty member (Dr. Arne Kildegaard), realigned some of his research to quantify the benefits and tradeoffs of community- versus-corporate wind project ownership. Another faculty member (Dr. Cyrus Bina), an expert on the economics of oil, was asked to present to the Argentinian government about policy options. A sampling of other research at Morris includes: synthesis of new materials for LEDs and new synthetic paths for making ammonia (Dr. Ted Pappenfus), nature-inspired poetry (Professors Vicki Graham and Athena Kildegaard), sustainability-themed theater and events (for example, As You Like It and Fashion Trashion with Professor Jessica Larson and Professor Ray Schultz) and art (Professor Michael Eble). Other topics include: investigations into the effects of climate change on the prairie (Dr. Peter Wyckoff), a local food-systems analysis (Dr. Donna Chollett), and more. The Morris Environmental Studies department also participated in the Engaged Department Program through the U of M system, identifying ways that their research could engage with community-identified interests. *[Research, Goals 1, 2, 3, 4, 5]*

5. Education and Outreach

Morris sustainability outreach and educational work continues to evolve through curricular and co-curricular offerings Morris has established Environmental Studies and Environmental Science programs to encourage multidisciplinary collaboration. Morris also had a successful sustainability-across-the-curriculum workshop that reached all areas of campus scholarship. 78 percent of our disciplines at Morris teach a sustainability-related course. Three Morris chemistry faculty received the 2012 American Chemical Society Award for incorporating Sustainability into Chemistry Education. Morris has delivered education focused on biomass gasification, including a summer 3-week course and an industry short course. Morris offers numerous renewable energy tours to students and many visitors each year from both educational and business sectors—about 200 people each year. Morris has made sustainability and energy a part of everyday activities. Sustainability is incorporated into new faculty and student orientation experiences on campus. Students



and student groups have played a catalyst role in creating new opportunities that reflect this change. Students help lead the on-campus recycling program. Morris has a sustainability floor in the residence halls and students lead a month-long sustainability-themed and energy-reduction competition in February each year. A student team called SUN-E (Students Using Natural Energy) worked with faculty and staff to write grants and secure funding for a solar thermal system on the Regional Fitness Center in Morris, and a video was produced about this effort. (<http://www.youtube.com/watch?v=mqKSax0Mr-Y&feature=youtu.be>) Morris Center for Small Towns (CST) and Office of Sustainability (OOS) partnered with MPCA to develop the Minnesota GreenCorps program. A Morris GreenCorps member coordinated an energy saving competition for colleges in the Upper Midwest through UMACS in 2011. In 2012, another member worked with Stevens Forward!, a community visioning group, to conduct winter weatherization workshops in off-campus student housing. Over the next year, a full-time GreenCorps member is working with communities in west central Minnesota on urban forestry. CST has connected students with communities to examine renewable energy options, local food development opportunities, and more.



The Morris Office of Community Engagement (OCE) has doubled the number of sustainability-related service-learning courses since 2006, with a goal of reaching 25 percent sustainability-related courses. OCE has connected students with opportunities to serve local healthy meals to community members, provide ESL classes, participate in seed harvests, and serve in a variety of sustainability-related areas. Morris is also the lead coordinating partner of the Morris Healthy Eating Initiative (MHE). MHE has helped implement a student-run organic garden and Native American garden on campus, improve local farmers' markets, and deliver fun cooking classes for residents in Stevens County. MHE also worked with faculty and the White Earth Land Recovery Project to develop a new Anishinabe food and culture course. Morris has also launched a new outreach and educational initiative, called the Carbon College, which offered a series of lectures to help regional community members speak “the language of carbon,” provided tours during the summer, and implemented a summer camp for children, called Nature Quest Camp. Morris OOS and the Clean Energy Resource Teams (CERTs) worked together to create the Family Energy Faceoff, a fun community-focused energy saving competition which has been featured in regional press and radio (<http://www.cleanenergyresourceteams.org/faceoff>). In 2011, Morris hosted an important regional sustainability conference for the Upper Midwest Association for Campus Sustainability, which brought 180 sustainability leaders to the Morris campus. *[Education and Outreach, Goals 1, 2, 3, 4]*

6. Communication

The University of Minnesota, Morris brand message is, “A renewable, sustainable education.” The branding is reinforcing our campus commitment to sustainability. Morris has worked to improve sustainability messaging across campus and with outside audiences. A sustainability piece was developed

that will help communicate Morris efforts and achievements with students and other audiences. There is an improved sustainability presence on the website, informational kiosks on campus that provide real-time monitoring information, a Green Tour that can be accessed from the web, a campus “green features” map and more. Morris continues to improve the website and available information about these efforts. Morris has a goal of increasing the data available to students to manage their own personal carbon footprint. And Morris has been working with partners like Clean Up the River Environment (CURE) and Institute on the Environment to convene community “listening sessions” to discuss sustainability goals and actions we can take as a larger regional community [*Communications, Goals 1, 2, 3*]

Action Steps for Campus

Morris

- Use STARS framework to assess the progress, celebrate accomplishments and existing work, and to prompt future actions.
- Advance healthy eating and sustainable food procurement goals with the Morris Healthy Eating Initiative partners.
- Advance sustainability-focused, community-engaged efforts through increased collaboration with Center for Small Towns, GreenCorps, Office of Community Engagement, Office of Sustainability, Carbon College and other campus units.
- Continue to advance renewable energy and conservation work by identifying new opportunities to conserve financial resources and shrink the carbon footprint.

University of Minnesota Rochester

Introduction

Rochester

Mission Statement

“The University of Minnesota Rochester promotes learning and development through personalized education in a technology-enhanced environment. The University of Minnesota Rochester empowers undergraduate and graduate students to be responsible for their own learning and provides appropriate support to prepare them to succeed in a global and multicultural society.

The University of Minnesota Rochester serves as a conduit and catalyst for leveraging intellectual and economic resources in Rochester and southeastern Minnesota through its signature academic, research, and public engagement programs in collaboration with other campuses of the University of Minnesota, other higher education institutions throughout the state and nation, governmental and non-profit organizations, and private enterprise.”
(Campus Mission Statement Approved, Board of Regents, June 2009)

UMR, as the newest campus in the University of Minnesota system, currently exists physically in leased space. Although there is limited control over decisions impacting the physical space, UMR strives to create sustainable policies and activities as able. Certainly, UMR has the unique ability to completely build and maintain the future campus within the new world of sustainable mindfulness.



318 Commons – Student Lounge

Greenhouse Gas Emissions Mitigation Plan

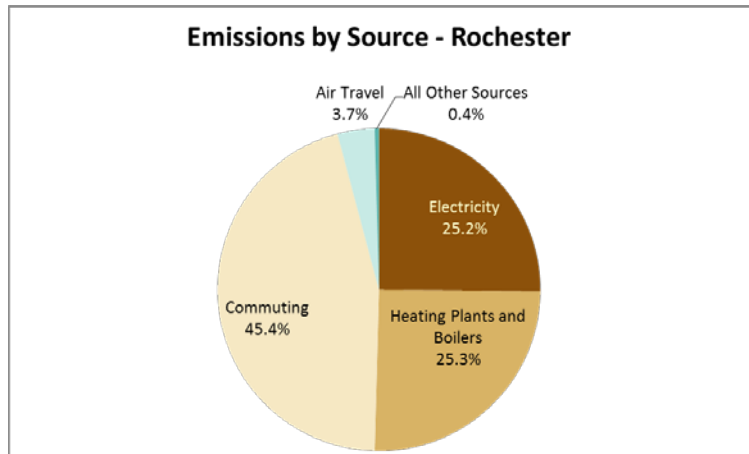
The University of Minnesota Rochester has an excellent record of contributing extremely low amounts of carbon to the atmosphere because it is a new campus. Currently, UMR leases space in a shopping mall, office building and a public/private partnership building for student housing and academic space. UMR continues to utilize existing community resources to meet needs.

The hope is that as UMR grows, it can protect the policies and initiatives that give a low-carbon status. Those policies/initiatives include:

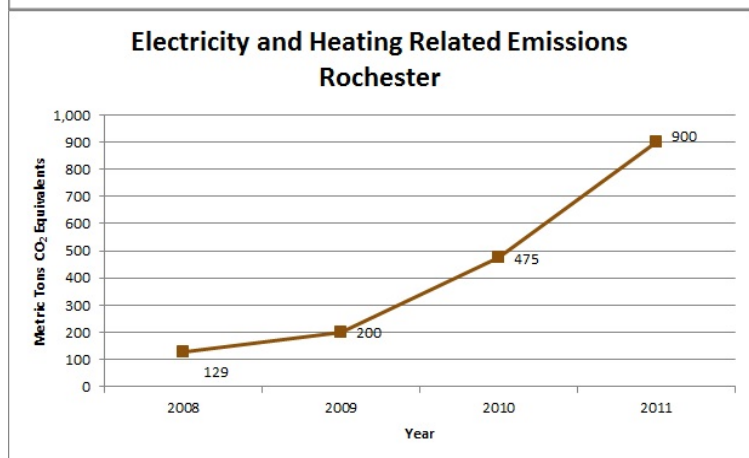
- Continue to use community resources and infra-structure. Examples include:
 - a) Utilizing the many varied food options within walking distance of the campus, including a brand-new Food Co-op located adjacent to 318 Commons.
 - b) Partnering with the Rochester Family Y (YMCA) to provide students with recreational and student activities space;

- c) Partnering with Olmsted Medical Center, located inside 318 Commons, to provide a part-time student health service; and
- d) d. Developing community-based student work/study employment opportunities to augment the availability of on-campus employment.

- Continue to utilize technology to decrease the need to travel to other University of Minnesota campuses. Being part of a system requires employees to pursue relationships with the other campuses. Fortunately, UMR has six ITV equipped rooms and faculty and staff can easily communicate with others using UMConnect, Skype, Google Hangout and PolyCom. Driving to other campuses is discouraged unless there is no other technological option.



- Continue to use only hybrid technology if driving is necessary. A new hybrid vehicle was purchased in August of 2012. Also, utilize an online reservation system to facilitate carpooling to off-campus meetings.



- Continue to purchase furniture made largely of recycled materials.
- Continue to use automatic lighting in all common areas.
- Continue the aluminum, plastic and paper recycling plan and work within the mall where UMR is located to expand recycling opportunities beyond UMR's borders.
- Continue to utilize a state-of-the-art heating and cooling system of pumps to regulate temperatures over a 24-hour period.
- Continue to seek out and work with interested and energetic students.
- Continue to plan future building and expansion with sustainability as a major factor.

Green Building

The University of Minnesota Rochester opened its newest building – 318 Commons – in August 2011. The Rochester campus, through a public/private partnership, entered into a 10-year master lease, with options for two additional three-year terms, for academic space and student housing. There are six floors of residential housing and two floors of classroom/lab, office and student life activity space. The remainder of the building offers a restaurant, a bank, a small branch of Olmsted Medical Center, with one additional space yet to be announced. Student housing currently occupies floors 3-7, and a portion of 8th floor. The 9th floor is currently being leased to individuals wishing to rent a downtown apartment, and is managed by the 318 Commons building management company.

The HGA (architects) design team led a process to achieve LEED certification at the Silver level for the facility. 318 Commons contains sustainability components that help UMR to meet its sustainability goals in leased space. The classroom, lab and office furniture being used for the 318 Commons academic and office space are Steelcase products, which are 74-95 percent recyclable and are made from 33-58 percent recycled material.

The multipurpose science lab accommodates physics, biology, and anatomy/physiology and uses state-of-the-art learning-design lab tables with integrated media components that can be activated by students and faculty. This lab accommodates both lab and lecture for three disciplines within one space, decreasing the need for additional labs until enrollment exceeds space capacity. The faculty “office” space design retains an identified space for each faculty member, yet without individual offices being built. UMR is able to accommodate 36 faculty between numerous disciplines, housed together, encouraging collaboration. The faculty are immediately adjacent to student study spaces and the student life space. The third floor outdoor plaza is available to student tenants in the building. A majority of the surface contains winter-hardy plantings designed for rooftop gardens.

UMR purchased two properties in FY11, and one property in FY12 on the site of the future permanent campus. UMR is beginning a consulting process with the University of Minnesota’s Dr. Ignacio San Martin, Dayton Hudson Professor, Chair of Urban Design and Director of the Metropolitan Design Center, College of Design. It is UMR’s intent to work with Dr. San Martin and a College of Design fellow to prepare an environmentally sensitive and sustainable interim plan for this property that meets the goals of the Rochester Campus Master Plan and the Rochester Downtown Master Plan.



UMR and Downtown Rochester

The University of Minnesota Rochester has been working closely with community leaders, including the City of Rochester, to plan a downtown community to encourage living, working and learning in the downtown area. The effort, known as the Rochester Downtown Master Plan, includes elements designed to promote a reduced dependency on the automobile, establishment of open and green connected spaces for community health, and provide for a walkable downtown.

The following comes from the Executive Summary of the Downtown Rochester Master Plan Report, August 2010 and the section on Mobility.

A Flexible Framework for Development

The master plan establishes a strong and sustainable framework of open space, streets, and an engaging public realm that forms a foundation within which future development will occur. The framework is composed of several parts: a framework of districts that envisions the specific mix of land uses that makes up each distinct area of downtown; an urban design framework that defines the urban form of the city by giving shape to the public realm through building massing, density, and the scale of streets; and an open space framework that sets the landscape character and helps define priority investments for streets, the river, trails, open spaces, and plazas. The mobility framework builds on the relationship between transportation and land use and balances an increasing number of mobility options—from transit to pedestrians and bikes to single occupancy vehicles—replacing priorities that privilege one mode at another’s expense. And, finally, the sustainability framework ties together these components to achieve a plan that is not only environmentally sensitive and climatically appropriate, but also socially and economically sustainable.



318 Commons Green Roof

The following principles directed the development of the master plan and the prioritization of its initiatives:

- Create a vibrant, economically healthy downtown that is walkable, livable and promotes human interaction
- Create strong connections between major activity centers including the CBD, UMR, and the Mayo Clinic
- Promote mobility options that reduce dependency on automobiles

- Create pedestrian friendly streets that balance use by people and automobiles
- Build upon historic buildings and landmarks that contribute to Rochester's history and culture
- Establish a connected open space system including the river
- Create strong connections between indoor and outdoor spaces at street level, subway, and skyway
- Develop buildings that engage the street, shape the civic realm and minimize energy use"

Mobility

"Today, approximately 71 percent of commute travel to downtown Rochester is by single-occupant automobile. Travel by other modes will need to increase in future years to accommodate planned growth in downtown, enhance the quality of the downtown environment, and limit impacts on the natural environment. The RDMP proposes an aggressive, but attainable shift in downtown commute travel by 10 percent each decade, bringing the commute mode split to 50 percent single-occupant trips by 2030. The Plan also encourages street design and land use changes that will facilitate non-commute trips be made on foot, transit or by bike. The plan goal is that no more than 70 percent of non-commute trips be made by single occupant modes by 2030."

This report was prepared for the City of Rochester, in cooperation and partnership with Mayo Clinic, the University of Minnesota Rochester, the Rochester Downtown Alliance, and the Rochester Area Foundation. There was significant input and participation by hundreds of Downtown Rochester stake-holders throughout the entire process. The consultant team included: Sasaki Associates, Inc. (lead), P.U.M.A., Ellerbe Beckett, and Nelson Nygaard.

Environmental Research

UMR is in its infancy in developing a research agenda. As of Fall 2012, UMR is in its fourth year of employing tenure-track faculty in its first degree program - the Bachelor of Science in Health Sciences (BSHS). The research component's primary focus for all tenure-track faculty is teaching and learning, with a secondary focus on disciplinary research. The faculty's chief agenda over the past year was developing the curriculum for the BSHS program. A few of the faculty are beginning to explore research opportunities in teaching and learning and their focus on disciplinary research will begin in the future.

Sustainability and Health Science Education

UMR's signature undergraduate program, the Bachelor of Science in Health Sciences, is built with an integrated curriculum design model as a foundational principle. One of the themes used as an integration point is "Environment and Health." Courses across the curriculum plan to coordinate content delivery on multiple aspects of the relationship between the environment (all dimensions: cultural, psychological, social, natural, physical), public health, individual health, politics of health, public policy and sustainability. For example, a topic such as "chemical toxins" might be addressed in chemistry, biology, sociology, history, statistics and ethics.

It is hoped that the broad curricular context in which this material is delivered will inform a broader contextual understanding of the issues related to the concept of environment in general and the natural environment specifically. From this perspective, UMR students will develop a better understanding of the effects that global warming and other pressing environmental issues have on various aspects of their daily lives. They will understand that issues concerning the environment and sustainability are not simply outside of themselves and have little direct impact. Rather, the students should develop an appreciation of the direct effect that these phenomena and concepts have on their daily lives and personal health. Furthermore, the interdisciplinary approach to addressing environmental issues will assist student understanding of the variety of approaches that could be used to address these problems. Solutions and courses of action will be informed by student understanding that carbon neutrality and sustainability can and should be approached from disciplinary perspectives beyond biology.



318 Commons Faculty Area

The UMR educational model does not end at the classroom door. Each student at UMR receives a monthly newsletter, "Student Health 101" that publishes articles relevant to all aspects of students' experiences in college. Articles addressing the environment are included and some examples include: June 2011 "Living Green for a Healthier You" and November 2010 "Is the Smoke Really Clearing on Campus?" Once students appreciate the variety of steps that they could take, UMR will provide them with opportunities to form student organizations dedicated to contributing to decisions and actions. These organizations will provide a contact point to help educate other students, faculty, staff and members of the local community on carbon neutrality and sustainability.

New Sustainability Student Group is Formed

In October, 2012 a new sustainability student group was formed at UMR by five BSHS students. Their first meeting focused on goal setting and campaign planning. By collecting information from the student population via a survey, the student group was able to form a better understanding of the students' interests relative to sustainability. Two students attended the SELFsustain conference at UMD in October and learned a great deal about how their group can contribute to the UM system's environmental efforts.

University of Minnesota, Twin Cities

Introduction

Twin Cities

Situated in the heart of one of the nation's most vibrant metropolitan communities, the Twin Cities campus (UMTC) has grown since its founding in 1851 from a handful of scholars into a bustling academic community of over 52,000 students and 16,000 faculty and staff. Through 19 colleges and schools, and 200 interdisciplinary centers and institutes, the flagship campus of the University of Minnesota engages in research, instruction, and public engagement of tremendous size and breadth. The campus is 8th among public universities in annual research expenditures and has the 5th largest student enrollment. From medicine to business, law to liberal arts, and science and engineering to agriculture, UMTC is home to a rich, unequalled portfolio of programs which are a source of enduring value to Minnesota and the world.

The span and size of the campus's intellectual endeavors are reflected in its infrastructure and operations. The campus is comprised of three distinct geographies: East Bank, West Bank, and St. Paul. Straddling the Mississippi River, the East and West Banks of the Minneapolis campus include over 160 buildings and the St. Paul campus, located in the suburban city of Falcon Heights, is home to another 100 University facilities. Combined, UMTC has over 22 million gross square feet of facilities to support the academic enterprise. The campus is the third largest traffic generator in the state and third largest purchaser of electricity from Xcel Energy.

In summary, the Twin Cities campus of the University of Minnesota is among the largest, most comprehensive, and most prestigious public universities in the world. UMTC's size, scope, reputation, and complexity make thinking and acting sustainably not only advantageous, but imperative.

Embedded into the campus decision-making framework, sustainability cuts across the breadth and capitalizes on the depth of our institution. Encompassing economic, social and environmental considerations, achieving sustainability goals demands long-term thinking, an ethic of stewardship, and an openness to innovation and transparency about costs, impacts, and affected stakeholders. As a topic of scholarship, sustainability and related themes, like energy, food systems, development, freshwater, and systems approaches, often transcend academic disciplines. Sustainability research brings faculty together to create groundbreaking discoveries. Sustainability also serves as a set of organizing principles relevant



[GlobalEcoGuy](#) Jonathan Foley tweets:

“Sustainability is about building an enduring prosperity for people and the planet.”

to all the activities of UMTC, from the core functions of teaching, research, and outreach, to the operations that support them. Numerous initiatives at UMTC demonstrate how sustainability thinking has overcome the challenges of working in a large, multifaceted institution

to produce outcomes of substantial impact and significance. Examples of sustainability in action include the formation of the interdisciplinary minor in Sustainability Studies, the success of faculty teams working on sustainability research, often already benefitting society and the environment, and the substantial energy savings achieved through focused effort at the Twin Cities campus and also widely communicated to drive culture change towards conservation across our community.

In 2010, a UMTC campus-wide sustainability committee was established to build on our prior successes in sustainability. Over the last year the committee took important actions to further implementation of the Board of Regents Policy: *Sustainability and Energy Efficiency*, including the creation of a plan to substantially reduce and eventually eliminate greenhouse gases attributable to the campus. The committee also created a process for broad engagement and coordination of administration, faculty, students, and staff on the topic of sustainability.

Campus Sustainability Highlights

Twin Cities

Over the last year the campus has expanded upon existing sustainability initiatives, started new sustainability projects, and advanced implementation of the Regents Policy: *Sustainability and Energy Efficiency*. Examples of work done include:

Implementing the campus climate action plan. In December 2011, the Twin Cities Sustainability Committee developed a plan for cutting UMTC greenhouse gas emissions in half by 2021 and reducing them to zero by 2050. In 2012, the University took steps to implement key strategies of the climate action plan. These steps included completing predesign and securing funding for the Combined Heat and Power (CHP) facility at Old Main, and reducing coal use to less than 1% of total fuel used at the Southeast Steam Plant during fiscal year 2012. See Figures that follow for information on campus greenhouse gas emissions.

- **Fostering a Living Laboratory for sustainability.** The 2009 University of Minnesota Systemwide Sustainability Goals and Outcomes Report established a goal of making the University a living laboratory for sustainability. As a living laboratory, the report envisions the University providing opportunities to develop, test, and share with others novel approaches as sustainability is integrated into teaching, research, outreach, and practice. To facilitate these goals the Twin Cities Sustainability Committee created and implemented a process

Less Coal, Lower Emissions

In fiscal year 2012 the Twin Cities campus changed operating procedures at its two steam plants to reduce the amount of coal used. Those changes were a resounding success, reducing the amount of coal burned on both campuses to 634 tons over the course of the year – **a reduction of 41,789 tons or 98.5% from the prior year!** In place of coal, the plants used natural gas. Compared to coal, natural gas results in fewer emissions when burned. This fuel switching helped the University avoid 34,130 tons of CO₂ emissions.

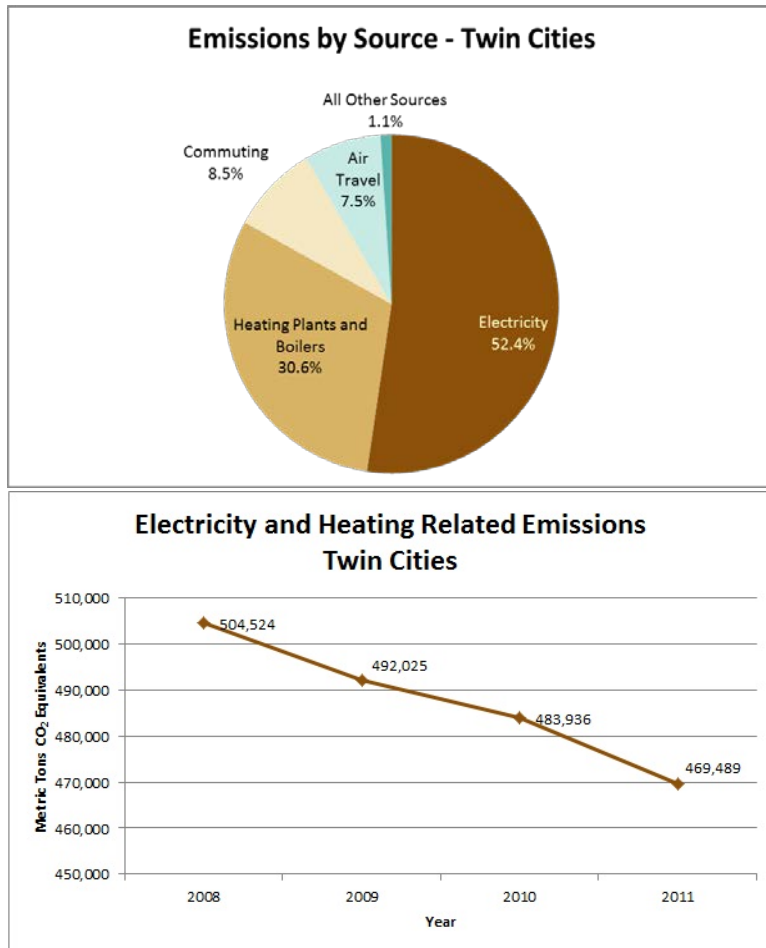


that encourages the use of campus grounds for research, teaching, demonstration projects, and hands on learning.

- Launching the Boreas Graduate Leadership Program.** Meeting the world’s environmental challenges demands effective leadership. The Boreas Graduate Leadership Program provides graduate and professional students, and postdoctoral fellows with skills needed to be active, effective environmental leaders, prepared to catalyze solutions to environmental and social challenges. Drawing on expertise from across the University, Boreas connects participants with

environmental leaders in many sectors and enhances leadership skills in three areas: communications and media, integrative leadership, and systems thinking. The program also offers valuable professional networking opportunities for students.

The remainder of the report for the Twin Cities campus details additional accomplishments from the prior 18 months and goals for the coming year. The accomplishments and goals are organized according to the guiding principles articulated in the Regents Policy: *Sustainability and Energy Efficiency* and the *University of Minnesota Systemwide Sustainability Goals, Outcomes, Measures, and Process* report. Due to the size of the Twin Cities campus, only a sample of the sustainability related activities, accomplishments, and goals for the campus community are chronicled.



Accomplishments, Future Goals and Focus Areas Twin Cities

1. Leadership and Modeling

Formed in 2010, the Twin Cities Sustainability Committee guides implementation of the Regents Policy: *Sustainability and Energy Efficiency* and goals established by the Systemwide Sustainability Goals and Outcomes Committee. The Twin Cities Sustainability Committee has developed a process for broad

consultation, goal setting, and prioritization that includes faculty, students, administrators, and staff. Supported by full-time sustainability staff from University Services, the UMTC Committee undertakes initiatives that further the University's sustainability leadership.

Highlights:

For the second year in a row UMTC participated in AASHE STARS. The system enables meaningful comparisons over time and across institutions using a common set of measurements. UMTC is one of four Big 10 institutions and 229 charter participants in AASHE STARS. UMTC's information was sent at the end of October 2012 and resulted in a Silver Rating from AASHE for the campus' sustainability programs, initiatives, and accomplishments. The STARS inventory recognizes the Twin Cities' leadership across the country in integrating sustainability into education, research, operations, and outreach, in accordance with the Regents Policy: *Sustainability and Energy Efficiency*. [*Leadership and Modeling Goal 1*]

In fiscal year 2012 UMTC invested over \$641,000 in energy efficiency projects from the campus' Energy Conservation Internal Loan Program. In aggregate, these projects have an expected simple payback of 4.6 years and reduce emissions of 1,380 metric tons of CO₂ annually. The Loan Program has been in place since 1998. In alignment with this long-standing commitment to invest in energy efficiency projects, UMTC became a signatory to the Billion Dollar Green Challenge in October 2011. This initiative spearheaded by the Sustainable Endowments Institute (SEI) encourages higher education institutions across the United States to invest in revolving loan funds that will pay for energy efficiency upgrades on their campuses. SEI's goal is to encourage aggregated investments totaling \$1 Billion. [*Leadership and Modeling Goals 1 and 3*]

The campus took a substantial step forward in storm water management with the development of a storm water master plan. The plan provides for innovative, comprehensive solutions for managing storm water on a district and campus basis rather than building-by-building. The plan also identified multiple paths for projects to comply with storm water requirements, developed a storm water capital plan, and provided pathways for more input from the faculty and research community. [*Leadership and Modeling Goal 1*]

Objectives:

- Significantly lower operating costs, maintain or enhance safety, reduce claims risk, decrease greenhouse gas emissions by ~20%, and lessen the administrative and financial burdens to the research enterprise by developing a "Smart Labs" program for research spaces. [*Leadership and Modeling Goals 1*]
- Work with University faculty to assess the prevalence and types of sustainability behaviors in the University workplace. Use the survey data as a baseline to measure future social shifts related to sustainability and to develop or enhance programs that support an organizational culture and individual decisions that are sustainable. [*Leadership and Modeling Goals 5*]

2. Operational Improvements

Sustainability principles and goals have long been embedded in operational support units such as Parking and Transportation, Facilities Management, Capital Planning and Project Management, University Dining Services, and Housing & Residential Life. These departments and many others are continually taking steps that reduce the campus' environmental impact, support the surrounding community, and efficiently use financial resources from the state and tuition.

Highlights:

The new 17th Avenue Residence Hall under construction will incorporate many sustainable features and principles in its design. The building will have a green roof and will reuse rain water collected from the roof area. It will also utilize energy efficient appliances, water efficient fixtures, and lighting with occupancy sensors to reduce the energy and water required. The residence hall, the recreation center expansion, the physics/nanotechnology building, the cancer/cardio building, and other projects around campus are being constructed to meet or exceed the State of Minnesota's Sustainable Building Guidelines: B3 – Buildings, Benchmarks, and Beyond. *[Operations Goal 1]*

The Sustainability Office, Purchasing Services, and staff from across University Services worked with a University of Minnesota Law Clinic to identify strategies to make more sustainable purchasing choices, to better communicate to our suppliers that sustainability is a core value of the institution, and to help our supply chain be more sustainable in their operations. The Clinic reviewed the University's existing practices, compared them to practices of leading organizations, and made nine recommendations.

[Operations Goal 2]

Parking and Transportation Services' (PTS) programs and service enhancements support the University community in making sustainable transportation choices. In its first season, the ZAP Bike Commuting Program was hugely successful registering more than 1,600 riders who collectively biked 619,039 miles and reduced transportation emissions by 428,908 pounds of CO₂. PTS also added a third hybrid bus this fall and launched the NextBus system, which is expected to increase bus ridership. *[Operations Goal 3]*

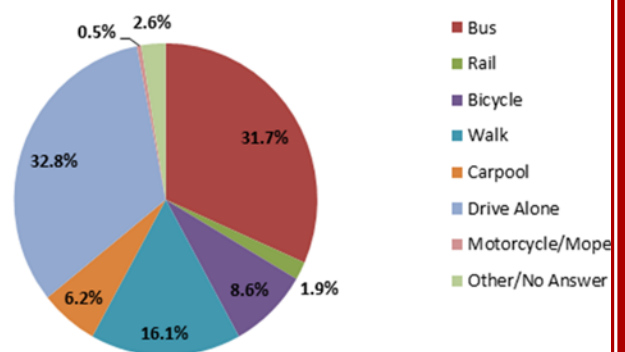
Objectives:

- Publish the University of Minnesota Standards and Procedures for Design. The Standards are intended

Sustainable Transportation

For more than a decade Parking and Transportation Services (PTS) worked hard to encourage sustainable transportation options and to support faculty, staff, and students who utilize these modes of transportation--PTS's hard work is paying off. In 2012 PTS surveyed UMTC students and employees about transportation choices. The results showed that **more than 65% of the University community normally uses a sustainable transportation mode** such as biking, public transit, or walking. Encouraging environmentally friendly transportation is an essential part of conserving resources, reducing our carbon footprint, and working towards a sustainable campus.

Primary Mode of Transportation to Campus
Proportionally Weighted University Population



Smart Labs = Sustainability

Laboratories on campus are an important part of what makes the University of Minnesota, Twin Cities one of the largest and most successful research institutions in the country, but labs also use enormous amounts of energy. In fact, though **labs are ~20% of the University's physical space, they're responsible for over 66% of the energy costs!** Laboratory ventilation is the largest energy user because the air in each lab has to be heated, cooled, dehumidified, filtered, distributed and exhausted multiple times per hour, 24 hours a day, 7 days a week – even when the lab is unoccupied. In response, the University is working to make “Smart Labs” that will optimize energy use, lower operating costs, increase user safety, and reduce our greenhouse gas emissions by up to 20%.



to assist architects, engineers, design professionals, and design/build contractors in understanding the University's sustainability goals and minimum requirements related to University construction projects. **[Operations Goal 1]**

- Implement recommendations from the University of Minnesota Law Clinic on sustainable purchasing. **[Operations Goal 2]**

- Utilize features of new e-procurement platform to more easily identify sustainable products.

[Operations Goal 2]

- Develop a plan to increase waste diversion from TCF Stadium. The goal of the facility is to become zero waste and a cross-functional team is working to develop a multi-year plan to achieve this goal. **[Operations Goal 4]**

3. Energy Efficiency

In their role coordinating and ensuring a supply of energy to the campus, University Energy Management is guided by three principles – Cost Effectiveness, Reliability, and Sustainability – and their performance reflects those principles. The campus consistently gets the power it needs to ensure the success of the academic enterprise while avoiding increased utility costs and emissions to the environment.

Highlights:

Recurring annual energy cost avoidance of \$1.1 million was realized in fiscal year 2012 bringing the total to over \$5.7 million since the beginning of fiscal year 2010. In total, over 60,000 tons of annual CO₂ emissions have been avoided as a result of energy efficiency and conservation initiatives. **[Energy Efficiency Goal 1]**

The cornerstone of our energy efficiency effort has been our building recommissioning program. Recommissioning success stories in fiscal year 2012 included energy cost avoidance of between 15 and 25 percent of the baseline annual energy consumption in Wulling Hall, Transportation and Safety Building, Bierman Athletic Building, Tate Lab and Ridder Arena. The total annual cost avoidance realized in these five projects was over \$135,000 with an investment payback period of less than four years. **[Energy Efficiency Goal 1]**

Campus-wide energy efficiency initiatives undertaken in fiscal year 2012 include an effort to identify and replace the last of the remaining inefficient incandescent and T12 florescent light fixtures on campus. This project resulting in the replacement of inefficient lighting “hiding” in inconspicuous locations such

as inside laboratory fume hoods, elevator cars, mechanical rooms, closets, storerooms and warehouse spaces. Proving that the University's sustainability motto *It All Adds Up* really is true, over \$145,000 in annual energy savings have been realized as a result of this simple lighting replacement initiative.

[Energy Efficiency Goal 1]

Energy Management continues to improve the fidelity of data being used in state and federal energy consumption benchmarking programs in order to evaluate the relative energy performance of UMTC campus buildings. By refining space-use data and building schedules we were able to further leverage the State's B3 Benchmarking tool which enables the comparison of energy performance in dissimilar buildings on a normalized basis; resulting in the development of a campus building energy report card.

<http://z.umn.edu/bldgenenergyreportcard> **[Energy Efficiency Goal 2]**

A related effort resulted in the identification of 10 additional UMTC campus buildings which are performing at the US Environmental Protection Agency's ENERGY STAR standard. The Donhowe Building and the Education Sciences Building earned ENERGY STAR certification in fiscal year 2011.

[Energy Efficiency Goals 1 and 3]

Objectives:

- An energy cost avoidance goal of \$3 million has been established for FY13. **[Energy Efficiency Goals 1 and 2]**



Welcome Week

4. Research

Sustainability is heavily embedded in research at UMTC. Faculty are conducting ground breaking sustainability research in a multitude of areas including renewable energy, architecture, landscape architecture, consumer behavior, economics, industrial psychology, education, agriculture, ecology, biology, horticulture, agronomy, applied plant science, soil science, populations studies, water resource science, law, public policy, public health, and chemistry. In addition, many of the campus's institutes and centers are focused on topics focused on or related to sustainability.

Highlights:

The Initiative for Renewable Energy and the Environment (IREE), a program of the Institute on the Environment, seeks out the most promising new renewable energy ideas and brings them to life with support from Xcel Energy ratepayers via the utility's Renewable Development Fund. When IREE launched in 2003, topics like climate change, greenhouse gas emissions, biofuels and energy security were just entering the mainstream dialogue. Since then, these issues have taken center stage in America and around the world. In the same way, IREE quickly became a central part of Minnesota's renewable energy economy, mobilizing more than 400 experts around one vital mission: *To promote statewide economic development; sustainable, healthy and diverse ecosystems; and national energy security through development of bio-based and other renewable resources and processes.* Fulfilling this mission calls for a systems-based approach that integrates scientific, economic and social perspectives.

Accordingly, IREE-funded researchers represent the breadth and depth of expertise at the University of

Minnesota, including seven colleges, four campuses and three research centers to date. **[Research Goals 1 and 2]**

While the planet's population has grown more than 30 percent since 1990, consumption has increased even faster. The business community and the innovative power of markets are core to any successful transition to a sustainable economy. In 2011, the Global Fortune 500 reported revenues of over \$26 trillion, roughly equivalent to the value of all goods and services produced in the United States, China, and Japan combined. The power and desire to significantly reduce the impacts of these systems can and must be found in this community. Through the NorthStar Initiative for Sustainable Enterprise (NiSE), the Institute on the Environment is working with the private sector – both for-profit and nonprofit – to understand the systemic sustainability challenges of rapidly expanding production and consumption systems, develop the decision tools necessary to navigate these complex systems, and accelerate innovation beyond marginal greening efforts to more meaningful change. **[Research Goals 1 and 2]**

Institute on the Environment (IonE) Mini Grants are intended to spur new collaborative efforts by providing small amounts of funding, with average grants being \$1,500, administrative support (including organizing and staffing meetings), and space (for meetings, small conferences, new courses, reading groups, etc.) to interdisciplinary groups of faculty, staff and students from across the University system. The overarching goal of the program is to encourage collaboration across disciplines, units or campuses at the University of Minnesota. Mini Grants are an opportunity for interdisciplinary teams of faculty, staff, graduate students and postdocs, from any campus of the U of M to engage with IonE. Teams must be led or coordinated by a faculty or research staff member who is eligible to be a principal investigator at the University. Teams are encouraged to work with partners beyond the University, although funds must be used at the University (except for travel expenses). **[Research Goal 1]**

In May, 2012, the University of Minnesota hosted an inaugural interdisciplinary environmental and energy law workshop, "[New Directions in Environmental and Energy Law, Policy, and Geography.](#)" The workshop and the University's environmental and energy law program are organized around four themes: (1) clean energy infrastructure; (2) multi-level environmental and energy governance; (3) environmental, energy, and climate justice; and (4) sustainable communities. **[Research Goal 1]**

UMTC Basking in the Sun

The University of Minnesota's commitment to reducing greenhouse gas emissions is prominently on display at the University Office Plaza building. In **March 2012 installation of a 38.4 kilowatt solar array was completed** on the roof of the building. The installation was funded through the City of Minneapolis as part of a \$1.35 million grant from the Minnesota Department of Commerce's Division of Energy Resources. Rebates from Xcel Energy's Solar Rewards also helped to cover installation costs.

This is the **second solar array on campus**, and is expected to generate 3.8% of the building's electricity, about 45,800 kilowatt hours, and **reduce emissions by 38 metric tons of CO₂ per year**. In addition to providing clean energy, the array also provides research opportunities for the University community.



Objectives:

- This year, IREE has a final funding opportunity available for two to four grants of up to \$750,000 for renewable energy research with an integrated systems approach and promise of big impact at the intersection of energy and the environment. The focus for these grants is on projects in biomass, solar, wind, hydropower, geothermal power and energy conservation/efficiency.
- The NiSE Network is focused on three initiatives: 1) Sustainable Procurement Initiative, 2) Materials Cycling Initiative and 3) Global Initiative on Financing Sustainability.
- IonE will continue to encourage collaboration across disciplines, units or campuses at the University of Minnesota through the Mini Grants program.
- The University of Minnesota will host a major conference in the spring of 2013 on *Legal and Policy Pathways for Energy Innovation*.

5. Education and Outreach

The UMTC campus offers numerous sustainability related undergraduate majors and graduate programs, and is home to one of the first Sustainability Studies Minor programs in the country, which now serves as a model for other universities. The minor’s interdisciplinary nature enables students from any major to enroll and it provides skills that are critical for future prosperity.

Highlights:

The Green Resident Certification Program was launched in January 2012 to recognize residents for living sustainably. Residents of University housing can become Maroon, Gold, or Green certified by pledging to take actions to live more sustainability, through quantifying their environmental footprint, and by engaging their fellow students to become certified too. *[Education and Outreach Goal 1]*

Eight students involved in sustainability initiatives on the Twin Cities campus traveled to the University of Minnesota, Duluth for a systemwide gathering of student leaders in sustainability. The event provided several students the opportunity to present work they are doing on campus to advance sustainability. It also created an opportunity to share and connect with peers from across the system on topics of mutual interest. *[Education and Outreach Goal 1]*

The Sustainability Studies Minor immerses students in the study of real-world problems from a variety of academic perspectives, incorporating disciplines from across the natural, social, and applied sciences. The program is unique in its efforts to engage students from every college at the U of M, offering collaborative opportunities that transcend disciplines. Through these diverse perspectives, students will better understand the values, choices, technologies, and policies that create a sustainable world. *[Education and Outreach Goal 3]*

Issues of sustainability are urgent and complex, and require the contributions of multiple disciplines and professions. The University of Minnesota offers a spectrum of opportunities for students to engage in the challenges of sustainability. The Sustainability Education Programs website provides undergraduate sustainability education offerings, graduate programs and courses and faculty resources. *[Education and Outreach Goal 3]*



Acara gives emerging entrepreneurs a chance to envision and launch successful social businesses. Since 2009, more than 300 students from 20 universities have participated in Acara's programs, guided by mentors in academia and industry to collaboratively explore business concepts and implement sustainable solutions while developing their leadership skills. This program is a global competition among universities to develop and launch sustainable businesses focused on a specific social or environmental challenge. *[Education and Outreach Goal 3]*

The Sustainability Education Network of University of Minnesota Faculty (the Network) includes faculty and staff members from nearly all colleges and schools across the Twin Cities campus. Network members pursue common opportunities to produce a more cogent and effective set of graduate education programs and courses for sustainability studies within the University. This purpose is broad, and the potential activities spurred by Network dialogue are ambitious. Nevertheless, a critical mass of over fifty faculty and staff members from twelve colleges across the University are now active Network members. They represent disciplines within the humanities, design and architecture, professional schools, the natural and physical sciences, and the social sciences. *[Education and Outreach Goal 3]*

This year, the University of Minnesota (UMN) launched a partnership with North Central CleanTech Open to mentor new business owners in incorporating sustainability elements into the business plans that they create for the CleanTech Open competition. The CleanTech Open features top clean tech entrepreneurs and their startup businesses from across the region and brings together accelerator companies with representatives from a diverse regional network. *[Education and Outreach Goal 4]*

Objectives:

- Implement year-round programming to encourage on-campus residents to live more sustainability and to conserve resources. *[Education and Outreach Goal 1]*
- Launch the Boreas Undergraduate Leadership Program. The program will offer mentorship and leadership training, utilizing program capacities developed through the Boreas Graduate Leadership Program. An application process for potential student leaders will ensure high quality, and students will be required to participate in service and volunteering with IonE events such as Momentum, Frontiers, presentations, and conferences. Student leaders would gain logistical support for their leadership initiatives and a small budget for initiating new activities. *[Education and Outreach Goal 1]*

- Implement the Resilient Communities Project (RCP). RCP will work with one Minnesota city per year to match community-identified sustainability projects with graduate courses at the U of M that have a community-project component related to one or more of the city's needs. RCP is intended to better connect University resources with communities, regional entities, and organizations interested in sustainability in the Twin Cities and other metropolitan areas in Minnesota. RCP provides the community with access to hundreds of students and faculty across a



range of academic disciplines, from design, planning, and engineering to business, environmental sciences, and the humanities. In addition, the program offers students real-world opportunities to apply their knowledge and training, as well as to engage with students in other programs and fields of study. *[Education and Outreach Goal 2]*

6. Communication

Communication of sustainability topics is a multifaceted endeavor. Communications professionals embedded within colleges, schools, and divisions develop media. The News Service and campus sustainability staff help disseminate content to audiences to various audiences to expand the reach of messaging and to grow our reputation in the field.

Highlights:

The Welcome Week Sustainability Fair engaged over 3,000 new students, providing them information about sustainability throughout education, research, operations, and student life at the on-set of their time at the Twin Cities campus. *[Communications Goal 1]*

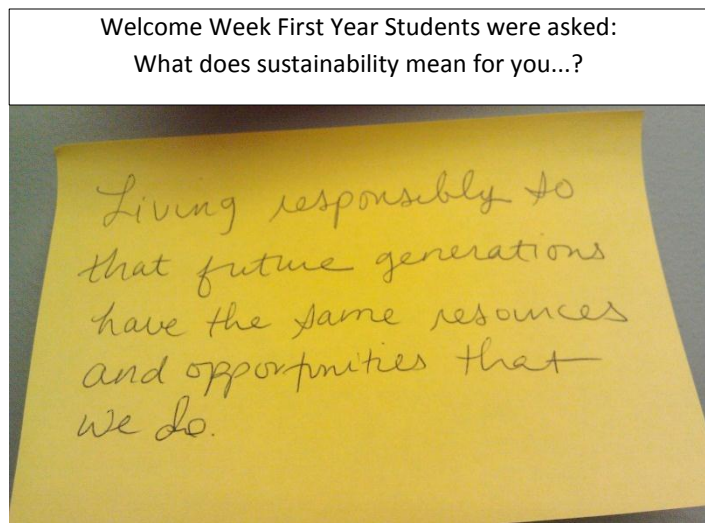
Sustainability sites and features can now be explored virtually with the creation of an on-line sustainability campus map. The map highlights sustainable features on-campus and provides links to more information. *[Communications Goal 2]*

University sustainability programs are increasing use of social media such as Twitter and Facebook to communicate information and to engage the community. The robust social media presence of organizations like *It All Adds Up* and the Institute on the Environment facilitates achievement of other sustainability goals. *[Communications Goal 1]*

Objectives:

- Develop a campus sustainability communications plan to coordinate and align the efforts of the many communicators across campus. *[Communications Goal 2]*
- Develop feature stories, social media, and residence and workplace engagement programs. Increase awareness and encourage sustainable practices at the U, and promote the University's position as a leader on sustainable issues to external audiences.

[Communications Goal 2]



“The more closely an academic institution can mirror the real world in their thought leadership and development of talent, the more effective and relevant they will be. The real world of sustainability involves the integration of many disciplines, from business to science to public policy to law. From that perspective, the University of Minnesota is unique and on the right path – because I view their sustainability initiatives as much more comprehensive and integrated than the majority of schools we encounter.”

- Neil Hawkins,
- Dow’s vice president of
- Sustainability and EH&S



Sustainability – University of Minnesota is on Facebook
and Twitter @UMNSustain

Appendix A
Board of Regents Policy:
Sustainability and Energy Efficiency



**UNIVERSITY OF MINNESOTA
BOARD OF REGENTS POLICY**

Page 1 of 2

Administrative
SUSTAINABILITY AND ENERGY EFFICIENCY
Adopted: July 9, 2004
Supersedes: (See end of policy)

SUSTAINABILITY AND ENERGY EFFICIENCY

SECTION I. COMMITMENT.

Sustainability is a continuous effort integrating environmental, social, and economic goals through design, planning, and operational organization to meet current needs without compromising the ability of future generations to meet their own needs. Sustainability requires the collective actions of the University of Minnesota (University) community and shall be guided by the balanced use of all resources, within budgetary constraints. The University is committed to incorporating sustainability into its teaching, research, and outreach and the operations that support them.

SECTION II. GUIDING PRINCIPLES.

Subd. 1. Leadership. Through excellence in environmental education, research, outreach, and stewardship, the University shall strive to be a world leader by promoting and demonstrating sustainability and energy efficiency and by producing leaders and informed citizens.

Subd. 2. Modeling. The University shall strive to be a model in the application of sustainability principles to guide campus operations by:

- (a) meeting and aspiring to exceed all applicable regulatory requirements;
- (b) preventing pollution at its source;
- (c) reducing emissions to the environment; and
- (d) encouraging the use of a life-cycle cost framework.

Subd. 3. Operational Improvements. The University shall undertake a continuous improvement process that seeks to meet the operational performance targets, goals, and objectives designed to achieve sustainability.

Subd. 4. Energy Efficiency. The University shall undertake a process to increase energy efficiency, reduce dependence on non-renewable energy, and encourage the development of energy alternatives through research and innovation.



**UNIVERSITY OF MINNESOTA
BOARD OF REGENTS POLICY**

Page 2 of 2

Administrative
SUSTAINABILITY AND ENERGY EFFICIENCY
Adopted: July 9, 2004
Supersedes: (See end of policy)

Subd. 5. Research. The University shall (a) promote innovative, high visibility research projects focused on sustainability and energy efficiency to inform campus operations as a whole as well as the broader community; and (b) promote collaborative projects that include faculty research undertaken in partnership with operations staff, students, public entities, community organizations, and industry.

Subd. 6. Education and Outreach. The University shall promote educational and outreach activities that are linked to operational improvements and innovation principles.

SECTION III. IMPLEMENTATION.

Subd. 1. Administration. The University shall have sustainability goals that inform administrative policies and procedures in the areas of planning, decision-making, execution, assessment, reporting, and alignment. These policies and procedures shall rely on scientific analysis and support the efforts described in subds. 2-4 of this section.

Subd. 2. Operations. Each University campus shall develop specific sustainability objectives and targets in the areas of:

- (a) physical planning and development, including buildings and infrastructure;
- (b) operations;
- (c) transportation;
- (d) purchasing; and
- (e) waste management and abatement.

Subd. 3. Accountability. The president or delegate shall develop indicators and measures of success in the implementation of the principles outlined in this policy in consultation with appropriate faculty, staff, students, and experts in the broader community.

Subd. 4. Reporting. The president or delegate shall report to the Board annually on progress toward established targets and standards, using this information to identify opportunities for subsequent improvement.

SUPERSEDES: POLLUTION PREVENTION AND WASTE ABATEMENT DATED JUNE 12, 1992.

Appendix B:
*University of Minnesota
Systemwide Sustainability Goals*

Reported to the Board of Regents, Systemwide Sustainability Goals and Measures Report, 2009
Over 400 individuals of the university community across the system contributed to the report.

High Level Goals

These high-level goals are distilled from the 27 work team goals and reflect key themes that repeatedly surfaced in the work teams' reports.

1. Leadership

As a large public research land-grant university, the University of Minnesota will strive to be a leader in sustainability and energy efficiency.

2. Living Laboratory

The University of Minnesota will serve as a living laboratory as we integrate sustainability across operations, education, research, and outreach.

3. Engagement

The pursuit of sustainability will actively engage all dimensions of the University, and the University will promote activism and engagement related to sustainability.

4. Communication

Transparent and abundant communication will help build awareness of the what, why, and how of sustainability throughout the University of Minnesota community. The University will encourage communication, marketing, and transparency to build awareness and participation.

5. Policies

Uniform policies will help departments and programs adopt best practices for sustainability. The University will establish policies that make best practices (energy, purchasing, etc.) the most desirable choice for all departments.

6. Culture Change

The University of Minnesota community will undergo a fundamental culture change as sustainability is integrated through our programs and practices. The University will nurture a culture that views sustainability as an integral component of all we do.

7. Community Impact

The University of Minnesota's pursuit of sustainability will enhance awareness and adoption of sustainable practices in the broader community. The University will create mechanisms for measuring impacts on campus and beyond. (How does our work change the world?)

8. Integration

The University of Minnesota will integrate sustainability into operational and financial decisions, teaching, research, and outreach.

Find out more about University of Minnesota Sustainability
<http://portal.environment.umn.edu/>

UNIVERSITY OF MINNESOTA
Driven to DiscoverSM

Reported to the Board of Regents, Systemwide Sustainability Goals and Measures Report, 2009
Over 400 individuals of the university community across the system contributed to the report.

University of Minnesota System Sustainability Goals

Leadership and Modeling

- Goal 1: Be a national leader and pioneering model for sustainability and energy efficient operations among large public research land-grant institutions
- Goal 2: Actively advance the transition to a sustainable world economy through research, teaching, outreach, and operations
- Goal 3: Inspire and influence the community, nation, and world through innovative sustainable research and practices
- Goal 4: Make significant continuous achievements toward sustainability goals and commitments
- Goal 5: Embrace an organizational culture and individual decisions that support an inclusive, engaged, active, and sustainable healthy community
- Goal 6: Meet all regulatory requirements and support the development of future regulations and policies through technical review, academic study, and practical experience

Operational Improvements

- Goal 1: Plan, program, design, construct, and operate University of Minnesota facilities throughout their life cycle to provide restorative impacts to the natural environment and a healthy indoor environment for the University community
- Goal 2: Integrate environmental, economic, and social priorities into purchasing and contract decisions
- Goal 3: Use lower impact transportation alternatives that increase fuel efficiency, provide more sustainable fuel options, and help reduce the miles traveled on campus, to campus, and as part of the University of Minnesota enterprise
- Goal 4: Manage resources for their highest end use by reducing consumption, minimizing waste, and strongly supporting the reuse and highest value recycling of unwanted materials

Energy Efficiency

- Goal 1: Reduce energy use
- Goal 2: Engage the University of Minnesota community in energy conservation
- Goal 3: Pursue climate neutrality and energy efficient operations across the University of Minnesota
- Goal 4: Adopt energy-related financial policies which enable the University of Minnesota to be socially, environmentally, and fiscally informed
- Goal 5: Contribute to the development of progressive state and federal energy policies

Research

- Goal 1: To advance sustainability, nurture cross-disciplinary collaboration and sharing of ideas and perspectives within and beyond the University
- Goal 2: To advance sustainability, promote civically engaged, socially informed, and community responsive research and scholarship
- Goal 3: To advance sustainability, instill sustainability principles in the research culture of the University of Minnesota; all levels of University leadership should embrace sustainability as a core pillar of the University's mission
- Goal 4: To advance sustainability, eliminate institutional barriers and disincentives to interdisciplinary and collaborative sustainability research
- Goal 5: To advance sustainability, transform the University of Minnesota into a living laboratory for sustainability

Education and Outreach

- Goal 1: Capture the land-grant mission: Sustainability is part of the educational or campus experience of each and every University of Minnesota student
- Goal 2: Integrate service learning into the undergraduate and graduate experience, linking students, faculty, University of Minnesota Extension and community partners
- Goal 3: Create and implement curricula and educational programs that address the interface of environment, society, and economy
- Goal 4: Develop outreach programs for sustainability education of working professionals in the public and private sector

Communication

- Goal 1: Create opportunity for dialogue to discuss global and local sustainability challenges, opportunities available, and the work of the University to advance sustainability
- Goal 2: Develop and implement marketing/promotion efforts to engage those who may not be aware of sustainability-focused education, outreach, and research opportunities
- Goal 3: Develop and maintain a transparent data management information system to enable decisions utilizing environmental, economic, and social factors

Appendix C:
2011 Sustainability Committee Information

University of Minnesota
2011-2012 Sustainability Committees across the system:
Implementing Sustainability Goals in each unique campus setting

Note: Committee membership is in process of being updated.

University of Minnesota Strategic Sustainability Committee

Chairs: Pamela Wheelock and Jacqueline Johnson

Staff to Committee: Amy Short

Representation from all campuses - faculty, students and staff

**Crookston
Sustainability
Committee**

*Chair: Daniel
Svedarsky*

**Duluth
Sustainability
Committee**

*Chair:
Mindy Granley*

Morris

*Chair:
Troy Goodnough*

Rochester

*Sustainability
Contact:
Gail Suater*

**Twin Cities
Sustainability
Committee**

*Chairs: Mike
Berthelsen,
Emily Hoover*

*Staff to Committee:
Shane Stennes*

Working Groups:

- Communications & Outreach
- Curricular
- Foods
- Physical Operations
- Recycling
- Water & Landscape

Supporting & Adhoc Subcommittees:

- Research
- Education & Outreach
- Energy & Operations
- Living Lab oratory Review Panel

University of Minnesota (Systemwide) Strategic Sustainability Committee:

Pamela Wheelock, Vice President, University Services, *Co-Chair*
Jacqueline Johnson, Chancellor, University of Minnesota, Morris, *Co-Chair*
Undergraduate student, UMTC TBD
David Bael, Graduate Student, HHH Institute of Public Affairs, UMTC (To be replaced in 2012)
Leslie Bowman, Executive Director, Contract Administration, Auxiliary Services
Jeffrey Corney, Managing Director, Cedar Creek Ecosystem Science Reserve, UMTC
Robert Dunbar, Associate Professor, Biology, UMR (to be replaced in 2012)
Heidi Eger, Undergraduate Student, UMM
Ann Freeman, Director, Internal Communications, University Relations, UMTC
Ken Gilbertson, Associate Professor, Health, Physical Education and Recreation, Director, Center for Environmental Education, UMD
Mary Guzowski, Professor, Architecture, College of Design, UMTC
Nick Jordan, Professor, Agronomy & Plant Genetics Department, UMTC
Linda Kingery, Executive Director, Regional Sustainable Development Partnership, UMC
Alexandra Klass, Professor of Law, UMTC (will be replaced in 2012)
Nathan Levendoski, Undergraduate student, UMD
Monique MacKenzie, Department Director, Capital Planning and Project Management, UMTC
Jerome Malmquist, Director, Energy Management, Facilities Management, UMTC
Craig Moody, Director, Department of Environmental Health and Safety
Alex Peterson, Undergraduate Student, UMR (to be replaced in 2012)
Amy Short, Sustainability Director and Staff to the Committee, UMTC
Lanae Smith, Undergraduate student representative, UMD
Peggy Sundermeyer, Executive Director, Research Advancement, OVPR
Dan Svedarsky, Director, Center for Sustainability, UMC & Northwest Research and Outreach Center
Lauren Snively, Undergraduate Student, UMC
Pete Wyckoff, Associate Professor, Science/Math, UMM

Staff to the committee:

Troy Goodnough, Sustainability Director, UMM
Mindy Granley, Sustainability Coordinator, UMD
Beth Mercer-Taylor, Sustainability Education Coordinator, UMTC
Lisa Socwell, Facilities and Operations Coordinator, UMR (new)
Shane Stennes, Sustainability Coordinator, UMTC

Systemwide Sustainability Communications Committee

Ann Freeman, Director, Internal Communications, University Relations, (chair)
Adam Overland, Content Manager and *Brief* Editor, UR (staff to committee)
Becky Beyers, Communications Director, College of Food, Agriculture, and Natural Resource Sciences
Aimee Viniard Weideman, Assistant Dean and Communications Director, Extension
Mary Hoff, Managing Editor, Institute on the Environment
Andrew Svec, Communications Director, University of Minnesota Crookston
Sarah Oslund, Communications Director, University of Minnesota Rochester
Christiana Kapsner, Public Relations Assistant, University of Minnesota Duluth
Melissa Weber, Interim Communications Director, University of Minnesota Morris
Chris Kelleher, Communications Specialist, Facilities Management, University Services
Tim Busse, Communications Director, University Services
Amy Short, Sustainability Director, Twin Cities and University-Wide
Dan Svedarsky, Agriculture and Natural Resources, Director, Center for Sustainability, Research Biologist, Northwest Research and Outreach Center, Crookston
Troy Goodnough, Sustainability Coordinator, Morris
Mindy Granley, Sustainability Coordinator, Duluth
Shane Stennes, University Services Sustainability Coordinator, Twin Cities

Systemwide Sustainability Committee -Curriculum & Academic Pilot Project Work Team

Geoffrey Bell, Associate Professor, Labovitz School of Business and Economics, Duluth
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Barrett Colombo, Graduate Research Assistant Institute on the Environment, Twin Cities
Evelyn Davidheiser, Director, Institute for Global Studies, Professor and Asst. Dean for International Programs, College of Liberal Arts, Twin Cities
Thomas Fisher, Professor and Dean, College of Design, Twin Cities
Margaret Kuchenreuther, Associate Professor and Coordinator of Environmental Studies, Science/Math Division, Morris
Dennis Falk, Distinguished Teaching Professor of Social Work, Faculty Fellow for Strategic Planning, Chancellor's Office, Duluth
Andrew Furco, Associate Vice President for Public Engagement, Twin Cities
Lewis Gilbert, Associate Director, Institute on the Environment, Twin Cities
Kenneth Gilbertson, Associate Professor, Department of Health, Physical Education and Recreation, Duluth
Mary Guzowski, Professor, School of Architecture, Twin Cities
Katherine Heilmann, Graduate Research Assistant, Humphrey School of Public Affairs, Twin Cities
Nicholas Jordan, Professor, Agronomy and Plant Genetics, Twin Cities
Charlotte Melin, Professor, German, Scandinavian and Dutch, Twin Cities
Beth Mercer-Taylor, Education Sustainability Coordinator, Institute on the Environment, Twin Cities
Nathan Meyer, Program Leader, Extension Center for Food, Agricultural and Natural Resource Sciences University of Minnesota Extension
Pat Nunnally, Research Associate, Institute for Advanced Study, Twin Cities
W. D. Svedarsky, Professor, Department of Agriculture and Natural Resources, Crookston
Charlotte Voight, Assistant to the Dean , Assistant Director, Office of Interdisciplinary Initiatives , Graduate School , Twin Cities

University of Minnesota Crookston

Crookston Sustainability Committee:

Daniel Svedarsky, Professor and Director of Center for Sustainability, *Chair*

Paul Aakre, Assistant Professor, Mechanized Agriculture

Jason Brantner, Research Fellow, NWROC

Kent Freberg, Assistant Professor

Shaw Friedland, Student

Linda Kingery, Program Director, Minnesota Extension

Douglas Langer, Senior Operating Engineer

Martin Lundell, Associate Professor, Information Technology Management

Rachel McCoppin, Associate Professor, Communications

Peter Phaiah, Associate Vice Chancellor for Student Affairs

Christo Robberts, Program Manager, Bachelor of Manufacturing Management & Quality Management

Tricia Sanders, Finance Director

Ben Sullivan, Student

Chris Waltz, CERTS Coordinator

Ben Williams, Student

Chris Winjum, Assistant to the Chancellor

Crookston Working Groups:

Communication and Outreach Working Group

Amber Bailey, E-Communications Manager

Amber Evans, Co-Chair/Director of Admissions

Heather Donati Lewis, Student

Kate Holmquist, Student

Linda Kingery, Program Director, Minnesota Extension

Rachel Lundbohm, Lecturer, Marketing & Management

Rachel McCoppin, Associate Professor, Communication

Ben Sullivan, Student

Dan Svedarsky, Director, Center for Sustainability, UMC & Northwest Research and Outreach Center

Elizabeth Tollefson, Assistant Director of Communications

Ben Williams, Student

Curricular Working Group

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Martin Lundell, Associate Professor, Information Technology Management

Katy Smith, Assistant Professor, Math, Science, & Technology

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Chris Waltz, Student

Foods Working Group

Natalie Brown, Director of Dining Services

Linda Kingery, Program Director, Minnesota Extension

Harouna Maiga, Professor, Animal Science

Ken Myers, Associate Professor, Hotel Restaurant & Institutional Management

Terry Nennich, Minnesota Extension

Peter Phaiah, Associate Vice Chancellor for Student Affairs

University of Minnesota 2011-2012 Campus Sustainability
Sharon Stewart, Associate Professor, Liberal Arts and Education Department, Math Science &
Technology Department
Deborah Zak, Minnesota Extension

Physical Operations Working Group

Paul Aakre, Assistant Professor, Mechanized Agriculture
Donn Anderson, Operating Engineer
Jason Brantner, Research Fellow (NWROC)
Tim Norton, Director of Facilities and Operations
Kent Freberg, Assistant Professor
Douglas Langer, Senior Operating Engineer

Recycling Working Group

Jenna Benoit, Student
Brian Christensen, General Maintenance Supervisor
Shawn Friedland, Student
Thomas Melhorn, Student
Melanie Meyer, Student
Peter Phaiah, Associate Vice Chancellor for Student Affairs
Chis Waltz, Student
Andrew "A.J." Wilson, Student

Water and Landscape Working Group

Eric Castle, Assistant Professor, Horticulture
Michael Knudson, Graduate Student
Brenda Miller, Faculty

University of Minnesota Duluth

Duluth Sustainability Committee as of Sept 2011:

Carl Berwald, Political Science Student
Geoff Bell, Associate Professor, Department of Management Studies
John King, Director, Facilities Management
John Sawyer, Principal Engineer Supervisor, Facilities Management
Karl Novek, Maintenance Planner/Scheduler, Facilities Management
Lisa Fitzpatrick, Viz Lab Coordinator
Mahjoub Labyad, Public Health Specialist, Environmental Health and Safety Office
Mike Mageau, Assistant Professor, UMD Geography, Center for Sustainable Development
Nan Stubanvall, Sustainable Twin Ports Board Member
Rich Axler, Senior Research Associate, Natural Resources Research Institute
Stacey Stark, GIS Lab Coordinator, UMD Geography
Stacy Gerth, Economics student
Terry Brown, Research Associate, Natural Resources Research Institute
Tim Bates, Associate Director, Recreational Sports Outdoor Program
Tim Bushnell, Principal Food Operations Manager, UMD Dining Services
Tom Ferguson, Visiting Professor, UMD Electrical/Computer Engineering
*Cheryl Anderson, Executive Office and Administration Specialist, Facilities Management
*Mindy Granley, Campus Sustainability Coordinator
staff to committee

University of Minnesota Morris

Green Team

Troy Goodnough, Chair, Office of Sustainability
Anne Rittgers, Co-Chair, Office of Sustainability
Lisa Harris, Plant Services Administrator
Troy Ostby, Plant Services
Tom Ladner, Dining Services Manager, Office of Residential Life
Bryce Blankenfeld, Student
Chase Gerold, Student
Tony Nemmers, Dining Services Manager
Melissa Weber, Director of Communications

University of Minnesota Rochester

Lisa Socwell (replaced Michael Fridgen), Facilities and Operations Coordinator, reporting to Gail Sauter, Vice Chancellor for Academic Affairs or

University of Minnesota Twin Cities

Twin Cities Sustainability Committee, 2011:

Mike Berthelsen, Associate Vice President, Facilities Management, Co-chair
Emily Hoover, Professor and Head, Department of Horticultural Science, Co-chair
Abou Amara, Graduate, Graduate and Professional Student Assembly Representative**
Todd Arnold, Associate Professor, Department of Fisheries, Wildlife, & Conservation Biology**
Laura Babcock, Director, MN Technical Assistance Program
Jim Green, Assistant Director, Energy Management, Facilities Management
Raymond Hozalski, Professor, Civil Engineering**
Phillip Kelly, Undergraduate, Minnesota Student Association Representative
Heather Mentgen Dickson, Marketing Manager, University Dining Services**
Beth Mercer Taylor, Education Sustainability Coordinator, Institute on the Environment
Ned Mohan, Professor, Electrical & Computer Engineering**
Lance Neckar, Professor, Department of Landscape Architecture**
Christy Newell, Undergraduate, Environmental Science and Policy Management
Andrew Phelan, Assistant Director, Department of Environmental Health & Safety**
William K. Roberts, Associate Director, Parking and Transportation
Amy Short, Sustainability Director, University Services
Virajita Singh, Senior Research Fellow, Center for Sustainable Building Research**
Tim Smith, Associate Professor Bioproducts/Biosystems Engineering and Director of the Northstar Initiative for Sustainable Enterprise at the Institute on the Environment
Deb Swackhamer, Charles M. Denny Chair of Science, Technology, and Public Policy, Humphrey School; Professor Environmental Health Sciences, School of Public Health; & Co-director Water Resources Center**
Brian Swanson, Chief Financial Officer, University Services
Connie Thompson, Assistant Director, Housing and Residential Life
George Weiblen, Associate Professor, Department of Plant Biology
Amelious Whyte, Chief of Staff, Office for Student Affairs

** Members to be replaced in 2012

***UMTC Sustainability Subcommittees
(Energy and Operations, Research and Education and Outreach)
formed to support Climate Action Plan and AASHE STARS
are being re-configured to support 2012 initiatives:***

Living Laboratory Process and Review Panel, Twin Cities

Charged by Provost Hanson and Vice President Wheelock

Monique MacKenzie, Director of Planning and Architecture, Capital Planning and Project Management;

Chair of Living Laboratory Review Panel

Tom Fisher, Dean, College of Design

Brian Horgan, Department Head (Interim), Department of Horticulture

Phillip Kelly, Minnesota Student Association

Kristine Miller, Department Head (Interim), Department of Landscape Architecture

Les Potts, Grounds Superintendent, University Landcare

Michael Richardson, Graduate and Professional Student Assembly

Tom Ritzer, Landscape Architect, University Landcare

Shane Stennes, Sustainability Coordinator, University Services; Staff to Living Laboratory Review Panel

Appendix D:

University of Minnesota System Renewable Energy Installations

University of Minnesota, Duluth

Renewable Energy Installations



Type of System: Solar PV

Description: 6 KW solar array mounted on Bagley Outdoor Classroom.

Type of System: Solar PV

Description: 5.8 KW array on Malosky Stadium/Griggs Field.





Type of System: Solar Thermal

Description: 32 flat panel solar energy collectors heats water for the Regional Fitness Center pool and avoids about 30,000 lbs. of CO₂ emissions per year.



Type of System: Wind Turbine

Description: 1.65 MW Vestas wind turbine. Provides electricity to Morris campus. Sited on City of Morris land.



Type of System: Solar PV

Description: 3 kw demonstration array with one fixed panel and one tracking panel.

Type of System: Gasifier

Description: Biomass gasification facility to provide up to 80% of campus heating needs from gasified agricultural products.



University of Minnesota, Twin Cities

Renewable Energy Installations



Type of System: Solar PV

Description: 38.4 kw solar array located on the roof of the University Office Plaza building at 2221 University Avenue. Array includes full complement of meteorological and system monitoring equipment

Type of System: Solar PV

Description: 15 kW system was formerly on the Science Museum in St. Paul and was moved and reinstalled at the University by Xcel Energy.



Appendix E:

Summary of Key Findings Purchasing Survey

University of Minnesota 2012 System-wide Sustainability Purchasing Survey – Key Findings

During 2012, a system-wide survey on sustainability purchasing was conducted by the Systemwide Sustainability Committee Workteam in partnership with University Purchasing. The purpose of this survey was to gain an understanding of behaviors and priorities of University purchasing professionals from a wide variety of departments and offices, and explore possible barriers to purchasing more sustainable products. There was a large interest in this topic -- response rate was 17.7%. Following are some of the findings from the survey based upon analysis by Professor Deniz S. Ones, Department of Psychology and her research team, Rachel Klein and Brenton M. Wiernik.

It was found that lack of environmental concern is not a barrier to identifying or purchasing sustainable products. The type of the most identified barriers in identifying sustainable products for purchasing were convenience factors and lack of organizational support – for example, lack of knowledge about sustainable products. For example, one participant commented, “I would like a UMN site with info to help me make better sustainable purchasing decisions.”

Conclusions and recommendations as a result of the study are as follows.

- Designated buyers or other support staff are more likely to prepare the paperwork and make the purchase, however faculty and administrators are more involved in making decisions about products
- Interventions for buyers and support staff should be aimed at making purchasing green products easier and more convenient
- Interventions for faculty and administrators should target increasing preference for green products and addressing quality concerns about green products

and,

- Employees who are interested in training about sustainable purchasing want to learn about
 - Local purchasing options
 - Sustainability specification for products and services
- Work to incorporate this information into the existing sustainability initiatives, as well as consider generating specific materials addressing this topics for employees in charge of purchasing

Also, responses about purchases targeted *three categories* of sustainable products to consider separately. Many of these purchases are through U Stores or other University outlets.

- Maintenance Products
- Infrequent/Special Office Purchases
- Everyday/Repeating Office Purchases