Report of the University Council on Environmental Sustainability

Submitted to President Joel Seligman
February 27, 2008

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Report of the University Council on Environmental Sustainability

On November, 16, 2007, President Seligman established the University Council on Environmental Sustainability, writing in an open letter to the University of Rochester community that ". . . few issues present a more global challenge than environmental sustainability," and, "what I ultimately seek are principles and initiatives that will both make the University of Rochester a leader in environmental sustainability and be well harmonized with our ongoing strategic planning initiatives."

In preparation for the Council, the President commissioned the Sustainability Task Force in spring 2007, to inventory existing UR programs addressing environmental sustainability, and to recommend strategies that particularly focused on university operations. The Task Force report catalogued the University's environmental sustainability initiatives going back to the 1980s, and proposed a systematic approach for the future, articulating a Statement of Commitment and Environmental Sustainability Principles and identifying specific initiatives in the areas of: energy, waste management and recycling, purchasing and business practices, land use and building design and construction, transportation and parking, and dining services.

The formation of the Council represents President Seligman's intent to expand the conversation about sustainability, cast it University-wide, and encompass research and academics. Its members include three trustees, the provost, the senior vice president for finance and administration, the senior academic dean of each of the six schools, faculty from throughout the University, student leadership, and members of the development and communications offices. The President provided the Council a three-fold charge:

1. Develop a proposed University-wide vision for environmental sustainability that also addresses academic and research initiatives.
2. Review the Task Force's 25 initiatives and make recommendations regarding their implementation and sequencing.
3. Endorse or modify the Task Force's proposed Principles, based on its consideration of research and academic proposals.

The Council began its deliberations in December, 2007, organized into two working groups: Operations, charged with conducting cost analysis and establishing implementation priorities for the 25 Task Force initiatives; and Academic Vision, assigned to summarize best practices in sustainability at other educational institutions, conduct a preliminary survey of existing research and curricular activities in sustainability at the UR, and propose a draft of a university sustainability vision and action principles. A third working group, Sustainability Communications, was added in January, comprised of Council members and professional staff from University Communications, and charged with developing online and print media.

The outcome of the Council's work, represented in detail in the enclosed pages, corresponds with the three-part charge and includes the communications initiative:

1. A refined and prioritized list of the 25 operations initiatives in the Sustainability Task Force's report, detailed here in Appendix A, along with three recommendations: to implement the initiatives within a prescribed timeframe; to establish targets and develop metrics for gauging progress on current and future initiatives University-wide; and to link operational initiatives to academic programs through faculty supervised projects.

2. A provisional vision for sustainability, providing a starting point for a longer-term, University-wide conversation, to result in an integrated roadmap for sustainability at the University of Rochester.

3. Endorsement and modification of the 12 principles-based actions in the Sustainability Task Force report, adding nine more, most prominently the creation of a Sustainability Council to provide integrated advice on all aspects of sustainability: operations, research, curriculum, and community.

4. A sustainability page on the UR website, as step one in a coordinated sustainability communications program, recommended by both the Sustainability Task Force and the Council's Academic Vision working group, and launched at the end of January, 2008: http://www.rochester.edu/sustainability/overview.html

The University of Rochester has a well-established record of commitment to sustainability in operations and development and was, notably, a 2006 recipient of the United States Environmental Protection Agency's Region 2 Environmental Quality Award. Likewise, sustainability is percolating actively in academics at the University via two undergraduate degrees, a proposed

cluster, many related courses, a diversity of faculty across schools and departments with academic interests in sustainability and students engaged in research, symposia, curricular proposals and website development.

While to date these efforts have been disparate and sometimes isolated, they are consistently excellent. In articulating a cohesive vision, and creating a vehicle for integration and communication, the Council believes the University of Rochester will be recognized as an academic leader in environmental sustainability.

Charge #1 Propose a Vision for Sustainability for the University of Rochester

We propose that the following be the starting point for a University-wide conversation regarding sustainability at the University of Rochester:

Few issues present a more global challenge than sustainably "meeting the needs of the present without compromising the ability of future generations to meet their own needs." [1] The University of Rochester aims to be a leader in promoting a sustainable society through our academic, educational, patient care and health programs, in the operation of our campuses and facilities, and in our interactions with the larger community of which we are a part.

Mission as a Research University

Our mission is to pursue research and promote education and, through these often multidisciplinary activities, to increase understanding of sustainable development in local, national, and global communities.

Operational Stewardship

We are committed to sustainable development and operating practices through the responsible management of building design, construction, and renovation, landscape practices, energy use, water and waste management, emissions, transportation, and procurement, within a framework of regulatory compliance and fiscal prudence.

Community Responsibility

As a major employer and home to the premier medical research institution and health care provider in upstate New York, the University of Rochester has a special responsibility to promote sustainability in its research, curricular, clinical, and outreach efforts and to play a proactive and collaborative role in contributing to an environmentally healthy community.

[1] The Brundtland Report, (United Nations) 1987

Charge #2 Review and Recommend Implementation and Sequencing of the Sustainability Task Force Initiatives

The Council has reviewed the 25 operational sustainability initiatives articulated in the
Sustainability Task Force report and determined priorities for implementation.

1.) After further consultation within the task force, including analysis of budget implications, we assigned priorities based on the following timeframe for implementation.

1 Already done or will do within 12 months;
2 Will do within 24 months;
3 Will do beyond 24 months.

We recommend pursuing each initiative as indicated on the schedule attached in **Appendix A**.

2) We recommend that targets be established and metrics developed and implemented to monitor the impact of each of these and future initiatives, particularly with respect to environmental benefits. These can be used to inform members of the University community of the progress being made in our sustainability programs. The information will also assist decision making at the departmental and individual level. For example, individuals should be made aware of the salutary effects of using Energy Star equipment, turning off electronic devices, adjusting thermostats, etc. There is eagerness within the University community to have such information.

Beyond the measurement of individual initiatives, targets should be established and metrics developed for the University's overall progress in its campus-wide sustainability programs. Performance measures should take into consideration widely accepted national standards as well as current information from peer institutions and other organizations.

3) We recommend linking operational initiatives to academic programs by engaging students in projects under faculty supervision. A current example is the Envirofootprint course taught by Katrina Korfmacher, Ben Ebenhack, Jack Fraser, and Maryann McCabe. Students receive suggestions for projects that would be useful to operations and are encouraged to contact Richard Pifer, Associate Vice President for University Facilities and Services, if interested to pursue them.

Charge #3 Endorse or Modify the Task Force on Sustainability Principles

The Council endorses the Task Force on Sustainability's Statement of Commitment, including it in full in the Operational Stewardship statement of the proposed UR Vision for Sustainability. We also endorse the twelve principles for action enumerated with the statement, recognizing that they provide specific direction for realizing the commitment in a coherent way, in operations throughout the University (see Appendix B).

We believe that to build on the University's framework for sustainability initiatives in operations and facilities, we should establish ongoing leadership in the academic arena to bring the numerous excellent but often isolated research, teaching, and student initiatives into a more cohesive and synergistic whole.

We recommend modifying the Task Force's guiding principles by adding nine strategic actions to include academics in the commitment, and result in an integrated roadmap for sustainability at the University of Rochester.

Recommendations:

1.) Create a University Council on Sustainability, reporting to and supported by the Provost. This group would provide integrated advice on all matters related to sustainability: research, curriculum, campus operations, and community. Depending on its recommendations and implementation timeframe, this group may become a standing body, with resources as needed, responsible for ensuring continued progress.

We recommend that the Council's initial task be to:

2.) Engage the University community in campus-wide development of a fully articulated vision for sustainability, in research, curriculum, campus operations and community, that builds on existing initiatives and strengths and is consonant with the University's Strategic Plan.

The Council should then:

3.) Develop a plan to insure that all members of the University community gain some understanding of the complexities of sustainability through a variety of mechanisms that might include seminars, workshops, conferences, project work, and community outreach in addition to coursework and research.

4.) Articulate mechanisms by which the University can facilitate and support sustainability-related research, throughout its schools, departments, and other units, and promote integration of sustainability efforts related to campus, curriculum, and community.

5.) Develop an annual "State of Sustainability at UR" report, to be presented to the Faculty Senate and the wider community, on the progress of sustainability efforts in the University as a whole, based on targets against which we assess our performance, and covering academic matters, medical institutions, campus operations, and community.

6.) Recommend whether the University, currently a member of the American Association for Sustainability in Higher Education, should join any of the other associations related to sustainability in higher education, such as the President's Climate Commitment or the National Council on Science and the Environment.

7.) Consider whether, and if so, when and what, external review might better guide our efforts.

8.) Establish and ensure ongoing maintenance of a comprehensive catalogue of sustainability initiatives at the University and develop a web site and other communications media and outreach programs to raise the University's sustainability profile.

9.) Consult as appropriate with the broader University community, including students, faculty, staff, administration, trustees, and surrounding community members and leaders.

Appendix A

University Council on Sustainability
Recommended Operations Priorities

Priorities: 1 Already done or will do within 12 months
2 Will do within 24 months
3 Will do beyond 24 months

I. Initiatives Already Undertaken

A. No Incremental Costs to Operating Budgets

1. **Maximization of Cogeneration Load** (#5)
   Project is expected to generate savings over future years with additional modifications and increased hot water loads. Capital investments will be reviewed as part of the capital budget process.
   Priority: **1** Absorption chiller – replacement of existing chiller using already budgeted funds.
   Rationale: Driven by Central Utility efficiency initiative. No separate funding due to sustainability.
   Priority: **2** Increase hot water loads to create more efficiency and increase capacity.
   Rationale: This will be an ongoing project as funds become available or as part of renovation projects.

2. **Compact Fluorescent Light Bulb Distribution Program** (#6)
   The program was initiated this fall with approximately 3,800 cf lbs distributed to students. The program is being expanded to the rest of the University. Initial cost of program ($15K) was funded from the existing River Campus facilities budget. Ongoing investment of $11K will be included in annual budget. Minimum savings to the University is $14K per year net of all costs.
   Priority: **1**
   Rationale: Program already initiated and will generate savings. No special funding required.

3. **Adherence to Green Printing Practices** (#16)
   Green printing practices have already been instituted by Communications through printers' use of recycled materials and soy based inks for University publications. Use of recycled ink cartridges will be encouraged through the office supplies website. Future initiatives will include campaigns reducing printing and copying.
   Priority: **1** Campaign to reduce copying, printing, and use recycled printer cartridges, etc.
   Rationale: No incremental costs.
   Priority: **2-3** Mandate recycled paper use and the purchase of duplex copiers/printers when replacement of existing equipment is required.
   Rationale: Potential incremental costs.

4. **Dining Services Initiatives** (#17-20)
   Initiatives that have already been implemented include buying locally grown foods; recycling glass, plastic and metal containers; and composting. These programs do not require any incremental costs. The University is also currently investigating options for a conversion program where fry oil would be converted to bio-diesel fuel.
   Priority: **1** Local foods, recycling, composting.
   Rationale: Already implemented. No incremental costs.
   Priority: **2** Fry oil to diesel conversion and use.
   Rationale: Potential incremental costs. A pilot program is under review with The College.

B. Net Cost is Budget Neutral Within a Reasonable Payback Period (7 Years)

1. **Retro-commissioning of University Buildings** (#1)
   Requires an annual commitment of divisional Operating and Maintenance funds for outside contract support and an annual capital commitment. Actual capital costs will need to be determined based on the buildings selected for retro-commissioning each year. Annual costs are expected to be offset by energy savings. Projects will need to be funded from divisional budgets that "own" the building being retro-commissioned (e.g. SMD, College). A business case will need to be developed on a building-by-building basis and discussed with the appropriate academic divisions.
   Priority: **1**
   Rationale: Major savings possibility. Budget implications to be reviewed by divisions on a building-by-building basis. Cost reduction initiatives with accompanying sustainability benefits (LEED) – ongoing, multi-year program.

C. Incremental Costs

1. **Development and Construction** (#11-13)
   Establishment of LEED Silver Certification as the target and LEED Certification as the minimal standard for major construction projects. The decisions on the level of LEED certification have been and will continue to be made on an individual project basis. Fulfillment of LEED certification could add to a building's construction cost (incremental costs have been estimated by Emory in the range of 0.8% to 2%) but should have lower life cycle costs due to energy efficiency. As a result, payback periods range from three to eight years.
   For smaller scale projects and renovations not covered under the LEED policy, sustainable guidelines will be incorporated into the design and construction standards (incremental costs to be identified).
   Priority: **1**
   Rationale: Requires analysis of each project. Essential for credible sustainability program.

Appendix A

II. Future Initiatives – To Be Undertaken

A. No Incremental Costs

1. **Implement an Environmentally Preferred Purchasing Policy** (#15)
   The University is in the process of developing an Environmentally Preferred Purchasing policy. This policy will introduce into the competitive bidding process terms and conditions related to a vendor's commitment to minimizing adverse environmental impacts while maintaining quality and cost effectiveness.
   Priority: **1**
   Rationale: No incremental costs.

2. **Participation in Energy Star Program** (#8)
   Initial investment is for student assistance with project implementation. Costs are to be borne by the Central Utilities budget.
   Priority: **1**
   Rationale: Symbolic value, provides access to benchmarking data, modest costs ($5K per year).

3. **Campaign to Address End-user Behavior** (#9)
   Energy saving ideas are being developed jointly with the Task Force on Cost Containment and the group will work with the Office of Communications to periodically inform members of the community of energy and cost saving opportunities. Communication vehicles will be through existing websites and publications such as "@Rochester" and "Currents".
   Priority: **1**
   Rationale: No incremental costs. Raises awareness.

B. Net Impact is Budget Neutral or Positive

1. **Integration of Building Technology and Scheduling** (#2)
   An initial investment of $216K is required for integration development and evaluation (paid back within 1.7 years). Further investments would be determined after evaluation of the initial phase of the project.
   Priority: **2**
   Rationale: Pilot on River Campus.

C. Incremental Costs

1. **Hiring a University Recycling Coordinator** (#14)
   Incremental costs are estimated at $52K-$70K. These costs would be centrally allocated to all divisions.
   Priority: **1**
   Rationale: Necessary for credible sustainability program.

Appendix A

III. Future Initiatives – Further Analysis Required

A. Optimization of Air Flow in Laboratories (#3)

Initial investment of $100K is required for an engineering study which will evaluate the current state and required future investment. Analysis will look at three levels of investment with a view to implement the option with the greatest payback.

***Priority*: 2** Training and education; work on operational aspects of implementation.

Rationale: Has health and safety implications and requires training programs and monitoring.

***Priority*: 3** Engineering study and implementation.

Rationale: Potential savings opportunity.

B. Utility System Upgrade to Increase Efficiency (#4)

Initial investment of $50K is required for an engineering study which will evaluate the current state and required future investment.

***Priority:* 1**

Rationale: Ongoing program to be accommodated within existing Central Utilities budget.

C. Campus-wide Lighting and Occupancy Sensor Retrofit (#7)

Initial investment of $100K to evaluate current lighting systems and a feasibility study to identify opportunities and savings. Once the initial study is complete, an implementation plan would be developed. Estimated cost of the full implementation is $3.0M with a payback in 4 years.

***Priority:* 2**

Rationale: Will evaluate partnerships with various external vendors.

D. Purchase of Green Energy (#10)

The purchase of 20% of the University's electrical requirements from wind power would cost $500K.

***Priority:* 3**

Rationale: Significant annual cost. Continue to evaluate. (The maximization of the cogeneration load is a higher priority and will provide a more efficient sustainability impact.)

E. Transportation and Parking (#21-24)

Detailed recommendations are still being developed that will address incentives for use of bus services and remote parking facilities. The purchase of hybrid vehicles for planned replacements in the security and parking fleets is being planned for fiscal year 2009.

***Priority:* 1** Purchase of hybrid vehicles. 19th Ward mortgage incentive.

***Priority:* 2** Major parking incentive overhaul. Public transportation options.

Rationale: Parking/transportation plan requires major effort with employee evaluation implications.

Appendix B

Sustainability Task Force
Statement of Commitment and Environmental Sustainability Action Principles

This University is committed to sustainable development and operating practices through the management of building design, construction, renovation, landscape practices, energy use, waste, emissions, transportation and procurement while maintaining regulatory compliance and exercising fiscal responsibility.

The following principles guide future development on University property:

1. Reduce the environmental impact of future development on University property through the establishment of environmentally responsive planning guidelines.

2. Design, build and operate University facilities to accepted sustainability standards.

3. Establish an energy conservation and efficiency program that accounts for growth of new facilities and the increased demand on existing facilities.

4. Minimize the use of non-renewable energy sources by University facilities.

5. Encourage alternative means of transportation for the University minimizing the impact of single-occupancy vehicles.

6. Promote environmentally appropriate maintenance practices including the use of environmentally friendly products.

7. Reduce solid waste and enhance programs for reuse and recycling.

8. Maintain safe and efficient use, tracking, storage and disposal of hazardous waste and toxic materials and pursue less toxic alternatives.

9. Preserve and enhance the biodiversity of the University's natural environment.

10. Incorporate environmentally conscious criteria in all procurement practices.

11. Enhance and promote sustainability practices in our dining program.

12. Create appropriate tracking and training programs to measure and ensure the success of these initiatives.

Appendix C

University Council on Sustainability
Academic Efforts in Sustainability: Overview of Existing UR Programs

This document summarizes the breadth of academic efforts related to sustainability currently underway at the University of Rochester. While this overview of existing academic efforts is not complete, we observe that:

- There are numerous academic programs that have sustainability as a core focus, and an even larger number of related courses, research programs, and outreach efforts. A more comprehensive inventory of existing efforts would need to start with an agreed-upon definition of environmental sustainability. This definition could serve as the basis for conversations with department chairs and faculty across the university to determine how their work relates to environmental sustainability.

- There is an impressive diversity in the number of schools and departments at the University of Rochester that house faculty with existing academic interests related to sustainability. This suggests that broadly multidisciplinary initiatives to support development of these interests could yield significant additional sustainability scholarship across the University.

- Efforts that currently exist lack cohesion. An overview of universities that are widely regarded as having successful programs in sustainability reveals the importance of strong support for and coordination of multidisciplinary teaching and research. This lack of coordination presents a significant impediment to expansion of sustainability-related research and teaching at the University of Rochester.

College of Arts, Sciences, and Engineering

Earth and Environmental Science/Studies

The Department of Earth and Environmental Sciences (EES) offers two undergraduate degrees. In addition to EES classes, coursework for the Environmental Science BS includes Biology, Physics and Chemistry courses; the Environmental Studies BA also includes three to four social sciences/humanities courses (political science, philosophy, anthropology, etc.). There are approximately 5 EES graduates each year. Recent enrollment trends show a sharp increase in numbers of students in introductory courses.

Independent Major in Sustainability and "Sustainability Clusters"

An increasing number of students have designed independent majors or Take Five projects related to sustainability. These students have been advised by faculty in various departments who estimate that 3-5 students per year design sustainability-related majors. In 2007-2008, around 6 students did KEY or Take Five projects in this field. Many of these independent majors have emphasized a social sciences perspective. There is no systematic support for

advising or guiding these majors, although individual faculty members in Engineering, Anthropology, and EES have worked closely with these students. In addition, students in a variety of majors have proposed Sustainability Clusters and have developed their own list of relevant courses.

Engineering

Engineers have and will continue to create technical solutions to many environmental problems. At the University of Rochester, engineering faculty members' research related to fuel cells and improved photovoltaics is a good example. Other prominent areas of research related to energy and sustainability are inertial confinement fusion, promising non-polluting energy from deuterium and tritium, and conservation strategies in microelectronics, promising greatly reduced power consumption for devices and servers. The Sustainability and Global Energy Project develops appropriate solutions for developing countries. Several courses focus on training students in engineering approaches to problems of environmental sustainability, including CHE 150 Green Engineering for a Sustainable Environment. The Forbes Prize, an annual competition for Engineering student teams to develop business plans for novel ideas, has been awarded to sustainability-related projects several times.

Other related efforts

As noted above, there are many courses in diverse departments with a focus on sustainability. In addition, sustainability is particularly fertile ground for broadly interdisciplinary courses and research. The University Cluster in Interdisciplinary Studies (UCIS) on Global Studies supports faculty interests in topics related to global sustainability, and a new Sustainability UCIS was formed in 2007. A number of courses with multiple cross-listings exist on topics related to sustainable development, environment, health, and policy. Several new courses have been initiated with funding from the Center for Entrepreneurship, including one taught by adjunct faculty in Biology and another team-taught by Anthropology, Environmental Health, Technology Transfer, and Engineering faculty. New majors being introduced in Public Health provide further opportunities for engagement with global and environmental issues.

Memorial Art Gallery

Nature has always served as an inspiration for visual artists. In addition, artists often express messages about human interactions with the environment through their work. Several recent exhibits at the Memorial Art Gallery exemplify this theme, including the "Wild by Design" quilt show and a recent exhibit of art made from recycled materials.

Appendix C

Eastman School of Music

Musicians and composers throughout the ages have been inspired by nature; faculty and students in the Eastman School are no exception. For example, one faculty member has composed a series of five pieces to be performed in parks. Another faculty member recently published an article on music and environmentalism: "The Pastoral after Environmentalism: Nature and Culture in Stephen Albert's Symphony: River Run." On a practical note, many musicians have recently become actively involved in promoting sustainable management of the tropical hardwoods needed to make their instruments, such as the endangered Brazilian pernambuco for cello bows and rosewood for guitars.

Warner School of Education

Given the importance of education in promoting environmental sustainability, it is not surprising that several Warner School classes incorporate examples and projects related to environmental sustainability. For example, the "Integrating Science and Technology" class helps future educators develop skills related to literacy learning as social practice and utilize model-based qualitative and quantitative investigative research methods as they plan and implement a week-long summer science camp for middle school children. At the camp, the Warner School students teach the children about water quality in Lake Ontario through inquiry-based activities such as measuring bacteria and dissolved oxygen levels near a swimming area. At least two additional courses, "Teaching, Curriculum and Change: (ED 404) and "Theory and Practice in the Teaching and Learning of Elementary Social Studies" (EDU 428) also devote some attention to environmental sustainability.

Simon School of Business

Business schools are increasingly recognizing the need to prepare their students to deal with the "triple bottom line" (people, planet, profit) in their future careers. The Simon School's economics-based orientation provides a powerful framework for understanding the role of preferences and incentives in positively influencing environmental sustainability. This framework also allows faculty and students to analyze and predict the effectiveness and broader consequences of policies (either at the level of an individual university, such as the University of Rochester, or society at large) designed to promote environmental sustainability. Several Simon School courses include units related to sustainability. For example, "Supply Chain Management" contains a module that focuses on "closed loop supply chains" and discusses management issues related to reverse logistics, remanufacturing, recycling, etc.

School of Medicine and Dentistry

The University has a special responsibility for greening its operations and curriculum because it houses a premier health institution. Within the School of Medicine and Dentistry there are multiple research, teaching, and outreach efforts related to environmental sustainability. The Department of Community and Preventive Medicine offers several relevant courses (including "Medical Ecology" and "Public Health and the Environment"). Environmental issues

are increasingly integrated into the School of Medicine curriculum. The Department of Environmental Medicine and its Environmental Health Sciences Center support a wide range of research and courses that explore the impacts of pollution on human health. Community-based research and outreach programs address asthma, childhood lead poisoning prevention, healthy homes, and the built environment and obesity, among other environmental health risks. The medical center works with "Hospitals for a Healthy Environment" (H2E) to promote environmental excellence in healthcare. The planned undergraduate major in Environmental Health may connect some of these efforts to programs on the River Campus.

School of Nursing

The School of Nursing recognizes the importance of environmental contributors to health and insures that its students are aware of these connections. Faculty have active programs of research in the areas of environmental triggers of asthma, injuries in the home environment, and preventive asthma care for children. In education, undergraduate nursing students study workplace environmental health in "Contexts of Health Care" (NUR 355). During community service assignments in "Politics, Public Health Policy, and Ethics in Leadership" (NLX 468), graduate students analyze ethical and policy issues, including lead hazard reduction and disaster preparedness. The School's Center for Nursing Entrepreneurship EDvantage program offers a Certified Asthma Educator Preparation Course (NSG: 080) for nurses and other professionals in the community seeking certification to advance their careers.

Appendix D

University Council on Sustainability
Best Practices in Sustainability, Other Institutions

Overview: Best Practice Themes

Best Practice Reviews:

Source: *Sustainability on Campus: Stories and Strategies for Change*
Eds. Peggy F. Bartlett and Geoffrey W. Chase, The MIT Press, 2004

Additional Institutional Reviews:

Source: American Association of Sustainabilty in Higher Education website

Appendix D

Overview: Best Practice Themes

Our committee was charged with collecting other institutions' "best practices" related to research and curricular aspects of sustainability. Each of our committee members was asked to highlight a different chapter from *Sustainability on Campus*; several additional cases were distilled from the 100+ summaries on the American Association for Sustainability in Higher Education (AASHE) website: http://www.aashe.org/resources/profiles/profiles.php.

We asked that each summary address:

1) The institution's mission statement related to academic environmental sustainability

2) How the academic efforts are administered, coordinated, and supported

3) What elements are relevant to the UR context.

Definitions

Most institutions adopted definitions of sustainability that addressed the "triple bottom line" of environment, economy, and society (or "People, Planet, Profit"). Related academic approaches were universally multidisciplinary.

Vision statements

Many developed vision statements through an extensive campus-wide process. Emory and Penn State's vision statements evolved over a 2-3 year grassroots process involving students, faculty, operations divisions, and administration. These statements vary in form, length, and focus, but virtually all address interactions among campus/operations, curricula, research, and the local community.

Process

Many of the case studies describe an iterative process of student or faculty-led projects, involvement of operational staff, commitment and leadership by administration, institutionalization of programs, and broad oversight by a University Council. Often a small number of faculty leaders (a biologist at Penn State, a political scientist and ecologist at Illinois Wesleyan, and anthropologists at Emory, Marymount, and Pitzer) generated initial momentum, but few lasting changes resulted without wider institutional support from other faculty, operations, and administration.

Appendix D

Promoting environmental sustainability in curricula

A wide variety of strategies exists, depending on the type of institution and existing academic programs. Several of the institutions received foundation or government grants to develop new degree programs; others dedicated internal funding to these efforts.

- Emory (Piedmont Project) and Northern Arizona University (Ponderosa Project) both had 'place-based' curriculum development projects that provided mini-grants and resources to faculty from all disciplines (natural and social sciences, arts, languages, and humanities) to integrate environmental sustainability.
- Many institutions had existing environmental science or studies programs that expanded to serve as a hub for environmental sustainability curricula (Illinois Wesleyan, Allegheny). These programs often offered "campus problem solving courses" to document baseline conditions, proposal alternatives, and pilot initiatives).
- Oakland College developed a sustainability requirement for all degree programs.
- The Aspen Institute recognizes the top business schools and individual faculty for environmental initiatives; such prizes may motivate or at least encourage new efforts.
- Johns Hopkins University noted "a special responsibility for greening its operations and curriculum because of the presences of a premier health institution" and as the largest private employer in Maryland.
- Pitzer College partnered with local elementary schools to train college students to teach environmental education at the Bernard Biological Field Station.
- Duke's Fuqua School of Business offers an annual Footprints conference to "celebrate the convergence of private, public, and social sectors to create sustainable social and environmental benefit."

Supporting research in environmental sustainability

Many research institutions created or expanded free-standing multidisciplinary institutes to promote environmental sustainability-related teaching and research. Some of these are topically focused (e.g. Berkeley's Institute of Urban and Regional Development, UVM's National University Transportation Center), while others are broadly interdisciplinary (Nicholas School of the Environment, Berkeley Institute of the Environment). Many of the research and teaching initiatives are grounded in an issue of campus or local concern (urban sprawl and Emory; ecotourism and economic development at Allegheny; the Finger Lakes at Ithaca). Other institutions (Brown) offer intramural interdisciplinary research funding.

Appendix D

Coordinating sustainability efforts

Many cases described initiatives by students and individual faculty that had promising beginnings but were not sustained over time due to lack of institutional commitment and coordination. Those campuses with the most successful efforts had central staff that coordinated academic, campus, and community initiatives, usually overseen by a diverse university-wide committee. These staff held a variety of positions; for example, a Sustainability Coordinator in the Office of the Executive Vice President (Duke University), a Dean for Environmental Affairs (Middlebury College), and a Director of Sustainability Initiatives (who reported jointly to the Offices of the Executive Vice President for Finance and Administration and Executive Vice President (Provost) for Academic Affairs) (Emory).

Sustaining initiatives

Secure funding, leadership, interdisciplinary commitment, and staff support are clearly important to the ongoing success of these programs. Several of the chapters also emphasize: 1) short term goals within a long term vision; 2) monitoring and accountability; 3) recognition and rewards for interdisciplinary work.

Best Practice Reviews

Chapter 1:Penn State University

Penn State's effort began when Christopher Uhl, a professor of biology with studying human impact in Amazon ecosystem, decided to shift his attention to the Penn State ecosystem. The first step was to develop sustainability indicators. This effort was initiated by Prof. Uhl and a small group of student volunteers, who over time were joined by others. The focus was on defining best or sustainable practices for each university subsystem. For example, energy sustainability indicators measured if Penn State's energy system was becoming less dependent on fossil fuels, less wasteful, and less polluting over time. In total 33 indicators were developed. See http://www.bio.psu.edu/Greendestiny/steps.shtmls).

Students did most of the work in the form of projects. It was decided to not follow the provost's advice to ignore qualitative indicators, leading to indicators such as: "technology: enhancing or undermining community" (this was then used to analyze the proposal to replace manual leaf rakes by leaf blowers). The report was formally released to the university community in a large open air ceremony in 1998, with an updated version published in April 2000.

The next step involved the creation of a mission statement. Uhl and two students spent three months drafting a mission statement and then collected feedback from almost 150 deans, department chairs and administrative leaders. After implementing changes based on the feedback received, the mission statement was unanimously approved by the faculty senate and subsequently approved by the president. Note: this was a grass-roots effort, without prior sanction or approval! The mission statement itself is a 15-page

document with sections on energy, water, material resources and waste disposal, food, land, transportation, buildings and community.

Next it was decided to analyze the Biology building on campus. Uhl had 20 students do projects as part of a course with the goal of cutting the building's ecological footprint in half. Recommendations were as detailed as recommended margins and font size for printed documents (this document follows these recommendations) as well as recommending the use of two-sided printing that would cut the building's annual consumption of paper from over 1,000,000 pages to around 300,000 pages, a reduction in consumption of 555 gallons of water, 360 kWh in electricity, 2,650 ft^2 of forest land and almost 800 lbs of CO_2 emissions per building occupant! Currently, Penn State is formulating its "Finance and Business Strategy for Environmental Stewardship."

Relevance to UR

Overall, what started as a grass-roots effort seems to have taken fairly solid roots at Penn State, and is impacting the operations on campus. There is less information on how sustainability is integrated into the curriculum, but it appears that there would be plenty of opportunities for ongoing student involvement through course related and independent projects. Penn State also has a Center for Sustainability, with as mission "serving Penn State and the Commonwealth of PA in developing and applying sustainable principles in education, research, and practice." This center seems to be receiving significant outside funding. There are a lot of interesting detailed ideas here that could be of use in various UR efforts.

Chapter 2: Illinois Wesleyan University

Illinois Wesleyan University created a "Green Task Force" (GTF) in 2000, with a goal of proposing ways to reduce the environmental footprint of the university. In two years, the GTF significantly expanded the University's recycling program, used "dumpster dives" to calculate the recycling rate of the University, increased environmental awareness, supervised a campus energy audit, and began reduction of paper and electricity use.

A minor program in Environmental Studies had been established in 1998, and with funding from a Rockefeller Foundation grant, a full-time faculty position was created. In May 2000, sixteen students enrolled in a "Greening the Campus" course, where they assessed the environmental impact of five different aspects of campus life: solid waste management, energy use, water consumption, grounds management, and dining services. They presented their findings at a conference with attendees including top administrators and staff.

The Green Task Force included students, staff, faculty, administrators, and physical plant personnel. A standing committee managed seven different committees, focused on dining services, energy consumption, environmental education, purchasing, reduce/reuse/recycle (RRR), toxics and grounds management, and water use. The first

semester was difficult, as only the RRR committee met regularly. The committee identified and compared options for a new vendor for recycling pick-up and processing, and waste reduction and recycling in dining halls was an achievable goal. Other committees met infrequently, and did not propose many new strategies. In general, it was found that students did not have the organizational skills required for leadership, although more than half of the committee chairs and co-chairs were students.

Presentations by noted environmentalists were used to increase awareness and enthusiasm for greening efforts campus-wide (funding came from the Rockefeller Foundation grant). Recycling efforts were put into place during spring 2001, and advertised through publicity measures, with "Think Green" banners throughout campus. For the major recycling kick-off, a day's worth of garbage and 513 pounds of food waste (the amount generated in one day by the dining hall) were dumped in the quad. The impact was notable; students invite an environmental scientist to speak at a student research conference, the Office of Residential Life made the environment part of the freshman Fall Festival, and students were given "Think Green" canvas bags.

Through the "Greening the Campus" course, one of the ES faculty members learned (to his surprise) that the director of the physical plant had implemented a comprehensive energy management plan beginning in 1984, which included variable speed drives for the heating and cooling systems, energy management computers for new and large buildings on campus, replacement of old and inefficient steam lines and boilers, and replacement of incandescent bulbs with fluorescent ones. Collaboration with the physical plant became invaluable to greening efforts.

Several problems were faced, including resistance to change, a lack of financial commitment, and a shortage of GTF leadership, resulting in burnout. One major issue was the location of recycling bins; while the grant money could be used to buy them, administrators did not wish to mar the aesthetics of campus with the bins. Ultimately, appealing to the university President was successful. Another major issue was the lack of university commitment to finance and institutionalize green projects. The money invested by the university to improve energy efficiency was made for financial reasons. No money was initially allocated to the GTF, and it was clear that proposals would be more likely supported if they did not require university funding. When more recycling bins were required, the university was persuaded to pay for them, but funding for campus greening has not yet been committed. A permanent Council for a Sustainable Campus has been established, but a position for a full-time coordinator of environmental affairs has not yet been created.

Relevance to UR

Increased recycling efforts are a major starting point for the University of Rochester, and would be most successful with a large advertising campaign. Improving building energy efficiency is also important as discussed by the Council for Sustainability. The funding difficulties met by Illinois Wesleyan are different from what we face here; their funding came from a grant to the Environmental Studies program, while it will come from the different schools here.

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Chapter 3 Emory University

Peggy Barlett, a senior faculty member and department chair relays what has occurred at Emory through largely grass-roots activism. She cites the Margaret Mead observation that cultural change is led by small groups of thoughtful people working together, and recounts the impact of an Ad Hoc Committee on Environmental Stewardship, formed in 1999 through an initial gathering of 21 faculty members and staff.

The Ad Hoc Committee's efforts ultimately resulted in:

- Regularly scheduled woods walks and the better preservation of nearby Baker Woodlands
- The development of a campus-wide mission statement; a Faculty Green Lunch Group
- The Piedmont Project, Emory's effort to "green" the curriculum through two days of lectures, discussions, and pedagogical exercises (usually held after graduation; modeled after NAU's Ponderosa Project; held for the last three years; derived from the assumption that the odds of a course requirement for all students at Emory were nil).

Reading the Barlett Chapter, along with a recent edition of BizEd (a business higher education periodical published by its main accrediting agency, the American Association of Collegiate Schools of Business) helped to underscore the importance of fostering a focus on sustainability at the grass roots level, in order to ensure that such an endeavor is itself sustainable; and developing mechanisms centrally to recognize/nurture grass roots efforts.

The Kennedy School of Government, for example, now holds annual recognition programs for innovations in Indian Country in order to encourage socio-economic development on tribal lands. The Aspen Institute (as recounted by BizEd) has also begun annually recognizing the top business schools and individual faculty pioneers in terms of their efforts to address environmental responsibility.

Relevance to UR

Perhaps we could develop some similar initiatives at the UR to annually recognize best practices at not only our campus but other university campuses. By recognizing such examples we could foster peer learning and inevitably bring credit to our own institution by being the home of the annual prizes. There might be two categories of prizes: one recognizing best initiatives to promote sustainability on an individual university campus; the other to highlight broader, society-wide contributions to sustainability that are brought to life by the faculty/staff/students on a particular campus. An alum/friend might be willing to endow such prizes and thereby lend a name and provide the means to bring such a worthwhile cause to life.

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Chapter 4 Northern Arizona University

NAU's Ponderosa Project was aimed at infusing sustainability in the curriculum. The vision articulated through the project is: to provide a forum for faculty to explore new interdisciplinary approaches to teaching sustainability, while lobbying for stronger university-wide commitment.

Their approach involved a small team recruiting a larger team, by inviting 40 faculty members to participate with an expectation to get 20 actual participants. The project characteristics were:

- Participants were enticed with small ($1k) stipends
- Participants were required to revise 1 general studies course to address sustainability
- Outside experts were brought in to discuss technical/resource issues
- A balance was sought between presentation and interaction
- A balance was also sought between content and pedagogy

The driving assumptions behind the project were:

- Faculty benefit most from being offered a broad range of approaches, ideas, and resources
- Education for sustainability is both content and pedagogy based
- Faculty know best how to revise their own courses
- Stepping beyond disciplinary confines is a good way to help faculty embrace sustainability

The chapter offers examples from specific courses that added a sustainability topic and notes challenges encountered, particularly regarding funding and divergent visions about how to proceed. Two primary conclusions derived from the experience: leadership is critical and clarity of focus is critical.

<u>Relevance to UR</u>

The Ponderosa Project offers some interesting connections between sustainability and interdisciplinary work. This may be a significant aspect of engaging sustainability at UR. They seem somewhat obvious, but are perhaps worth noting, the Ponderosa Project premises that Sustainability is both an issue of content and pedagogy and that the faculty teaching courses are best positioned to make revisions to include sustainability content. Comments included in the chapter on the ways in which this can reshape some pedagogical thinking are interesting.

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Chapter 5: UC Berkeley

Mission Statement

None given; however, according to the AASHE website entry: "In 2007, the University of California System announced the adoption of a pioneering Policy on Sustainable Practices," with sustainability emerging as a key goal for UC Berkeley.

Administration/Coordination/Support

This chapter focuses on the development of the interdisciplinary graduate program (the Energy Resource Group, ERG) over three decades. The program was developed by a multidisciplinary group of faculty (natural, physical and social scientists) in response to energy and environmental crises to "sustain faculty interaction and train graduate students." Its success was attributed to a strong problem orientation (primarily energy, but expanded to environmental), academic excellence, a strong transciplinary core (faculty, courses, and advising), and disciplinary departments' support for its interdisciplinary approach. This allowed it to survive multliple efforts to merge it with other programs.

In other areas, sustainability efforts of faculty and students are broadly supported by the Chancellor's Advisory Committee on Sustainability (CACS) and Berkeley Institute of the Environment (BIE). "With over 20 members from staff, students, faculty and alumni, CACS has integrated environmental sustainability with existing campus programs in education, research, operations and public service by authoring the Campus Sustainability Assessment 2005…UC Berkeley is at the forefront of curricula and research in all components of sustainability."

There are currently approximately 250 faculty members and 375 classes available to both undergraduate and graduate students with the environment as their focus. Approximately 80 courses deal directly with sustainability, while the remainder deal with many diverse subjects such as environmental policy and law, ecology and climate change. Sustainability related courses represent offerings from 30 different departments. There are currently 51 graduate and 35 undergraduate environmental degree programs offered at Berkeley, with energy research as a strong trend among many of these programs." The AASHE summary also mentions 32 related student groups and 64 interdisciplinary research programs (including the Berkeley Institute of the Environment, Institute of Transportation Studies, Institute of Urban and Regional Development)

Relevance to UR

There are several examples of interdisciplinary academic programs that bridge Schools at the U of R, including the Department of Biomedical Engineering and the new undergraduate Public Health major. If this is a model the University chooses to expand, the ERP's experience may be relevant. Berkeley's broader environmental commitments and curriculum outside ERP also are very strong and could be strong models for both academic and campus-based programs.

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Chapter 6: Michigan State University

MSU created an environmental sustainability committee charged with a mission to highlight and market the university's positive environmental impact, as well as develop strategies to minimize negative impact. The final proposals included:

(1) Developing a committee to conduct a campus environmental assessment
(2) Developing courses on environmental sustainability open to the entire university community

When creating the syllabus for the seminar series "Our Place on Earth", MSU looked at its own mission statement, which charged it with "foster[ing] a collaborative learning culture". Through application of the mission, the course depended on students becoming more aware of their community – taking walking tours of the campus, promoting local foods for dining halls, being cognizant of where they live, etc. Fifteen speakers of varying race, religion, age, occupation were contacted to present their views of place and our relationship to the environment.

A third proposal, not listed above, was for MSU to create a University Council for a Sustainable Campus (UCSC), which reports to the VP for research and graduate studies, whose purpose was to recommend policies and actions to promote a sustainable future. It applied for a US Environmental Protection Agency Sustainable Development Challenge Grant, which it received, allowing MSU to complete the two projects listed above. The course listed above also catalyzed a group of students to submit a paper to the W.K. Kellogg Foundation to further the university's engagement with local food. Since these efforts, the school has created an Office of Campus Sustainability http://www.ecofoot.msu.edu/ which houses the UCSC and promotes campus efforts for environmental sustainability.

Relevance to UR

In a very real way our committee can accomplish these three tasks. We already have courses that are sustainability/"our place"-related, so what we could do is take it to the next level and develop a major that could be integrated into the College's Strategic Plan. I'm aware of students who already do this, as well as minor or cluster in sustainability, so it would be a low-cost opportunity for our school to further market upon our already sustainable practices.

Chapter 7: Oakland Community College

The Oakland Community College sustainability vision, "Global environmental awareness, social responsibility, and interpersonal skills are required components of all degrees…" is the most sweeping of all the institutions reviewed. The focus of this chapter is on persuasive techniques employed to win support for this vision on campus.

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The OCC effort began with a Futures Institute, whose leadership initiated an environmental scan of issues, highlighting needs for:

- Educated citizens to address environmental problems
- Reducing student apathy, and building commitment to social responsibility
- Better interpersonal skills

The conclusion drawn was that making sustainability a degree requirement is a quick way to infuse it throughout the curriculum.

Relevance to UR

The article about making degree requirements at Oakland Community College seems less pertinent in general. I would have serious reservations about trying to make it a degree requirement here. First, I think it would meet greater resistance at a research university. Second, I think that it may result in unfortunate contortions by faculty who are not substantially informed about sustainability issues.

It may be worth noting that the Oakland Community College initiative began from a Futures Institute. Perhaps there is some merit in UR considering relationship between Sustainability and other 'Institute-level' concepts, such as Global Studies

Chapter 8: Oberlin College (not reviewed)

Chapter 9: Stanford University

This chapter is about a core group of students' collaboration with Stanford administration to develop a set of guidelines integrating sustainability into the design process for new campus buildings. Though not related to academics/research, the chapter enumerates a story wherein the drive came from the students and not the administration.

The students finally collaborated with administrators to publish *Guidelines for Sustainable Buildings*, which was adopted in March 2002. However, since then the Department of Land and Buildings has remained skeptical and hesitant. Stanford administration has also been unwilling to commit to LEED standards.

Relevance to UR

Not much here is relevant to academics and research at Rochester. Here, environmental sustainability has become a priority from the administration as well as the students' end, allowing for much less resistance to possible changes. What we can take away from this chapter is a commitment to hold ourselves accountable after anything we publish as final guidelines, so that our work extends beyond our Committee. One recent commitment at Stanford is the Presidents' Climate Commitment, which allows schools to

take a stance on integrating environmental sustainability into academics as well as building practices. http://www.presidentsclimatecommitment.org,

Chapter 10: Allegeheny College (not reviewed)

Chapter 11: Pitzer College, Claremont Colleges

This involves a partnership between Pitzer College, a small liberal arts college located in Claremont, CA and four elementary schools (130 children) to study ecological and environmental issues at the Claremont Colleges' Bernard Biological Field Station. Claremont students enrolled in the course "Theory and Practice of Environmental Education" serve as instructors.

Relevance to UR

This is possibly a useful idea for the College or Warner School.

Chapter 12: Marymount College

Mission Statement

No mission statement is given, as this chapter was written prior to Marymount making an institutional commitment.

Administration/coordination/support

This chapter talks about specific efforts related to native plantings and landscaping that were conducted by students with the support of one faculty member (an anthropologist) and, to some extent, the building and grounds staff. Efforts were primarily initiated and supported by student groups with support of a faculty member in Anthropology.

The chapter may provide more 'counter' examples than 'best practices,' showing how poor communication among parts of the college, lack of institutional commitment, and lack of coordinating staff undermine the success of initiatives. The service-learning efforts were probably good learning experiences for the students, but because they were not institutionalized they were not 'sustainable.'

Relevance to UR

Marymount is a very different kind of institution from the University of Rochester, but the 'lesson' that student/faculty partnerships can initiate innovative projects but cannot sustain them without administrative support, institutional commitment, and integration with other divisions of the college, is universal.

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Chapter 13: University of South Carolina (not reviewed)

Chapter 14: Johns Hopkins University

Two Hopkins faculty members at the School of Public Health have "found religion" in sustainability and recount their efforts to "proselytize" at Hopkins.

The accomplishments they cite are:

- Obtained baseline data at the undergraduate College and School of Public Health on sustainability issues related to curriculum and operations.
- Publicized past and current efforts by the University to "decrease its footprint on earth," along with suggestions for what faculty and staff can personally do
- Created an "official Greening Committee" at the School of Public Health.

Since publication of the chapter, some of their key recommendations have been addressed: in 2006 Hopkins' president appointed a University-wide committee on sustainability, intended to reach across all Schools and units, and the medical school and hospital. The Committee articulated a sustainability mission: *to improve the environmental profile of the Johns Hopkins University by building better lines of communication among its divisions, sharing ideas and best practices, collaborating on projects that produce wide-spread benefits, and highlighting successes to the entire Hopkins community* and articulated a series of recommendations.

In 2007 a second group, the Task Force on Climate Change, was established to guide development of new policy to meet the objectives recommended by the Committee and organized into three working groups: tactics and strategies; community partnerships; innovation and research. Members of these groups include Johns Hopkins scholars, professional staff, and students, as well as local experts with specific knowledge of the target issues.

Relevance to UR

The chapter opens with a discussion of the decentralized nature of Hopkins as a University, and its structure as a major college campus along with a medical center. In this respect, there are similarities between Johns Hopkins and the UR, although we have the advantage of contiguity between these two campuses. They note that Hopkins has a special responsibility for greening its operations and curriculum because of its premiere health institution, including medical, nursing and public health components. The same responsibility can be ascribed to UR. A final similarity is that they make the case that as the largest private employer in Maryland, Hopkins has an opportunity to set an example and influence policy by improving University-wide standards of practice in areas such as recycling, energy use, purchasing, green building practices, transportation, etc. Here too, this rings true for UR. Nothing that they have done at Hopkins at the time this chapter was written, however, offers new or particularly helpful ideas for UR.

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Chapter 15: Ramapo College (not reviewed)

Chapter 16: Middlebury College (not reviewed)

Additional Institutional Reviews

Source: American Association of Sustainabilty in Higher Education website

University of Vermont

Mission Statement

The University of Vermont's mission describes a commitment to the foundations of a sustainable future, including "an abiding concern for the environment…A strong commitment to diversity …A willingness to address difficult societal issues with honesty, civility, and practicality," an emphasis on "ethical decision making," and an "appreciation of our commitment to the State of Vermont and our land-grant heritage."

Administration/coordination/support

The University's stated academic focus on environment, along with liberal arts and health, has grown out of more than 30 years of course offerings in environmental studies and sciences. About 10 percent of undergraduates major in environmentally related areas, including natural resources, sustainable agriculture, environmental engineering, environmental science, and environmental studies. The Environmental Council, created in 1996, works with the University's full-time Environmental Coordinator, who is responsible for tracking environmental performance; recommending environmentally responsible practices; encouraging collaboration among students, faculty members, and staff members; and connecting with the local community.

During the past two years, under the leadership of President Daniel Mark Fogel, the University's commitment to sustainability and environmental excellence in academics, operations, and outreach has been elevated from a medley of grassroots and departmental efforts to a consolidated, university-wide strategic initiative (AASHE site).

Recent high level statements and initiatives have helped provide the tools to foster service learning, residential learning communities, and interdisciplinary activity, blurring traditional lines between academics, research, operations, and outreach:

- National University Transportation Center with a focus on sustainability.
- Programmed housing, including Residential Learning Communities (RLC); a new RLC for 180 students, GreenHouse, opened in the fall, 2006 in an LEED Gold building, and provides place-based and environmentally themed programming involving faculty, staff and students across all academic units.

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- Green Forestry Education Initiative
- An interdisciplinary program in Environmental Sciences, recently integrated into the University curriculum.
- A summer intensive in Sustainable Business
- Vermont Center for Emerging Technologies, a key component of a UVM-based umbrella organization, Vermont Innovation Alliance for Technology and Entrepreneurship.
- The Office of Community-University Partnerships and Service Learning, created September 2003, supports active, collaborative UVM-community partnerships, high quality service-learning, and community-based scholarship.

Relevance to University of Rochester

Several of the specific initiatives highlighted above may be relevant to the U of R. While we do not have the historical focus on natural resources issues in the curriculum as at UVM, it may be useful to examine the impact of high-level leadership in promoting cross-campus collaboration and coordinating specific initiatives (research, teaching, service, and operations) at UVM more closely.

Duke University

Mission Statement

In 2005, the University and Health System adopted a comprehensive Environmental Policy that commits us to addressing sustainability in three priority areas: academics, operations and community impact.

Administration/coordination/support

The primary center for academic efforts related to sustainability is the Nicholas School of the Environment, which evolved from a merger of the School of Forestry, the Marine Lab, and the Geology Department to form one of the nation's leading multi-disciplinary centers for teaching and research on the environment.

The Nicholas School offers graduate professional (Masters of Environmental management) and research (MS and PhD) degrees and administers undergraduate majors (B.A. in Environmental Science and Policy; B.S. in Environmental Science, and BS in Earth and Ocean Sciences, as well as minors). The Nicholas Institute for Environmental Policy Solutions marshals Duke University resources -- including the Duke Law School, the Fuqua School of Business and the Nicholas School -- to provide independent analysis on key environmental issues to corporate and environmental leaders, policy makers and the news media. Related courses are offered by many disciplinary departments and the Schools of Business, Engineering and Law as well.

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Sustainability efforts across campus are coordinated by at least seven staff members in the Office of the Executive Vice President and various operational divisions, in addition to numerous paid student interns. Courses in the Nicholas School and the Pratt School of Engineering involve students in campus- and community-based projects. In addition, "the Duke Environmental Leadership Program improves the knowledge and understanding of environmental issues and leadership capacity among practicing environmental professionals, business executives, graduate students and K-12 teachers and students."

Relevance to UR

The University of Rochester does not have a School of Forestry with the potential to evolve into a multidisciplinary hub for research and teaching. However, the model of interaction between research and teaching in the Schools of Medicine, Engineering, Business, the Institute of Public Policy, and the undergraduate curriculum may be relevant. The AASHE web site also gives examples of how classes in several of these schools engage with on-campus projects coordinated through the Environmental Sustainability Coordinator and operational departments (there are at least 7 staff dedicated to this purpose plus paid student interns and a 'green grant' fund; see http://www.aashe.org/resources/profiles/duke2007.php)

Another unique program with potential relevance to the Simon School: Duke's Fuqua School of Business hosted their annual Footprints Conference celebrating the convergence of private, public, and social sectors to create sustainable social and environmental benefit.

Appendix E

UNIVERSITY OF ROCHESTER
REPORT OF THE SUSTAINABILITY TASK FORCE
OCTOBER 19, 2007

Over the past few years, the topic of sustainability has attained great prominence throughout society generally and especially on college and university campuses. An increasing number of institutions have developed formal policies and programs dealing with issues of sustainability. Some universities have affiliated themselves with external groups focusing on specific issues such as the Presidents Climate Commitment, and others have decided to pursue their strategies independently. In response to a request from President Seligman during the spring of 2007, Senior Vice President for Administration and Finance Ronald J. Paprocki formed a task force to bring together information regarding the University's previous efforts and existing programs and to recommend strategies for the future. Members of the Sustainability Task Force include:

Mark Cavanaugh, Director of Environmental Health and Safety
Holly Crawford, Associate Vice President for Budgets and Planning
Ovide Corriveau, Sr. Operations Officer, The College
Jeff Foster, Director of River Campus Facilities and University Properties
Lisa Glover-Henderson, Assistant Director of the Central Plant
Mary Ockenden, Associate Vice President, Space Planning, Medical Center
Lori Packer, Web Editor, University Communications
Ronald Paprocki, Sr. Vice President for Administration and Finance and CFO, *Chair of Sustainability Task Force*
Richard Pifer, Associate Vice President for University Facilities and Services
Phil Profeta, Corporate Director of Purchasing
Cam Schauf, Director of Campus Dining Services and Auxiliary Operations
Mark Schwartz, Director of Medical Center Facilities and Operations
Bruce Smith, Director of Central Utilities
Marvin Stillman, Manager of Hazardous Waste Management
Paul Tankel, University Architect

This document is the Sustainability Task Force's report.

Appendix E

DEFINITIONS

There can be various interpretations of the term "sustainability". Some are broad and include concepts such as economic development and social justice. A widely respected report issued by the Brundtland Commission[1], defines sustainable development as "meeting the needs of the present without compromising the ability of future generations to meet their own needs." At the core of the sustainability discussion is the issue of the institution's impact on the environment. Thus, the focus of the work of the task force and of this report is on environmental sustainability.

Universities address issues of environmental sustainability through educational programs, research activities and development and operational activities. At the University of Rochester, planning for educational and research programs is being dealt with by the divisions in their strategic planning. The task force has limited its deliberations on environmental sustainability to issues of development (i.e., land use and construction) and operations.

ACCOMPLISHMENTS

The University of Rochester has a strong track record of consistent efforts to minimize its adverse impact on the environment. A list of the University's environmental initiatives is found in Appendix 1. The following are significant examples:

- Conversion of central utilities boilers from coal to natural gas, drastically reducing harmful emissions, in 1998.
- Following integrated pest management practices in grounds-keeping and pest control programs since 1990.
- Construction in 2005 of a thermal following cogeneration plant, which generates electricity without any increase in fuel consumption or emissions.
- Recycling of more than two million pounds of waste per year and pioneering programs to eliminate toxic materials in the waste stream.
- Design of most recent building project to meet Leadership in Energy and Environmental Design (LEED) standards.

[1] Formally the [United Nations] Report of the World Commission on Environment and Development (WCED), *Our Common Future*, known by the name of its Chair Gro Harlem Brundtland, was published by Oxford University Press in 1987.

The University's environmental programs have been recognized through various awards including the New York State Governor's Award for pollution prevention in 1999 and the U.S. Environmental Protection Agency's Region 2 Environmental Quality award in 2006.

WORK OF THE TASK FORCE

Despite an impressive list of individual initiatives, the task force observes that the University's efforts have not been as systematic and as well communicated as programs at other institutions. The task force is unanimous in its belief in the need for the University to move forward boldly and more systematically to address issues of environmental sustainability.

There are multiple reasons for the University to pursue an aggressive program of environmental sustainability. The University has a special obligation to environmental stewardship given its role as one of the largest institutions in its local community and given the unique expertise and resources it possesses as an institution of education and research. The University also must maintain its competitiveness with peer institutions in responding to heightened student interest in environmental issues. In addition, a number of environmentally beneficial measures usually associated with sustainability can have economic benefits for the University as well. For example, actions that reduce energy consumption not only affect favorably the University's carbon footprint but also reduce its utility costs.

While some sustainability measures produce immediate financial benefits, others present short-term costs and long-term financial benefits, and still others will result in a net expense to the University. The task force has attempted to take a responsible approach to environmental sustainability by considering costs as well as benefits to be derived from potential recommendations.

Deliberations of the task force and consequently its recommendations can be divided conceptually into two parts.

1. The formulation of a statement of commitment to sustainable practices with accompanying operating principles covering various aspects of the University's development (land use and construction) activities and operations.
2. Identification by working subgroups of specific recommendations and timetables for implementation of initiatives in the following areas:

energy, waste management and recycling, purchasing and business practices, land use and building design and construction, transportation and parking, and dining services.

STATEMENT OF COMMITMENT AND ENVIRONMENTAL SUSTAINABILITY PRINCIPLES

The task force is comprised of individuals with operational responsibility for the University's current environmental sustainability activities. The members of the task force have formulated a statement of commitment to sustainability as well as a set of principles or guidelines that together are indicative of the commitment by the operating units to environmental sustainability. The statement will help signal the University's recognition of the importance of sustainability and place specific operational initiatives within a coherent framework. We believe that this will foster a better understanding on the part of the University community of the institution's sustainability programs.

The sustainability principles will also serve as a guide for actions by others throughout the University at various levels. A case in point is principle number seven, which deals with recycling programs and the reduction in solid waste. While it will be up to the University's service departments to organize and support recycling programs, it is the behavior of all members of the University community that will make such programs successful.

Environmental Sustainability Principles

The University is committed to sustainable development and operating practices through the management of building design, construction, renovation, landscape practices, energy use, waste, emissions, transportation and procurement while maintaining regulatory compliance and exercising fiscal responsibility.

The following principles guide the University's approach to environmental sustainability:

1. Reduce the environmental impact of future development on University property through the establishment of environmentally responsive planning guidelines.

2. Design, build and operate University facilities to accepted sustainability standards.

3. Establish an energy conservation and efficiency program that accounts for growth of new facilities and the increased demand on existing facilities.

4. Minimize the use of non-renewable energy sources by University facilities.

5. Encourage alternative means of transportation for the University minimizing the impact of single occupancy vehicles.

6. Promote environmentally appropriate maintenance practices including the use of environmentally friendly products.

7. Reduce solid waste and enhance programs for reuse and recycling.

8. Maintain safe and efficient use, tracking, storage and disposal of hazardous waste and toxic materials and pursue less toxic alternatives.

9. Preserve and enhance the biodiversity of the University's natural environment.

10. Incorporate environmentally conscious criteria in all procurement practices.

11. Enhance and promote sustainability practices in our dining program.

12. Create appropriate tracking and training programs to measure and ensure the success of these initiatives.

ACTION PLAN FOR GOING FORWARD

To develop recommendations for operations in the future, the task force divided itself into groups concentrating on specific operational categories. The charge to the subgroups was to:

- Determine how current efforts might be strengthened and augmented.
- Identify new initiatives to be implemented immediately or over the longer term.
- Make proposals for major new initiatives and recommendations for policy changes.

Summaries of major findings and recommendations of the various subgroups follow. The initiatives listed are in various stages of development. Some require more detailed financial analysis of capital investments. In some cases, the recommendations have already been implemented because they made business sense, and they were within the purview of the operating departments represented. Together these initiatives represent an action plan for operational sustainability.

Energy

Energy use is central to the issue of environmental sustainability because of the magnitude and complexity of its environmental impacts and also because of its centrality to the discussion of the effects of carbon use on an institution's carbon footprint and on climate change. The "carbon footprint" is defined as the total amount of greenhouse gases emitted directly and indirectly to support human activities, usually expressed in equivalent tons of either carbon or carbon dioxide. Other gases such as methane, perflourocarbon, nitrous oxide, and halon can also be taken into account when determining an institution's carbon footprint.

There are various models used by institutions to calculate their carbon footprint. The University of Rochester's energy manager has calculated the University's carbon footprint to be 201,891 metric tons of CO_2. Because of differences in methodologies as well as in the types of facilities, apples-to-apples comparison with peer institutions is not practical. However, the University's own calculation can be used as a baseline that when consistently applied over time can serve as a basis for the measurement of the University's success in reducing its carbon footprint and consequently its negative impact on the environment and specifically on climate change.

The University's carbon emissions are due primarily to its burning of natural gas fuel in its central utilities plant and to its consumption of electricity. The University has an opportunity to reduce significantly its carbon footprint through the initiatives to be undertaken including those addressing new construction projects.

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The energy subgroup consists largely of professionals from University Facilities. Each initiative recommended by that subgroup has been evaluated in terms of potential reduction in carbon emissions, other environmental impacts and financial costs and benefits. The initiatives concentrate on two major programs reducing utility consumption and maximizing efficiency of the central utilities plant.

For the most part, energy initiatives requiring University expenditure more than pay for themselves through a reduction in annual energy costs. The one major exception is the purchase of green power. Specifically, we have been informed by our external energy consultant that the electricity generated through wind power commands a 15% to 20% price premium over conventionally generated electricity. Nevertheless, because of the obvious environmental benefits, we are moving forward with a more detailed analysis of options. In the case of recommendations requiring significant capital investment, it is assumed that projects will be further analyzed through the University's normal capital budgeting processes.

Initiative 1: Retrocommissioning of University buildings. The retrocommissioning process is a systematic review of how outside air is conditioned and delivered into buildings. During the review, the current operations are compared to the design specifications and modifications are identified to improve conditions and increase energy efficiency. Savings result from turning equipment off, utilizing cool outside air for cooling and ventilation, and optimizing equipment for efficient operations. This program has already been initiated and has demonstrated savings.

Retrocommissioning projects in Schlegel Hall on the River Campus and the Ambulatory Care Facility have resulted in a decrease in energy consumption and consequently a decrease in cost and emissions. Retrocommissioning is a long-term program, which, when fully implemented across all the University's facilities, will result in a very significant (28,800 metric tons or 14%) reduction in the University's carbon emissions. This project will require an annual commitment of funds in the University's capital budget. Due to offsetting energy savings, these expenditures can be accommodated in the existing utilities budgets.

Initiative 2: Integration of building technology and scheduling. This initiative calls for the integration of building automation software that controls air handling units with scheduling systems used to reserve large-capacity rooms. This will allow optimization of heating and cooling based

on actual use of the facilities. (Overrides are possible to permit deviations from the schedule.) An implementation investment of $216,000 will be paid back in 1.7 years. Annual utilities savings will be approximately $127,000 and carbon reduction is estimated at 335 metric tons per year.

Initiative 3: Optimization of air flow in laboratories. It is well documented that laboratories are energy intensive. Laboratories typically consume five to ten times more energy per square foot then the typical office building. Most labs can reduce energy use by 30% or more and significantly reduce carbon dioxide emissions by incorporating high performance designs. Systems must be sophisticated enough to meet the special demands of the experiment, as well as provide a safe environment for those working in the lab. Under this initiative, we will examine the design ventilation rate of our laboratory areas, confirm current usage, and determine appropriate rates and ventilation requirements. In addition, with emerging laboratory technology, there is an opportunity to explore the retrofit of the ventilation equipment to maximize energy efficiency. Throughout the process, safety and the preservation of research data must not be compromised, so coordination between Facilities personnel, Environmental Health and Safety Department staff, the lab users, and design engineers is critical to the success of this program. Laboratory buildings to be included initially in this program are the Kornberg Medical Research Building, the Medical Research Building Extension, and Hutchison Hall, which are the three largest consumers of energy at the University. Future projects could include other laboratory areas within buildings that house multi-departmental programs.

Initiative 4: Upgrading of utility system to increase efficiency. Current technology is quite different from what was available when the Central Utilities Plant began operation. Under this initiative, each component of the Plant will be evaluated for improvements in energy efficiency. The goal of this program is to minimize utility usage at the Plant in order to reduce costs and environmental impact without affecting system reliability and comfort. Immediate projects that will be developed include improving pump efficiencies with new motor drives and installing heat recovery on the boilers. Based on engineering recommendations that meet payback criteria, funding will be requested and projects implemented. Our goal is an 8% reduction in CO_2 emissions.

Initiative 5: Maximization of cogeneration load. Cogeneration or CHP (combined heat and power) is the simultaneous production of electricity and

heat using a single fuel such as natural gas, and it is a well-proven technology recognized worldwide as a cleaner alternative to traditional centralized generation. At the University, our cogeneration station is operating to meet our base thermal load requirements, so it is in our best interest financially to connect as many buildings and load opportunities as possible to the hot water distribution network. Continuing to add hot water load to our cogeneration system allows us to eliminate the expensive costs to maintain aged pipes in the ground and to limit the need for investment in the replacement of new boiler plant equipment. More significantly, as the hot water load increases so does our ability to generate a larger proportion of our own electricity without increasing consumption of fossil fuels.

Initiatives 6 – 8: Other Energy conservation measures not requiring behavioral change. Together, the initiatives in this category will result in energy cost savings as well as a reduction in greenhouse gases.

6. Distribution [program] of compact fluorescent light bulbs (cflb). Compact fluorescent light bulbs use 75% less energy than standard incandescent bulbs and last up to ten times longer. The University's program will replace standard incandescent light bulbs at the University with lower wattage cflbs. A distribution, recycling, and disposal program is being developed for students and staff. This program was initiated this fall with the distribution of cflbs to students as they moved into the residence halls. A program to replace incandescent task lighting throughout the University has also been started. Approximately 3,800 cflbs have been distributed to date. Minimum savings to the University from the replacement of 5,000 incandescent light bulbs is $14,000 per year net of all costs. Annual CO_2 reduction is estimated at 187 metric tons per year. This is a visible program that engages the University community and thus has symbolic benefits as well.

7. Retrofitting of campus-wide lighting and occupancy sensor. This program entails installing more efficient lighting, reducing lighting levels where appropriate, and installing more efficient ballasts and occupancy sensors. A process implemented by the University in the 1980s resulted in several million dollars of savings. Since then, lighting technology has advanced again making further efficiencies possible. This program will take advantage of the NYSERDA programs for partial funding. The program will start with an evaluation of fixtures and will take several years to implement. A capital investment of $3 million over time will result in

approximately $700,000 of utilities savings per year and a CO_2 reduction of approximately 668 metric tons.

8. Participation in Energy Star Program. The University will become a partner in the Environmental Protection Agency's Energy Star for Buildings and Plants. With this program, we will agree to measure, track, and benchmark energy performance; develop and implement a plan for improvement; and communicate our partnership and achievement with Energy Star. Many of our peer institutions already participate in this program. There are no direct financial or CO_2 savings projected from this program. However, the effort is expected to lead to more specific recommendations. We expect a cost of approximately $37,000 for the first year and $5,200 per year thereafter for the engagement of student assistants to help with this project. Costs will be borne by the utilities budget. This is potentially a highly visible program that will signal the University's commitment to energy conservation.

Initiative 9: Campaign to address end-user behavior. Minor changes in the behavior of members of the University community can result in significant environmental and financial benefits. Some examples include:

- setting back thermostats in the winter and up in the summer;
- unplugging electronic devices not in use such as cell phone chargers, radios, fans, and coffee pots;
- turning off lights, computers, monitors, and printers each night.

A campaign will be implemented to alert members of the University community to these benefits. These energy-savings ideas are being developed jointly with the Task Force on Cost Containment. The energy management group will work with the Office of University Communications to periodically inform members of the community of these opportunities. Communication vehicles will be the sustainability website, bulletins printed in "@Rochester", and articles in "Currents". This campaign is a means of engaging the entire University community in sustainability efforts.

Initiative 10: Purchasing of green energy. A number of institutions have incorporated into their sustainability policies the purchase of green energy, particularly electricity generated through wind power. Demand for green energy has increased significantly, and the economic implications of such purchases vary throughout the country. The University has been informed by its external energy consultant that wind-generated electricity carries a premium cost of 15% to 20%. Nevertheless, the task force recommends

further analysis of green energy purchase options. The acquisition of Energy East, parent company of the Rochester Gas and Electric Corporation, by Iberdrola, a European company known for its environmentally focused programs, poses one potential opportunity for further exploration. To that end, a meeting has been established between Ron Paprocki and some members of the Sustainability Task Force and James Laurito, RG&E President along with his company's green energy specialists. Other opportunities for green energy purchase will be pursued concurrently.

Development and Construction

Land development and construction activities have a broad range of potential environmental implications both positive and negative and are consequently a major focus of sustainability programs. The issues dealt with in this category include the impact of new development on natural resources and on local neighborhoods, energy efficiency of new construction and major renovation projects, selection of materials for construction projects, and diversion of construction waste from landfills.

Initiative 11: Establishment of LEED Silver Certification as the target and LEED Certification as the minimal standard for major construction projects. The Leadership in Energy and Environmental Design (LEED) green building rating system is the national benchmark for design, construction, and operation of green buildings. LEED is a program of the U.S. Green Building Council. According to that organization's website, "The LEED rating system was created to transform the building environment to sustainability by providing the building industry with consistent, credible standards for what constitutes a green building." It recognizes performance in five areas:

- human and environmental health;
- sustainable site development;
- water savings;
- energy efficiency;
- material selection; and
- indoor environmental quality.

Construction projects receive credits for compliance with LEED standards and are certified at various levels: Certified, Silver, Gold, or Platinum. Colleges and universities are increasingly adopting LEED certification in

their construction programs. Emory, Duke, and Rice, for example, have committed to register all new construction for LEED certification. At the University of Rochester, the recently completed Goergen Hall was constructed following the sustainable design guidelines under LEED. The Medical Center has expressed commitment to fulfillment of at least the LEED Silver standards in the construction of its new Clinical and Translational Sciences Building.

The task force believes that the University should strive to fulfill LEED Silver standards for major projects whenever feasible but at least to fulfill basic certification requirements for all major projects. Fulfillment of LEED certification could add to a building's construction cost depending upon the type of building project. At the same time, it is generally recognized that the life cycle costs of projects constructed under LEED standards are lower than those of conventional construction. Principal cost savings result from superior energy efficiency. Emory University, which has developed a large number of LEED certified buildings, reports incremental construction costs in the range of .8% to 2% and a payback ranging from three to eight years with an average of five years.

Initiative 12: Incorporation of sustainable guidelines into design and construction standards. These will apply to smaller scale projects and renovations not covered under the LEED policy.

Initiative 13: Adherence to the smart growth principles in the University's Campus Master Plan. As the University Campus Master Plan is being developed, broad planning concepts have been established which will become the foundation of a sustainable approach for future development. This Master Plan deals with smart growth strategies by incorporating the following principles:

- Respect the responsible capacity of the land while retaining the quality of the campus;
- Preserve and create open space to maintain and reinforce the intimate scale with existing and new buildings;
- Emphasize safe and universally accessible pedestrian paths of travel;
- Accommodate growth on infill sites with compact development and use of existing infrastructure;
- Balance land use with mixed use development;
- Optimize the use and adaptive reuse of existing buildings;

- Collaborate with adjacent communities on economic development and quality of life issues;
- Create/maintain an enduring and vibrant campus.

Waste Management and Recycling

As evidenced in the list of accomplishments in Appendix 1, the University already engages in significant recycling activity, and a number of its programs for minimization and disposal of waste particularly in the elimination of hazardous materials are cutting edge. The breadth of activities, geography, and the sheer size of the University community present both challenges and opportunities for effective waste management. Although perhaps not the most significant aspect of a sustainability program, recycling activities are among its most highly visible components, and they engage the entire University community. It is the belief of the task force that an efficient, highly visible recycling program is an essential element of a credible University sustainability effort.

Initiative 14: Hiring of a University Recycling Coordinator. A coordinated effort will allow the University to integrate waste minimization, proper waste segregation, and recycling throughout the institution. The coordinator will work with the University's Waste Minimization Committee, student groups, and others to coordinate efforts, track, and measure results of the success of the program. Training of building service staff and increasing employee understanding of waste reduction practices will be an important part of this position.

Other initiatives relating to waste management and recycling include:

- Management of the waste stream during the construction process. This will result in less material being sent to landfills and is related to the University's adoption of the LEED standards.
- Elimination of halon in the University's fire suppression systems. This will be environmentally beneficial since halon is a compound considered to be destructive of the earth's ozone shield. A significant reduction will occur upon the closure of the University's Data Center in the Towne House.

Purchasing and Business Practices

The University has the opportunity to mitigate its impact on the environment through purchasing and business practices.

Appendix E

Initiative 15: Implementation of an Environmentally Preferred Purchasing (EPP) policy. The University's Corporate Purchasing Department is developing an Environmentally Preferred Purchasing policy. This policy will introduce into competitive bidding processes terms and conditions relating to a vendor's commitment to minimizing adverse environmental impact while maintaining quality and cost effectiveness. In selecting its suppliers, the University will determine whether products and services are consistent with the University's environmental stewardship objectives as well as complying with quality and cost criteria. The University's EPP program will adhere to standards of the Hospitals for a Healthy Environment program sponsored by the American Hospital Association.

The Corporate Purchasing Department will work with its constituents to establish environmentally certified and labeled products as the norm: Energy Star for appliances, chillers, vending machines, etc. and Green Seal for cleaning chemicals and similar materials. Emphasis will be placed on recycled, recyclable, and reusable products. The University will also work with its vendors to minimize packaging materials.

Initiative 16: Adherence to green printing practices. The University produces countless formal publications and individually printed documents. The environmental implications are manifold from consumption of forest products in the production of paper, to the use of solvents and chemicals, to the waste stream created from the disposal of documents.

With respect to formally printed materials, most of the University's large printing projects such as brochures and marketing materials are now printed with soy based inks. Soy beans are a renewable resource unlike traditional petroleum based ink. The use of soy inks also makes de-inking paper easier resulting in a higher quality of recycled product. In terms of stationery, the University's main vendor uses 95% recycled paper. That firm also uses computer-to-plate technology, permitting the elimination of the use of film and development chemicals.

Corporate Purchasing will work with the Office of Communications to develop standards for the use of recycled paper throughout the University. Recycled printer cartridges will be stressed as the default choice in the University's office supply catalog (although non-recycled cartridges will

also be available as an option). Sustainability tips disseminated in University media will promote double-sided copying and printing and stress the avoidance of printing of electronic messages whenever possible.

Dining Services

A program of sustainability initiatives has been developed for the student dining program.

Initiative 17: Increasing Dining Services' buying of locally grown, processed and produced products and products in which use of pesticides and other chemicals has been minimized. "Buy-local" efforts started in 2005 as part of Dining Services' own sustainability policy. In fiscal year 2006, local foods accounted for 6% of total purchases. In fiscal year 2007, that portion nearly doubled to 11%. This year there is locally produced food at nearly every dining location on the River Campus and at the Eastman School of Music. This commitment to buying local has earned the University of Rochester the honor of being the first college or university to join the Pride of New York program (Appendix 2). In November, Dining Services will open a new café called Connections, in Rush Rhees Library, that will focus on locally produced foods and beverages. Dining Services will continue to expand its outreach to local farms and businesses through partnership with Foodlink and Freshlink Farms.

Initiative 18: Recycling 100% of the "recyclable" glass, plastic and metal containers in all dining production areas. In previous years, all kitchen waste went directly to the trash compactor. Beginning in September 2007 glass, plastic, and metal are being separated from the waste stream in all Dining Services kitchens and placed in recycle bins to be recycled by Waste Management.

Initiative 19: Piloting a program of separating compostable waste and sending it to Freshlink Farms for composting. There is a great deal of student interest in composting. There are always two major stumbling blocks to starting a composting program. One issue is the separation and storage of compostable waste and the other is the management of the compost. The pilot program calls for starting with a few dining locations so the logistics of the collection and storage process can be worked out. Freshlink Farms will pick up the compostable waste and manage the composting process at their site. Beginning October 15, Dining Services

will separate compostable waste in the Meliora kitchen and collect coffee grounds in Pura Vida and Hillside. The plan is to expand the composting program to all dining locations.

Initiative 20: Implementation of a fry oil to bio-diesel fuel program. The University's used vegetable oil can be processed into fuel so it can be burned in diesel engines. The used vegetable oil is first pumped through filters to remove waste particles and water for the oil in three stages. After the oil is filtered, non-hazardous chemicals are added to stabilize and thin the oil so it can be burned as fuel. In late October, the University is scheduled to meet with Rochester Alternative Fuel, a subsidiary of the Gibbs Marine Group. Rochester Alternative Fuel is offering to pay the University for its used vegetable oil. They will provide collection bins and will pick up the oil. It is our intention to have this program in place before the end of the fall semester.

Transportation and Parking

Transportation and parking issues are an integral part of a comprehensive program of sustainability initiatives. The reason for their inclusion is two-fold. First, automobiles, usually carrying only one or two passengers, are an inefficient means of transportation and their internal combustion engines are a significant source of greenhouse gas emissions. Second, additional surface lots and parking structures are necessary to some degree for safety, convenience, and competitive reasons, but they are undesirable from an environmental standpoint since they consume open spaces, create traffic congestion, and present a potential source of pollution. It is naïve to assume that there will not be the need for expansion of parking facilities in the coming years, however.

Members of the Sustainability Task Force have been working with the Department of Parking and Transportation to develop plans to minimize the use of gasoline powered automobiles on campus and decrease the demand for on-campus parking. This is a complex and sensitive set of issues, and detailed recommendations will not be available until mid year. However, the broad contours of its recommendations are known.

Initiative 21: Provision of incentives for use of mass transit, car pooling, and alternative means of transportation. Among the tactics being explored are a buy-back program for parking permits, increasing financial incentives for car pooling permits, and free bus passes perhaps in

combination with access to Zipcar usage. In addition, the University is collaborating with the Regional Transit System to develop "park and ride" routes based on the demographics of the University's employee population. A plan for the installation of bicycle racks and safe storage areas is also being developed.

Initiative 22: Pursuing use of existing remote parking facilities and minimize the paving of campus areas. To the extent that the University can acquire and make use of existing parking lots or properties easily adaptable to parking lots, the presence of automobiles on campus and the need to construct additional parking spaces can be minimized. This must be accompanied with attention to safety and convenient shuttle services. The University's ability to provide such services has improved with the awarding of its shuttle bus contract to a firm specializing in campus transportation.

Initiative 23: Strengthening of the University's mortgage incentive program to encourage living close to campus. The University is now engaged in discussions with the City of Rochester and several local banks to develop a program of financial incentives for University employees to purchase homes in the Nineteenth Ward. This program will further the development of one of the neighborhoods adjacent to the University. This program in itself is not likely to significantly alter the demand for parking on campus, but it will highlight the benefits of living within walking distance of campus. Shuttle service from the Brooks Landing/Riverview areas to campus may also encourage Nineteenth Ward residents to leave their cars home.

I**nitiative 24: Introduction of hybrid vehicles into the University's fleet.** The University will begin introducing hybrid vehicles into its fleet with the scheduled purchase of security patrol vehicles later in the year. Hybrid vehicles are particularly efficient at lower speeds and for short-distance driving, both characteristic of the vehicles used by the University. Hybrids will result in a decreased consumption of fuel and reduced emission of greenhouse gases.

Communication

The task force believes that the initiatives already taken by the University along with those proposed represent a substantive program of operational sustainability. Many of these have been implemented behind the scenes in the

normal course of business by the various operating departments. To the extent that information regarding this initiative has been disseminated, it has been piecemeal and usually incorporated within other departmental information such as on the websites of the Facilities and Services and Environmental Health and Safety Departments.

The University's operational sustainability activities are not widely known or understood. An effective sustainability program will require the understanding and support of the University community. Successes in this domain should be known and celebrated. Recommendation:

Initiative 25: Increasing the awareness of the University's sustainability initiatives through the use of websites, bulletins, articles, etc. We have engaged the Office of University Communications in our sustainability review to make them aware of our efforts and to obtain their advice about how to best inform the University community. A prototype sustainability website has been developed (Appendix 3). This site will contain links to internal and external information sources, the inventory of the University's initiatives as well as information promoting sustainable practices at the departmental and individual level. We also contemplate regular bulletins in "@Rochester" and "Currents" to provide updates and offer other helpful information. For example, short bulletins of "helpful hints" will provide tips on energy conservation, purchasing sustainable goods, and recycling. The University should be recognized for its sustainable operating practices. Appropriate logos indicating the use of recycled paper, soy inks, etc. should be placed as appropriate on University publications and stationery.