University of Minnesota Sustainability Education for the 21st Century: a white paper of the System-wide Strategic Sustainability Committee

prepared by the Curriculum & Academic Work Team, November 1, 2012

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Executive Summary

The Regents of the University of Minnesota have charged faculty, staff and students to make sustainability learning an integral and robust part of every students’ experience at the University. The Systemwide Strategic Sustainability Committee created a working group to identify and pursue high-leverage strategies for implementing the Regent’s charge. This working group (the authors of this white paper) is engaged in a two-year project to create new capacity for sustainability education at the University. The present report proposes that existing and emerging efforts be expanded to create new, integrated curricular and institutional structures for sustainability education across the UMN system. These structures are needed to promote sustained dialogue on sustainability education between faculty, staff and academic leaders, which in turn is critical to achieving the Regent’s charge around sustainability learning. In this document, we provide a high-level overview of sustainability education in the UMN system and profile several pioneering efforts to enhance sustainability education. These efforts feature place- and project-based learning models and demonstrate the benefits of experiential, interdisciplinary and community-engaged learning experiences. Initiatives of this kind educate students to be leaders in sustainability work, in the face of economic, social, and cultural complexity. They gain much of their educational power by situating sustainability education in the context of fundamental questions facing our state and region, in areas related to climate change and social, economic, and environmental well being. The report proposes that new strategies and educational infrastructure are needed to advance sustainability learning. The University is well positioned to develop these strategies and infrastructure by making good use of its unique institutional assets: far-ranging campuses and geographies, a strong legacy of public and civic engagement, and a broad array of cutting-edge research and instruction. The report concludes that the University can create a powerful capacity for sustainability education across curricula and campuses by developing develop a broad portfolio of sustainability education projects, backed by an appropriate educational infrastructure, and linked to and leveraged by our research and engagement work on sustainability challenges. The working group is now seeking major external funding for efforts to expand sustainability learning in the UMN system.

Introduction

The Team and its Tasks

The 2009 report of the System-wide Sustainability Goals and Outcomes Committee called on the University of Minnesota to make sustainability part of the experience for every student, thus recognizing that sustainability education is a strategic priority of central importance to our land-grant mission in the 21st century. Building on initiatives that followed, a work team of 17 faculty and academic leaders from across the University of Minnesota system was convened during the academic year 2011-2012 to address the matter directly. The group focused on questions of how best to develop curricular and institutional structures to advance toward this goal. Because the University of Minnesota is a complex system spread out over multiple campuses, colleges, and units, we worked to identify vehicles that have the potential to expand the scope of sustainability education on a broad scale and to overcome barriers to interdisciplinary collaboration. Discussions considered ways to create or implement curricula and educational programs, integrate service learning, and promote outreach, including the
possibility of new credential tracks and transformative structures for public engagement around sustainability challenges. The latter part of this paper suggests pilot projects that might be undertaken to realize our current academic sustainability goals and chart paths for future development.

In a series of interviews with more than 40 individuals we have achieved:

Improved understanding both of current initiatives and “what works” in creating curricula and programming that meaningfully enhance sustainability education across the University of Minnesota.

Open dialogue between faculty and academic leadership concerning the opportunities and challenges related to sustainability education in the context and setting of particular academic units.

Clearer identification of replicable models of new sustainability learning approaches, across scales ranging from activities, courses, curricula, co-curricula, undergraduate majors, etc.

Expanded capacity for networking and exchange of sustainability expertise among faculty and students.

**Why should the UMN System invest in sustainability education?**

Higher education, particularly in the context of a world-class public institution like the University of Minnesota, needs to ensure that our society and its decision makers have the knowledge to address the critical challenges we face in the 21st century. This imperative is stressed in the United Nations Higher Education Sustainability Initiative (Rio Declaration 2012, [http://www.uncsd2012.org/index.php?page=view&nr=341&type=12&menu=35](http://www.uncsd2012.org/index.php?page=view&nr=341&type=12&menu=35)), which emphasizes the integral connection of sustainability thinking with progressive teaching, social engagement, and global exchange of research. Sustainability education strives to address the greatest challenges faced in the world today, recognizing that better management of the relationship between the aggregate impact of human actions and the functioning of both natural and non-human systems on our planet benefits both current and future generations. The University as an institution dedicated to creating and disseminating new knowledge has a vital role in this process on two levels that immediately pertain to the curriculum:

- The University has a responsibility to govern and conduct itself in a manner that demonstrates best practices for other institutions and society at large; and
- The University has a responsibility to provide the best possible curricular and co-curricular offerings to prepare students to address societal challenges after they leave the University.

Sustainability education provides a framework for carrying out these responsibilities with respect to the relationship and fundamental connection between humans and earth systems.

**How is the UMN System positioned to deliver innovative sustainability education?**

The University of Minnesota System is well positioned to move into a leadership role in this area. Although sustainability education has existed for some time, the concept is evolving. Growing student interest has led to increased demand for such courses throughout higher education and recent events have created an appetite for learning more about the issues addressed by this field. Among the strengths the University of Minnesota offers in sustainability education are the following:
Many units across the system already address sustainability from their unique perspectives – Diverse departments across the university have strengths in these areas and are already engaged in teaching, research, and service related to sustainability education. Natural resource managers have been grappling with the trade-offs of managing forest systems since the advent of the US Forest Service in the early 20th century. Similarly, fisheries managers continue to grapple with the challenges of ecosystem and fishing economy dynamics to this day. Management and business schools are concerned with long-run economic sustainability in the context of the social and environmental systems in which the economy operates. Scholars in humanities have been growing programs that explore the cultural, ethical, historical, and philosophical dimensions of relationships between humans and our planet. And the social sciences explore the interdependence of social structure and natural systems. Faculty members teaching in these areas are committed to growing and developing future sustainability education initiatives.

University Services has strong sustainability staff and programs - A key element in the University’s approach to sustainability education is the way in which the commitment to teaching can be transparently linked to management of our campus impact on local and global systems. With more than 50,000 students and 3.5 million square feet of facilities, the University is larger than many small towns. University Services has recognized both the responsibility and the opportunities that this size presents and has built up a dedicated sustainability staff who focus on reducing our energy use and waste production, while ensuring that our purchasing power is used to reduce the impacts of the materials we buy and consume. In keeping with President Kaler’s objective of administrative and operational efficiency, these staff members ferret out inefficiencies and implement as many win / win cost and material saving opportunities as possible. At UMD, the facilities management people have established a $400,000 fund that provides seed grants for student-generated sustainability initiatives which have positive returns that can repay the fund with interest. The efforts provide a very strong platform around which new curricular offerings can be designed and pedagogical strategies tested.

Multiple campuses are developing unique sustainability education strengths - One of the challenges of the human / nature relationship is that it varies from place to place. The sustainability challenges in a large urban setting are different from those in a smaller rural community. The University has a strong advantage in designing programs that address the important role of place in managing our interactions with our planet. Each of the campuses is represented on the work team and on the system-wide committee and is currently engaged in thinking about sustainability education at the system and campus levels. Likewise, abundant study abroad opportunities for students offer unique ways for them to learn how to think both globally and locally.

The Sustainability Faculty Network is a thriving TC-campus cross-college organization - With support from the UMN-TC Graduate School, the Sustainability Faculty Network was organized and is gaining strength as a largely self-organizing group of faculty with sustainability education interests from across the Twin Cities campus. Because faculty members participate on a voluntary basis and come from a wide range of fields, it operates as a venue welcoming to interdisciplinary connections and broad networking. The Network has developed an Implementation Strategy document, informed by
interviews with faculty, which outlines detailed strategies related to (1) networking among faculty and students, (2) communication about sustainability education, and (3) building curricular capacity. Evidence of the group’s momentum is the launch of the Resilient Cities Initiative in the fall 2012 semester.

**Enrollments in the UM-TC Sustainability Minor, the UMM Environmental Studies Major and several other related programs continue to grow,** There is an ongoing debate regarding the best strategies and practices for providing graduates with sustainability education credentials in higher education in general. At the UM-TC campus, the Sustainability Minor launched several years ago, and in the UM-TC CLA, Geography has changed its name to “Geography, Environment and Society” to reflect growth in its course offerings related to sustainability studies. The Sustainability Minor is very fully subscribed, as is the CLA major Biology, Society, and Environment. We believe that many more students might pursue such programs if we were able to expand teaching capacity in the associated curriculum. As important as the minor itself is the learning achieved. Sustainability thinking is inherently complex and interdisciplinary. The work team has explored issues of cross-college governance and accounting; several of the above programs now provide good working models that can guide the design of future endeavors.

If we are successful in harnessing and coordinating these and many other strengths on a system-wide basis, the University of Minnesota has the potential to emerge as an institution that others turn to for guidance and innovative leadership in the coming years.

**The Centrality of Teaching Connected to Research and Active Learning**

Higher education is under tremendous pressure to demonstrably address societal needs and to respond to extremely rapid changes in areas such as technology innovation, workforce development, and economic vitality. These transformative pressures will drive change in the academy, and institutions that draw skillfully on their selective advantages to evolve will emerge as leaders in the years to come.

Central to the higher education environment today is the need to teach students more efficiently and with greater purpose while maintaining the rigor, depth and breadth at the core of our academic excellence. It is increasing clear that we must augment traditional classroom instruction and semester calendars with other modes of instruction. The innovations that will emerge will likely include learning in less structured and more individualized instructional settings (e.g. online education), service or experiential learning (including internships, projects that connect student consultant teams to clients addressing sustainability issues, and study abroad), and other forms not yet imagined. These new modes of teaching and learning will lead to the development of other new pedagogies.

In addition to changes in the modes of education that research universities can pioneer, the character of what we teach needs to evolve. Where we now focus on expertise in existing knowledge, future graduates are likely to need to gain facility in bodies of knowledge that do not yet exist; hence we need to prepare them to be ongoing learners and provide them with analytic skills that help them to determine what it is that they need to know. We need to envision an education that equips students with transferrable intellectual tools that can be applied in multiple contexts, during and after the completion of their degree programs. Systems
thinking, scenario planning, and international learning/research collaboratives are examples of the sort of tools and innovative pedagogies that this kind of teaching employs, offering students much more hands-on and problem-specific learning than traditional instructional forms.

All learning takes place within a broader pedagogical frame: the institutional behavior of the University as a whole. By modeling the concepts and practices that are being explicitly or implicitly conveyed in the classroom and other instructional settings in the operations of the University as a whole, we fulfill our responsibility to teach responsibly and practice life-long learning to the fullest.

**Desired Sustainability Education Outcomes**

Sustainability can be thought of as the set of processes by which our society, and the planet as a whole, moves toward desirable futures. Given the number of humans now on Earth and the growing interconnectedness of societies, this is no simple task. We must be able to cope with huge uncertainties in our ability to predict the impacts of our actions and the unavoidable trade-offs and incommensurable values associated with “desirable future” across the globe. The outcomes that we have identified for our sustainability education program are first steps in building the social and institutional capacity for improving human life in the coming decades and years beyond.

*For our students and graduates*

**Our graduates will be able to recognize and act upon sustainability challenges**

All University of Minnesota graduates must understand the large and growing vulnerabilities and risks that are associated with ongoing changes in the natural systems of our planet, including climate change, resource consumption, degradation of the biosphere and other global issues. They must understand that business needs to be operated in a manner that maximizes the long-term well-being of the society and the natural environment rather than focusing solely on short-term accounting profits. They will be equipped with the skills to engage with complex and increasingly technical problems in both their work and private lives, and understand how to apply critical thinking to address the challenges that face them.

They should be prepared to challenge assumptions in all sectors of private and public life that contribute to vulnerability and risk. Our graduates will be ready to ask deep and probing questions about how we as a society set priorities and interact with knowledge regarding how our planet works. They will be well informed, capable of independently analyzing the information that confronts them, and skilled in communicating the conclusions they draw.

The process of decision-making necessary to achieve these objectives requires that our graduates place high value on deliberative democracy and public work. They will be active citizens and will exercise their democratic responsibilities with deliberate rigor.

**Our graduates will be able to work across disciplines from a systems perspective**

Children of the future will live in a world where change and the unexpected will be much more commonplace than in the world inhabited by their parents. To prepare them for this fundamental shift, we need to augment our current curricular offerings with educational elements that help students develop systems or “big picture” perspectives. A combination of independent curricular elements (e.g. courses) and tools and resources that can be integrated into existing courses and degree programs can help address this issue.
Complementing traditional approaches, which rely heavily on compartmentalized knowledge, systems perspectives thinking will help our students identify connections and linkages that reveal the cause and effect relationships among elements of our social and natural worlds. By learning about these dynamic systems, our graduates will be able to identify places and strategies for effecting change on local to global scales, in the public, private and non-profit sectors.

Much of the ability to see and act on interconnections will be gained through active participation in interdisciplinary inquiry. Students must be exposed to the wide variety of ways of knowing through problem-specific learning, to global perspectives, and to forms of knowledge that bridge the sciences to the humanities.

Positioned in this way to move beyond rigorous disciplinary grounding, students should be able to take advantage of leadership and communications skills training. These offerings will give them a competitive advantage in the job market as they will be able to assemble and manage the teams necessary for solving complex systems-based problems.

For the University

The University will develop more sustainable operations and facilities

In higher education it has become clear that the path to teaching sustainability thinking necessarily involves an intentional transformation of the campus environment to reinforce environmental awareness. Reducing the impact of our operations on the natural systems of our planet is an opportunity to build connections between the operational and academic components of the university. Important elements of this bridging include:

- Modeling the learning-by-doing style of management in ways that enhance the engagement of in all sectors of the campus community, including students. This approach is likely to become increasingly important in the future.
- Transparency about sustainability goals on the operational level must be understood as fundamental to the University’s over-arching pedagogical responsibility. As the details of our operations become more transparent and more integrated with our academic enterprise, our priorities regarding a better future will be more clearly defined.

The careful integration of elements of our operational and academic enterprises will also yield valuable professional development opportunities for our staff. As the distinction between academic and operational expertise blurs, we can expect to attract and retain the best-of-the-best throughout our institution. A corollary to this will be that we will graduate a cadre of decision makers, managers and other leaders with a distinct style of problem solving that includes the skills of systems leadership and scenario planning.

The University’s curricula must meet the challenges of sustainability

Pedagogy and curricula are intrinsically connected; the inherent interconnectedness of all Earth systems calls for curricula that reflect our evolving understanding of those interconnections as well. Yet sustainability education is not synonymous with environmental studies. As detailed above, the innovations needed to realize sustainability education to its fullest must span the full breadth of the University. Indeed, we contend that sustainability literacy must to be recognized as central to the mission of the University of Minnesota.
Curriculum evolution is fundamental to the University and part of the core role of the faculty. In designing and revising curricula, we organize knowledge and express values, making important statements about what is essential to know based on current understanding. In strategically choosing pedagogies and re-designing educational programs, we revitalize our curriculum in dynamic connection with our evolving research. With increases in the pace of societal and natural changes and in the scope of our knowledge, attention to curricular evolution becomes all the more important.

While there are diverse perspectives about what sustainability curriculum entails in different institutional settings, at the University of Minnesota it should have the following characteristics:

- It must draw on all corners of the University of Minnesota system and include a wide range of options for achieving sets of learning outcomes that warrant the credentials awarded by a University degree.
- It will include a strong large-problem solving focus under which students and teams of students must draw from a broad palette of disciplinary knowledge in order to succeed.
- It should provide mechanisms whereby students will be able to connect their education with frameworks and settings beyond the classroom, including settings on and off campus.

Our current organizational and budgetary systems tend to discourage interdisciplinary innovations of the kind that sustainability education requires, for the sake of practicality rather than intellectual reason. However, structures that overcome these obstacles have begun to emerge. The sustainability minor provides a functioning governance model and a number of programs housed in the Institute on the Environment (IonE) have been working on frameworks for revenue sharing in interdisciplinary courses. Our success in designing new curricula will be enhanced to the extent that college and campus leadership encourage similar administrative innovation in other areas.

Recent surveys indicate that the portion of high school students who consider an institution’s sustainability programs and record as a central element in college choice is growing. From this information it is clear that many of the best and the brightest are drawn to this field of knowledge, drawn by the urgency and complexity of sustainability issues. Attracting these students to the University of Minnesota depends on providing strong programs where prospective students can see efforts and results realized through the resources of a research institution.

For our Constituents

The University will extend its land grant mission

The Morrill Act boldly founded universities in the 19th century that conceived of education in the service of society as a whole. Sustainability education is the opportunity in the 21st century to bridge the boundaries between our universities and the community that they serve. In the sense that it recognized the dynamic interconnection between educational institutions and society, the Morrill Act placed “sustainability” at the heart of education by creating institutions whose mission was to improve lives and potential livelihoods by providing access to universities to a greatly expanded portion of our population.
The structures of our societies and economies have undergone revolutionary shifts since Lincoln signed the Morrill Act into law. Applying ourselves to the curricular and pedagogical innovations outlined above, thus linking teaching research and service, is a strong strategy for extending the land-grant mission into the future. These innovations will more closely tie the teaching and learning elements of the university to the goals of our society and will bridge the barriers between the knowledge creation and dissemination activities and our broadest set of constituents.

*The University will robustly address regional sustainability challenges*

While connectivity on Earth has reached global scale, we recognize that the University of Minnesota and our region face specific local challenges, such as the impacts of climate change on our natural and urban systems, and the vitality of our rural and urban communities as economies become increasingly international. The future sustainability curriculum envisioned must include abundant opportunities for students, faculty, and staff to contribute to and learn from the process of solving immediate challenges. Working collaboratively with community practitioners, University members can help articulate and solve problems on scales that extend from lots and neighborhoods to counties and the entire upper Mid-West.

*The University will strongly enhance cross-sector engagement of key societal sectors*

This engagement, which depends on the institutional cross-fertilization of initiatives related to sustainability efforts, will draw together organizations from across the public, private and non-profit spheres. Our efforts have the potential to position the University as a hub in societal learning network—a network in which strong reciprocal public engagement creates powerful and ongoing learning opportunities for citizens, institutions, organizations and enterprises. Such connections will promote new levels of deliberative democracy, sustainable innovation, resilience and adaptation. These civic and public capacities will be strong assets as we move deeper into the 21st Century.

**Ongoing and Proposed Initiatives to Expand & Integrate Sustainability Education**

**On-going Experiments in Expanding Sustainability Education**

Below, we provide brief sketches of three recent efforts in the UMN system to expand the scale and scope of sustainability education. Each of these projects is striving to address one or more of the major opportunities and challenges in sustainability education that are outlined above. We believe that deliberate experimentation with curriculum, pedagogy and other educational structures that can increase the power, articulation and centrality of sustainability education is critical to ‘learning our way’ forward and to making full use of the distinctive resources and assets of the University of Minnesota System. In that spirit, we present these three projects.

**Resilient Communities Project (RCP)**

**Overview**
The Resilient Communities Project (RCP) is intended to better connect University of Minnesota resources with communities, regional entities, and organizations interested in sustainability in the Twin Cities and other metropolitan areas in Minnesota. The program serves communities and organizations addressing sustainability at the local or regional scale by convening the wide-ranging expertise of U of M faculty and students. The program is modeled on the Sustainable Cities Year Program at the University of Oregon (http://sci.uoregon.edu/content/scy), a highly successful cross-disciplinary program that supports one-year partnerships between a selected city and the university, facilitating faculty-supervised course-based projects that meet city-identified sustainability needs.

**How It Works**

RCP will annually identifies a community or region (e.g., a city, the Southwest Transit Corridor, Minnehaha Creek Watershed, I-35W Corridor) of interest, through a competitive request-for-proposals process. RCP works with stakeholders in the community or region to identify potential projects based on community-identified sustainability issues and needs. RCP then serves as a centralized “matchmaker,” soliciting University of Minnesota faculty participation by matching project needs with relevant graduate-level course-based projects. At the conclusion of the project, RCP assists project partners to create an evaluation strategy that uses sustainability benchmarks and indicators to help them evaluate and monitor their sustainability efforts.

This model provides the city or region with access to hundreds of students and faculty across a range of academic disciplines, from architecture, planning, and engineering to business, environmental sciences, and the humanities. Expertise is available related to all aspects of sustainability, including analysis, planning, design, implementation, and evaluation. In addition, the program offers students real-world opportunities to apply their knowledge and training, as well as to engage with students in other programs and fields of study.

RCP also provides a comprehensive communication and outreach effort, drawing on traditional and social media platforms to disseminate information and generate “buzz” about the year-long partnership and its impact. This communication strategy can maximize the impact of the project by making project outcomes available not only to those communities and organizations RCP works with directly, but also to other communities and regions interested in sustainability.

**Activities in the 2012-2013 Pilot Year**

RCP will partner with one community each academic year; during the 2012-2013, RCP is engaging with the City of Minnetonka, MN. City staff have participated in a planning workshop to kick off the effort; a set of specific projects related to the City’s current and future sustainability goals were identified and RCP staff have matched these projects with six graduate-level courses being offered during the academic 20120-2013 semester.

Minnetonka has provided a **project manager** who can devote approximately 10 hours per week to the RCP effort, and who would be responsible for working directly with RCP’s program manager to coordinate and manage all projects. For those projects that are successfully matched with one or more courses, the city has also identified a **project lead** who can devote approximately 5 hours per week to the project, and who would be the primary contact at the city for students and faculty working on the project. The project leads, faculty,
and RCP staff have created a comprehensive workplan for each project, including identifying final deliverables, to guide work on the project.

RCP staff is providing continued support for course-based projects throughout the semester by coordinating resources, identifying and acquiring from the City or other sources any data necessary for the projects, soliciting periodic feedback from City staff, assisting faculty and students with day-to-day project needs, maintaining a project website, coordinating media outreach, and general troubleshooting.

Outcomes from each project are being documented in a final report and presentation to City staff at the conclusion of each semester. In consultation with City staff, project results will be disseminated through the project website, social media, and traditional media outlets. At the conclusion of the project, RCP will work with City staff to outline an evaluation strategy to monitor and evaluate sustainability efforts stemming from the project.

**River Life (RL)**

**Overview**
River Life, a program of the Institute for Advanced Study (IAS), serves as a catalyst and as a resource to bring together University of Minnesota teaching, programs and research with community partners engaged in sustainable, inclusive, and resilient river planning. The University of Minnesota campus is bisected by the Mississippi River; much of the Minneapolis campus is located within a National Park (Mississippi National River). River Life takes strategic advantage of this location by innovative sharing of information and development of student/community programs and classes for UM students. The Mississippi River, one of the world's great rivers, is our “home lab,” the testing case for new innovations that are shared worldwide with river planners. River Life’s web site [http://riverlife.umn.edu/](http://riverlife.umn.edu/) has more details.

**How It Works**
River Life offers several programs that engage students with multiple levels of interest and backgrounds. “River Rangers,” the student “point of entry” program, develops programming accessible to all students, whatever their major and whether they have an afternoon, a semester, or a career to spend with the Mississippi River. Programs include service projects, recreational activities, career development themes, and informal education programs. Community partners in addition to the National Park Service, have included the Minneapolis Park Board, Minnesota Historical Society, and City of Minneapolis.

River Life’s curriculum developments are undertaken with partners in the College of Design, College of Agricultural and Natural Resource Sciences, Humphrey Institute, and College of Liberal Arts. We believe that future river leaders, holders of the jobs that our students seek, will need to have interdisciplinary training across a wide field of knowledge, including the natural sciences, policy, planning, and design, as well as the liberal arts. Courses such as HSEM 3039 “Living with the Mississippi River” give students an introduction this broad field perspective, and are most often undertaken with community partners for educational opportunities that model experiential and community-engaged learning.
Finally, River Life serves as a coordinator between community partners and their needs for advanced research, design, and program development and students who are ready to commit a capstone project, internship, a thesis, or some other advanced investigation to solving a community river-oriented problem.

At all levels of the River Life program, students and community partners confront the “wicked” problems of how urban rivers can be made more sustainable and resilient, and how planning toward those goals can be more inclusive. Rather than arriving at a finalized definition of “sustainable,” our work always sees sustainability as the dynamic, complex interaction of human and bio-physical systems, with immediate drivers for change coming from the specific landscape under investigation, understood as symptomatic of broader national and global patterns.

**Activities in the 2012-2013 Pilot Year**

To date, River Life has progressed through a pattern of taking advantage of selective opportunities. For 2012-13, the program’s overall goal is to build a more systematic set of relationships across the University and more deeply into the regional and national river sustainability community. We will do this through more formalized outreach and engagement efforts and through the development of online materials that will serve as resources for faculty, students, and community partners. In particular, we expect to convene faculty and students across the University around a question such as “What does the Mississippi River, as a “natural” and “constructed” system, look like for the next 300 years? How/does our experience of the past 300 years inform our possible future(s)?”

A measure of our success in 2012-13 will be that we’ll engage faculty, students, and community partners, separately and collectively, in dialogues about the future of the Mississippi River as a “common thread” for University teaching, engagement, and research, and that we will have substantive and programmatic involvement from new collaborators across the University and beyond its boundaries. “Sustainability” will be a key thread in these conversations.

**Connecting Campus to Community: Crookston’s CommUniversity Initiative**

**Overview**

Crookston and Morris are the two most rural of the U of MN’s campuses but unlike, Morris which is spatially integrated into the town, the Crookston campus is located about 2 miles from the town center. This can lead to a functional separation of “town and gown” and a number of discussions in recent years have addressed how to improve the issue. Leadership and involvement by campus faculty and staff in community service groups, student community service projects, and University personnel living in the community have all helped but some recent activities have provided more attention to connections.

Examples of these tangible connections include the following: UMC has recently been awarded 3 GreenCorps specialists; a campus and/or community outreach program of AmeriCorps administered by the Minnesota Pollution Control Agency. In 2010, the energy conservation
specialist assisted with a number of campus projects but also co-authored a $ 90,000 grant with city officials to change out street lights to LED units having a 2-year payback after rebates. In 2011, the stormwater specialist assisted with assembling an infrastructure inventory to aid in developing a stormwater management plan and installed Crookston’s first rain garden. In 2012, the green outreach specialist has coordinated volunteers to assist in the construction of a nature discovery park, development of an energy conservation forum among community businesses to share experiences, assisted with the installation of a CommUniversity Trail System (funded by a community development grant), and participated in Crookston InMotion, a community planning effort. Community outreach projects of the Northwest Regional Sustainable Development Partnership and CERTS (Community Energy Resource Teams) have also played a key role in supporting and implementing sustainability related outreach projects and make this a truly university project. While residents of a somewhat conservative community may have difficulty embracing sustainability as an abstract concept, it becomes more meaningful when they can relate real projects to saving real dollars for real people in the present.

**How It Works**

Student engagement in CommUniversity provides rich opportunities for applied learning on sustainability action. Most students want to make a difference in their world and community; and even those who do not have that as an upfront internalized goal are often invigorated by the involvement and like the “ride.” All graduates will one day be incorporated more or less into a community, yet the structure and function of a community is foreign to most Crookston campus students. By promoting sustainability related projects as part of a class, club, internship, or service activity, students can get an exposure experience. The Crookston community is currently engaged in a community planning effort referred to as “Crookston InMotion.” A loose knit group of campus and community citizens have developed 4 Destiny Drivers to provide a bit of targeted focus within which to direct community efforts. These include; sustainability, downtown enhancement, economic development, and housing. The “Sustainability as a guiding principle in community development” driver embraces the following broad principles:

- **Promoting a more walkable and bikeable community with less reliance on the automobile to improve health and reduce resource use. Complete biennial assessment report.**
- **Planning which places a priority on a vibrant community core and building “from the inside out” to strengthen a sense of community and reduce urban expansion onto good farm land.**
- **Advocating for the production and sale of locally grown food and vegetables through urban gardening and farmer’s markets. This connects people to the land, promotes healthy eating, and stimulates the local economy.**
- **Celebrating our reliance on the conservation of natural resources of soil, water, plants, and wildlife through recycling, discovery park experiences and strengthening our connections to the river by fishing and water-based recreation.**
- **Placing a priority on the retrofitting, design, and construction of housing which exemplifies forward thinking in energy efficiency, and renewable energy technologies.**

These principles are considered a work in progress and will be fine-tuned over time. They are broadly stated to include a range of on-going projects (hike/biking trails, housing energy-saving retrofits, discovery park development, local food promotion, stormwater management, ecological design applied to land use planning, industry energy conservation forums) and serve as a guide for the initiation of new ones. By relating formal and informal education projects to
these sustainability related principles, good things happen for the planet, students contribute to real action, and numerous opportunities become available to communicate to the community that sustainability applications are a good thing especially when thinking long-term for sound community development.

**Recommended Governance Approaches for Sustainability Education**

A critical component of these proposed educational outcomes is the recognition that we need to learn how to articulate desired futures and to identify priorities and strategies that will move us closer to our goals. We recognize that the process is iterative, meaning that our current understanding of what is needed will be reinterpreted by future generations. This commitment to transformation is central to the institutional pedagogical responsibility we carry. We, as faculty, staff, and students, should live the question, “How will we manage a large, complex land-grant university to ensure that generations to come enjoy a better future?”

Coordination and transparency are characteristics of a governance system that best achieves the democratic outcomes we seek. A sustainability governance system is likely to include elements such as:

- **Committee or Council on Sustainability Education** - We envision a standing body that would provide strategic oversight, critical thinking, and coordination around sustainability learning in the University of Minnesota system. Membership in this body would accommodate the rapidly growing interest in sustainability education. This council might also serve to implement and coordinate other ideas that have emerged in preparation of this report and will emerge in the future.

- **A Platform for Information Sharing** - Many in the University community are acutely aware of the need for a system that can provide insights on course design or pedagogical and curricular issues, while opening up networking possibilities to interested and involved individuals within and beyond the University of Minnesota system. An early implementation of such a resource is [http://www.susteducation.umn.edu/](http://www.susteducation.umn.edu/). Enhancing and expanding these current efforts could be part of developing a sustainability governance structure.

- **Strategic Communications Planning** - The Morrill Act sesquicentennial celebration presents a prime opportunity to articulate disseminate and distribute our sustainability vision. Effective communication with a wide variety of internal and external audiences on an on-going basis will be important to our success as we expand our engagement capacity.

- **Interdisciplinary Administrative Structures** - Just as our current institutional and administrative structures reflect our disciplinary heritage, interdisciplinary curricula must be facilitated by the development of institutional and administrative structures that are commensurate with those courses and activities. The Sustainability Minor provides a model for possible governance solutions and there are many examples of *ad hoc* efforts that address budgetary challenges (e.g. the courses in the Acara and Boreas programs).

**Potential Experiments in Sustainability Education**
The initiatives begun by the Resilient Communities Project, Riverlife and The CommUniversity point to ways in which sustainability education can and should be extended to all parts of the University of Minnesota community. We recognize, however, that the UMN system needs to expand the scale and scope of sustainability education by fundamentally changing curricular and institutional structures. With this goal in mind, we propose the following high impact approaches to this educational transformation.

System-wide Sustainability Exchange Program

An important difference between human systems of the early 21st Century and those of the late 19th is the degree of interconnection that has become a daily reality. This interconnectedness makes it very important that our graduates appreciate the role of culture and place in determining what actions are possible, what actions are desirable, and how those vary, even across relatively short distances on Earth’s surface. The University is uniquely positioned as an institution of higher education to design a curriculum that addresses this issue by capitalizing on the variety of programs represented by the full set of our campuses and the international research strength of the faculty.

Each of our campuses has complementing strengths. For instance, Crookston is distinctly rural in comparison to the Twin Cities. Morris has strong environmental studies along with good examples of renewable energy installations. Duluth has strong research infrastructure and contrasts with other campuses in its location on Lake Superior in a medium-sized port city. Rochester provides a small campus setting and an emphasis on biomedical professions.

A system-wide sustainability program could be designed that, for example, would encourage all students to spend at least one semester on another campus. The details of these exchanges would reflect the student’s interests and the complementing strengths across our system. The objectives of the exchanges would include:

- Enhanced appreciation for the importance of place
- Enhanced interdisciplinary exposure
- Stronger connections among our individual campuses

This model could be extended to faculty, which would in turn amplify the outcomes, or be conceived to include international exchanges and study abroad.

Finally, the University of Minnesota Extension system provides a highly important educational resource via its staff, programs and offices. Emerging opportunities to engage with the resources and interests of Extension related to sustainability learning can strengthen this network. There is growing interest in Extension in expanding its work on complex and challenging issues, e.g., regional energy systems. In addition there is interest in coordinating currently discrete programs like the regional partnerships for sustainable development, resident education coursework and internships under a coordinated model. Exchange programs of various kinds could be expanded to build on these resources as well.

Grand Challenges Capstone

As the University moves forward in developing its capacity for sustainability education, we will need to educate students to become productive members of society who can:

- articulate problems,
- identify the knowledge necessary to solve them,
assemble teams to address the complexity of the problem, and move from theory to action.

Current capstone experiences encompass some of these elements, but tend to isolate students within disciplinary fields. We imagine a deeper, interdisciplinary educational opportunity that would comprehensively focus the senior year on sustainability thinking, following preparatory work in the junior or sophomore years. This experience might also be productively connected to elements of graduate and professional programs.

These experiences would need to be coordinated across majors and colleges and perhaps across campuses. They would be driven by students, with faculty playing a strong mentoring role. Through this structure, the problems that teams of students take on could be of larger scale problems than typical capstones and might extend work and learning across multiple years.

The central innovation in the grand challenge capstone experience would be the requirement that students identify the knowledge that they need to acquire in order to address the problem that they are trying to solve. They would then be called upon to develop strategies for acquiring that knowledge either through formal coursework or by taking advantage of the growing body of instruction and learning resources that are available through digital media and other sources. Faculty mentors would guide this process and work with students to identify metrics appropriate to learning outcomes essential to the credentials that the students choose to pursue.

Preparing Future Faculty: Sustainability Education

Young scholars in many graduate programs and fields are intensely interested in sustainability education and closely-related forms of learning and scholarship, such as community-engaged education and research. Recently, a group of graduate students at UMN-TC formed a ‘task force’, aiming to improve graduate education related to community-engaged learning and research. We perceive multiple opportunities to create new learning and practice programs for these young scholars, leveraging ongoing or envisioned activities, such as the Resilient Communities Project or the Grand Challenge Capstone. We envision creating and supporting an interdisciplinary group of graduate students who would be heavily involved in these projects.

Next Steps

This report summarizes ideas that grew out of many discussions and the work team recognizes that further discussion will be needed to determine how best to pursue the aspirations expressed in this document. The examples presented here each represent major areas in which action could be taken. In this final section we reflect on possible next steps.

With broad agreement and senior leadership, we can begin to build the governance mechanisms that will ensure that we make efficient use of our resources and that we maintain and increase academic rigor while we innovate. The creation of lean governance structures has the potential to coordinate this work with broad strategic goals, thus enhancing institutional and collegiate collaboration while promoting faculty engagement and leadership.

As collaborative networks are built and strengthened, we can come to agreement about how to determine and define priorities. The approach proposed in this document is meant as a set of starting points, to which other possibilities can be added. The pilot programs
recommended describe initiatives that could build on existing resources to achieve near-term results that can provide a basis for long-term planning.

Funding mechanisms will be needed to support the work that will be required to capitalize on the opportunities and the responsibilities presented here. The funds might come from a combination of sources including:

- cost savings from operations,
- enhanced revenue from innovative course delivery and expanded enrollments,
- fund raising from public and private sources,
- internal investment from individual campuses and from system sources.

As new programs are designed, it will clearly be important to engage in on-going analysis of the costs and benefits with respect to both finances and broader educational objectives.

The interviews that were a starting point for discussions by the work team—and the rapid growth of the Sustainability Network to over 60 members—reveal a robust cadre of self-selecting faculty and staff from across the University. Together, these faculty and staff represent a broad portfolio of interests and hold well-conceived ideas regarding sustainability education. As well, University Services and its staff have taken on sustainability with enthusiasm. Vice President for University Services Kathleen O'Brien served as Co-Chair of the System-Wide Sustainability Committee and on the Twin Cities campus has been the most senior leader around sustainability issues. This broad-based commitment to sustainability education on the part of faculty, administrators, and staff positions the University well.

As outlined above, sustainability must be university-wide project with an important academic component. Many of the innovations suggested above will be hard to accomplish without broad consensus that they are a high priority. Domains of responsibility and leadership must be clearly articulated as well. As a world-class research university in the 21\textsuperscript{st} century, we must come to a clear agreement in these areas, embracing sustainability education and becoming an institutional leader in this field.