Final Report of the

Task Force on Environmental Initiatives

October 2007

Prepared for President Irvin D. Reid
Wayne State University

October 22, 2007

Irvin D. Reid, President
Wayne State University
4200 Faculty/Administration Building
656 W. Kirby
Detroit, Michigan 48202

Dear President Reid,

On behalf of the Task Force on Environmental Initiatives, we are pleased to submit our final report in response to your charge to enhance our campus while playing a constructive role as an environmental citizen.

After conducting a thorough review and analysis of existing programs, the task force has developed a series of recommendations that we believe will position Wayne State University as a leader in environmental stewardship.

Our recommendations are made with the underlying goal of enriching university life and sustaining the mission of innovation throughout the entire institutional community.

It is our honor to have served on this important task force. We stand ready to answer questions you may have regarding this report.

Sincerely,

Nabelah Ghareeb
Associate Vice President
Business and Auxiliary Operations

Ralph Kummler
Dean
College of Engineering

Co-Chairs, Task Force on Environmental Initiatives

TABLE OF CONTENTS

APPENDICES

I. Executive Summary

The Task Force on Environmental Initiatives has completed its initial review of the university's environmental needs and programs. The task force identified and implemented strategies to enhance the campus and protect the environment. The following report is intended to be a useful tool to shape the future direction and scope of environmental initiatives at Wayne State University.

The task force makes its recommendations with the recognition that protecting the environment is becoming urgent worldwide as human impact strains the planet's resources. Furthermore, as a provider of world-class education and as an influential metropolitan Detroit institution, it is important that Wayne State University demonstrate and promote leadership in conservation.

Recommendations

After careful study, the task force is pleased to make the recommendations which align with several of the university's long-term strategic goals. Those goals include upgrading the physical environment and infrastructure of the campus; updating the campus master plan by prioritizing facilities that support the academic mission; and establishing an energy conservation strategy. The key recommendations of the task force are as follows:

- Develop energy-efficiency policies to guide all future construction.
- Design and implement the Wayne State Energy Reduction Program and a Campuswide Lighting Initiative.
- Wherever possible, use "green" power — power that preserves environmental quality
- Establish a recycling infrastructure that efficiently removes waste streams and economically reuses university resources.
- Continue to teach the campus community about recycling.
- Establish an Academic Study Group to identify additional research, scholarship and instructional opportunities to address the growing interest in industrial and urban sustainability.

- Introduce a Sustainability Certificate Program or a set of certificate programs.
- Challenge all units to streamline their paper-intensive processes, using the Dean of Students Office as a prototype.
- Decrease the economic, environmental and public health impacts associated with heavy vehicle traffic to and from campus. Reduce the number of miles that students, staff and faculty drive to the university by encouraging the use of convenient, economic, alternative transportation, or living in Midtown.
- Reduce — through purchasing practices and education — costs and environmental, community and occupational risks associated with the use and disposal of materials.
- Practice waste minimization techniques.
- Monitor and reduce the purchase of chemicals, and lessen the risks of using toxic chemicals.
- Create an ongoing standing committee to analyze, recommend and implement both strategies and methods for improving environmental performance.
- Develop written administrative policies to promote energy conservation measures in the university's activities, services and business practices.
- Continue to educate the campus community on the importance of environmental stewardship, disseminating information about environmental research and policy, increasing student, faculty and staff awareness of environmental issues and offering additional opportunities for environmental education.
- Centralize the coordination of the university's sustainable environmental initiatives under a single unit to achieve cost savings and streamline operations.
- Work with surrounding communities to build a sustainable university and neighborhoods.

Accomplishments

The task force is leading the charge to effectuate change across campus in environmental practices and stewardship. Thus far, a number of steps have been taken to protect the environment and enhance the campus, including:

- Incorporated additional energy conservation measures into the construction of the new Engineering Development Center.

- Gathered information on Wayne State's existing sustainability-related courses and explored establishing a sustainability certificate program.
- Worked with the Dean of Students Office (DOSO) to expand DOSO initiative to transfer online and move toward paperless all student activities processes.
- Established a new environmental student organization.
- Promoted alternative transportation by establishing discount programs with transportation organizations.
- Increased awareness of transportation alternatives.
- Requested that vendors supply information on commonly purchased solvents.
- Analyzed life cycles of solvents and paint wastes.
- Reinitiated the University Chemical Reclamation Program.
- Restructured the Battery Recycling Program.
- Established a program for donating used paint.
- Selected a pilot laboratory, which has been recycling its solvents since January 2007.
- Joined the Association for the Advancement of Sustainability in Higher Education and the US Green Building Council to gain access to a wide variety of resources.
- The College of Engineering and TechTown's NextEnergy embarked on a partnership with the shared vision to develop sustainable energy technologies to drive tomorrow's Michigan economy. The College's Alternative Energy Technology master's degree and certificate received top award funding by NextEnergy among the state's sustainable energy technology higher education programs.
- The College of Engineering and NextEnergy partnered with Chrysler and BP Energy to host a new generation Mercedes-Benz hydrogen fuel cell car in a three-year project to test the new technology in daily real-world conditions. The WSU Department of Public Safety operates the vehicle, which is the world's first hydrogen-powered police vehicle.

II. Task Force Charge and Proceedings

Charge

Wayne State's 2006-2011 Strategic Action Plan places a premium on enhancing the quality of campus life by nurturing a strong and dynamic community. The third strategic direction in the plan calls for upgrading the campus's physical environment and infrastructure and establishment of an energy conservation strategy. Clearly, the university embraces the values and goals of environmental stewardship by articulating these principles in the 2006-2011 Strategic Plan.

In order to achieve these objectives, the Wayne State University Board of Governors' unanimously adopted a resolution on September 13, 2006 called the Resolution on Environmental Concerns. The resolution explains that the Board of Governors supports programs that protect the environment and enhance the campus. Governor Jacquelin Washington made the motion to approve the resolution; the motion was seconded by Governor Annetta Miller. The resolution also recognized the ongoing development of a campuswide recycling program and broader measures for progress toward environmental objectives, including ongoing maintenance and construction of campus buildings.

At the September 13, 2006, Board of Governors meeting, Wayne State University President Irvin D. Reid announced that Andrea Dickson, executive vice president and chief of staff, would head the campuswide effort to develop and implement programs that protect the environment and enhance the campus.

To accomplish the Board of Governors' resolution on environmental concerns, President Reid created the Task Force on Environmental Initiatives on September 28, 2006. Ralph Kummler, dean, College of Engineering, and Nabelah Ghareeb, associate vice president for Business and Auxiliary Operations, were named co-chairs of the task force.

On October 6, 2006, President Reid charged the task force to provide a comprehensive strategy for improving the university's resource management. According to the charge, the strategy is to include recycling; green purchasing; energy conservation, waste stream, mass balance and sustainability measures; and raising campus awareness on environmental stewardship.

President Reid's charge also states that it makes financial sense to implement environmentally conscious practices that will result in cost savings and reduce consumption across campus. The task force, the charge continues, was to build on the successes of two ongoing initiatives in recycling and transportation.

The task force was comprised of 28 members from the university community formed five subcommittees: Energy Conservation, Recycling, Sustainability, Transportation and Waste Stream and Mass Balance. Each subcommittee wrote a portion of this document. The full task force met monthly; subcommittees met separately and brought in internal and external experts, conducted benchmarking, identified best practices and consulted with federal agencies. Subcommittee members presented an interim report to the university community during Wayne State University's Earth Week activities April 2-6, 2007. At that time, livinggreen.wayne.edu was launched to track and highlight the university's progress in implementing measures identified in this report.

Proceedings

The majority of the task force recommendations were conceived and researched by the subcommittees who used a variety of means to collect and analyze data and information necessary to build a foundation for this report. The recommendations set out at the front of this report are the compilation of the respective reports from the subcommittees.

It is instructive to the university community to set out in entirety the individual subcommittee reports. As the reports reveal, the various subcommittees reached similar conclusions on the blueprint for achieving the goals of the Presidential Task Force on Environmental Initiatives

III. Energy Conservation Subcommittee Report

Summary

The Energy Conservation Subcommittee recommends the following actions as the most likely to produce significant, sustained energy conservation. First, the university has incorporated additional energy conservation measures into the design of the new Engineering Development Center. The plan is for the building to achieve a silver LEED certification.

Next, the university should continue to gather information on best environmental practices from other campuses and professional organizations and quickly fill any knowledge gaps to guide its energy conservation efforts. The group already has obtained membership in two organizations that can provide access to conservation resources. Finally, the subcommittee recommends (1) developing energy-efficiency policies to guide all future construction; designing; (2) implementing the Wayne State Energy Reduction Program (WSERP) and a Campuswide Lighting Initiative; (3) and developing and using green power.

Charge

The Energy Conservation Subcommittee advocates for and assists in the implementation of technologies, policies and practices to lead to reduced energy consumption and the development of a sustainability ethic in the Wayne State University community of faculty, staff and students. This will be accomplished by placing specific emphasis on

- developing approaches consistent with those of professional organizations committed to excellence in energy conservation and sustainability;
- designing energy-efficient facilities and systems;
- monitoring and managing energy consumption and costs;
- suggesting policies and practices that will result in shared responsibility for energy conservation; and
- Promoting the individual behaviors of members of the Wayne State community that will lead to energy conservation.

This subcommittee was guided by a specific goal in the Wayne State University 2006-2011 Strategic Action Plan, item 3.2.3: Establish an energy conservation strategy. As viewed by the committee, this strategy consists of a broad vision and requires an articulation of the means by which the university might move in a persistent manner toward this vision. The subcommittee began by exploring the scope of the energy conservation issues facing this campus and quickly determined that the following areas would be most likely to produce a significant, sustained impact on improving energy efficiency and reducing energy consumption.

A. Objectives

- Incorporate energy conservation measures into the construction of the new Engineering Development Center on a cost-effective basis.
- Gather information pertaining to best environmental practices from other campuses and professional organizations, take stock of what is known, and quickly fill any knowledge gaps to guide its energy conservation efforts.
- Develop energy-efficiency policies to guide all future construction identified in the Capital Outlay Plan.
- Create a Wayne State Energy Reduction Program (WSERP) to recommend policies and practices for reducing energy consumption.
- Develop and implement a Campuswide Lighting Initiative
- Develop and use green power.

B. Accomplishments

1. Engineering Development Center

As part of an initial focus on identifying opportunities for energy conservation, the subcommittee took steps to initiate discussions regarding the construction of the new Engineering Development Center (EDC). The members of this subcommittee felt that because of the unique programmatic elements of the EDC, a significant opportunity existed to create an intersection between the goals of the task force and the teaching and research activities that were to take place in the new building. Based on a number of national perspectives that were analyzed, most notably

those of the US Green Building Council and its Leadership in Energy and Environmental Design (LEED), the subcommittee felt that a case could be made to incorporate additional energy conservation measures on a cost-effective basis. Accordingly, the following resolution was drafted by this subcommittee and introduced at the December 2006 meeting of the Task Force on Environmental Initiatives:

> *The Task Force on Environmental Initiatives requests that the university administration use the opportunity presented by the planned construction of the Engineering Development Center (EDC) to demonstrate the university's commitment to environmental stewardship. We believe the EDC should be LEED designed and certified at a level that symbolizes the university's commitment, and Energy Star rated, incorporating all necessary design elements and systems to ensure that the facility demonstrates and promotes energy efficiency and the adoption of alternative energy technologies. Given the nature of the activities planned within the center, in particular, the teaching, research, and technology transfer programs focused on alternative energy solutions, this action provides the added benefit of creating a symbolic and synergistic relationship between the academic enterprise and the university's interest in adopting environmentally conscious practices. It is further requested that the university administration adopt a cost-benefit analysis and return-on-investment view of the project costs that will enable the university to make an informed decision on a level of LEED certification that is consistent with resources and its commitment to campuswide sustainability. We believe the university administration should consider incorporating appropriate changes in the remuneration provided to the architectural firm responsible for design and review, move to implement an energy cost model, and consider having the university administration and the College of Engineering share responsibilities for the operating budget for the EDC.*

- The administration embraced the spirit of this motion. A series of meetings followed, wherein several members of this subcommittee were invited to participate in workshops and the subsequent

discussions and efforts designed to achieve the highest level of energy conservation that the budget and project schedule would allow. This effort was a major undertaking by the members, requiring a significant investment of time. At this point, it appears that the EDC could obtain a silver LEED certification. Similarly, the Richard J. Mazurek Educational Commons (with construction beginning fall 2007) will be designed and constructed in accordance with LEED certification at either the silver or gold level. A number of other developments grew out of this focus, and the subcommittee was able to isolate a number of initiatives that it would recommend as elements for the overall university energy conservation strategy.

2. Knowledge Management Initiative

- The subcommittee arranged for a presentation by Seimens Corporation on January 22, 2007.
- The subcommittee recommended that the university obtain a membership in existing organizations that can provide access to a wide variety of resources, including benchmark data, policy guidelines, interest groups, experts, and empirical studies. On March 2, 2007, the university announced obtainment of a membership in the Association for the Advancement of Sustainability in Higher Education (AASHE), and the US Green Building Council (USGBC).

C. Energy Certification for Future Projects

As Wayne State renovates and constructs buildings, it is important that both LEED and Energy Star criteria be implemented. The university should rate its residence halls and compare the ratings with those of other universities with Energy Star-labeled buildings. In order to meet Energy Star partner guidelines for future building projects, the university should develop energy conservation and sustainability policies. Examples of such policies might include the following:

- The unit charged with sustainability oversight should examine and provide advice on all building and projects that will have an impact on energy consumption.
- The American Physical Plant Association, of which Wayne State is a member of the Michigan chapter, has partnered with the EPA to update the Energy Star database. This enables organizations to develop reasonable baselines for university buildings to achieve Energy Star rating.
- The U.S. Department of Energy and the EPA administer the Labs for the 21st century program (http://labs21century.gov/) which should be an area of particular emphasis given our research infrastructure.
- Purchasing practices and procedures should reflect sustainability goals, and all relevant products and services should be compliant with Energy Star Partner guidelines.
- The Administrative Policies and Procedure Manual should be revised to reflect campus sustainability objectives and practices.

1. Bring Best Practices to Campus

- The university should establish a fund to send faculty, staff and students to workshops and conferences that will provide insights and best practices that can be applied here.
- Acknowledged leaders in the systems, controls and software associated with energy conservation measures, such as Johnson Controls and The Trane Company, should deliver presentations. This subcommittee recommends that the university consider holding a sponsored conference that would include leading experts and representatives from relevant associations and organizations, as well as leading academicians, to facilitate an extended dialogue and to spark collaborations. The sessions can be moderated by members of the task force. The conference could be used as a learning opportunity for students and members of the community. The subcommittee believes that it is critical for the university to expand its understanding of available options and to engage the campus community in a dialogue. In this way, Wayne State can

shorten the learning curve, avoid possible missteps and quickly gain momentum quickly.

- The university should gather and analyze energy consumption data and design and implement a program to undertake the ongoing review of campuswide energy consumption, both on a comparative and absolute basis, to support the energy conservation goals of the university. Specifically, the subcommittee recommends that the university take the following steps:
    - Provide actionable performance monitoring data on a real-time basis and a tracking system that would provide transparency of results achieved and progress made. The university's success in reducing relative energy consumption must be visible and demonstrable.
    - Provide research grants for faculty and students to analyze the current Wayne State energy consumption relative to similar buildings at comparable institutions.
    - Develop university capabilities by working with existing academic programs and courses. Also, develop new courses to set up student projects for developing a five-year plan for creating an energy-efficient campus. Student-faculty teams can conduct an evaluation, develop the program for remediation, develop the budget models, and assist in implementation and tracking of efforts targeting every building on campus.
    - Examine current energy control systems and review and recommend adoption of new technologies that will produce energy savings and cost savings. Specifically, appropriate metering and submetering needs to be provided so that the consumption of energy can be isolated on a building-by-building basis. In this manner, energy conservation initiatives targeting different buildings or building types (e.g., instructional, research, general purpose, etc.) can be evaluated in terms of efficacy and efficiency.

2. Incorporate Energy-Efficiency in Future Construction

- Identify general-purpose, energy-efficient building technologies.

- Identify a general-purpose life-cycle analysis for case-by-case validation.
- Create a process to establish energy cost modeling, modified remuneration to architectural and design services firms, and adjust university capital projects' financing and operational budgeting. Establish other measures to ensure adoption of energy conservation efforts and energy-efficient design in the construction of buildings and systems to ensure LEED design and certification and Energy Star ratings.

3. Implement the Wayne State Energy Reduction Program (WSERP)

- In collaboration with Facilities Planning and Management, WSERP would detail the design, implementation and coordination of an action-oriented educational campaign to instill the habit of energy reduction across campus. The goal of the WSERP is to mobilize change by addressing underlying cultural and behavioral issues through adaptation and implementation of the Personal Pledge model below, (as in the example at http://www.greencampus.harvard.edu/pledge/forms/pledg.php).
- Develop a program to solicit and review proposals that would receive university funding for collaboration among staff, faculty and students to reduce resource consumption at the school, college, department and unit level through educational programs and active behavior-change campaigns. Examples might include:
- A Sleep Mode Initiative, a program designed to ensure that all computers go into "sleep mode" when not used after a predetermined amount of time (time to be recommended by this group).
- A Lights Out Initiative, a program to remind staff and students to turn off lights and equipment when not in use. This program should have periodic reminders to participants.
- Fume Hood Sash Management, an educational campaign and competition encouraging researchers to save energy by closing their fume hood sashes.
- Development and implementation of strategies to save water in residential, laboratory and outdoor settings.

  - Implement Economizer Controls wherever feasible. These controls reduce chilled water consumption, electrical usage and heating loads.
  - Seek to institute Delta-T Improvements. These improved controls and piping cool buildings more efficiently, raising the Delta-T of chilled water as it returns.
- Introduce necessary changes to existing purchasing policies and to the applicable sections of the APPM to specify Energy Star-qualified products, such as office equipment, in contracts or purchase orders.

4. Campuswide Lighting Initiative

  - Establish a light bulb exchange program. The program would be centered on exchanging incandescent light bulbs for compact fluorescent light bulbs. This would be a one-for-one exchange. The parameters of the program need to be defined. Establish and fund a budget to support this program. Recent developments in the commercial sector make this a feasible goal.
  - Study, select and implement lighting upgrades and communicate the cost savings achieved.
- Establish a lighting retrofit program for existing buildings. This would include the installation of occupancy sensors where applicable. Establish and fund a budget to support this program.

5. Green Power

- Develop and implement a Solar Photovoltaic (PV) Retrofitting Initiative.
- Identify a general-purpose solar PV retrofitting "kit."
- Identify and target a number of buildings for the implementation of such retrofits.
- Evaluate the options to purchase green power. The university should monitor developments regarding the Michigan 21st Century Energy Plan and seek opportunities to partner with the State of Michigan as it endeavors to increase the generation of power from renewable sources.
- Evaluate the feasibility of converting the university motor pool to a hybrid-powered pool.

IV. Recycling Subcommittee Report

Summary

The Recycling Subcommittee's recommendations are teaching the campus community about recycling; developing a recycling department that would generate 60 percent of its financial support in five years; creating a full-time recycling program manager position; and establishing a recycling program in each building that meets the facility's unique needs. The subcommittee determined that no central authority on recycling exists at the university. Instead, the group found a number of individual recycling efforts. The ultimate goal is to establish an infrastructure that allows for a cohesive movement of material and a space large enough to accommodate volumes of material to result in revenue generation for the university.

Charge

The Recycling Subcommittee adopted the following charge and goals for the duration of the term of the task force.

- Create a comprehensive plan for a sustainable recycling program on campus, including residence halls, classroom, office and research buildings and other building types on campus.
- Identify existing programs and find solutions for what is recyclable on campus, including paper; postconsumer waste such as plastic, metal, glass and cardboard; compostables; ink and toner cartridges; computer equipment; withdrawn bound material (books, primarily from university libraries, that are discarded after their useful life); batteries; and light bulbs.
- Identify the infrastructure necessary to support recycling for each building type.
- Identify contractual obligations for vendors, and provide an education and promotion plan to instill a necessary culture change.

A. Objectives

The Recycling Subcommittee's objectives and goals are to

- Identify current recycling programs;
- Create a master plan for the university recycling program;

- Establish a standard operating procedure for each building.
- Educate the community on our recycling program.

Further, the subcommittee sought to create a program that is logical and convenient. The ultimate goal is to establish an infrastructure that allows for efficient movement of material to a space large enough to accommodate volumes of material that will offset pickup costs.

The subcommittee found that no central authority on recycling exists. Instead, the group found a number of individual recycling efforts, most focusing on paper. Most paper programs are concentrated only in staff areas. Because the programs are operated individually, they cause the vendor to come to a single building multiple times over the course of several weeks to empty recycling bins that are within a few offices of each other (see Appendix A for a complete listing of recycling pick-up locations on Wayne State campus). The most efficient programs on campus are those that allow for collection of a large amount of material gathered in one location for pick up by the vendor. The University Library System's paper recycling program, for example, earns refunds. (model recycling programs identified by building type is described in Appendix B).

B. Accomplishments

The Recycling Subcommittee accomplished the following:

- Identified many paper recycling programs on campus.
- Reviewed the following four buildings for current recycling practices and made model recommendations for improvements
  - Office Building: Faculty/Administration Building
  - Classroom Building: State Hall
  - Research Building: Scott Hall
  - Residence Hall: The Towers Residential Suites
- Identified improvements to maximize participation and necessary infrastructure changes.
- Identified potential locations for cardboard baling in three locations on campus: Scott Hall, The Towers, and Student Center.

- Presented pilot findings and promoted expansion of the program to the Building Coordinators meeting in February. 2007. From this meeting, the program expanded to include Computing & Information Technology and the Reuther Library.
- Found a positive attitude about existing programs from staff on campus and a willingness to assist with expansion.
- Discovered many areas where existing recycling efforts can be improved. Identified intermediate steps to realize a more efficient and cost-effective program across the university.

C. Recommendations: 0-3 Years (October 2007–September 2010)

Goals

- Recycle 15 percent of the waste stream.
- Develop a recycling department that recovers 50 percent of its financial support within three years through credits for diverting waste from trash pickup and selling recycled material.

1. Educate the Campus on Recycling

- Create posters to identify what is recyclable at WSU and where to put it for recycling.
- Introduce competition in residence halls. See RecycleMania (recyclemania.org) and involve Wayne State in this competition.
- Establish education tools, brochures and bins to enable and encourage residents' participation.
- Develop a Web site to promote, inform and allow for comments and suggestions.
- Work with student organizations and Greek Life to support quality of life on campus by participating in programs such as recycling.

2. Infrastructure

- Build a sustainable program on campus that will meet the needs of the campus, minimize impact on staff and maximize the amount of material that can be recycled.
- Establish a recycling program that meets each building's unique needs.

- Request that each building's jurisdictional dean/director appoint designee(s) in every building to be contact person(s) to assist with recycling implementation and engage in problem solving.
- Identify vendor obligations and work with Business Operations to identify a methodology to ensure the vendor meets contractual obligations.
- Utilize custodial services to move material from central pickup locations to areas where recycling vendors conveniently can pick up recyclables.
- Evaluate current locations of trash containers and recycling containers. Locate them side by side so recycling is just as easy as throwing something away.
- Identify and cost out proper supplies and equipment.
  - Containers
  - Trucks
  - Central Pickup locations
- Balers (standard price is $3,500; may be available through State of Michigan surplus.)
- Create a "free" corner in the Property Management Office that allows anyone to pick up material that is not purchasable. Re-evaluate how material is disposed of through this office.
- Identify and implement opportunities for expansion of recycling efforts, including these:
  - Move-In Day, implement cardboard recycling
  - Move-Out Day, allow for Goodwill Industries or Salvation Army to pick up unwanted furniture and goods.

3. Management Support

- Ask Board of Governors to adopt the state initiative on recycling as a university policy.
- Create or redeploy a full-time staff position, reporting to Business Operations, to run the Recycling Program. The Recycling Program coordinator will be responsible for managing the recycling operation, as well as expansion on campus. Evaluate all buildings to strengthen

existing recycling programs. See text at http://www.michigan.gov/dmb/0,1607,7-150-9141_25043---,00.html

- Ensure collaborative, creative, progressive response to problems by Facilities Planning and Management Custodial Services and other coordinating departments.
- Allow Recycling Program manager to make recommendations to Business Operations and Fiscal Operations regarding vendor contracts and Request for Proposals (RFPs).
- Identify measurables that will determine success of the program.

D. Recommendations: 3-5 years: (October 2010–September 2012)

Goals:

- Develop a recycling department that recovers 50 percent of its financial support within three years through credits for diverting waste from trash pickup and selling recycled material.
- Increase participation levels in offices and residence halls.
- Implement opportunities for Dean of Students and student organizations to participate in Urban Volunteers.
- Create a service learning component for students living in residence halls.
- Create a central recycling center on campus:
  - Resell furniture.
  - Provide a floor for giveaway items at the Property Management Office.
  - Create collection center for all recycled material collected on campus.
  - Create a composting center to recycle tree, as well as food waste, and return mulch to the university's Grounds Unit for use on campus.

E. Recommendations: 5+ years: (October 2012+)

Goals

- Recycle 100 percent of recyclable material in the waste stream.
- Develop a recycling department that generates 100 percent of its financial support.

- Create regional business by utilizing local entrepreneurs to build a recycling region. Utilize student research to create an economic development program.
- Utilize student research to evaluate the efficacy of a WSU incinerator to dispose of items that are not recyclable.
- Build a WSU recycling dock to maximize our recycling output and payback opportunities.
- Include a construction and demolition recycling center.
- Sponsor a national leadership conference on sustainability.

F. Strategic Action Plan Linkages

Accomplishing the goals of the Recycling Subcommittee would help Wayne State carry out its urban mission to contribute to the renewal, prosperity and well-being of Detroit and Michigan. The reduction of waste would improve the quality of life in the region and the local economy.

The subcommittee's goals address these parts of the university's strategic plan.

- 3.2, Upgrade the physical environment and infrastructure of the campus.
- 3.2.1, Update the campus master plan, prioritizing facilities that support the academic mission.

V. Sustainability Subcommittee Report

Summary

The principal recommendation from the Sustainability Subcommittee is that the university establish an Academic Study Group to identify the research, scholarship and instructional opportunities to address the growing interest in industrial and urban sustainability. The subcommittee already has gathered information on Wayne State's existing sustainability-related courses and explored establishing a Sustainability Certificate Program.

The Sustainability Subcommittee further recommends improved utilization of campus resources to bolster sustainability. For example, one office has arranged for submission of all its paperwork online. Another recommendation is to encourage students to participate in sustainable development on campus; a new environmental student organization has been established.

Through careful examination of day-to-day practices and procedures, schools, colleges and divisions should be mindful of their administrative procedures and look for ways to streamline operations and conserve resources. The subcommittee also recommends working with surrounding communities to build a sustainable university and neighborhoods. Work is underway to recruit a community advisory board.

Charge

Generally, the most widely accepted definition of "sustainable development" was identified in the *Brundtland Report* as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (World Commission on Environment and Development, 1987).

The Sustainability Subcommittee's charge is to promote improved sustainable development within the Wayne State University community

through the improved understanding of the meaning of campus sustainability and its importance for the future viability of the university.

Objectives

The group adopted the following objectives.

- Improve and increase sustainability content in courses in all colleges (education and curriculum).
- Help streamline administration processes and implement improved utilization of campus resources (administration and facilities management).
- Encourage students to participate in sustainable development on campus (student involvement).
- Work with communities surrounding the campus to build a sustainable university alongside sustainable neighborhoods (community engagement).

A. Accomplishments

The Sustainability Subcommittee has tackled a variety of campus sustainability tasks, as shown in Appendix C, and already accomplished the following throughout the university:

- Drafted a letter to be sent from the provost's office to all university departments to help identify existing sustainability course content and determine whether there is a need for the development of new courses and/or simply augmenting existing courses (see Appendix D).
- Performed an academic audit to gather information regarding the existing sustainability-related courses within the university (see Appendix E).
- Engaged in preliminary discussions regarding the feasibility of establishing a Sustainability Certificate Program at WSU. The faculty members from various academic departments formed the discussion group and met with professors from neighboring universities in February 2007. A second meeting with the Engineering Society of Detroit on the certificate program was held in March 2007.

- Successfully created a 24/7 Dean of Students Office, where all existing paperwork can now be submitted online, eliminating paper-intensive procedures, reducing the consumption of money, time and materials.
- Work has begun to compose a list of potential community leaders to be a part of an advisory board to encourage interaction with the surrounding community.
- One of our student members has established a new environmental student organization to focus on educational programs and community service projects.

Recommendations

The campus sustainability recommendations are shown below and summarized in Appendix C. The subcommittee also has developed action plans for many of the proposed tasks discussed below. It also should be noted that the group refers to the term "community" to include all local members of the city planning department, nonprofit organizations, industry leaders and residents. In general, the group is dedicated to being the core for industrial and urban sustainability research and education within the extended university community.

B. Recommendations: 0-3 Years (October 2007–September 2010)

1. Education and Curriculum

- The principal recommendation from the Sustainability Subcommittee is that the university establish an Academic Study Group to identify the research, scholarship and instructional opportunities to address the growing interest in industrial and urban sustainability.
- Introduce a Sustainability Certificate Program or a set of certificate programs.

2. Administration and Facilities Management

- Streamline existing university practices. Challenge all units to streamline their paper-intensive processes, using the Dean of Students Office as a prototype.

- Work with local nonprofit organizations such as Greening of Detroit to (1) plant trees to make more areas of the campus green; and (2) continue to restore the campus.
- Review the current external lighting guidelines to see if appropriate energy consumption standards were used. If not, change external lighting procedures without compromising campus security.
- Develop university guidelines on future construction to require some level of sustainability from project conception when it is fiscally sound. Guidelines could cover, for example, Leadership in Energy and Environmental Design (LEED) certification, building rating systems, construction waste, green roofs and building accessibility). The goal is for the university to consider a broad spectrum of issues before construction to achieve sustainable buildings.
- Establish a dedicated home for the university environmental initiative.

3. Student Involvement

- Introduce a new student environmental organization.

4. Community Engagement

- Become involved in the May 2008 National Brownfields Conference in Detroit.
- Work with local non-profit organizations that are involved with sustainability projects.

C. Recommendations: 3-5 years: (October 2010–September 2012)

1. Education and Curriculum

- Host sustainability conversations every semester.
- Determine criteria to measure campus sustainability.

2. Administration and Facilities Management

- Utilize more efficient campus lighting.

3. Community Engagement

- Partner with area high schools to promote sustainability.

- Develop a sustainability advisory board to encourage interaction with the surrounding community.

D. Recommendations: 5+ years: (October 2012+)

Community Engagement

- Offer sustainability extension courses that are open to the community.
- Host a seminar called “The Sustainable Urban Campus.”
- Construct a cycling/running route through campus.

VI. Transportation Subcommittee Report

Summary

With 33,000 students and 8,000 employees and over a 100,000 annual visitors to campus for special events and activities, Wayne State University is clearly a hub of transportation in Midtown Detroit. Not only are students, faculty, staff and visitors coming to and from campus, but once here may need to travel to other areas of the approximately 200-acre campus including main campus, the medical complex and the TechTown Research and Technology Park.

The Transportation Subcommittee's recommendations are three-fold:

- Partner with state, regional and local governmental entities to address short- and long-term transportation needs in the region;
- Provide students, faculty and staff with alternatives to the use of cars including information and linkages on mass transit, shuttles and pedestrian walkways;
- Create student organization(s) that focus specifically on transportation alternatives with the goal of reducing traffic, congestion and pollution.

Wayne State is actively promotes alternative transportation by establishing discount programs with transportation organizations and continually promoting awareness of transportation alternatives to the university community. Second, the university has stepped up efforts to provide alternatives such as shuttle service for intra-campus trips that help reduce the number of vehicle miles driven by students, faculty and staff. The university also pledges to work closely with civic organizations in identifying opportunities to reclaim green space that will be converted to pedestrian walkways and bike paths to encourage alternative methods of transportation that contribute positively to the quality of life for the campus community.

Charge

The charge of the Transportation Subcommittee is to reduce the economic, environmental and public health impacts associated with motorized vehicle traffic to, from and within Wayne State University.

This subcommittee's report incorporates information from a separate group called the Wayne State University Transportation Task Force. This related task force was created in fall 2005 to address long- and short-term transportation needs of the university community.

Objectives

- Reduce the number of miles that students, staff and faculty drive to and from campus and once on campus.
- Encourage the use of convenient, economic, alternative transportation to preserve with the goal of reducing pollution, traffic congestion and infrastructure costs.
- Improve awareness of transportation services available to faculty, staff and students and promote alternatives to intra-university travel.

A. Accomplishments

- The following partnerships have been developed with these agencies to increase use of public transit and ride-sharing among students, faculty and staff:

    - Detroit Department of Transportation (DDOT)
    - Southeast Michigan Council of Governments (SEMCOG)
    - Suburban Mobility Authority for Regional Transportation (SMART)
    - Transportation Riders United (TRU)
    - MichiVan

    In furtherance of fostering these partnerships, each organization provided information and delivered presentations to the Transportation Task Force. Students and employees distributed

information to on-campus residents and commuting students. Every year this information will be provided as part of new student orientation, Move In Week, Homecoming and Welcome Back Week.

- Wayne State partnered with SEMCOG's RideShare program, a free carpool and vanpool service that can link Wayne State employees and/or students who want to commute together. Information is available at www.parking.wayne.edu and www.eRideShare.com.
- Wayne State solicited special promotions for university community members including the following:
    - Three months of DDOT bus riding with one month free;
    - Free one-month SMART bus passes for all new employees. Information on these programs is provided during new employee orientation by the Human Resources department.

- Expansion of the university shuttle system to link more sections of campus.
    - Currently two complimentary shuttles are offered, one serving main campus; the other linking main campus with the medical campus;
    - Enables students, faculty and staff to park car and get to the other side of campus by flashing a OneCard;
    - Extension of existing service to the TechTown Technology Park in fall 2007.

- Partner with the University Cultural Center Association (UCCA) to promote the Midtown Loop Greenway.
    - Loop will connect Wayne State campus and the Detroit Medical Center (DMC) and will be linked to a larger greenway network connecting campus to the New Center area and downtown Detroit and the riverfront;
    - Expands pedestrian walkways and crossings using a variety of planting beds to separate pedestrians from vehicle traffic
    - Reclaims green space and contributes to quality of life and recreation options in area.

  - Construction of Phase I of project is expected to be underway in spring 2008.

B. Recommendations: 0-3 Years (2007–September 2010)

- In partnership with the City of Detroit and DDOT, hosted a town hall meeting to discuss transportation issues in spring 2007;
- Expanded RideShare program;
- Partnered with the City of Detroit transit project;
- Used Wayne State shuttle buses for events off campus;
- Created a student organization focusing on transportation initiatives;
- Extend campus shuttle to the TechTown Technology Park in fall 2007.
- Promote the Midtown Loop Greenway to encourage additional pedestrian and recreational opportunities on campus and reduce number of vehicle miles.

C. Recommendations: 3-5 years: (October 2010–September 2012)

- Establish transportation information kiosks on central campus with information on Parking and Transportation Services
- Seek funds for special transportation programs from federal and state governments and other sources;
- Continue promoting community carpooling/vanpooling to campus;
- Develop transportation partnerships involving nearby businesses and organizations including Henry Ford Health Systems.

Recommendations: 5+ years: (October 2012+)

- In conjunction with local, regional, state and federal governments, expand regional transportation alternatives to address the long-term transportation needs of Southeast Michigan.

VII. Waste Stream and Mass Balance Subcommittee Report

Summary

The Waste Stream and Mass Balance Subcommittee has several recommendations to reduce — through purchasing practices and education — costs and environmental, community and occupational risks associated with Wayne State's use and disposal of materials. Recommendations include practicing waste minimization techniques; monitoring and reducing the purchase of chemicals; and lessening the risks of using toxic chemicals.

The group already has implemented a number of accomplishments that will reduce costs and risks, including arranging sustainability training; requesting that vendors supply information on commonly purchased solvents; analyzing life cycles of solvents and paint wastes; reinitiating the University Chemical Reclamation Program; restructuring the Battery Recycling Program; and establishing a program for donating used paint. The group also selected a pilot laboratory, which has been recycling its solvents since January 2007.

Charge

The charge of the Waste Stream and Mass Balance Subcommittee is to reduce — through purchasing practices and education — costs and environmental, community and occupational risks associated with Wayne State's use and disposal of materials. In addition, the group's charge is to increase awareness of best practices regarding waste stream and mass balance. Mass balance concerns the accounting of material entering and leaving the university or accumulating in it.

A. Objectives

- Minimize waste, and, therefore, chemical disposal costs.
- Reduce occupational and environmental risks.
- Monitor and reduce the purchase of chemicals.
- Donate waste paint.
- Redistribute surplus chemicals.

- Reduce mercury pollution.
- Recycle solvents.
- Reduce risks associated with use of toxic chemicals.

B. Accomplishments

- Completed a comprehensive inventory of all chemicals in campus laboratories in accordance with U.S. Department of Homeland Security requirements.
- Arranged for the Office of Purchasing to require vendors to supply information on commonly purchased solvents.
- Evaluated and completed life cycle analyses for solvents and paint wastes.
- Arranged for the Office of Environmental Health and Safety to incorporate sustainability concepts into all training programs.
- Reinitiated the University Chemical Redistribution Program.
- Restructured the Battery Recycling Program.
- Established a program for donating used paint to nonprofit organizations.
- Selected a pilot laboratory, which has been recycling its solvents since January 2007.
- Recommended establishment of Chemical Safety Committee that operates in conjunction with the Wayne State Office of Environmental Health and Safety.

C. Recommendations: 0-3 Years (October 2007–September 2010)

1. University Waste Minimization

The subcommittee recommends that university researchers and educators practice waste minimization techniques to reduce the volume and toxicity of chemical wastes produced at Wayne State. The benefits of such a program are twofold. First, waste minimization will reduce chemical disposal costs, which approximately are greater than $300,000 annually and will increase as governmental regulations become more restrictive. Second, encouraging substitution of hazardous materials with nonhazardous materials will reduce occupational and environmental risks.

Waste minimization can be achieved by product substitution, process modification, chemical redistribution, neutralization and deactivation, education and recycling.

- Product substitution: Materials considered toxic according to the US Environmental Protection Agency can be reduced by substitution of less toxic materials. For example, citric-based chemicals could be used instead of xylene and toluene in histology laboratories, and nonhazardous scintillation liquid cocktails can be used in place of xylene and toluene. Detergents and enzyme cleaners can be used for cleaning glassware.
- Process modification: Laboratories can use microanalysis techniques to reduce their chemical waste. University machine shops also can participate in solvent recycling programs.
- Neutralization and deactivation: Some laboratories can render their hazardous chemical waste by neutralization or deactivation. In addition, some laboratories remove metals from their aqueous waste by precipitation.
- Education: Since laboratory workers require annual training, the recommendations and initiatives from the Sustainability Subcommittee will be incorporated into our initial and annual training programs.
- Form a peer-review chemical safety committee to work in tandem with the Office of Environmental Health and Safety and to achieve the concerns identified by the subcommittee.

2. Campuswide Inventory Program

In mid 2007, the university conducted a comprehensive inventory of chemicals on campus as required by the U.S. Department of Homeland Security. Establishment of a permanent inventory control program would monitor and reduce the unnecessary purchase of chemicals within the university by requiring researchers to survey the chemicals being used in their laboratories. A more comprehensive inventory control program would initially increase the costs of disposal for the university by requiring the disposal of chemicals that have not been used within one to two years. On

the other hand, this program would augment the existing chemical redistribution program by aiding our life cycle analysis or mass balance. The inventory program would enable the university to redistribute chemicals under two years old to other researchers resulting in costs savings and reduced purchases of chemicals. It also would lessen environmental and occupational risks associated with storage of hazardous materials.

3. Paint Donation

Although the university does not generate very much waste paint, the subcommittee recommends that material be donated to nonprofit organizations such as Habitat for Humanity or Motor City Blight Busters whenever possible.

4. University Sustainability Committee

The purpose of this sustainability committee would be to support, coordinate and monitor environmental sustainability programs on campus for ensuring success. The committee also would create and recommend sustainability policies and procedures to further the university's strategic plan, mission, and its academic and business culture.

5. Standards Committee

Although the Standards Committee could be part of the Campus Sustainability Committee, the Standards Committee would establish policies and procedures for the university's vendors. By consolidating our purchasing power, the university could require vendors to provide services for enhancing sustainability programs. For example, requiring vendors to remove their waste during renovations or finding vendors who are willing to take surplus equipment for recycling whenever the university purchases new equipment from them would reduce the amount of hazardous materials placed into the ecosystem. This committee could also establish a list of green vendors.

C. Recommendations: 0-3 years: (October 2007–October 2010)

1. Chemical Redistribution Program

With decommissioning and renovation projects in many laboratories across campus, a multitude of chemicals that are scheduled for disposal could be reused. The university had been using the "Orphan Chemicals Program" to recycle chemicals free of charge to any interested university researcher or teaching laboratory. This approach reduced the disposal of good chemicals by redistributing them to others in need. The Office of Environmental Health and Safety has developed a more effective system for delivering this program through education and modification of storage areas. In addition, the name of the redistribution program will be changed from Orphan Chemicals Program to the Chemical Redistribution Program. It should be noted that chemicals in this program are not hazardous waste, and must first be registered through a Web site. The University Chemical Reclamation Program can be found at: http://www.oehs.wayne.edu/chemredistribution.html.

Mercury Pollution Reduction: 3-5 years (October 2010-September 2012)

The university generates slightly less than one ton of mercury waste each year. With federal guidelines for discharge of mercury becoming more stringent, it is not only prudent to reduce the amount of mercury purchased and disposed of at the university, but it is also financially wise. The university frequently purchases and uses batteries, fluorescent lamps, electronic equipment, thermometers, blood pressure measuring equipment, and other chemicals containing mercury. In a mercury pollution reduction program, individuals would require prior approval before purchasing certain products.

- The university has purchased two additional fluorescent light recycling units. These units recycle the glass and metal while capturing the mercury vapor in the lamps. The units allow the proper management of the fluorescent bulbs on campus. The target locations for these recycling units are the medical campus, the Facilities Planning and Management service building and Biological Sciences Building.
- Our Battery Recycling Program will be restructured. Information concerning our universal waste programs can be found at the following link: http://www.oehs.wayne.edu/oeh&s/universalwaste.htm.

Solvent Recycling

About 55 percent of the hazardous materials generated by the university have the potential to be recycled. Unfortunately, solvent recovery is a treatment process that is regulated by the Michigan Department of Environmental Quality. An in-house system would cost approximately $10,000. The university is paying $85 for a 55-gallon drum of solvent. If such a system were initiated, the university would recover its cost in approximately two to four years. The solvent recycling program will be incorporated into the Chemical Reclamation Program. Laboratories will also be encouraged to recycle and recover solvent within their laboratory.

Material Usage Policy

It may not be feasible to prevent certain materials from being used at the university, because there may not be a viable substitution or alternative method. Although material usage is overseen by the Office of Environmental Health and Safety, a Chemical Safety Committee is instrumental in developing policies and procedures for monitoring and approving materials usage. A peer-driven committee would give researchers a greater voice in the university's oversight of material usage while tapping into their expertise and knowledge of specific materials. A peer committee also would help reduce risks associated with some toxic materials enabling researchers to provide practical assistance in risk assessment and review of compliance. Such a committee would serve an invaluable role in promulgating and initiating sustainable programs within the university's teaching laboratories.

VIII. Conclusion

Wayne State University seeks to achieve a leadership role in environmental sustainability and stewardship. We will use our institutional capability to play an instrumental role and practice environmental stewardship in our city, state and beyond. We will remain proactive in the protection of our resources and bring vision and intellect to this worthwhile endeavor.

The Task Force on Environmental Initiatives believes that environmental leadership is an integral component to the university's goal of becoming the model urban public research university for the 21st century. It is imperative that Wayne State pursue these objectives not only for external recognition, but also to benefit our students, faculty and staff in keeping with our mission to provide judicious management of our resources.

Upon receipt of this report by President Reid, the task force hopes that the campus community will continue to discuss the presented recommendations and their significance to the university. The task force looks forward to consultation with key stakeholders including students, faculty, staff, alumni and industry experts to move the university forward in the environmental arena.

The task force further recommends the establishment of a standing committee to oversee the implementation of this report's recommendations. The task force will be comprised of six to eight members with representatives from the faculty, staff and students. Three ex-officio members will also serve on the implementation committee and they include Executive Vice President and Chief of Staff Andrea Roumell Dickson, College of Engineering Dean Ralph Kummler and Associate Vice President for Business and Auxiliary Operations Nabelah Ghareeb. Specifically, the implementation committee will be tasked with following through on the Time Frame Matrix for the Campus Sustainability Plan identified in Appendix C of this report.

This report was the result of several months of hard work, creativity and collegiality among task force members with diverse backgrounds and areas

of expertise. The task force was multi-disciplinary in nature and undertook their work in the spirit of intellectual pursuit and reasoned discourse. The task force used a variety of means to accumulate background information and data. This final report is a compilation and synthesis of all the subcommittee recommendations and reflects the consensus of the work groups. The task force is pleased to submit this report to President Reid and stands ready to provide further information on our findings and recommendations.

Appendix A:

Recycling Pickup Locations on WSU Campus

Location	Address/Room	Room	Week	Contact Name/number	Bins
New Location					
101 E. Alexadrine	101 E. Alexadrine	Main Floor, Back Door	1/5/07	Terena 313-577-1628	4 Bins
5425 Woodward	5425 Woodward	Bins also @ SouthEnd Go to Room 101	1/5/07	313-577-3494	
5425 Woodward	5425 Woodward	Lobby 1st Floor			
AAB Building	5700 Cass	2127	7/26/07	313-577-4613	1
AAB Building	5700 Cass	2131	1/5/07		
AAB Building	5700 Cass	2131	12/11/06		1 Bin
AAB Building	5700 Cass	2131	2/23/07		1
AAB Building	5700 Cass	2131	3/9/07	313-577-4613	1
AAB Building	5700 Cass	2131	3/30/07	313-577-4612	1
AAB Building	5700 Cass	2131	4/27/07	313-577-4613	1
AAB Building	5700 Cass	2139	1/5/07		
AAB Building	5700 Cass	2426	1/5/07		
AAB Building	5700 Cass	2910	1/5/07		
AAB Building	5700 Cass	3600	6/7/07	313-577-9464	1
AAB Building	5700 Cass	3638	3/9/07	313-577-6816	2
AAB Building	5700 Cass	3641	1/5/07		
AAB Building	5700 Cass	3660	1/5/07		
AAB Building	5700 Cass	3700	7/19/07	313-577-9464	1
AAB Building	5700 Cass	4107	1/5/07		
AAB Building	5700 Cass	4200	1/5/07		
AAB Building	5700 Cass	4316	1/5/07		
AAB Building	5700 Cass	4602	1/5/07		
AAB Building	5700 Cass	4700	1/5/07		
AAB Building	5700 Cass	3624 (TCW)	6/21/07	313-577-2132	1
Athletic Dept	5101 John C Lodge		12/18/06	Bob 7-4295	2
Bio Engineering	818 West Hancock	1st Floor	5/10/07		1
Bio Engineering	818 West Hancock	1st floor copyroom	12/11/06		1
Bio Engineering	818 West Hancock	1st floor copyroom	2/16/07		1
Bio Engineering	818 West Hancock	1st floor copyroom	4/13/07		1
Bio Engineering	818 West Hancock	1st floor copyroom	6/7/07		1
Bio Engineering	818 West Hancock	1st floor copyroom	7/5/07		1
Bio Engineering	818 West Hancock	1st Floor Copyroom	8/2/07		2
Bio Engineering	818 West Hancock	1st Floor Receptonist	8/30/07		1
Biological Sciences	5047 Gullen Mall	1360	1/5/07		

Biological Sciences	5047 Gullen Mall	2nd mailroom	1/5/07		
Biological Sciences	5047 Gullen Mall	3rd mailroom	1/5/07		
Biological Sciences	5047 Gullen Mall	4th mailroom	1/5/07		
Biological Sciences	5047 Gullen Mall	5th mailroom	1/5/07		
Biological Sciences	5047 Gullen Mall		8/2/07		1
Chemistry	5101 Cass	1st Floor SE Corner	5/3/07	Diane 313-577-2579	
Chemistry	5101 Cass	1st Floor SE Hallway	1/12/07		
Chemistry	5101 Cass	2nd Floor SE Hallway	1/12/07		
Chemistry	5101 Cass	3rd Floor SE Hallway	1/12/07		
Chemistry	5101 Cass	4th Floor SE Stairwell	1/12/07		
Chemistry	5101 Cass	Basement SE Hallway	1/12/07		
CIT Building	77 West Canfield	1st floor hallway see Amy 2nd Floor	5/10/07		1
College of Education	5425 Gullen Mall	Room 212	5/24/07	313-577-8111	1
College of Education	5425 Gullen Mall	Room 212	7/12/07	313-577-8111	1
College of Nursing	5557 Cass	Room 100	2/9/07	Deans Office 577-4089	5
College of Nursing	5557 Cass	Suite 100 Dean's Office	5/24/07	David Barnett 313-577-4089	5
College of Nursing			Jan 22-26		
Community Arts	450 Reuther Mall	Room 150	3/2/07	313-577-2980	1
Community Arts	450 Reuther Mall	Room 150	4/27/07	313-577-2980	1
Computing Center	5925 Woodward		8/2/07	Alex 313-577-2079	1
Dept of Chemistry	5101 Cass	1st Floor Room 181	7/26/07	Diane 313-577-2579	
Education Building	5425 Gullen Mall	Room 316	2/23/07		1
Education Building	5425 Gullen Mall	Rooms 212, 316, 469	8/2/07		3
Elliman Building	421 E. Canfield	3rd Floor in Hallway	7/26/07		1
Eugene Applebaum	259 Mack	2248	12/18/06		1
Eugene Applebaum	259 Mack	3rd Floor Freight Elevator	3/2/07	313-577-5415	2
Eugene Applebaum	259 Mack	Room 2190 Pharmacy Practice	4/20/07	Caroline 313-577-0824	1
Eugene Applebaum	259 Mack	Room 2190 Pharmacy Practice	5/24/07	313-577-0824	1
Eugene Applebaum	259 Mack	Room 2190 Pharmacy Practice	7/12/07	Caroline 313-577-0824	1
Eugene	259 Mack	Room 2243	3/23/07	313-577-1435	1

Applebaum					
Eugene Applebaum	259 Mack	Room 2248	2/16/07	Claire 313-577-1436	1
Eugene Applebaum	259 Mack	Room 2248	3/9/07	313-577-1435	1
Eugene Applebaum	259 Mack	Room 2248	4/6/07	Claire 313-577-1436	1
Eugene Applebaum	259 Mack	Room 2248	5/3/07	313-577-5822	1
Eugene Applebaum	259 Mack	Room 2248	5/24/07	Claire 313-577-1436	1
Eugene Applebaum	259 Mack	Room 2248	6/14/07	Claire 313-577-5822	1
Eugene Applebaum	259 Mack	Room 2248	6/21/07	Claire 313-577-5822	1
Eugene Applebaum	259 Mack	Room 2248	7/12/07	Claire 313-577-5822	1
Eugene Applebaum	259 Mack	Room 2248	7/26/07	Claire 313-577-5822	1
Eugene Applebaum	259 Mack	Room 2248	8/9/07	Claire 313-577-5822	1
Eugene Applebaum	259 Mack	Room 2248	8/16/07	Claire 313-577-5822	1
Eugene Applebaum	259 Mack	Room 2590	3/2/07	313-577-1368	2
Eugene Applebaum	259 Mack	Room 2590	3/30/07	313-577-1368	2
Eugene Applebaum	259 Mack	Room 2590	5/3/07	313-577-5471	2
Eugene Applebaum	259 Mack	Room 2590	6/14/07	313-577-1368	2
Eugene Applebaum	259 Mack	Room 4135	5/24/07	313-577-0824	1
FAB Building	656 Reuther	1150	ALL		
FAB Building	656 Reuther	1150	ALL		
FAB Building	656 Reuther	1328	ALL		
FAB Building	656 Reuther	2074	ALL		
FAB Building	656 Reuther	2360	ALL		
FAB Building	656 Reuther	3040	ALL		
FAB Building	656 Reuther	3074	ALL		
FAB Building	656 Reuther	3103	ALL		
FAB Building	656 Reuther	3198	ALL		
FAB Building	656 Reuther	3226	ALL		
FAB Building	656 Reuther	4360	ALL		
FAB Building	656 Reuther	Room 1328	1/5/07	Cheryl 313-577-3390	1 Bin
FAB Building	656 West Kirby	Room 3020	4/13/07		1

FAB Building	656 West Kirby	Room 3040	1/12/07	313-577-2208Center for Urban Studies	2 Bins
FAB Building	656 West Kirby	Room 3040	4/13/07	313-577-2208 Center for Urban Studies	1
FAB Building	656 West Kirby	Room 3274	3/16/07	313-577-8364	2
FAB Building	656 West Kirby	Rooms 3020, 3296	4/27/07		2
FAB Building	Art History Room 3048		12/11/06	Berry Johnson 313-577-2525	1
Facilities and Planning	5454 Cass	1st Floor	1/5/07	Deborah 313-577-4310	1 Bin
Facilities and Planning	5454 Cass	1st Floor	2/16/07	313-577-1974	1
Facilities and Planning	5454 Cass	1st Floor	3/2/07	313-577-1974	1
Facilities and Planning	5454 Cass	1st Floor	4/13/07	313-577-1972	1
Facilities and Planning	5454 Cass	1st Floor	7/12/07	313-577-7655	1
Facilities and Planning	5454 Cass	1st Floor	8/23/07	313-577-7655	1
Facilities and Planning	5454 Cass	1st Floor	5/10/07	313-577-0762	1
Facilities and Planning	5454 Cass	1st Floor Central Hallway	5/31/07	313-577-0762	1
Huddson Webber	4100 John R,	5, near elevators	12/18/06	Sally 313-576-9301	4
Huddson Webber	4100 John R	5th, 6th, 7th, 8th	4/20/07	313-576-8249	4
Huddson Webber	4100 John R	6, near elevators	12/18/06	Sally 313-576-9301	4
Huddson Webber	4100 John R	7, near elevators	12/18/06	Sally 313-576-9301	4
Huddson Webber	4100 John R	8, near elevators	12/18/06	Sally 313-576-9301	4
Knapp Building	87 East Ferry	226	12/18/06		3
Knapp Building	87 East Ferry	Room 226	3/16/07	313-577-2297	2
Lande Building	550 E. Canfield	Room 211			
Lande Building	550 E. Canfield	SE Corner 3rd Floor		313-577-0506	
Law School	471 West Palmer	1219	1/5/07		
Law School	471 West Palmer	1258	1/5/07		
Law School	471 West Palmer	2209	1/5/07		
Law School	471 West Palmer	3304	1/5/07		
Law School	471 West Palmer	3310	1/5/07		
Law School	471 West Palmer	(knock to get in locked room)	8/23/07	313-577-3933	1
Law School	471 West Palmer	2nd floor	2/2/07		1
Law School	471 West Palmer	Room 3310	2/2/07		1
Law School	471 West Palmer	Rooms 1258, 3310	6/28/07		2
Macabees Building	5057 Woodward	7908	1/5/07	Margaret Day, 313-577-7700	
Macabees	5057 Woodward	13202	1/5/07		

Building					
Macabees Building	5057 Woodward	4th Floor	2/9/07	Ring Buzzer Ken 248-376-2645	1
Macabees Building	5057 Woodward	8th floor	1/5/07		
Macabees Building	5057 Woodward	Room 9408	12/11/06	Judy 313-577-2456	1
Macabees Building	5057 Woodward	Room 3301	2/16/07	313-577-1750	1
Macabees Building	5057 Woodward	Room 9408	2/23/07		2
Macabees Building	5057 Woodward	9408	1/5/07	Judy 313-577-2450	2
Macabees Building	5057 Woodward	10th floor	1/5/07	Judy 313-577-2450	2
Macabees Building	5057 Woodward	13 th Floor Freight Elev. Room 13202	5/17/07		2
Macabees Building	5057 Woodward	13th Floor	5/3/07	313-577-2291	1
Macabees Building	5057 Woodward	13th Floor by Freight Elevator	6/28/07	313-577-2291	1
Macabees Building	5057 Woodward	4th Floor	6/21/07	Sally 313-577-3537	1
Macabees Building	5057 Woodward	4th Floor Must Ring Buzzer	4/27/07	313-577-3537 Sally	2
Macabees Building	5057 Woodward	4th Floor Student Records	5/24/07	Sally 313-577-3537	2
Macabees Building	5057 Woodward	6th Floor Freight Elev.	4/13/07	313-577-2291	1
Macabees Building	5057 Woodward	6th Floor Freight Elev.	5/3/07	313-577-2291	1
Macabees Building	5057 Woodward	6th Floor Freight Elev.	5/17/07	313-577-2291	1
Macabees Building	5057 Woodward	6th/13th Floor by Freight Elevator	8/30/07	313-577-2291	2
Macabees Building	5057 Woodward	Freight Elev.	4/13/07	313-577-2291	1
Macabees Building	5057 Woodward	Room 13202	4/13/07	313-577-2291	1
Macabees Building	5057 Woodward	Room 13202	6/28/07	313-577-2291	1
Macabees Building	5057 Woodward	Room 13202	8/30/07	313-577-2291	1
Macabees Building	5057 Woodward	Room 3301	5/10/07	313-577-1750	1
Macabees Building	5057 Woodward	Room 9408	5/24/07	313-577-2450	4
Macabees	5057 Woodward	Room 9408	6/28/07	313-577-2450	1

Building					
Manoogian Hall	906 West Warren	2nd, 3rd, 4th floors by elevators	4/20/07	313-577-2729	
Manoogian Hall	906 West Warren	Room 487	1/12/07	Holly 313-577-3004	3
Manoogian Hall	906 West Warren	Room 487	5/24/07	313-577-3004	4
Manoogian Hall	906 West Warren	1st Floor down from elevators	7/12/07	313-577-8072	5
Manoogian Hall	906 West Warren	1st Floor down from elevators	7/19/07	313-577-8072	5
Manoogian Hall	*Missed Last Week*	2nd, 3rd, 4th floors by elevators			
Manoogian Hall	906 West Warren	3rd floor	12/11/2006		2
Manoogian Hall	906 West Warren	5th Floor Room 531 Dept of Communication	5/3/07	313-577-2946	2
Manoogian Hall	906 West Warren	Room 487	4/27/07	313-577-3004	4
Manoogian Hall	906 West Warren	Room 531 Southend of Building	8/30/07	313-577-2946	2
Manoogian Hall	906 West Warren	Room 581 Drop 1 locked Doc. Dest Bin	7/12/07	313-577-8004 Carol	
Mart Harris Recreation/ Fitness Center	5210 Gullen Mall	Front Desk/Main Entrance	6/14/07	David 313-577-2348	Drop 1 Bin
Matthei	5101 Cass	Storage Room	2/16/07	Bob 7-4295	2
Medical Library	4325 Brush Street	***DROP 14 EXTRA BINS***	8/16/07		
Medical Library	4325 Brush Street	Receiving	7/26/07	Don Cowan 313-577-5648	6
Medical Library	4325 Brush Street	Receiving	8/16/07	Don Cowan 313-577-5648	6
Merrill-Palmer	71 E. Ferry	Back Door	5/24/07	Rose 313-872-1790	1
Metro Center High Tech.	2727 2nd Avenue	4th Floor Room 4000	7/19/07	313-963-7293	2
Mott Center	275 E. Hancock	1st Floor	12/11/06		2
Mott Center	275 E. Hancock	2nd floor	12/11/06		2
Mott Center	275 E. Hancock	basement	12/11/06		2
Old Main	4841 Cass Room 3207	Dept of Theater	8/16/07	313-993-8242	1
Old Main	4841 Cass	Room 2155	2/16/07	313-577-8581	1
Old Main	4841 Cass	Room 3207	2/9/07	Dept of Theater	1
Physics Dept	666 West Hancock	Basement	8/23/07	Forgot Broken Down Cardboard	1
Physics Dept	666 West Hancock	Basement Drop 1 extra Bin	8/16/07	Prof. Denman 313-577-2731	3
Physics Dept	666 West Hancock	Loading Dock	12/18/06	Harry Denman	5
Physics Dept	666 West Hancock	Loading Dock	2/23/07	Professor Denman	6

Physics Dept	666 West Hancock	Loading Dock	5/17/07	Professor Denman-313-577-2731	Drop 3 Bins
Public Safety	76 West Hancock		12/18/06		3
Public Safety	76 West Hancock		2/16/07	313-577-2222	3
Public Safety	76 West Hancock		3/2/07	313-577-2222	3
Public Safety	76 West Hancock		4/20/07	313-577-6066	3
Public Safety	76 West Hancock		4/27/07	313-577-6066	4
Public Safety	76 West Hancock		7/12/07	313-577-6066	3
Public Safety	76 West Hancock		8/16/07	313-577-6066	4
Rackam Building	60 Farnsworth	Outside Room 109/Room 201-8	8/2/07	313-577-9996	2
Recreation & Fitness	5210 Gullen Mall	Front Desk/Main Entrance	8/16/07	313-577-5843	1
Schafer Music Building	5451 Cass	1st Floor	3/16/07		2
School of Medicine	*Missed Last Week*	**Plus drop 2 extra bins**			
School of Medicine	540 E. Canfield	Room 2361	7/12/07	313-577-1413	3
School of Medicine	540 E. Canfield	Room 2361	7/19/07	Dareen 313-577-1412	3
School of Medicine	540 E. Canfield	Room 2361	7/26/07	Dareen 313-577-1412	5
Science & Engineering Library	5048 Gullen Mall	Room 50	2/2/07	Dept of Computer Science 7-2477	1
Science Hall	410 West Warren	Room 3219	2/23/07	734-645-0916 Peter Bodary	2
Scott Hall	540 E. Canfield	1369	1/12/07	SOM Krista 7-9028	1 bin
Scott Hall	540 E. Canfield	3232	1/12/07	SOM Krista 7-9028	2
Scott Hall	540 E. Canfield	8276	1/12/07	SOM Krista 7-9028	
Scott Hall	540 E. Canfield	Room 1116	1/12/07	SOM Krista 7-9028	2 bins
Scott Hall	540 E. Canfield	Room 3127	2/2/07	Suzanne 313-577-5325	2
Scott Hall School of Medicine	540 E. Canfield	1102	All	Mary Housey 313-577-5323	
Scott Hall School of Medicine	540 E. Canfield	1169	All	Mary Housey 313-577-5323	
Scott Hall School of Medicine	540 E. Canfield	1269	All	Mary Housey 313-577-5323	
Scott Hall School of Medicine	540 E. Canfield	2361	All	Mary Housey 313-577-5323	
Scott Hall School of Medicine	540 E. Canfield	3127	All	Mary Housey 313-577-5323	
Scott Hall School of Medicine	540 E. Canfield	8374	All	Mary Housey 313-577-5323	
Shiffman Library	4325 Brush Street	Receiving	7/5/07	Don Cowan 313-577-	10

				5648	
Simmons Building	4809 Woodward	1st Floor	1/12/07	University Press, Colleen 7-6120	2 Bins
Skillman Building	100 E. Palmer	1st Floor	5/24/07	Rose 313-872-1790	2
Skillman Building	100 E. Palmer	Room 123	3/23/07	313-872-7166	2
State Hall	5143 Cass Room 431	Dept of Communication	5/31/07	Matthew 313-577-2477	2
State Hall	5143 Cass Room 431	Room 431	2/2/07	Dept of Computer Science 7-2477	2
Student Center	5221 Gullen Mall	Basement	4/13/07	313-577-3357	3
Student Center	5221 Gullen Mall	Basement	6/28/07	313-577-3357	3
Thompson Home	4756 Cass	105	1/5/07	Juanitta 313-577-4049	
Thompson Home	4756 Cass	226	1/5/07	Juanitta 313-577-4049	
Thompson Home	4756 Cass	Basement	1/5/07	Juanitta 313-577-4049	
Tower Residential Suites	655 West Kirby	Behind Front Desk	1/12/07	Phil 313-577-6600	1 Bin
Tower Residential Suites	655 West Kirby	Behind Front Desk	4/27/07	Emily 313-577-6600	1
Tower Residential Suites	655 West Kirby	Behind Front Desk	8/9/07	Emily 313-577-6600	1
Undergraduate Library	5150 Anthony Wayne Drive	Room 2100	3/30/07	Joanne 313-577-4085	2
Undergraduate Library	5150 Anthony Wayne Drive	Room 2210	4/20/07	313-577-4085/0152 Door Locked	1
University Health	4201 St. Antoine	Room 9A	7/26/07	313-577-0111	1
University Health Center	4201 St. Antoine	9A	12/18/06	313-577-6678	1
University Health Center	4201 St. Antoine	Room 4J and 9B	5/10/07	313-993-4133	2
University Health Center	4201 St. Antoine	Room 6E	4/27/07	Monique 313-966-9763	1
University Health Center	4201 St. Antoine	Room 9 B	3/2/07	313-577-1841	1
University Health Center	4201 St Antoine	Room 9A	2/2/07		1
University Health Center	4201 St Antoine	Room 9A	5/17/07	313-577-1033	1
University Health Center	4201 St. Antoine	Room 9A Receiving	6/28/07	313-577-4654	1
University Health Center	4201 St. Antoine	Room 9A Receiving	6/7/07	313-577-1033	1
University Health Center	4201 St. Antoine	Room 9B	6/21/07	Caroline Benitez 313-577-1227	1
University Health Center	4201 St. Antoine	Room 9B	7/12/07	Caroline Benitez 313-577-1227	1
University Health Center (UHC)	4201 St. Antoine	Room 9A Receiving	1/12/07	313-577-6678	

University Press	4809 Woodward	1st floor	2/2/07	Colleen 313-577-6120	2
University Press	4809 Woodward	1st Floor	3/2/07	Colleen 313-577-6120	2
University Press	4809 Woodward	1st Floor	3/30/07	Colleen 313-577-6120	3
University Press	4809 Woodward	1st Floor	5/3/07	Colleen 313-577-6120	3
University Press	4809 Woodward	1st Floor	5/31/07	Colleen 313-577-6120	3
University Press	4809 Woodward	1st Floor	8/16/07	Colleen 313-577-6120	2
University Press	4809 Woodward	1st Floor	8/30/07	Colleen 313-577-6120	1
University Press	4809 Woodward	1st Floor and 3rd Floor	7/5/07	Colleen 313-577-6120	5
University Press	4809 Woodward	2nd and 3rd Floor	5/10/07	313-577-6120	4
University Psychiatric	2751 E. Jefferson	Suite 200	3/23/07		2
University Towers	4500 Cass	Loading Dock	All		
WDET Radio	4600 Cass	1st floor	All		2
Welcome Center	42 West Warren	Room 436	1/12/07	Graduate Admissions Tamara Maxwell 7-8141	1
Welcome Center	42 West Warren	Room 436	3/23/07	Graduate Admissions Tamara Maxwell 7-8141	1
Welcome Center	42 West Warren		1/5/07		1
WSU Engineering	5050 Anthony Wayne Drive	2100	All		
WSU Engineering	5050 Anthony Wayne Drive	2nd floor copy room	All		
WSU Engineering	5050 Anthony Wayne Drive	3rd floor copy room	All		
WSU Engineering	5050 Anthony Wayne Drive	4th floor copy room	All		
WSU Engineering	5050 Anthony Wayne Drive	5th floor copy room	All		

Appendix B:
Model Recycling Programs Identified by Building Type

We conducted a survey of four building types on campus, recognizing that each building will be unique in its deployment of its recycling program, but there will be similarities across similar building types.

1. **OFFICE BUILDING:** Faculty/Administration Building (FAB)
   a. Get assistance from interested building residents. Provide signage, and information to all residence.
   b. Place 3 paper pickup bin locations on each floor. This will represent an inconvenience to some, and a greater convenience to others depending on their proximity to existing pickup locations, but will overall provide good, consistent recycling locations on all floors.
   c. Put plastic, metal, glass recycling receptacles on each floor near elevator bank.
   d. Provide staff with the desk top containers, and instructions on what, where and when to recycle. Staff will move their recycling material from their desk top recycling bins to the central recycling bin on or before the designated pick up day.
   e. Custodial services moves material from floors to central pickup location once per week if full.
   f. Vendor comes to central pickup location and swaps out full bins for empty ones.
   g. Custodial Staff moves empty bins into place and cycle begins again.

2. **CLASSROOM BUILDING:** State Hall
   a. Get assistance from interested building residents. Provide signage, and information to all residence
   b. Bin Locations:
      i. **4th floor:** 6 labs with small blue bins (trash can size) with recycling labels on them. Copy center big blue

container Large grey bin at the bottom of the "L" visible from either direction

ii. **3rd floor:** Outside room 307, (west corner near stairwell): glass, metal, plastic container and slotted grey paper container. Stair 4, (east corner, near lounge, bottom of "L"): glass, metal, plastic container and slotted grey paper container. Eight labs with smaller blue bins

iii. **2nd floor:** Room 225, (former Geography and Urban Planning room): one tall blue container. Room 226, 227 small blue container. Outside room 207, (west corner near stairwell): glass, metal, plastic container and slotted grey paper container. Stair 4, (east corner, near lounge, bottom of "L"): glass, metal, plastic container and slotted grey paper container

iv. 1st floor: Entrance west side, along hallway outside of auditorium: glass, metal, plastic container and slotted grey paper container. Outside room 107, (west corner near stairwell): glass, metal, plastic container and slotted grey paper container**.** Hallway across from room 147 (south entrance): glass, metal, plastic container and slotted grey paper container

c. Custodial services moves material from floors to central pickup location once per week if full.
d. Vendor comes to central pickup location and swaps out full bins for empty ones.
e. Custodial Staff moves empty bins into place and cycle begins again.

3. **RESEARCH BUILDING:** Scott Hall
   a. Obtain assistance from SOM Departmental Administrators
   b. Place 26 Bins throughout Scott Hall (FLOORS = BINS B = 2, 1st = 4, 2nd = 4, 3rd = 4, 4th = 2, 5th = 2, 6th = 2, 7th = 2, 8th = 2, 9th = 2).
   c. Provide staff with desktop containers and instructions of what, when, and where to recycle.

d. Place plastic, metal, and glass recycling receptacles on each floor near elevator bank.
e. Have custodial services move materials from floors to central pick-up location once a week.
f. Vendor comes to central pickup location and swaps out full bins for empty ones.
g. Custodial Staff moves empty bins into place and cycle begins again.
h. Investigate procurement and installation of bailer machine to accommodate cardboard recycling.

4. **RESIDENCE HALLS:** Towers Residence Hall
   a. Involve the RAs on all recycling initiatives
   b. Utilize Trash Rooms on each floor for Recycling locations. (Rename the Trash Rooms the "RECYCLING ROOMS")
   c. Give one recycling bin at check in to each room along with information on what to recycle and where.
   d. Kitchenette areas need a single bin for plastic, metal, cardboard and glass. To be taken to recycling station along with trash by custodial staff.
   e. Have custodial services move materials from floors to central pick-up location once a week.
   f. Vendor comes to central pickup location and swaps out full bins for empty ones.
   g. Custodial Staff moves empty bins into place and cycle begins again.

5. Marketing/Education/Promotion:
   a. Signage Needed:
      i. Shredded paper: put in bags next to bins
      ii. Signs on Shredders: please take bags of shredded material to _____. Leave bags next to bin.

iii. Signs for Desk top recycling containers that say: “Be sure to put recyclable paper in bin in room _____by Wednesday!”
iv. Signs that say **what** can be put in each bin, at **each bin location**, and also in lobby/staff lounge/common areas.
v. Signage in Residence Halls: Towers and Food service.

b. Utilize the glass case on first floor State Hall and Student Center for recycling info.
c. Website to promote the program, and allow for comment/suggestion and problem reporting
d. Involve RAs, Student Council, Greek Life and other leadership groups on campus in getting information into the hands of students throughout the year
e. Orientation programming
f. Give information to incoming residence hall students on how, when, where to recycle.
g. Continue with Earth Week programming

h. Promotion: Utilize the glass case on first floor State Hall for recycling info. Rachel G. will find out who has key. Believes it belongs to English Dept.

Appendix C:
Time Frame Matrix for the Campus Sustainability Plan

Areas of Campus Sustainability	Campus Sustainability Tasks	Time Frame		
		< 3 yrs	3-5 yrs	> 5 yrs
1. Education and Curriculum	**1-1 Perform an academic audit of existing sustainability related courses (see Appendix B and C)**	X		
	1-2 Introduce a Sustainability Certificate Program	X		
	1-3 Host sustainability conversations every semester		X	
	1-4 Determine criteria to measure campus sustainability		X	
2. Administration and Facilities Management	2-1 Streamline existing university practices	X		
	2-2 Improve utilization of campus green space (i.e. planting indigenous trees)	X		
	2-3 Utilization of more efficient campus lighting		X	
	2-4 Improve labeling and usage of recycling bins around campus (paper, plastic, etc.)	X		
	2-5 Develop a policy for all new campus construction (see Appendix D)	X		
	2-6 Establish a dedicated home for the university environmental initiative	X		
3. Student Involvement	3-1 Introduce a new environmentally related student organization	X		
4. Community Engagement	4-1 Work with Greening of Detroit on a campus restoration	X		
	4-2 Partner with area high schools to promote sustainability		X	
	4-3 Develop a sustainability advisory board to encourage interaction with the surrounding community		X	
	4-4 Offer sustainability extension courses that are open to the community			X
	4-5 Host a seminar called “The Sustainable Urban Campus”			X
	4-6 Construct a cycling/running route through campus			X
	4-7 Become actively involved in the May 2008 National Brownfields Conference in Detroit	X		

Appendix D:

Letter to All University Departments to Identify

Existing Sustainability-Related Courses

Date

To Whom It May Concern:

The Wayne State University Task Force on Environmental Initiatives' Sustainability subcommittee is dedicated to promoting improved sustainable development within the Wayne State University community. This will be realized by focusing on the four main areas of campus sustainability: education and curriculum; administration and facilities management; student involvement; and community engagement.

As a first step in improving the sustainability education and curriculum at Wayne State, we feel that an academic audit must be performed to determine the departments currently offering sustainability-related courses. Once this has been accomplished, our group can determine where new sustainability-related courses should be introduced and how to further publicize and promote the existing courses to the university community to enhance the students' sustainability education.

We request your help in performing this sustainability academic audit by reporting back to our group the name and course number of all sustainability-related courses offered in your department, along with a brief summary of the course content. To assist in the identification of such courses, we attached a set of existing courses identified using the WSU Bulletin. Please add any additional courses we have omitted.

We see this as the first step for Wayne State University to move forward as a sustainable urban campus. We thank you for your time and assistance.

Sincerely,

Co-Chairs, Sustainability Subcommittee, Task Force on Environmental Initiatives

Yinlun Huang	Robin Boyle
Professor	Professor and Chair

Chemical Engineering and Materials Science
College of Engineering

Geography and Urban Planning
College of Liberal Arts and Sciences

Appendix E: Academic Audit Results

Discipline	***Course # & Name***	***Semesters Offered***						
		F04	W05	S/S05	F05	W06	S/S06	F06
Engineering	CE 4210: Intro to Environmental Engineering		X			X		
	CE 4510: Intro to Geotechnical Engineering		X			X		
	CE 5230: Water Supply & Wastewater Eng.		X					
	CE 5370: Finite Element Analysis Fund.					X		
	CE 5410: Hydrogen Infrastructure & Alt. Fuel Transportation		X					
	CE 5420: Alt. Energy Tech. for Various Transportation Modes				X			
	CE 5510: Geotechnical Engineering I	X						
	CE 5520: Geotechnical Engineering II				X			
	CE 5580: Land Disposal of Hazardous Waste							
	CE 6150: Hydrologic Analysis & Design						X	
	CE 6190: Groundwater	X	X					X
	CE 6270: Env. Mgmt. & Sustainable Development				X			
	CE 6580: Geoenvironmental Engineering		X					
	AET 5700: Process & Materials for Alt. Energy Tech.		X			X		
	ChE 4800: Chemical Process Integration		X			X		
Geology	GEL 1000: Geology & the Environment		X			X		
	GEL 5120: Environmental Geochemistry					X		
	GEL 5150: Soils & Soil Pollution			X			X	
	GEL 5510: Environmental Fate & Transport of Pollutants				X			X
Geography	GPH 3400: The Physical Landscape							
Health	HEA 2320: Dynamics of Community & Env. Health	X				X		
Int. Sci & Tech	IST 2310: Living in the Environment		X	X		X	X	
Law	LEX 7231: Environmental Law				X			X
	LEX 7351: Hazardous Substances Workshop							
	LEX 8071: Advance Environmental Law							
Physics	PHY 1070: Energy & the Environment							
Political Science	PS 3450: Environmental Policy & Politics							
Urban Planning	UP 6260: Land Use Policy & Planning	X			X			X
	UP 6470: Environmental Planning				X			X

Appendix E continued: Academic Audit Results, continued

Industrial Sustainability Related		Urban Sustainability Related	
Engineering		**Geology**	GEL 1000: Geology & the Environment
Chemical/Mat	ChE 4800/6810: Chemical Process Integration		GEL 5120: Environmental Geochemistry
	ChE/AET 5110: Fundamental Fuel Cell Systems		GEL 5150: Soils & Soil Pollution
	ChE/AET 5700: Process & Materials Safety for Alt. Energy Tech.		GEL 5510: Environmental Fate & Transport of Pollutants
	ChE 6520: Chemodynamics: Environ.Transport	**Geography**	GPH 3400: The Physical Landscape
	ChE 6570: Safety in Chemical Process Industry	**Health**	HEA 2320: Dyn. of Community & Env. Health
	ChE 6610: Risk Assessment	**Int. Sci & Tech**	IST 2310: Living in the Environment
	ChE 6997: Optimization of Chemical Processes	**Law**	LEX 7231: Environmental Law
	ChE/AET 7410: Alternative Fuels		LEX 7351: Hazardous Substances Workshop
	ChE 8450: Advanced Plant Design Concepts		LEX 8071: Advance Environmental Law
Civil/Environ	CE 4210: Intro to Environmental Engineering	**Physics**	PHY 1070: Energy & the Environment
	CE 5230: Water Supply & Wastewater Eng.	**Pol. Sci.**	PS 3450: Environmental Policy & Politics
	CE/AET 5410: Hydrogen Infrastructure & Alt. Fuel Transportation	**Urban Planning**	UP 6260: Land Use Policy & Planning
	CE/AET 5420: Alt. Energy Tech. for Various Transportation Modes		UP 6470: Environmental Planning
	CE 6270: Env. Mgmt. & Sustainable Development		
	CE 6580: Geoenvironmental Engineering		
Industrial	IE/AET 5600: Alt. Energy Product Realization System		
	IE 6310: Lean Operations and Manufacturing		
Mechanical	ME/AET 5120: Fund. of Alt. Energy Technology		

Appendix F:

Task Force on Environmental Initiatives
Committee Roster

Nabelah Ghareeb, Associate Vice President, Business and Auxiliary Operations, Co-Chair

Ralph Kummler, Dean, College of Engineering, Co-Chair

Fran Ahern, Assistant Director, Facilities Planning and Management

Kent Bolt, Director, Facilities Planning and Management

Robin Boyle, Chair, Geography and Urban Planning

Nina Butler, master's candidate, Urban Planning

Eugene Carter, Director, Facilities Planning and Management

Cheryl Dove, University Counselor, Placement Services

Judith Field, Senior Lecturer, University Library System

Dennis Fiore, Student Representative

Larry Fodor, Director, Facilities Planning and Management

Lance Franklin, Research Director, Environmental Health and Safety

Victor Green, Director of Community Relations, Governmental and Community Affairs

Noah Hall, Assistant Professor, Law School

Merlin Hamre, Associate Professor, School of Medicine

Yinlun Huang, Professor, Electrical and Computer Engineering

Jerry Ku, Associate Professor, Mechanical Engineering

Sarah Kubik, Student Representative

Zheng Liu, Graduate student

Mary Beth Lock, Manager, University Libraries

Andy Maggetti, Student Representative

Judy McClusty, President, Staff Association

Annetta Miller, Member, WSU Board of Governors

Cristina Piluso, Graduate student

Chuck Pokriefka, Medical Facilities, School of Medicine

David Reich, Public Affairs Officer, Engineering

Mike Simmons, Director, Facilities Planning and Management

Jeffrey Stoltman, Associate Professor, School of Business Administration

David Strauss, Dean of Students, Dean of Students Office

Anca Vlasopolos, Professor, Liberal Arts and Sciences

Mary Wood, Executive Vice President and Chief of Staff's Office