

AggiEcology

USU thinks green!



Utah State University Criteria for Best Practices in Campus Sustainability

September 1, 2003

Does the graduate know that "he is only a cog in an ecological mechanism? That if he will work with that mechanism his mental wealth and his material wealth can expand indefinitely? But that if he refuses to work with it, it will ultimately grind him to dust...If education does not teach us these things, then what is education for?"

-Aldo Leopold

Please Note:

This report serves as a revision to the Environmental Campus Task Force Report that was presented to President Hall on April 1, 2003. As a revision, this report contains additional information on topics that were not addressed in the original report. This report also is supplemental to the earlier report, as information contained within this report is complementary to what is covered in the earlier report.

The online version, <http://www.usu.edu/about/president/>, of the report does not include appendices; however, copies may be obtained by contacting Jack Payne, jack.payne@usu.edu, (435) 797-2201.

TASK FORCE COMMITTEE MEMBERS:

Jack Payne – Extension Administration, Chair
Brian J. Andersen – Facilities and Operations
Mary E. Barkworth – Biology
R. Ryan Dupont – Civil and Environmental Engineering
Darrell E. Hart – Facilities Administration
James W. Huppi – Facilities Planning
Craig W. Johnson – Landscape Architecture and Environmental Planning
Eric F. Jorgensen – Environmental Health and Safety
Roger K. Kjelgren – Plants, Soils, and Biometeorology
Richard T. Koenig – Plants, Soils & Biometeorology
Michael R. Kuhns – Forestry, Range and Wildlife
Tiffany Leo – Associated Students of Utah State University
Nancy Mesner – Aquatic, Watershed, and Earth Resources
Barbara Middleton – Forestry, Range and Wildlife
Ellen E. Newell – Facilities Planning
Kevin G. Phillips – Facilities Business Services
Terry L. Sharik – Environment and Society
Ronald C. Sims – Civil and Environmental Engineering
Jim Steitz -- Student

Table of Contents

September 1, 2003

- **Executive Summary**
- **Foreword**
- **Sustainability Education**
- **Sustainability Research**
- **Water**
- **Land**
- **Energy**
- **Food**
- **Material Resources and Waste Disposal**
- **Built Environment**
- **Transportation**
- **Decision-Making and Sustainable Practices**
- **Sustainability Dashboard**
- **Appendices** (Not included in online version. Contact Jack Payne, jack.payne@usu.edu, 435.797.2201, for copies)

Appendix A. The Talloires Declaration and Signature Page by
USU President Stanford Cazier

**Utah State University Criterion for Best Practices in Campus Sustainability,
Environmental Education & Research**

Table of Contents

September 1, 2003

Appendix B. Information Regarding the Association of University Leaders for a Sustainable Future (ULSF)

Appendix C. ULSF's Sustainability Assessment Questionnaire for Colleges and Universities

Appendix D. Information Regarding a Proposed Utah State University Training Program as Sponsored by the National Wildlife Federation

Appendix E. Benchmarking and Assessment Information for Campus Environment Performance as Provided by the National Wildlife Federation

Appendix F. The National Wildlife Federation's Criteria for Exemplary Schools

Appendix G. The National Wildlife Federation's Topline Results for Campus Sustainability

Appendix H. Information on the University Affiliate Program for the National Council for Science and the Environment.

Appendix I. The Green Building Rating System by the Leadership in Energy and Environmental Design (LEED)

Utah State University Criteria for Best Practices in Campus Sustainability

EXECUTIVE SUMMARY

September 1, 2003

Although Utah State has not formally progressed toward sustainability in the 11 years since the Talloires Declaration was signed, there have been numerous advances by other universities and non-government agencies in developing campus sustainability or “greening” programs, all of which have been very helpful in modeling this much-revised report. The main examples that have been most helpful are: The National Wildlife Federation’s Criteria for Exemplary Schools and Penn State’s list of 30 Indicators of Sustainability that formed the basis of the criteria and measures for Utah State in this report. Perhaps the most useful models were the numerous sustainability audits and ensuing action plans prepared by Penn State, Ball State, Chico State, Purdue, Colorado State, Oberlin, Brown, and their attendant implementation success stories that enabled this report to be inclusive and dynamic.

Admittedly, more questions are being proposed here than answers which is mainly due to the fact that without a full-blown sustainability audit within the recommended 10 categories of: Sustainability Education, Sustainability Research, Water, Land, Energy, Food, Material Resources & Waste Disposal, Built Environment, Transportation, and Decision-Making and Sustainable Practices. Utah State does not have a clear picture of where it really stands in its desire to become an environmental university. In the final analysis, Utah State may only elect to opt for implementing a few of these categories as a beginning, or it may find the “low hanging fruit” within all of them and tackle the lot. Hence, the primary recommendation and number one action item is to conduct a complete audit to make available a baseline for future progress, allow stakeholders to voice their opinions, and to provide a complete and accurate snapshot of where Utah State stands environmentally juxtaposed with its peers and the generally accepted indicators. It is further recommended that the university make use of the services of either the National Wildlife Federation or the Association of University Leaders for a Sustainable Future, as they both offer extensive programs and workshops in facilitating campus sustainability programs and have been consultants to most of the universities which are referenced above.

Becoming an Environmental University is a daunting process as it involves all of the university’s systems. Getting the job done will require the following steps:

1. **Advocacy** is the impetus to begin the change movement. Without input and support from the administration, faculty and students, we could scarcely begin, but it should start from the top.
2. **Policies** addressing the proposed change(s) are required. An exceptionally understandable, compelling, written, highly publicized, and actionable set of sustainability policies will establish the ground rules and get people moving.
3. **Resources** for the change movement are imperative. This task cannot be embarked upon as an avocation or through a sole volunteer effort. Top level professional coordination will be necessary.

Utah State University Criteria for Best Practices in Campus Sustainability

EXECUTIVE SUMMARY

September 1, 2003

4. **Leadership** is the key for a successful change movement. Need we say more?
5. **Well-defined means** to achieve **agreed upon ends** that are important elements for success. We will need clear strategies, resources, and visibly defined outcomes.
6. **Education** in and out of the classroom for students and employees is the primary mean and end. Building a sustainable university is not about environmental compliance, but about stimulating students to become good global citizens and creating the knowledge to out-do themselves in striving for sustainability.

To that end, the goals for an Environmental Utah State Campus or **AggiEcology** movement are based on the following commonly accepted goals for campus sustainability:

- **Significantly Reduce Fossil Fuel Dependence**
- **Dramatically Reduce Water Waste**
- **Become a Minimum-Waste University**
- **Purchase, to the Fullest Extent Possible, Foods Produced Using Sustainable Practices**
- **Create and Abide by a Land Ethic**
- **Promote Compelling Alternatives to Car-Based Transit**
- **Create "Green" Buildings**
- **Promote Ecological Literacy**
- **Prioritize Research for a Sustainable World**
- **Ground Decisions in Sustainability Principles**

From these goals the key action items are

1. **Perform an environmental audit of the following areas: Energy, Water, Material Resources and Waste Disposal, Food, Land, Transportation, Built Environment, Decision-Making and Sustainable Practices, Research, and Sustainability Education**
2. **Prioritize indicators and form short, midterm and long-range goals**
3. **Develop an effective environmental policy by pinpointing the most significant impacts and their causes**
4. **Reveal cost savings opportunities**
5. **Improve University efficiency**
6. **Promote good environmental citizenship through a dynamic education movement**
7. **Improve the University's image and community relationships**



Utah State University Criteria for Best Practices in Campus Sustainability

EXECUTIVE SUMMARY

September 1, 2003

With the action item requests granted and with the convergence of grassroots and top-down advocacy, Utah State can begin a concerted effort toward institutional environmental change. That change will not happen spontaneously. Only with dedicated policy and resources will institutionalized leadership develop the means and ends to educate the campus and move Utah State towards sustainability.

This year, which President Kermit L. Hall has proclaimed "Academics First" with "Think Utah State" as the call to action, is the year to begin environmental change at USU. Now the administration must commit to action. They must take active steps to being responsible environmental stewards on our planet, and Think Green.

Utah State University Criteria for Best Practices in Campus Sustainability

FOREWORD

September 1, 2003

"In one way or another all of the important questions of our age have to do with how we get on with the Great Work, transforming human activity on the earth from destruction to participation and human attitudes toward nature from a kind of autism to a competent reverence."

-David Orr

The concept of sustainability - meeting present needs without compromising the ability of future generations to meet their needs - challenges Utah State to pay attention to the myriad ways in which it depends on the earth. The world of tomorrow starts with the university and college campuses of today. Utah State is a place where ideals and behaviors are strengthened or originated; a place where new technologies and methods are given trial and evaluated; and a place where knowledge is invented. It is a place that is a microcosm of society at large. The many roles Utah State plays reflect the numerous reasons why Utah State needs to be an exemplar for the graduating generations of decision-makers and to the communities it serves. Moreover, Utah State's status as a Land-Grant University makes it the ideal and necessary candidate for the implementation of the most up-to-date environmentally responsible actions and policies.

As an institution of higher learning, Utah State is not always as progressive as the ideas it produces. As educators we always should be questioning what we can do as global citizens and identify the implications of our actions. All education applicable to life on our planet - intellectual, social, political, or conservation - is environmental education and needs to be acknowledged and considered as such. A transformation toward a more sustainable society can be accomplished only through fundamental and sweeping changes in the educational experience. At the same time, as educators we must be held accountable to walk our talk and teach by example.

In 1991 Utah State took the first step toward broadening its definition of sustainability and environmental education when former Utah State president Stanford Cazier and president-elect George Emert joined the ranks of over 300 university presidents, rectors and vice chancellors and signed the Talloires Declaration which was the gateway to engaging the considerable resources of universities to work toward an environmentally sustainable future. Assisted by internationally respected environmental leaders, the presidents explored the state of the natural environment, the impact of human population growth and economic activity on the environment, and strategies for the future. They pledged mutual support to take actions at their own universities to implement the recommendations and to initiate programs to prepare their graduates for the challenges of the twenty-first century. They invited their colleagues to sign the declaration and join them in these efforts.

Since then, Utah State has made only what could be termed as sluggish progress of implementing in theory or practice the tenets of the Talloires Declaration. Meanwhile, in the more than decade that has passed since signing the Talloires Declaration, many of the original signatories have been executing the agreement and have become models of campus greening for the higher education community. Ball State University, Penn State University, State

Utah State University Criteria for Best Practices in Campus Sustainability

FOREWORD

September 1, 2003

University of New York at Buffalo, Tulane, Oberlin, and Colorado State University, to name a few, are currently in the forefront of eco-literacy and sustainability campuses. In addition, conservation organizations such as the National Wildlife Foundation (NWF), Association of University Leaders for a Sustainable Future, the Nathan Cummings Foundation, and the National Council for Science and the Environment, have recognized that ensuring a habitable planet for future generations should start in the campus community and have formed partnerships and consultancy agreements with many universities in developing sustainability implementation tools and measures.

In light of Utah State's commitment to sustainability through the Talloires Declaration and in order to maintain and improve its standing within the peer academic community and its obligation as a Land-Grant University, it is evident that Utah State must strive to be no less than an Exemplary School by the criteria set forth by the NWF and follow the tenets of the Talloires Declaration. It is further recommended that Utah State go beyond these recommendations and make sustainability a core concept of Utah State curriculum and campus culture, thereby providing greater visibility to its programs and positioning the University as an environmentally aware institution which will enhance its reputation for learning, discovery, and engagement, and facilitate many of the other university goals.

Although Utah State is somewhat behind relative to other Talloires universities, it is fortunate that during the past decade, good progress has been made by peers and by non-government conservation organizations that has provided a solid framework and a universal roadmap of goals, strategies, standards, and measures. In researching their accomplishments it is clear that Utah State would benefit from utilizing a few of their models. As a result, this report contains a synthesis of goals, recommendations, strategies, and standards (indicators) that have come from those organizations which are widely recognized as being at the forefront of higher education conservation methodologies in the areas of:

- College and university environmental education;
- Campus environmental practices ; and
- Student environmental activism.

To that end, the Talloires Declaration, National Wildlife Foundation's State of the Campus Environment Criteria for Exemplary Schools, A New Ranking System for Colleges and Universities by David Orr, and relevant Penn State Indicators of Sustainability have been incorporated into this report to create a Utah State Criterion for Best Practices in Campus Sustainability and Environmental Education and Research. The following provides a broad overview and/or description of the principles used by each organization from whom we have borrowed:

Talloires Declaration

- 1) Increase Awareness of Environmentally Sustainable Development
- 2) Create an Institutional Culture of Sustainability
- 3) Educate for Environmentally Responsible Citizenship
- 4) Foster Environmental Literacy for All
- 5) Practice Institutional Ecology

Utah State University Criteria for Best Practices in Campus Sustainability

FOREWORD

September 1, 2003

- 6) Involve All Stakeholders
- 7) Collaborate for Interdisciplinary Approaches
- 8) Enhance Capacity of Primary and Secondary Schools
- 9) Broaden Service and Outreach Nationally and Internationally
- 10) Maintain the Movement

National Wildlife Federation's State of the Campus Environment Criteria for Exemplary Schools

Although colleges and universities have been taking an active role in creating and modeling solutions to environmental problems in the 12 years since the Talloires Declaration, there was little baseline information available to show how successful colleges were in carrying out that mission. While extensive information was available on most other aspects of University performance enrollments, costs, competitiveness and cultural diversity - no such data on environmental performance existed.

The National Wildlife Foundation's State of the Campus Environment project was designed to address this problematic information gap. In a first-ever large-scale environmental performance survey, every college and university in the U.S. was asked to describe its environmental practices, from recycling, landscaping and transportation, to campus policies, curriculum and energy use. Although Utah State was not a respondent in the survey, the ensuing Criteria for Exemplary Schools offers all institutions of higher learning a set of measures and standards for which to strive:

NWF Criteria for Exemplary Schools

- Offer undergraduates the option of environmental or sustainability studies as a major and minor and require all or most students to take at least one course related to the environment.
- Have programs to support faculty professional development on environmental topics and formally evaluate or recognize how faculty have integrated environmental topics into their courses.
- Set and review goals for purchasing organic foods in all campus units and have written policies about purchasing organic foods in all campus units.
- Have a written declaration committing to the promotion of environmental responsibility
- Have a written declaration that educating students about environmental responsibility is part of its academic mission and set and review or have written policies in most of the nine environmental activities.
- Have hired all four of the following: a fulltime administrator who manages environmental issues beyond regulatory compliance, a recycling coordinator, an energy conservation coordinator, and a green purchasing coordinator.
- Require environmental accountability campus-wide, not just in some campus units.

FOREWORD

September 1, 2003

A New Ranking System for Colleges and Universities by David Orr

David Orr is perhaps best known for his pioneering work on environmental literacy in higher education and his recent work in ecological design. He spearheaded the effort to design and build the Environmental Studies Center at Oberlin College. Dr. Orr is the author of three books: The Nature of Design; Earth in Mind; Ecological Literacy and co-editor of The Global Predicament. He has lectured at Utah State and hundreds of colleges and universities throughout the U.S. In an article (1999), Dr. Orr proposed to rank colleges and universities based on whether they move the world in more sustainable directions. He employed five criteria as follows:

1. What quantity of material goods does the university consume on a per capita basis? (e.g., How much paper and water is used per student? How much CO₂ is released per student for electricity and heating needs?)
2. What are the university/college management policies for materials, waste, recycling, purchasing, landscaping, energy use, and building? (e.g., Is there a priority to use recycled materials? Is the use of toxic chemicals kept to a minimum?)
3. Does the curriculum engender ecological literacy? (e.g., Do graduates know the “stories” behind their food, water, and discarded materials? Are there opportunities to restore local rivers and degraded lands?)
4. Do university/college finances help build sustainable regional economies? (e.g., Do food purchases come from regional farms? Are endowment funds invested in enterprises that employ sustainable practices and produce goods that truly benefit society?)
5. What do the graduates do in the world? (e.g., Does the work they do contribute to a sustainable culture?)

Relevant Penn State Indicators of Sustainability

Examining an institution through the lens of sustainability invites us to think about values. The values associated with sustainability are age-old precepts that are both sensible and uplifting. They include a respect for the biota and natural processes, the exercise of mindfulness of place, a commitment to live within limits and to consider full costs, and the assumption of civic responsibility. - Penn State Indicator Report 2000

This report examined sustainability at Penn State using 33 different indicators distributed among 10 university “systems.” The systems included energy, water, food, transportation, and decision-making. For each indicator, data are presented that gauge if the institution is moving toward sustainability.

Utah State University Criteria for Best Practices in Campus Sustainability

FOREWORD

September 1, 2003

CATEGORIES	INDICATORS OF SUSTAINABILITY
Energy	<ul style="list-style-type: none"> -Total and per capita energy consumption -Consumption of natural gas vs. coal on campus -Carbon dioxide emissions
Water	<ul style="list-style-type: none"> -Total and per capita water consumption -Ground water quality -Waste water disposal
Material Resources and Waste Disposal	<ul style="list-style-type: none"> -Total waste production -Recycled solid waste -Paper consumption
Food	<ul style="list-style-type: none"> -Dining hall diet -Dining hall waste -Food purchasing policies
Land	<ul style="list-style-type: none"> -Land accumulation and policies -Impervious surfaces -Native vs. exotic plants on campus -Pesticide use in land care
Transportation	<ul style="list-style-type: none"> -Car dependence -Green space converted to parking space -Transport-related safety
Built Environment	<ul style="list-style-type: none"> -Building decision process -Building priorities -Ecological design in buildings
Community	<ul style="list-style-type: none"> -Ecological literacy of graduating seniors -Technology: Enhancing vs. undermining community vitality
Research	<ul style="list-style-type: none"> -Ethical treatment of research subjects -Disposal of laboratory wastes -Research on sustainability -Research priorities
Decision-Making	<ul style="list-style-type: none"> -Core values guiding decisions

FOREWORD

September 1, 2003

What's in this report?

The intent of this report is not simply to supply answers but to raise questions. The questions center on ecological responsibility, research ethics, the wisdom of continual growth, the openness of decision-making, and the moral responsibilities of the University—in short, questions that are worthy of the attention of all vital institutions. The preliminary report from the Environmental Task Force may have fallen short of being conclusive, but further research into the current state of the sustainable universities has led to even fewer conclusions and opened the door to more inclusions. Although the Task Force made recommendations on Water, Energy, Landscape and Waste, Building, Transportation, Food, Decision-Making and Sustainable Practices and Sustainability Education were not adequately explored and are included in most of the studies by peer institutions. We believe it is important to forthrightly acknowledge all of Utah State's sustainability deficits and prioritize remedial action than to err on the side of brevity. The Task Force made recommendations and has provided some measures, but **without a full-scale sustainability audit, Utah State will never have the baseline information or the self-understanding necessary to satisfy our commitment to the Talloires Declaration or reach the level of Exemplary School.** As a result, this report should be considered as a supplement to the Environmental Task Force Report dated April 1, 2003.

Categories and Indicators

The following list of categories is a comprehensive list based on sustainability best practices which is expected to be addressed by an institution embarking upon “greening.” Some categories will be of greater concern at Utah State than others, but in an effort to present a comprehensive picture of the institution, it is important to list all of the categories as no one of them can exist in a vacuum (a basic tenet of sustainability). It is anticipated that after an environmental audit, a “short list” of prioritized indicators will be created for immediate and mid-range implementation with other issues becoming long-term goals. In this report, preference of action has been given to the areas that the Task Force felt are University “hot buttons”, but an audit could very well change those priorities.

The three over-arching indicators chosen for this survey are: management systems, curricula, and operations. In developing more specific indicators, we will ask: What are we teaching? How well are environmental issues integrated across disciplines? What systems are in place at the highest levels to support environmental performance, ensure environmental quality intersects all aspects of campus life, and sustain initiatives over time? What are we doing to enhance our environmental performance in each of our operations and through our research?

The categories are:

- Sustainability Education
- Sustainability Research
- Water
- Land
- Energy

Utah State University Criteria for Best Practices in Campus Sustainability

FOREWORD

September 1, 2003

- Food
- Material Resources and Waste Disposal
- Built Environment
- Transportation
- Decision-Making and Sustainable Practices

We begin each of the report's ten categories with the indicators (standards) for that category, a brief introductory paragraph explaining why the category is important to the sustainability of Utah State the National Wildlife Federation's Criteria for Exemplary Schools for the category, goals, suggested audit topics, what's going on at other universities, a section of action items labeled What Utah State Can Do, additional recommendations, and Sustainability Indicators Dashboards.

- Category
- Relevant Penn State Indicators of Sustainability
- Introduction
- NWF Criteria for Exemplary Schools
- Goals
- Suggested Audit Topics
- [Category] at Other Universities
- What Utah State Can Do
- Additional Recommendations
- Sustainability Indicators Dashboard

Why Audit Campus Environmental Performance?

"Measure what you value, don't value what you measure."
-Kermit Hall

Assessing environmental performance can be helpful in several respects. Each assessment provides a baseline against which environmental trends on a campus can be monitored over time. The audit also can help identify opportunities and highlight good practices. This information can be used to further refine goals and to show members of the campus community how their efforts are making a difference. When conducted regularly (every year or 18 months), audits can help ensure that environmental performance is a dynamic rather than a static process, providing a sense of "where we have been, where we are now, and where we are going." Regular audits also help establish mechanisms for collecting and quantifying important information, make information accessible, and ensure that information relayed to the campus and the public is current.

When conducting an environmental audit, one of the first challenges is the essential, yet painstaking, step of unearthing background information and compiling basic usage data. It is strongly recommended that Utah State make use of the consulting services of one of the conservation organizations listed above as they have significant experience and success in

FOREWORD

September 1, 2003

providing direction, training, and auditing expertise and will attract attention to the greening cause and an impartial efficacy to the audit process. To that end, an appendix with information regarding these consultants has been prepared discussing their scope of services and in some cases, a list of clients.

How to Assess Campus Environmental Performance

There are four main steps in the audit process:

1. Identifying indicators,
2. Establishing performance benchmarks,
3. Evaluating performance against those benchmarks, and
4. Documenting the results.

Establishing a goal to reduce waste by 50 percent in the next academic year may not be realistic, for instance, if the campus is currently diverting only 10 percent. Additional resources for developing assessment tools are listed in the resources section of this report. These include the Sustainability Assessment Questionnaire (SAQ) by the University Leaders for a Sustainable Future and Campus Ecology, A Guide to Assessing Campus Environmental Performance by April Smith and the Student Environmental Action Coalition, and State of the Campus Environment Identifying Indicators.

The first step of any assessment process is to identify the indicators, i.e., to determine what is important and what should be evaluated. Many of the questions in each of the three modules of this survey can assist campuses in developing indicators for assessing performance. The survey provides at least a starting place from which students, faculty, and staff can identify their own issues and customize questions to their own physical context, culture, and issues of greatest environmental concern. For those who choose to participate in the next audit, using some or all of the indicators used in this audit will make reporting on environmental progress easier in the next round.

Utah State University Criteria for Best Practices in Campus Sustainability

SUSTAINABILITY EDUCATION

September 1, 2003

“More importantly, we want students, faculty, and academic administrators to join together to assure that all future students will leave college fully conversant with environmental issues and with a commitment to sustainability in both thought and action. Universities must become centers of environmental education and concern. The next generation deserves nothing less.”

-Charles R. Halpern

President, The Nathan Cummings Foundation

Category: *Sustainability Education

***Note:**

A Utah State sustainability education system was not represented or addressed within the Environmental Task Force Report but was addressed by the students who participated. Rather than having education become a conspicuous omission, it is tackled herein as it is referenced in almost every campus sustainability report, is a NWF Criteria for Exemplary Schools, and considered an important indicator. Therefore, until there is a sustainability audit, with prioritized actions, these criteria will not be complete and suggestions reflect general issues found in peer audits and reports.

A sustainable environmental education possesses the following characteristic:

- **Ecologically literate.** Members of sustainable communities have the capacity to see themselves as part of, rather than separate from, the environment in which they dwell (e.g., they understand where their water comes from and where their waste goes).

Introduction

In the class of 2000 Report, the Nathan Cummings Foundation outlines a vision for eco-literacy.

“We have a vision for higher education in the 21st century:”

- Every discipline—from economics to literature to engineering—will incorporate environmental perspectives as a core component.
- All university operations will be measured against standards of ecological responsibility.
- Students will be engaged in environmental service and public dialogue from campus to national levels.

Environmental literacy is not just about developing citizens who will create environmental solutions; it is also about preventing the ignorance and negligence which lead to ecological damage. Students of *all* fields need to develop “environmental literacy,” the intellectual tools and practical skills to become caring and competent stewards of the planet. Although building a core of environmental professionals is important, detailed teaching about the environment should not be reserved for future specialists. The over-riding message, from the ETF students, “Make sure that environmental ignorance is NOT an option for anyone leaving USU.”

Reaching all students will require the redirection of traditional disciplines toward a more ecological perspective. The most obvious instruments for undergraduate environmental

Utah State University Criteria for Best Practices in Campus Sustainability

SUSTAINABILITY EDUCATION

September 1, 2003

education are environmental studies and sciences programs, but environmental issues should not remain isolated in special programs. All students, not just the environmental professionals—need to understand environmental concerns.

A report by the National Wildlife Federation entitled, Campus Environment: A National Report Card on Environmental Performance and Sustainability in Higher Education, reviewed environmental efforts and performance at universities throughout the country. The report gave universities the highest grades for implementing energy and water conservation programs and fairly good grades for other efforts such as waste reduction and landscaping programs. The biggest surprise noted in the report was how few campuses require all students to take an environmental course of any kind (8 percent). **The report notes that the area where the most improvement is needed is in ensuring that graduates, regardless of their major, are ecologically aware and environmentally literate.**

NWF Criteria for Exemplary Schools

- Offer undergraduates the option of environmental or sustainability studies as a major and minor and require all or most students to take at least one course related to the environment.
- Have programs to support faculty professional development on environmental topics and formally evaluate or recognize how faculty have integrated environmental topics into their courses.
- **Have a** written declaration committing to the promotion of environmental responsibility has a written declaration that educating students about environmental responsibility is part of its academic mission and set and review or **have** written policies in most of the nine environmental activities.

Goals

- Promote ecological literacy by modeling sustainable practices.
- Act as a “role model” for students and society for ecological sustainability.
- Meet or exceed NWF Criteria for Exemplary Schools and sustainability education characteristics.

Suggested Audit Topics

1. What are the types of environmental studies programs offered at USU? Include: Name of program, department, school, degrees offered, annual budget, year of program creation, enrollment, and program chair.
2. Does USU offer specific courses in the following subjects: Toxic /Hazardous Waste, Solid Waste, Energy Efficiency and Management, Water Conservation, Air Quality, Water, Environmental Economics, Environmental Law, Environmental Business, Forest Management, etc.?
3. Which, if any, environmental courses have included the study and research of campus environmental issues in the curriculum?
4. Describe any student research projects (include dates) that have resulted from these courses and any campus environmental programs that were subsequently implemented.

Utah State University Criteria for Best Practices in Campus Sustainability

SUSTAINABILITY EDUCATION

September 1, 2003

5. Do any environmental literacy programs exist on campus that train faculty to incorporate environmental themes into their curricula?

Environmental Education at Other Universities

World Resources Institute

World Resources Institute is working with over 100 business schools to integrate ecological literacy into business curricula.

Consortium for Environmental Education in Medicine

Consortium for Environmental Education in Medicine is working with medical schools to elucidate the relationship between human health and environmental health.

Tufts University

Tufts University recently created an Environmental Literacy Institute and made ecological literacy a goal for all students.

Allegheny College

Allegheny College is working with students to create environmental and economic improvements in biologically diverse but economically impoverished Northwest Pennsylvanian communities.

Middlebury College

Middlebury College has incorporated a commitment to ecological literacy into their mission statement...“is committed to environmental mindfulness and stewardship in all its activities.” This commitment arises from a sense of concerned citizenship and...a desire to teach and lead by example. The College gives high priority to...respect and care for the environment, sustainable living, and intergenerational responsibility.” (Quoted from Middlebury College Mission Statement.)

What Utah State Can Do

Short-Term Actions (Less Than One Year)	Midterm Actions (1-3 Years)	Long-Term Actions (3-5 Years)
Develop a new course, “Living on Earth,” and require that all undergraduate students take it.	Set up an interdisciplinary committee of faculty and students to review the present USU curriculum and assess opportunities for further integration of environmental information.	Ensure that its graduating seniors are: Aware of their ecological dependencies. USU graduates should learn how to identify, wherever they live, the sources of their food, water, and energy, as well as the destiny of their waste.

Utah State University Criteria for Best Practices in Campus Sustainability

SUSTAINABILTY EDUCATION

September 1, 2003

Short-Term Actions (Less Than One Year)	Midterm Actions (1-3 Years)	Long-Term Actions (3-5 Years)
		<p>Grounded in the natural world: Graduates should be able to walk through Utah's fields and forests and along streams and recognize the commonly occurring organisms (biodiversity), and they should be attuned to fundamental ecological processes (e.g., energy flow, nutrient cycling, species interactions).</p> <p>Skilled at making ecological connections: Graduates should be able to take any ordinary man-made object (e.g., a magic marker, three-ring binder, pair of sneakers) and elucidate, in a general way, the "upstream" and "downstream" ecological connections associated with the product's manufacture, use, and disposal.</p> <p>Mindful of their "ecological footprints": Graduates should be able to calculate the size of their ecological footprint and be knowledgeable of measures they might take to minimize "footprint" size.</p>
<p>Establish an interdisciplinary committee of faculty and students to oversee the three courses being proposed and to undertake a longer-term effort to enhance environmental learning opportunities for students.</p>	<p>Introduce freshmen to USU's environmental efforts during SOAR and incoming graduate students during Graduate Student Orientation.</p>	

Utah State University Criteria for Best Practices in Campus Sustainability

SUSTAINABILTY EDUCATION

September 1, 2003

Short-Term Actions (Less Than One Year)	Midterm Actions (1-3 Years)	Long-Term Actions (3-5 Years)
Develop a "Campus Environmental Monitoring" optional course that would provide students with the opportunity to participate in various environmental service activities on campus.	Award Presidential Scholarships for leadership in environmental efforts.	
Create a "Campus Environmental Service."	Sponsor environmental literacy training of faculty members.	
Create an interdisciplinary committee of faculty and students to review the current University curriculum and assess opportunities for further integration of environmental information into the curriculum.	Bring environmental perspectives into all disciplines.	
Strengthen and prioritize undergraduate, graduate, and post-grad environmental studies, research, and policy programs.	Expand opportunities for using the campus physical plant and business operations as a "learning lab" for students. Develop community environmental education programs and participate in public dialogue on environmental issues in the wider community.	
	Create a residential hall with a living/learning program dedicated to sustainability.	
	Make funds available for curriculum revisions.	
	Require all students to complete an intern-type experience related to USU as the Environmental University, to include such	

Utah State University Criteria for Best Practices in Campus Sustainability

SUSTAINABILITY EDUCATION

September 1, 2003

Short-Term Actions (Less Than One Year)	Midterm Actions (1-3 Years)	Long-Term Actions (3-5 Years)
	activities as participation in various environmental service activities and assessing USU's environmental performance, beginning in 2005-2006.	

Additional Recommendations

- Increase departmental funding to provide for full-time instructors, to assure the availability of quality classes, and to provide for academic advisement. Investigate long term strategies for the Environmental Studies program with attention to both the social and physical elements of the environmental field.
- Review the "hot jobs" list and incorporate local and state environmental career forecasts in curriculum planning.
- Change the Environmental Studies curriculum to include and mandate "hands-on" classes. This could be accomplished through field and laboratory work, independent study or internships. In addition, campus facilities, such as the energy conservation center, chilled water plant and recycling center, should be used as teaching aids, providing internships and getting students involved with the physical operation of the University. The students would be able to observe the progress of these facilities and take part in a unique learning experience without taxing strained budgets.
- Support and expedite the creation of an environmental institute on campus. Such an institute would coordinate and increase University environmental research and course offerings and create opportunities for undergraduates to participate in environmental research.
- Investigate the status of graduate programs in environmental fields at the university with suggestions for expansion and/or coordination.
- Initiate Pledge of "Social and Environmental Responsibility" at Graduation. Graduating seniors at dozens of universities are now signing a statement which says: "I pledge to investigate and take into account the social and environmental consequences of any job opportunity I consider." This pledge is printed on commencement programs and students signing the pledge wear green ribbons at graduation.
- Require a survey course on the Earth's ecology and environmental problems as part of the University's general education requirement. Incorporate this training into introductory classes for those disciplines that do not participate in the general education program.
- Develop an in-house faculty training program on environmental literacy.
- Work to bring environmental perspectives into all disciplines.

Utah State University Criteria for Best Practices in Campus Sustainability

SUSTAINABILITY EDUCATION

September 1, 2003

- Organize debates on the status of the human and natural environment and other controversial environmental concepts.
- Publicize environmental research on campus.
- Reward environmental subject matter and methodology in research and teaching efforts.
- Inform students of ways they could engage in environmentally responsible behaviors as part of the campus community.
- Introduce students to environmental sustainability.
- Get the environmental message across:
 1. "Utah State Today" emails
 2. The USU campus website (kept current)
 3. The Statesman (student newspaper)
 4. Cable TV in student housing
 5. Radio (KUSU-FM and local Cache Valley stations)
- Place signage in the Bookstore and around campus about environmental products and projects that is appealing, innovative, and informative.
- Provide an Ecological Footprint Barometer to measure and monitor the accomplishment of the university community towards becoming an Environmental University and reducing our ecological footprint.
- Make environmental concerns an integral part of all decision-making.
- Foster increased understanding of the environmental, social, and economic impact of both institutional and personal decisions among those that it employs and those it serves.
- Provide opportunities to become literate in the interactions of human, biological, and physical systems that affect environmental quality.
- Require all employees to attend workshops on environmentally-responsible behavior.
- Integrate training in natural resource systems function and human effects on the environment into the University curriculum.
- Consider leadership in environmental efforts as criteria for Presidential Scholarships.
- Teach environmental literacy to all students.
- Expand successful student environmental programs to serve the wider campus.
- Support a culture and structure that encourages active student participation.

Sustainability Indicators Dashboard

- ✓ **Ecological literacy of graduating seniors**

Utah State University Criteria for Best Practices in Campus Sustainability

SUSTAINABILITY RESEARCH

September 1, 2003

Category: *Sustainability Research

***Note:**

Utah State sustainability research was not represented or addressed within the Environmental Task Force Report. Rather than having research become a conspicuous omission, it is tackled herein as it is referenced in almost every campus sustainability report and considered an important indicator. Therefore, until there is a sustainability audit, with prioritized actions, these criteria will not be complete and suggestions reflect general issues found in peer audits and reports.

Research in a society which is committed to sustainability is characterized by the following:

- **Research uses sustainable means.** Research activities endeavor to minimize harm to the environment and to other beings. Strict ethical guidelines govern the treatment of research subjects; research-related waste is kept to a minimum and disposed of carefully.
- **Research seeks to promote sustainability.** Creating a sustainable society requires that we conduct both basic and applied research with an emphasis on deepening our understanding of natural processes, the efficient and wise use of materials, the intricacies of full-cost accounting, and the social dimensions of democracy and civic responsibility.
- **Researchers are mindful of the values underlying their investigations.** Researchers should acknowledge forthrightly that research is not "value-free"--that it always serves some value.

Introduction

Utah State is recognized widely for the quantity and quality of its research; however, one might pose the following questions:

- Do the scientific discoveries and technological innovations coming out of Utah State contribute measurably to health, harmony, and wholeness?
- Does USU research contribute to local and global sustainability?

A final element of the student educational program would involve an active, interdisciplinary research program. A number of questions regarding the earth's ecological processes remain unanswered. The University should encourage faculty efforts to achieve a greater understanding of both natural processes and the human influence on those processes. These efforts should be complemented by efforts to pinpoint areas where human impacts may be eliminated or minimized and identify methods helpful toward the creation of sustainable communities. Faculty exchanges and debates on environmental issues should be encouraged to reveal gaps in current knowledge bases; opportunities for new research; and creative solutions to environmental problems. The education and research efforts of Utah State could be complemented by a strong commitment to developing environmentally sustainable support operations. With vision, creativity, and administrative backing, University employees could enjoy

Utah State University Criteria for Best Practices in Campus Sustainability

SUSTAINABILITY RESEARCH

September 1, 2003

a campus with paperless offices, 100 percent recycling, "green" research and teaching methods, organic land care, energy efficient building designs, and a pedestrian friendly campus layout. The University could serve as a testing ground and example of how environmentally sustainable lifestyles could be introduced and practiced.

NWF Criteria for Exemplary Schools

- N/A

Goals

- Act as a lead institution in promoting and supporting research for a sustainable world
- Meet or exceed sustainability research characteristics.

Suggested Audit Topics

1. Does Utah State consider the social responsibility of the companies from which it accepts contracts?
2. Are there certain types of corporate-sponsored research which Utah State will not permit on campus?
3. Estimate the amount of faculty research or scholarship being done in the various disciplines in the area of sustainability (for example, renewable energy, sustainable building design, ecological economics, indigenous wisdom and technologies, population and development, total environmental quality management, etc.).
4. List any faculty research or scholarly activities related to sustainability.
5. Estimate the amount of student research or scholarship being done in the various disciplines in the area of sustainability.
6. List any student research or scholarly activities related to sustainability.
7. What percentage of faculty members teach or do research on sustainability issues?
8. What percentage of faculty members do you estimate would be interested in teaching and research on sustainability issues?
9. Does Utah State have established multidisciplinary and interdisciplinary structures (such as an institute or center) for research, education and policy development on sustainability issues? If yes, describe.
10. What are the largest research projects at the University in terms of funding?
11. Name the research projects that deal with the subject of toxics or hazardous waste, including research on generation, use, and disposal of such materials, as well as occupational and environmental hazards involved.
12. Are there any projects to research pollution or hazardous waste reduction?
13. What are the funding levels for these projects?
14. Who are the project sponsors?
15. Who are the participating faculty and departments?
16. Name the research projects that deal with the subject of solid waste. What are the funding levels for these projects? Who are the sponsors? Who are the participating faculty and departments?
17. Are there any projects to research solid waste reduction and recycling?

Utah State University Criteria for Best Practices in Campus Sustainability

SUSTAINABILITY RESEARCH

September 1, 2003

18. Describe any other environmentally related research efforts. Provide information on funding, sponsors, and participating faculty and departments.
19. Does the campus have Department of Defense contracts? What is the nature of this research?
20. Does the campus have Department of Energy contracts?

Sustainable Research at Other Universities

Georgia Institute of Technology

Georgia Institute of Technology has made sustainable technology a core mission that permeates all university endeavors from teaching through research to operations.

Center for Energy and Environmental Studies

Center for Energy and Environmental Studies at Boston University offers graduate training and research opportunities in ecological economics, energy analysis, and environmental modeling.

University of Maryland

University of Maryland provides graduate training and research in sustainability practices through its program in Sustainable Development and Conservation Biology.

University of Virginia School of Architecture

University of Virginia School of Architecture has a strong emphasis on ecological principles and "green" design.

Penn State

Penn State is working on reducing the volume of hazardous waste.

University of Washington

University of Washington Environmental Health and Safety Office has adopted a policy to "minimize the amount of chemical waste that is going into the environment whether it enters through incineration, landfill, or discharge into the water system. Additionally, it is able to reduce both disposal costs and the need to purchase new chemicals.

The University of California System

Integrating Research and the Environment throughout the University

The University of California system initiated a state-wide Integrated Pest Management (IPM) project for the various agricultural commodities throughout the state. The California IPM Project is a national leader in developing economical and environmentally sound pest control alternatives. The Project draws on the expertise of hundreds of scientists in a variety of disciplines, and the research program has funded over 200 projects in 35 different commodities. It is an extensive research, outreach, and educational program that benefits local communities, the state and the world.

Utah State University Criteria for Best Practices in Campus Sustainability

SUSTAINABILITY RESEARCH

September 1, 2003

What Utah State Can Do

Short-Term Actions (Less Than One Year)	Midterm Actions (1-3 Years)	Long-Term Actions (3-5 Years)
Establish an Ethical Code for Research Activities Code which clearly delineates the types of research which it might, in good conscience, choose not to conduct.	Assemble the creativity and brain power to train graduate students to address key social, economic, technical, and environmental challenges, such as promoting energy-use efficiency and conservation, designing and implementing sustainable farming systems, developing policies to ensure the inclusion of "externalities" in product pricing, creating "green" buildings.	
Be an advocate for research that focuses on sustainable practices.		
Appoint an Ombudsman for the Environment to work with faculty, staff and students to identify and initiate research projects that seek to reduce environmental impacts.		

Sustainable Research Indicators Dashboard

- ✓ **Research uses sustainable means.**
- ✓ **Research seeks to promote sustainability.**
- ✓ **Researchers are mindful of the values underlying their investigations.**

Utah State University Criteria for Best Practices in Campus Sustainability

WATER

September 1, 2003

Category: Water

A sustainable water use has the following characteristics:

- **Conserving.** Water is used carefully when needed, not wastefully.
- **Non-polluting.** Surface and ground water are protected from contamination ensuring high quality drinking water and demonstrating a respect for the biota and natural processes.
- **Cyclical.** Water is captured and returned to the environment close to its point of use; the biota cycle and clean "used" water.

Introduction

More than half of the earth's renewable water resources are already being used by humans. Indeed, limited water availability might ultimately put a cap on the earth's carrying capacity for humans. The quality of our water supplies is also a concern: Clean water is no longer part of our birthright because water in many parts of the U.S. is contaminated. Current practice information addressing water use that was identified and evaluated included culinary water, canal (secondary) irrigation water, stormwater, municipal wastewater generation and reuse issues, and University campus education topics. Analysis of the information generated and collected was used to identify specific issues, problems, and information gaps that are itemized below:

- Current practices concerning the measurement of water use with water meters, including culinary and irrigation, are only partially complete and do not provide accurate figures for total flows on to and off the campus. Thirty structures and buildings currently are not metered for measuring water use, with 22 buildings on or near the USU campus.
- Culinary water is used for irrigation on several Housing areas, and other areas including the Motor Pool, Veterinary Diagnostic Laboratory, Agriculture Systems Technology and Education buildings, and portions of Innovation Campus.
- Existing reservoir and culinary systems do not provide adequate fire protection for the campus.
- Low flow faucet and shower devices and motion sensors are not installed in a majority of student dormitory buildings.
- The water well by the College of Natural Resources building serves as the only source for endangered fish, and the operation of the well is inefficient and costly for the University, especially during peak water demand periods.
- There are no programs to educate the University community about the current efforts to reduce culinary and irrigation water use and implement appropriate water use practices.
- There are no comprehensive or consistent programs for educating the USU student body about wise water use.
- The University Paint Shop currently does not have a separator for cleaning paint brushes and associated tools. Paint-contaminated wastewater currently is disposed down the drain and into the sewer system, adding toxic chemicals to the University's wastewater.
- The University is not taking advantage of the potential for reuse of treated municipal wastewater for irrigation of forage for livestock. The University has two farms, including

Utah State University Criteria for Best Practices in Campus Sustainability

WATER

September 1, 2003

Wellsville and Drainage that are situated such that they could utilize reclaimed water from publicly owned treatment works (POTWs) at Wellsville City and Logan City, respectively. Reclaimed water, in this context, refers to treated municipal wastewater originating from publicly owned treatment facilities (POTWs) that is used for irrigation for livestock forage.

- Because off-campus agricultural facilities are viewed by citizens throughout the state as the face of the University, these facilities offer an opportunity to demonstrate the highest standards of best management practices with regard to the control of NPS pollution.
- NWF Criteria for Exemplary Schools
- Schools must rank in the Top 20 schools for both lowest per capita and lowest per square foot water use.

Goals

- Eliminate water waste.
- Conserve and protect water resources.
- Meet or exceed NWF Criteria for Exemplary Schools and sustainable water use characteristics.

Suggested Audit Topics

1. Water usage.
2. Where does Utah State's water supply originate?
3. Where is campus water treated?
4. What kind of treatment does it receive?
5. How much water did the University consume last year?
6. What was water consumption per square foot / per capita?
7. How has this figure changed over the past five years?
8. What percentage of water is used indoors as compared to outdoors?
9. How does USU manage its outdoor water usage?
10. What were the water utility costs for the University for the past year?
11. How have these costs changed over the past five years and why?
12. Does the campus have a water conservation program?
13. If so, what measures does it include?
14. Are there any estimates of water savings from such programs?
15. If so, how much?

Utah State University Criteria for Best Practices in Campus Sustainability

WATER

September 1, 2003

Wastewater and Storm Runoff

1. How much wastewater (sewage) does the campus generate annually?
2. Where is campus wastewater treated?
3. Where is this treated wastewater discharged?
4. What percentage of the community's wastewater treatment facility is used to process campus-generated wastewater?
5. What kind of treatment does it receive?
6. What costs, if any, are associated with treating campus wastewater?
7. Has Utah State initiated any programs to reduce wastewater volume and/or toxicity? If so describe.
8. Does Utah State use any reclaimed water in its facilities or on landscaping? If so, how much?
9. What is the source of this water?
10. Is campus storm water runoff treated, or does it flow directly to a body of water?

Water at Other Universities

California State University - Northridge

Cal State Northridge has had an active water conservation program since 1986. The University has taken steps which have resulted in a 24 percent reduction in water usage. The water conservation measures already instituted include retrofitting all showers, flush valves and faucets with water saving devices, reducing and changing irrigation systems, placing water conservation stickers in all restrooms and kitchenettes, eliminating washing of university vehicles, and distributing educational materials. The University is now exploring using reclaimed water for landscaping efforts and replacing obsolete and malfunctioning irrigation systems.

Brown University

Brown University began water conservation efforts in 1991 by retrofitting all dormitory shower heads with low flow utilities. The program saves 5.6 million gallons of water per year and a student survey has shown consumer satisfaction is high. In the spring of 1993, the University retrofitted all athletic facility buildings with water conserving shower and faucet heads. The university is in the process of installing 1.5 gpm toilets and flush valves in the dormitories. In addition, Brown has undertaken efforts to improve process cooling systems for laboratory equipment that significantly reduce water consumption. Finally, a campus water audit has been undertaken that revealed by continuing the types of conservation measures, Brown could save approximately 120 million gallons of water annually after all measures are completed. This will result in a savings of approximately \$300,000 per year.

Utah State University Criteria for Best Practices in Campus Sustainability

WATER

September 1, 2003

What Utah State Can Do

Short-Term Actions (Less Than One Year)	Midterm Actions (1-3 Years)	Long-Term Actions (3-5 Years)
Develop information and education programs on wise water use to educate the USU community about current and future efforts to reduce culinary and irrigation water use.	Install water meters in buildings and structures without meters.	
Expand the mission of off-campus agricultural facilities to include non-point source pollution education.	Replace culinary water used for irrigation where it is currently used with secondary (canal) water for irrigation of Innovation Campus, USU Housing areas (Aggie Village, Student Living Center, and Trailer Court), Motor Pool, Veterinary Diagnostic Lab, ASTE and Education buildings.	Install indoor plumbing fixtures that save water through flow reductions: <ul style="list-style-type: none"> ▪ Low flush toilets ▪ Toilet displacement Devices ▪ Low-flow showerheads ▪ Faucet aerators ▪ Pressure reduction
Design a formal program or approach to water conservation	Gray water reused for gardening, lawn maintenance, and landscaping.	Water reuse by recirculation, process cooling water and reusing gray waters.
Implement water conservation program to repair leaks and retrofit inefficient plumbing fixtures.	Landscape with plants that need little water.	
	Use indigenous plants.	
	Install sub metering to understand trends in water usage and make water users aware of how much water they use and its cost.	
	Reduce the total amount of water used for irrigation on campus by 20 percent and increase the proportion that is from non-culinary sources (e.g. canal water, building and hard-surface	

Utah State University Criteria for Best Practices in Campus Sustainability

WATER

September 1, 2003

Short-Term Actions (Less Than One Year)	Midterm Actions (1-3 Years)	Long-Term Actions (3-5 Years)
	runoff, gray water, etc.) to 100 percent within five years.	

Additional Recommendations

- Repair leaks and retrofit inefficient plumbing fixtures.
- Avoid water consuming air compressors and "one-pass" air conditioning systems.
- Protect ground water and storm runoff by minimizing use of salt for ice-melting and by implementing an automotive oil recycling program for on-campus students.
- Implement engineering practices based on changes in plumbing, fixtures or water supply operating procedures.
- Implement behavioral practices based on changing people's water habits.
- Avoid water consuming air compressors and "one-pass" air conditioning systems.
- Protect ground water and storm runoff by minimizing use of salt for ice-melting and by implementing an automotive oil recycling program for on-campus students.

Sustainability Indicators Dashboard

- ✓ **Total and per capita water consumption**
- ✓ **Ground water quality**
- ✓ **Waste water disposal**
- ✓ **Rank in the Top 20 schools for both lowest per capita and lowest per square foot water use.**

Utah State University Criteria for Best Practices in Campus Sustainability

LAND

September 1, 2003

Category: Land

Sustainable land stewardship has the following characteristics:

- **Values the native biota.** Supporting and protecting the life that is native to a region strengthens the community's identity and ensures that the region's unique natural ecosystems remain healthy.
- **Respects natural processes.** Allowing natural cycles and processes (e.g., birth/death, growth/decomposition) to operate reduces the cost of land maintenance and provides opportunities to promote ecological literacy.
- **Conserves green space.** Providing special protection to natural areas, open spaces, and fertile farmland helps ensure that poorly planned "development" does not sprawl across the landscape.

Introduction

Utah land that grew crops and raised livestock for generations now spawns housing tracts, four-lane highways, malls, and parking lots. In the past, land carried deep meaning—tribal homeland, ancestral birthplace, mother earth; but as we become more disconnected from our home place, land loses its deeper significance, often becoming a commodity to be bought and sold at strategic moments.

The identity of Utah State University as an institution is shaped in part by its physical landscape. The campus landscape is the outward image and lasting impression projected to the campus community of faculty, students, staff, and visitors, such as parents, alumni, and tourists. The University campus can be described as a traditional style landscape characterized by extensive turf grass with imbedded trees, trimmed with shrub and annual beds adjacent to buildings and major walkways. But there are difficult new questions that challenge our land use:

- What sort of lessons are students being taught by the campus lands and their management?
- Are the university grounds being used effectively to teach students about the environment and our place in it?
- Do the campus grounds encourage a connection with the earth, or distance students from it?

There are several reasons for taking a close look at how the landscape of Utah State is maintained and used, and what it teaches:

- The approved Master Plan makes no mention of land stewardship. None!
- The University is a place of learning. If its lands are not used for teaching, they are being underutilized.
- The campus landscape is a symbol of the University. The landscape's design and maintenance make a powerful statement about whether Utah is a national leader, or part of the status quo.
- Many life lessons are taught outside of the classroom. If the University grounds are teaching "lessons" that are different than what is taught in lecture halls, then they are counterproductive.

Utah State University Criteria for Best Practices in Campus Sustainability

LAND

September 1, 2003

NWF Criteria for Exemplary Schools

- Schools must perform all of the five types of activities related to landscaping and grounds (habitat restoration programs, native landscaping programs, identification and removal of invasive exotic species, integrated pest management, and programs to provide food and shelter to attract wildlife).
- Schools must have plans to do more in five types of activities related to landscaping and grounds (habitat restoration programs, native landscaping programs, identification and removal of invasive exotic species, integrated pest management, and programs to provide food and shelter to attract wildlife).

Goals

- Create and abide by a land ethic that promotes stewardship of natural processes, ecosystems, and the conservation of green space.
- Meet or exceed NWF Criteria for Exemplary schools and Sustainable land stewardship characteristics.

Suggested Audit Topics

1. How much land is now owned or operated by Utah State and what is its geographical disbursement?
2. What are Utah State's current plans for expansion or renovation?
3. Does Utah State have a long-range development plan describing existing and future land uses for campus? If so, does the document contain environmental criteria?
4. Does Utah State have an ongoing planning committee? Who sits on the committee?
5. Is the campus exempt from any local (city or county) land-use planning and zoning laws?
6. Are there, or have there been, any land-use conflicts between the campus and the surrounding community? If so, how were they dealt with?
7. Does Utah State own any land that will be developed for private, non-educational facilities?
8. Are there any examples on campus of environmental building design? If so, describe.
9. Does Utah State offer cooperative housing?
10. How have environmental principles been incorporated into these housing arrangements?
 - Has Utah State investigated whether it complies with all local, state and federal regulations on land use?
 - Have the University's land parcels been evaluated to determine whether they include regulatory wetlands?
 - If Utah State plans to perform any development activities on the land or modify any uses of the land in any designated wild, scenic and recreational river system area, has it obtained a permit for this activity?
 - If there are known historic and archaeological sites on the site, have steps been taken to determine if additional information/approvals are needed to properly protect and preserve them?
 - Relative to any projected development, what is known about prior use of the site?
11. Were raw materials stored, shipped or processed on the site?

Utah State University Criteria for Best Practices in Campus Sustainability

LAND

September 1, 2003

12. Were electrical transformers, asbestos sources, fuel storage areas and waste disposal areas on the site?
13. Are there any process pits, ponds or lagoons on-site?

Utah State University Criteria for Best Practices in Campus Sustainability

LAND

September 1, 2003

Land at Other Universities

Connecticut College

Connecticut College has committed one-third of its property to serve as an arboretum devoted to the propagation of native plants. The arboretum's collection contains 288 taxa of trees, shrubs, and woody vines, all of which are indigenous to Eastern North America. Besides providing a source of native seeds and plants for regional restoration projects, the arboretum is devoted to developing a regional identity.

Nebraska Wesleyan University

Nebraska Wesleyan University (NWU) also has recognized the value of native vegetation. Twyla Hansen, NWU's grounds manager, noted the high fertilizer, pesticide, water, and labor input necessary to maintain the campus's prevailing non-native landscape. Consequently, Hansen began replanting campus zones which had been disturbed by construction or other activities with low maintenance, native grasses and wildflowers.

Pitzer College

The John Rodman Arboretum at Pitzer campus maintains a landscape of native species where students are involved in maintenance and research.

Colgate College

On-campus fertilization with 80 percent organic fertilizer.

Continuing efforts to reduce chemical use (pesticides, herbicides, etc.) on campus grounds.

Testing of organic herbicides and insecticides.

Heavy mulching around trees and shrubs.

Transport of campus leaf collection to local farms for use as cow bedding.

Over 25 acres seeded with better quality grass.

No longer chemical spraying of trees - all treatments are by injections (in upper 6 to 8 inches of tree and that prevents leaching into the groundwater).

Planning of tree replacements, currently a 10 year plan.

Movement to make Seven Oaks golf course more environmentally sensitive, including steps to become an Audubon Cooperative Sanctuary.

Methodist College

Methodist College, NC - On this golf-course-centered campus, students and staff are creating an inventory of plants and wildlife, which will provide a critical foundation for future conservation projects.

Indiana University

Indiana University, IN - Nature-loving students are bringing a little bit of prairie onto campus, creating a demonstration site of native plants and nesting boxes, and teaching other students about the plants and their importance.

Utah State University Criteria for Best Practices in Campus Sustainability

LAND

September 1, 2003

World College West

An example of innovative campus land use is the 194-acre campus of World College West in Petaluma, California, where building and roads cover only 10 percent of campus. The remaining 175-acres are covered with native landscaping where deer, fox and other wildlife roam. The campus is entirely pedestrian; drivers must park in a remote lot and take a shuttle bus to campus. All academic buildings and residence halls employ passive solar heating and natural lighting; neither air-conditioning nor overhead lighting is used except when absolutely necessary. Toilets use one-half gallon of water per flush, and energy efficient halogen lamps are used.

What Utah State Can Do

Short-Term Actions (Less Than One Year)	Midterm Actions (1-3 Years)	Long-Term Actions (3-5 Years)
Create a landscape policy.	Designate campus landscapes to be environmentally appropriate minimizing resource inputs, in particular water, while meeting functional, aesthetic, cultural, and amenity goals.	Create and abide by a land ethic that promotes stewardship of natural processes, ecosystems, and the conservation of green space.
Develop a long-term landscape planning process taking into consideration the interests of stakeholders.	Utilize a diverse selection of plant material in all new and renovated landscapes, with an emphasis on lower water use Intermountain West native plants.	
Revise the Master Plan to introduce sustainable land stewardship practices.	Design and monitor landscapes to serve as teaching and research tools for Extension, undergraduate and graduate courses, graduate research, and the community whenever possible.	
Perform a comprehensive efficiency analysis for water use in landscaping, based on grass and plant variety, their water demand, and actual figures for watering rates. Develop and implement a plan to increase efficiency.	Move away from an aesthetic of monoculture grasses to stable and diverse plant communities.	
Inventory campus landscapes in terms of use, visibility, and historic value, and recommend an	Solicit stakeholder input regarding the campus landscape, including attitudes	

Utah State University Criteria for Best Practices in Campus Sustainability

LAND

September 1, 2003

Short-Term Actions (Less Than One Year)	Midterm Actions (1-3 Years)	Long-Term Actions (3-5 Years)
appropriate level of plant biodiversity and resource consumption for each category.	towards the existing traditional landscape and receptiveness to alternative styles.	
Specify a USU policy through the Master Planning process on principles of responsible land stewardship, a clearly formulated land ethic, and accumulation policy.	Review proposed new landscape locations and designs, the selection and placement of plant materials and suggest retrofitting existing landscapes.	
Commitment to decrease impervious surfaces on main campus and commitment (e.g., Master Plan) to reverse this process.	Oversee development of educational and interpretative programs to increase awareness of the campus landscape and its sustainability.	
	Convert at least a fifth of the campus grounds and other university cultured land holdings with soils to drought-tolerant native vegetation within five years.	

Additional Recommendations

- Redefine campus beauty.
- Reduce lawn areas and grass cutting.
- Promote "natural succession" for unneeded lawn areas.
- Go organic and celebrate dandelions!
- Develop a nature appreciation program.
- Protect woodlands, wetlands, watershed, and wildlife.
- Implement a tree protection policy.
- Plant native species.
- Take steps to remove invasive species from USU land/community
- Compost leaves and lawn clippings
- Campus zoning for green space – establish areas that will be zoned for non-development
- Establish conservation easements on off-campus landholdings
- Efforts should be made to respect the local conditions in landscaping to reduce water use.
- Eliminate inappropriate watering of lawns
- Use local plant species supports native wildlife and overall ecology, while increasing the diversity of landscaping options on campus and engaging the design with local ecology.

Utah State University Criteria for Best Practices in Campus Sustainability

LAND

September 1, 2003

- Low traffic grassy areas and unused perimeters could be transformed to local plant communities that use less water, are favorable to native bird and animal species, and improve aesthetics. Native species could be reintroduced
- Create a central composting center for landscape debris, mulch, and food scraps, to be used as a fertilizer and soil source for landscaping.
- Provide a demonstration site of native plants that are attractive to humans and wildlife.
- Create website about the progress of the project.
- Create a brochure about native landscaping for adults and one for children and make classroom visits.
- Giving tour of the greenhouse and demonstration site and publishing articles about the project.
- Increase efficiency and educational value of landscaping, reducing water and pesticide use through the application of conservation techniques and land-use options.
- Double the diversity of plant species on campus within five years.

Sustainability Indicators Dashboard

- ✓ **Land accumulation and policies**
- ✓ **Impervious surfaces**
- ✓ **Native vs. exotic plants on campus**
- ✓ **Pesticide use in land care**

Utah State University Criteria for Best Practices in Campus Sustainability

ENERGY

September 1, 2003

Category: Energy

A sustainable energy system has the following characteristics:

- **Conserving.** Every effort is made to increase energy-use efficiency and to use energy mindfully.
- **Generated from renewable resources.** A sustainable energy system runs, as much as possible, on energy income (e.g., solar, wind, bio-fuels), not on energy capital (i.e., fossil fuels).
- **Non-polluting.** Care is taken to minimize pollution associated with energy consumption.

Introduction

At Utah State, the expansion of building space, the increased use of electronic devices, and a growing University population have led to a significant increase in the use of fossil fuels. However, during this same period there have been many technological breakthroughs in the realm of energy-use efficiency and conservation. For this reason, it is now possible for a university like Utah State to expand its infrastructure and services while significantly reducing its total energy consumption. As a research institution, especially one with a strong engineering program, Utah State has a wonderful opportunity to be a leader in the design and implementation of highly efficient and environmentally benign energy systems.

NWF Criteria for Exemplary Schools

- Must do the following: have at least some percentage of electricity and heating and cooling needs met by renewable sources; have water efficiency upgrades, lighting efficiency upgrades and heating, ventilation and air conditioning upgrades in at least some campus units; and have developed efficiency design codes for new or existing buildings and implemented life-cycle analysis for energy project evaluation in at least some campus units.
- Must have plans to do the following in the future: use renewable sources for electricity and heating and cooling needs; upgrade water efficiency; upgrade lighting efficiency; upgrade heating, ventilation and air conditioning, and develop efficiency design codes for new or existing buildings and implement life-cycle analysis for energy project evaluation.
- Must have at least 50 percent of campus's total electricity, heating and cooling demand met by renewable sources.

Goals

- Significantly reduce polluting emissions associated with the usage of fossil fuels.
- Meet or exceed NWF Criteria for Exemplary Schools and sustainable energy system characteristics.

Suggested Audit Topics

1. What are the sources of energy for the electric utility serving USU?

Utah State University Criteria for Best Practices in Campus Sustainability

ENERGY

September 1, 2003

2. How much energy did campus buildings and grounds consume in the last academic year and what were the costs associated with each type of fuel?
3. How has campus energy use changed over the past five years?
4. Does USU have an energy-efficiency program?
5. If so, what kinds of programs does it include?

Energy at Other Universities

SUNY Buffalo

SUNY Buffalo has taken an aggressive approach to conservation with 300 projects that have reduced energy bills from 22.5 million to 20 million dollars per year. Savings are expected to increase by another 2 million dollars in coming years. The projects were funded 25 percent by utility rebates and incentive programs. The energy officer, Walter Simpson, focuses on long term and short term projects. He believes it is important to concentrate on long term projects because short term projects with quick paybacks run out quickly. A balance is the most holistic way to approach energy conservation. In addition, SUNY Buffalo also is approaching conservation by energy reduction and education. The University has found that they could reduce the corridor lights by 50 percent and still provide sufficient illumination. Many lights were identified through the building conservation contacts who volunteer to turn off unused lights and computers, report overheated and undercooled areas, and areas where wattage could be reduced. A final tactic used is that Simpson posts energy bills in building lobbies.

Rochester Institute of Technology

Rochester began its conservation efforts by determining that 30 percent of energy is used on campus for lighting, 40 percent for heating, air conditioning and ventilation, 10-15 percent for processing equipment such as printing presses and teaching aids, and 15-20 percent for office equipment, computers, and other appliances. The University has employed conservation strategies including occupancy sensors, fluorescent lights, electronic ballasts, insulated heating, ventilating, and air conditioning policies, and encouraging conservation minded computer and office equipment habits.

What Utah State Can Do:

Short-Term Actions (Less Than One Year)	Midterm Actions (1-3 Years)	Long-Term Actions (3-5 Years)
Develop a Utah State University "Sustainable Environments Program."	Complete the installation of occupancy sensors.	Extend campus utility tunnels to serve other areas of campus, specifically to the north and to the east - possibly including student housing.
Establish criteria for evaluating buildings for sustainability and a rating system that could be used to	Install high efficiency lighting upgrades.	Develop a cogeneration facility at the central energy plant.

Utah State University Criteria for Best Practices in Campus Sustainability

ENERGY

September 1, 2003

<p>guide the development of sustainable building efficiency standards and requirements.</p>		<p>Continue developing plans for a central chilled-water system. Complete replacement of frequency drives and high efficiency motors in all equipment installations Re-commission, evaluate and rebalance the building supply air and water systems to ensure occupant comfort and efficiency.</p>
	<p>Install and monitor digital building HVAC controls.</p>	
	<p>Centrally automate tunnel lighting controls.</p>	
	<p>Replace the remaining outdoor lighting fixtures with metal halide.</p>	
	<p>Repair leaking steam and condensate piping.</p>	
	<p>Finish installing occupancy light sensors in all suitable rooms.</p>	

Additional Recommendations

- Create energy databases which document energy use and completed energy conservation measures and projects.
- Develop heating and cooling season temperature policies which promote conservation.
- Minimize HVAC fan and equipment run times.
- Exploit all cost-effective retrofit opportunities for efficient lighting, HVAC, motors, drives, EMS, etc., and operate this equipment to maximize savings.
- For lab buildings, focus on fume hood ventilation system efficiency measures including heat recovery and variable air volume fan systems.
- Make conservation projects happen by using energy service companies (ESCOs), third party financing, and demand-side management incentives.
- Use life cycle analysis to evaluate conservation projects.
- Organize an ongoing energy awareness program which enlists the support of the campus community and encourages respect for temperature policies, efficient operation of lights, use of power management features on computer equipment, etc.

Utah State University Criteria for Best Practices in Campus Sustainability

ENERGY

September 1, 2003

- Link energy conservation effort with programs to reduce campus carbon dioxide emissions and contribution to global warming.
- Structure energy purchases to benefit our conservation program, not hurt it.
- Use energy efficiency measures to flatten campus load profile to lower electric rates.
- Buy green power.

Sustainability Indicators Dashboard

- ✓ **Total and per capita energy consumption**
- ✓ **Carbon dioxide emissions**
- ✓ **Renewable resources**

Utah State University Criteria for Best Practices in Campus Sustainability

FOOD

September 1, 2003

Category: *Food

*Note:

A Utah State sustainable food system was not represented or addressed within the Environmental Task Force Report, but was addressed in the list of suggestions by the students who participated. Rather than having food become a conspicuous omission, it is tackled herein as it is referred to in almost every campus sustainability report, is a NWF Criteria for Exemplary Schools, and considered an important indicator. Therefore, until there is a sustainability audit, with prioritized actions, these criteria will not be complete and suggestions reflect general issues found in peer audits and reports.

A sustainable food system has the following characteristics:

- **Healthy diet.** Food is wholesome; diet is balanced.
- **Low waste.** Strong emphasis on waste elimination and recycling; food waste is composted; packaging is minimized; disposable eating/drinking implements are rejected in favor of durable tableware.
- **Regional orientation.** Explicit linkages are made between a region's land and its food producing potential; government policies (both at federal and regional levels) foster farmland preservation, caps on farm size, crop and animal diversification, and regional (as opposed to predominantly global) alternatives to food production.
- **Sound farming practices.** Food is produced using non-damaging, ecologically sustainable methods: Soils are carefully managed, becoming more fertile with time; pests are controlled, to the extent possible, using biological and cultural techniques (as opposed to pesticides); and the amount of fossil fuel energy used to produce food is always less than the energy contained in the food itself (i.e., the food system has a positive energy balance).

Introduction

Utah State is surrounded by agricultural land. For Utah State students, a simple swipe of a card at one of the campus dining commons provides access to fresh vegetables, fruits, hot entrees, sandwiches, soups, and desserts: But from where does that food come? The USU food system is complex. It includes farm field activities, as well as the processing, packaging, transport and retailing. At each step, the choices that are made have the potential to promote or undermine sustainability. It is estimated that a small fraction of the food consumed at Utah State comes from local sources, but our region theoretically could supply a significant portion (seasonally) of our dietary needs. The success of modern agriculture is due in large part to the availability of inexpensive fossil fuels. Indeed, we invest about ten times more energy (as fossil-fuel) to produce our food (includes energy used in food processing, packaging, and transportation) than the food that we consume actually contains. Given the finiteness of fossil fuel resources, this is not sustainable.

NWF Criteria for Exemplary Schools

- Set and review goals for purchasing organic foods in all campus units and have written policies about purchasing organic foods in all campus units.

Utah State University Criteria for Best Practices in Campus Sustainability

FOOD

September 1, 2003

Goals

- Purchase, to the fullest extent possible, foods produced using sustainable practices.
- Meet or exceed NWF Criteria for Exemplary Schools and sustainable food system characteristics.

Suggested Audit Topics

1. Who operates Utah State's food service?
2. Does Utah State administration manage the operation or do they contract for services?
3. Does Utah State have a food-service committee? If so, who sits on the committee?
4. To what extent does food services purchase from regional growers and food processors?
5. Does Utah State food service operation offer vegetarian meals on a regular basis?
6. Does Utah State purchase certified organically-grown produce or meat and dairy products?
7. Have any surveys been conducted to estimate the demand for vegetarian food on campus? If yes, what were the results?
8. Have food services discontinued the purchase of any food products for environmental reasons?
9. Have any programs or events taken place on campus highlighting the connection between diet and the environment?

Food at Other Universities

Hendrix College

Hendrix College in Arkansas requires that food served in its cafeterias: 1) be local when possible; 2) be grown using sustainable farming methods; 3) use minimal energy; 4) leave marginal land out of production; and 5) involve the humane treatment of animals. When Hendrix initiated its program, less than 10 percent of the food served on campus came from Arkansas. Today, 30 percent comes from Arkansas and the college aims to reach 50 percent.

Carleton and Saint Olaf Colleges

Following the lead of Hendrix, both Carleton and Saint Olaf Colleges in Minnesota also are redesigning their food systems. Even at their more northerly latitudes, close to half of their food purchases could be local.

Wilson College

The Food Project at Wilson College in Chambersburg, PA, is working to re-direct 30 percent of Wilson's food budget to local growers.

Cornell

Cornell is altering its food buying practices. For example, a student organization (The Cornell Food Project) works with Dining Services to increase the amount of locally produced foods served on campus. The Cornell project also educates students through workshops held in

Utah State University Criteria for Best Practices in Campus Sustainability

FOOD

September 1, 2003

dormitories and events such as "New York Harvest Week" (a week in September when Cornell obtains all of its produce from local sources).

What Utah State Can Do

Short-Term Actions (Less Than One Year)	Midterm Actions (1-3 Years)	Long-Term Actions (3-5 Years)
Maximize purchase of organic food and food low on the food chain for dining services (residence halls, catering).		
Maximize local/regional food purchase for dining services (residence halls, catering).		
Make food system visible.		

Additional Recommendations

- The University should support a discounted price for drinks when people bring and use their own mugs/glasses.
- Provide the option to have dinner on campus after 3:30 p.m. as it would reduce the need to travel off campus and back, and could contribute to an evolving social environment on campus.
- Make policy changes for choices for alternate, environmentally-conscious packaging available from vending machines.
- Address the issue of composting food waste from the dorms and food facilities in the Taggart Student Center.
- Utilize methane production from composting food waste, plus plant and manure wastes from the research farm system, as a viable alternative energy source to power a portion of campus and thus reduce our dependence on commercial energy.

Sustainability Indicators Dashboard

- ✓ Dining hall diet
- ✓ Dining hall waste
- ✓ Food purchasing policies

Utah State University Criteria for Best Practices in Campus Sustainability

MATERIAL RESOURCES AND WASTE DISPOSAL

September 1, 2003

Category: Material Resources and Waste Disposal

A sustainable waste disposal system has the following characteristics:

- **Conserving.** Products are carefully maintained and repaired; they are designed intelligently with reuse in mind; and the use of virgin materials is kept to a minimum.
- **Non-polluting.** Goods are manufactured in ways that minimize pollution.
- **Minimum waste.** Material goods are always recycled thereby reducing the need for virgin materials and lowering environmental costs associated with waste disposal.

Introduction

On an average daily basis, each U.S. citizen now consumes (directly or indirectly) 115 pounds of basic materials—40 pounds of petroleum and coal, 29 pounds of minerals, 26 pounds of agricultural products and 20 pounds of forest products. A consequence of using such large amounts of materials is the generation of immense quantities of waste.

The Utah State ETF Subcommittee found that the current campus non-hazardous waste generation rate is 2,344 T/yr, while our current recycling rate is 577 T/yr for an overall waste recycling rate of 24 percent. Current campus hazardous waste generation in excess of 84,000 lbs/yr is costing the University more than \$94,000 annually. It was found that from 10 to 30 percent of this waste is composed of unopened or not fully used, uncontaminated hazardous materials that could be diverted with better control of purchasing, distribution and tracking of this material.

Review of functional area waste management practices indicated that:

- The electronic waste management program should be strengthened;
- A serious problem with coordination of green waste management with subsequent production of a uncontrolled and non-compliant waste disposal area at the old coal pile area should be addressed immediately;
- The management of waste, nutrients, and pesticides on University farms is in need of significant improvement; and
- The environmental burden potentially imposed by vehicles in terms of stormwater pollution and air emissions, while not well defined, warrants further monitoring and evaluation to determine the magnitude, and consequently the priority for improvement efforts in this area.

NWF Criteria for Exemplary Schools

- Must say they recycle at least 60 percent of the total municipal waste generated.
- Must have plans to do more in the following areas: Recycle eight types of goods (higher grades of paper, lower grades of paper, corrugated cardboard, aluminum containers, glass bottles and jars, plastic, food scraps or landscape trimming for composting or mulching, construction materials) and have plans to do more in six different types of

Utah State University Criteria for Best Practices in Campus Sustainability

MATERIAL RESOURCES AND WASTE DISPOSAL

September 1, 2003

activities (materials exchange program, encouraging environmentally sound purchasing, reducing the need for paper hard copies, encouraging lab courses to implement micro-scale experiments, specifying that office paper purchased must contain a minimum 25 percent post-consumer waste, specifying chlorine-free requirements for office paper).

- Must perform most of the following: Recycle eight types of goods (higher grades of paper, lower grades of paper, corrugated cardboard, aluminum containers, glass bottles and jars, plastic, food scraps or landscape trimming for composting or mulching, construction materials) and perform most of six different types of activities (materials exchange program, encouraging environmentally sound purchasing, reducing the need for paper hard copies, encouraging lab courses to implement micro-scale experiments, specifying that office paper purchased must contain a minimum 25 percent post-consumer waste, specifying chlorine free requirements for office paper).

Goals

- Minimize solid, liquid, and hazardous wastes.
- Meet or exceed NWF Criteria for Exemplary Schools and waste disposal and material resources characteristics.
- Create purchasing policies to reduce the ecological impacts of materials consumption.

Suggested Audit Topics

1. What laws and regulations affect the usage of hazardous chemicals?
2. What kind of hazardous waste does USU generate and what are the sources?
3. How much hazardous waste does USU generate annually?
4. How has this figure changed over the past five years?
5. How is this waste disposed?
6. How much is recycled, incinerated or landfilled?
7. What were the total hazardous-waste disposal costs for the last academic year?
8. How have these costs changed over the last five years?
9. What is being done at USU to minimize the quantity of hazardous substances used and waste generated?
10. Have any microscale chemistry techniques/surplus chemical exchange programs been initiated? If so, describe including date of implementation and cost-savings to date.
11. If the Chemistry Department has implemented a microscale laboratory program, how many courses use microscale techniques and how many students does this include?
12. Roughly, what portion of the chemistry program does this represent?
13. Does USU have a system for tracking and inventorying hazardous chemicals bought and used? If so, describe.
14. How much total solid waste does the USU campus generate annually?
15. Have any waste-composition studies been conducted? If so, provide information on the composition of campus solid waste.

Utah State University Criteria for Best Practices in Campus Sustainability

MATERIAL RESOURCES AND WASTE DISPOSAL

September 1, 2003

16. For the past academic year, how much solid waste was landfilled, incinerated, recycled, and/or composted and mulched? Information should be given by volume, in cubic yards, or by weight in pounds or tons.
17. What were the costs of solid-waste disposal for the last academic year?
18. How have they changed over the past five years?
19. Does USU have a recycling program? When was it started and who operates the program?
20. Are there any regulations relevant to the recycling program?
21. What is the budget for the program? How is it funded? What are the revenues from recyclables sold?
22. How many tons of each material were recycled during the last academic year (newsprint, glass, white ledger/computer paper/, mixed color paper, aluminum, other metals, cardboard, plastic)?
23. Please describe any programs USU has implemented to promote source reduction (such as a reusable mug program, switching from disposable to washable dishes.

Material Resources and Waste Disposal at Other Universities

University of Washington

The University of Washington has developed a computer based chemical inventory and Material Safety Data Sheet (MSDS) program called the Lab Safety System (LSS). The system facilitates comprehensive programs to share, recycle, and substitute hazardous materials and chemicals. It is organized in a decentralized fashion and has more than 600 users on-line, 2000 chemical inventories reported, 170,000 MSDSs available, and another 14,500 MSDSs indexed that can be distributed in hard copy. Users can access all information and maintain and edit their own chemical inventory. The EHS department uses the system for reporting of chemicals, under SARA Tier II for example.

The EHS department also aggressively focuses on waste minimization efforts with two full time staff, one of whom specializes in source reduction. The University runs a chemical exchange and distillation redistribution program. Distilled chemicals are distributed to labs, reducing both disposal and purchase costs.

Bowdoin College

Bowdoin College has been at the forefront of efforts to reduce usage of hazardous chemicals by instituting microscale laboratory experiments. Faculty members have researched this topic extensively and have created their own experiments. The head of the effort, Professor Dana Mayo, has written a textbook, Microscale Organic Laboratory, now in its third edition, which includes more than 90 common experiments. The book outlines how to perform experiments that, for example, will reduce solvents per student from 300 to 400 ml to only 100 ml for all students. As a result, Bowdoin faculty has observed students to be more focused in the lab. Few students are able to sit around because microscale experiments move quicker than

Utah State University Criteria for Best Practices in Campus Sustainability

MATERIAL RESOURCES AND WASTE DISPOSAL

September 1, 2003

traditional experiments. In addition, "students learned the techniques much more quickly... they learned the right way to handle stuff, and they were much more concentrated on what they were doing." Administrators were even more pleased than professors and students. Annual costs to run organic laboratories were reduced from \$8000 per lab to less than \$1000 per lab due to decreased amount of chemicals purchased and reduced disposal fees.

University of Colorado at Boulder

The University of Colorado at Boulder began its recycling program in the early 1980s. The program is run in partnership with the students and administration. The students become involved in recycling through paid work-study programs and community service requirements. In addition to collection, students prepare manuals, make public presentations, write letters to the school paper, and prepare research papers and advertisements. According to the administration, working with students has been a low cost source of labor and an opportunity for students to learn the operations, management and education or promotion of recycling... and prepare themselves to be future leaders of this booming field.

Appalachian State University

Appalachian State University has approached the problem of solid waste by aiming to reduce the amount of material consumed. Source reduction efforts aims to eliminate single use items, utilize more durable goods, encourage reuse of materials, and eliminate unnecessary waste. The University even distributes forms to faculty, students, and staff to eliminate junk mail from direct marketing organizations.

What Utah State Can Do

Short-Term Actions (Less Than One Year)	Midterm Actions (1-3 Years)	Long-Term Actions (3-5 Years)
Upgrade tanks identified as high risk through the SPCC analysis plan to minimize their potential release of hazardous materials to surface waters and reduce USU's liability associated with such releases.	Develop a strategy for the collection of mobile source emission rates associated with campus activities to determine the priority that these sources should be given in the long-term planning for environmental improvements by the University. Evaluate over the longer-term what policies and practices might be adopted to minimize these air quality impacts through modifications of mobile	Become a minimum waste university.

Utah State University Criteria for Best Practices in Campus Sustainability

MATERIAL RESOURCES AND WASTE DISPOSAL

September 1, 2003

Short-Term Actions (Less Than One Year)	Midterm Actions (1-3 Years)	Long-Term Actions (3-5 Years)
	source activities on campus.	
Reorganize and consolidate green waste management on campus.	Direct resources toward defining stormwater/groundwater quality impacts resulting from fertilizer and pesticide use in landscaping areas.	
Eliminate the mixed green waste reject/construction and demolition waste piles in the old coal pile area of campus.	Data need to be collected to fill in data gaps in our current understanding of this aspect of USU's environmental footprint so that appropriate prioritization of this problem can be made.	
Transfer responsibility for green waste management to the Recycling Office and move to integrate green waste into Logan City's program as Housing already has done.	Emphasize education of students, faculty and staff regarding waste management programs and waste reduction efforts on campus via improved information dissemination (i.e., web site upgrade) and outreach, and the establishment of individual and unit achievement awards and recognition.	
Expand the Recycling Program via a focus on increasing participation by Merrill Library, the College of Business, Old Main and Campus Housing units.	Develop a mechanism to provide risk and environmental impact pre-review of proposed new tanks prior to their installation.	
Improve waste, nutrient and water management practices on USU's farms.	Identify extramural funding opportunities for increasing investment in USU's waste management and recycling activities.	
Establish a coordinating body or office such as the Office of	Increase the overall waste recycling rate at USU from	

Utah State University Criteria for Best Practices in Campus Sustainability

MATERIAL RESOURCES AND WASTE DISPOSAL

September 1, 2003

Short-Term Actions (Less Than One Year)	Midterm Actions (1-3 Years)	Long-Term Actions (3-5 Years)
Environmental Program Coordination, with jurisdiction and responsibility over all environmental aspects of campus.	the current value of 24 percent to 50 percent over a five-year period.	
Appoint an Environmental Coordinator to coordinate in-house expertise and help support campus units in assessing environmental decisions.	Upgrade all hazardous waste tanks within two years.	
	Shift to 100 percent environmentally-benign cleaning products within two years.	

Additional Recommendations

- Meet or exceed legal "haz mat" handling, collection, disposal and tracking requirements.
- Educate campus hazardous waste generators about minimization and proper disposal techniques.
- Use "micro scale" chemistry techniques for research and teaching.
- Encourage chemical users to explore less hazardous chemicals.
- Develop a chemical tracking or inventory database.
- Implement a "chemical swapping" program.
- Switch to non/least toxic paints, solvents and cleaning agents.
- Switch print shop to soy-based inks.
- Recycle hazardous waste-containing products such as fluorescent lamps and ballasts, anti-freeze, solvents, batteries, computer monitor and TVs, etc.
- Use integrated pest management techniques to minimize or eliminate use of pesticides.
- Don't use herbicides on campus lawns.
- Recycle and recover ozone-depleting CFCs.
- Convert/replace cooling and refrigeration equipment to use HCFCs or HFCs.
- Avoid chlorine-based products and incineration of plastics.
- Establish a waste reduction ethic in all areas, including office activities —minimize unnecessary copying, reuse scrap paper and envelopes, print double-sided etc.
- Set up campus "repair and swap" shops to refurbish exchange and reuse unwanted items.
- Reduce Third Class junk mail.
- Reduce distribution of phone books.

Utah State University Criteria for Best Practices in Campus Sustainability

MATERIAL RESOURCES AND WASTE DISPOSAL

September 1, 2003

- Minimize press runs of campus newspapers and other publications, consistent with actual need.
- Perform waste stream analyses to determine recycling potential.
- Implement a recycling program—start with paper and cardboard and expand to metal, plastic and glass.
- Recycle tires, batteries, fluorescent lamps and ballasts, computers, scrap metal, concrete, asphalt.
- Compost organic waste.
- Seek to recycle at least 50 percent of campus waste stream.
- Use electronic forms for purchasing.
- Insure that all university farms meet established guidelines for waste, nutrient, and water management within five years.
- Transfer the management of green wastes not used for mulching and composting on University properties to the City of Logan within two years.
- USU Resource Recovery will work in coordination with the USU Landscape Crew to implement green waste recycling to the end of zero waste. This will end the current problem of uncontrolled or contaminated green waste that has been identified by the Task Force. It should increase diversion amounts by 50 to 100 tons per year and will provide much needed control and accounting for the green and demolition waste on campus. It is estimated that \$25,000 is needed for the necessary equipment and an additional \$10,000 for construction of the facility.
- USU Resource Recovery will hire a part-time Waste Reduction Educator to promote and educate faculty, students, and staff as to the need and benefits of increased recycling and waste reduction. This person will work a minimum of 20 hours per week and will visit each campus building and department to offer training and to evaluate facility needs to accommodate the program. Estimate cost to cover wages is \$8,000.

Sustainability Indicators Dashboard

- ✓ **Total waste production**
- ✓ **Recycled solid waste**
- ✓ **Paper consumption**
- ✓ **Office paper chlorine-free and minimum 25 percent post-consumer waste**

Utah State University Criteria for Best Practices in Campus Sustainability

The Built Environment

September 1, 2003

Category: *The Built Environment

***Note:**

A Utah State sustainable building system was not represented or addressed within the Environmental Task Force Report, but was addressed in the list of suggestions by the students who participated. Rather than having it become a conspicuous omission, it is tackled herein as it is referred to in almost every campus sustainability report, is a NWF Criteria for Exemplary Schools, and considered an important indicator. Therefore, until there is a sustainability audit with prioritized actions, these criteria will not be complete. The suggestions reflect general issues found in peer audits and reports.

A sustainable built environment has the following characteristics:

- **Conserving.** Sustainable buildings utilize materials produced in environmentally-sound ways; they are energy efficient; and they minimize the loss of green space.
- **Respectful of place.** The design, placement, and function of sustainable buildings is in tune with their locale; heating and cooling systems are designed with local geography and climate in mind.
- **Democratic.** Sustainable structures are designed with the whole community in mind; they are built as a response to a true need in the community; all stakeholders have a voice in the design and planning process.

Introduction

Utah State University has many more buildings than most of us realize. We have departmental buildings, classroom buildings, research buildings, but also barns, airplane hangers, warehouses, greenhouses, garages, cold storage buildings, power plants, pump houses, and more. Because we spend much of our time at Utah State living and working indoors, it is sensible to consider the sustainability of our built environment. Buildings can educate. The materials used in their construction, their design, how they fit their location, and how they operate, all combine to produce a "hidden" curriculum that teaches, for better or worse, through example.

Creating a sustainably built institution requires long-term thinking. Thus, for building decision-making to be sustainable at the University level, it should be guided by the question: What is in the best long-term interest of the entire University? Master Planning gives many universities the opportunity to make organizational adjustments to ensure long-term thinking, which can save millions of dollars while encouraging the adoption of sustainable practices. For example, at many universities, the decisions concerning the funding of new construction and renovation are often made independently from those concerning the costs of operating and maintaining infrastructure. Capital projects are funded by the state (for state schools), the university's general funds, and gifts, whereas tuition and state appropriations fund operation and maintenance. With the operating costs over a building's lifetime roughly equal to the initial cost of building construction, every time money is donated for new infrastructure it must be matched

Utah State University Criteria for Best Practices in Campus Sustainability

The Built Environment

September 1, 2003

by another sector of the university. Thus, there is no built-in incentive to conserve university resources when designing and constructing new buildings.

The technology and expertise now exist to create buildings which are many times more efficient than those of the past. Because Utah State is currently in the midst of a major building campaign, the University has a remarkable opportunity to improve dramatically how it plans, designs, and constructs buildings.

NWF Criteria for Exemplary Schools

- Must do the following: have at least some percentage of electricity and heating and cooling needs met by renewable sources; have water efficiency upgrades; lighting efficiency upgrades; and heating, ventilation and air conditioning upgrades in at least some campus units; and have developed efficiency design codes for new or existing buildings and implemented life-cycle analysis for energy project evaluation in at least some campus units.
- Must have plans to do the following in the future: use renewable sources for electricity and heating and cooling needs; upgrade water efficiency; upgrade lighting efficiency; and upgrade heating, ventilation and air conditioning and develop efficiency design codes for new or existing buildings, and implement life-cycle analysis for energy project evaluation.

Goals

- Strive to create sustainable campus environments by considering ecological impacts in the planning, design, construction, renovation, and maintenance of all university facilities
- Meet or exceed NWF Criteria for Exemplary Schools and have sustainable built environment characteristics.

Suggested Audit Topics (Existing Buildings)

1. What are building operating hours?
2. List major energy consuming equipment / functions in your building.
3. What are the labs' functions?
4. What lab equipment is used?
5. Is lighting only used when needed?
6. Is lighting on after hours and weekend use only when needed?
7. What percentage of lights is being shut off during after hours/weekends?
8. Outside lights (outside building and entry) acceptable?
9. Special Lighting needs/concerns where?
10. What do you hear most often regarding lights in this building?
11. Do you need additional light switch stickers to remind people to turn off lights when not in use?
12. If heating/cooling control is accomplished from central computer, does the computer schedule match your occupancy?
13. Are heating thermostat set points set to maintain 70°F or lower?

Utah State University Criteria for Best Practices in Campus Sustainability

The Built Environment

September 1, 2003

14. Is air conditioning (A/C) set for 73°F-75°F and shut down during unoccupied hours?
15. Are there many fans or portable electric space heaters used by occupants?
16. Are steam and hot water piping insulated? (Pipes are warm/hot to touch).
17. Are restroom exhaust fans shut off during unoccupied hours? Other building exhaust fans?
18. What do you hear most often regarding this building heating/cooling & comfort?
19. Do you have very large (>1HP) fans or motors operating in this building?
20. Are doors/windows kept closed during heating and cooling season?
21. Is weather stripping found to be adequate around windows/ doors (reduce air leak)?
22. Are windows in need of solar film to reduce/block the sun?
23. Are building walls too hot/cold? Are they candidates for insulation?
24. Is domestic hot water at lowest possible setting (105°F-110°F) for general purpose?
25. Are there any leaking faucets?
26. Are all faucets using low flow?
27. Do you receive utility usage and cost reports for your building?
28. Are energy awareness materials displayed throughout the building?
29. Is there other major energy usage issues in your building not covered in this audit?
30. Are PC monitors, copying machines, being shut off and on sleep mode at the end of the work day?

Building at Other Universities

Northland College

Northland College in Wisconsin spent two years planning a new residence hall which would meet the needs and interests of students, showcase its environmental mission, and offer a living/learning laboratory for environmental studies. Students worked closely with the Master Planning Committee, local architects, engineers and consultants in the conceptualization of the building. Efforts were made to choose the most environment-friendly building materials; these included cedar shakes from Michigan (to reduce the impact from transportation from western states), organic based linoleum flooring, and cellulose for attic insulation. The building, completed in 1998, houses 114 students and contains community and classroom space, passive solar design, supplemental photovoltaic and wind generators for electricity, two greenhouses, two composting toilets, low volume showers, and energy-efficient appliances and lighting. Estimates indicate that the construction cost per bed will be comparable to buildings other colleges have built recently, but the operational costs should be significantly lower than average.

Oberlin College

Oberlin College in Ohio is constructing a "green" environmental science building that will be a net producer of energy. In addition, the Oberlin building has been designed to discharge wastewater at least as clean as the water which enters the building, incorporate sustainable materials, and meet the rigorous requirements of full-cost accounting.

Utah State University Criteria for Best Practices in Campus Sustainability

The Built Environment

September 1, 2003

Rutgers University

Department of Natural Resources at Rutgers University is moving forward with a plan to design and construct a new building for its labs and offices that will embody sustainable building principles.

Yale University

Yale University's new Forestry building will be a "flagship of environmentally sensitive architecture" according to Yale President, Richard Levin.

Humboldt State University

Humboldt State University in California has a grey-water marsh that has been designed to treat shower and faucet water; the water then is recirculated into use for landscaping.

What Utah State Can Do

Short-Term Actions (Less Than One Year)	Midterm Actions (1-3 Years)	Long-Term Actions (3-5 Years)
Commitment to at least the Silver rating with the LEED Green Building Rating System for new and renovated buildings.	Consider site development to reduce the impact of development on the natural environment. For example, orient the buildings to take advantage of solar access, shading and wind patterns that will lessen heating and cooling loads.	
Revise the Utah State Master Plan to be attuned to the need to build in ecologically responsible ways with a commitment to "design, renovate and/or construct all new buildings in an environmentally sensitive manner.	Carefully select materials that are durable, contain recycled content, and are locally manufactured to reduce negative environmental impacts.	
Revise the Utah State Master Plan to commit to USU's goal for sustainability and adopt improved building industry practices for sustainability and the use of safe materials as led by these three guidelines: <ul style="list-style-type: none"> ▪ Select environmentally 	Incorporate energy-efficient design into buildings to create an efficient and comfortable environment. Take advantage of the natural elements and technologies to conserve resources and increase	

Utah State University Criteria for Best Practices in Campus Sustainability

The Built Environment

September 1, 2003

<p>sensitive architects to design USU buildings.</p> <ul style="list-style-type: none"> ▪ Keep up-to-date the provisions of adopted building codes and campus construction standards regarding these concerns. ▪ Weigh first-cost vs. longer-term payback decisions. 	<p>occupant comfort/productivity while lowering long-term operational costs and pollutants.</p>	
<p>Carefully select materials that are durable, contain recycled content, and are locally manufactured to reduce negative environmental impacts.</p>	<p>Design for high indoor air quality to promote occupant health and productivity.</p>	
<p>Minimize the waste in construction and demolition processes by recovering materials and reusing or recycling them.</p>	<p>Minimize the waste in construction and demolition processes by recovering materials and reusing or recycling them.</p>	
	<p>Manufacture/harvest close to point of final use.</p>	
	<p>Use renewable and sustainably harvested materials.</p>	
	<p>Use Non-toxic materials.</p>	
	<p>Use Durable materials .</p>	
	<p>Use recycled and recyclable materials wherever possible.</p>	
	<p>Incorporate energy-efficient design into buildings to create an efficient and comfortable environment. Take advantage of the natural elements and technologies to conserve resources and increase occupant comfort/productivity while lowering long-term operational costs and pollutants.</p>	
	<p>Install high-efficiency and</p>	

Utah State University Criteria for Best Practices in Campus Sustainability

The Built Environment

September 1, 2003

	occupancy-sensored lighting in all USU building space and outdoor settings within the next two years.	
	Upgrade HVAC controls on all university buildings not upgraded over the past ten years within three years.	
	Review LAEP student's MLA project, now completed, on a landscape remodel of the Institutional Residence and, if feasible, implement the project to demonstrate how the Institutional Residence could be a model to the community.	

Additional Recommendations

- Don't oversize or build unnecessarily.
- Utilize sustainable or "green" design principles for all new construction and rehabs.
- Design for state-of-the-art energy efficiency and exceed energy codes.
- Incorporate renewable energy technologies including daylighting and passive solar.
- Include suitable recycling collection space in building design programs.
- Recycle construction and demolition debris.
- Specify environmentally-friendly building materials and products.
- Evaluate options based on life cycle analysis.
- Locate campus convenient to population being served and regional public transit system.
- Develop campus master plan which minimizes negative impacts and disruption of natural ecosystems and surroundings.
- Preserve and enhance green space.
- Protect natural areas from development.
- Concentrate buildings and arrange campus walkways and roads to minimize on-campus driving and create a convenient pedestrian and bicycle campus. Allow for solar access in building siting and orientation. Use water-efficient indigenous plantings; landscape for energy efficiency as well as aesthetics.
- Subject all new building, renovation and expansion plans to a public participation process, an environmental impact analysis, and sustainable design principles.
- "No ugliness."
- Discharge wastewater at least as pure as the water taken in.
- Generate more electricity than is used.

Utah State University Criteria for Best Practices in Campus Sustainability

The Built Environment

September 1, 2003

- Incorporate no material known to cause cancer, birth defects, hormone disruption or other hazards.
- Use energy and materials with great efficiency.
- Use products and materials grown or manufactured sustainably.
- Be surrounded with landscape that promotes biological diversity.
- Meet rigorous requirements for full-cost accounting.
- Keep an open communication with Facilities Management personnel and USU's campus architect and environmental consultant to discuss which methods would be feasible and cost effective in our buildings.
- Develop sustainability standards for all USU buildings within the next year and apply them to the renovation of existing buildings and construction of new buildings.

Sustainability Indicators Dashboard

- ✓ **Building decision process**
- ✓ **Building priorities**
- ✓ **Ecological design in buildings**

Utah State University Criteria for Best Practices in Campus Sustainability

TRANSPORTATION

September 1, 2003

Category: Transportation

***Note:**

A Utah State sustainable transportation system was not represented or addressed within the Environmental Task Force Report but was addressed in the form of suggestions by the students who participated. Rather than having it become a conspicuous omission, it is tackled herein as it is referenced in almost every campus sustainability report, is a NWF Criteria for Exemplary Schools, and considered an important indicator. Therefore, until there is a sustainability audit, with prioritized actions, these criteria will not be complete and suggestions reflect general issues found in peer audits and reports.

A sustainable transportation system has the following characteristics:

- **Clustered.** Communities are densely settled and designed (i.e., careful land-use planning) so that the places people routinely visit—schools, shops, churches, parks—are close (i.e., within easy walking or biking distance). Clustered development (as opposed to sprawl-type development) enhances human interaction while also maximizing green space on a regional level.
- **Efficient public transportation.** Reliable, clean, convenient public transportation alternatives are readily available: mini-buses for the elderly and young within town; light rail, running at frequent intervals along main transportation corridors for longer trips.
- **Traffic calming.** The disruptive effects of cars (e.g., accidents, noise, air pollution) on community life are acknowledged. Measures to "calm" traffic (e.g., narrowing rather than widening of roads, enforcing 15 mph speed limits in town, offering right-of-way to pedestrians and bicyclists) are recognized as essential to restoring the people-centered vitality of the town/campus environment.

Introduction

Mobile sources such as motor vehicles are the source of approximately two-thirds of carbon monoxide emissions and nearly half the smog forming emissions. In addition, transportation is responsible for about one-third of the air pollutants that affect the ozone layer. The extent of these effects is dependent on the mode of transportation taken, the amount driven, vehicle maintenance, and fuel usage. Transit buses with as few as seven passengers use less fuel per passenger mile than typical cars with one driver. A fully loaded rail car is 15 times more energy efficient than an average car. Carpooling in pairs by 100 employees traveling 20 miles a day during two business weeks reduces emissions approximately in half, cutting 75 pounds of hydrocarbons, 30 pounds of nitrous oxides, 550 pounds of carbon monoxide, and 9,900 pounds of carbon dioxide in two weeks. **Finally, bicycling and walking represent a 100 percent drop in vehicle emissions.**

Every day many thousands of people come to Utah State. By foot, bike, or car, the mode of transportation is a function of a person's distance from campus, access to different transportation modes, and economic constraints. However, as each person travels to campus, there is also a complementary impact on the environment. In many ways, the transport system

Utah State University Criteria for Best Practices in Campus Sustainability

TRANSPORTATION

September 1, 2003

utilized by Utah State is indistinguishable from the U.S. transport system at large. **Utah State's Master Plan includes additional parking, new roads, loops, and extensions, but is bereft of bike paths or alternative transportation methods.**

To design a sustainable university transportation system requires viewing our campuses, towns, and cities as interactive people places. The vitality of communities comes from the rich diversity and concentration of culture, information, businesses, public places, and most of all, people. Transport decisions which rob communities of their vitality (e.g., continually accommodating the automobile by improving roads and building new parking structures) lead away from, rather than toward, sustainability.

Progress toward a sustainable transport system would be based (among other things) on developing and promoting alternatives to single-occupancy cars, preserving green space, and creating a safer environment.

NWF Criteria for Exemplary Schools

- Of the six transportation programs (free or discounted bus passes to students, free or discounted bus passes to faculty and staff, a carpooling program, incentives not to drive alone, adequate and protected bicycle racks, and bicycle lanes) schools must have at least five of them campus-wide and must also have at least some vehicles powered by renewable sources.

Goals:

- Promote and use sustainable transportation options
- Meet or exceed NWF Criteria for Exemplary Schools and Sustainable Transportation Systems characteristics.

Suggested Audit Topics

1. How do people get to campus every day?
2. What are the estimated percentages by each mode? (Single-occupancy vehicle, vanpool, bicycle, carpool, transit, walking.)
3. How many vehicles travel to campus daily?
4. How far do people commute on average?
5. What percentage of Utah State's campus area is devoted to roads and parking lots?
6. Does Utah State have a program to promote ride-sharing? (e.g., carpool, matching services, preferential parking, reduced parking rates, subsidized vanpools). Describe.
7. Are transit passes subsidized for students, staff, or faculty? Describe.
8. Does Utah State have enough parking to meet the demand?
9. Is it campus policy to provide parking to meet demand?
10. Are students, staff, and faculty charged for parking? How much?

Utah State University Criteria for Best Practices in Campus Sustainability

TRANSPORTATION

September 1, 2003

Transportation at Other Universities

University of Wisconsin

With one of the highest per capita campus rates of bicycle use in the country, University of Wisconsin at Madison (UW)'s Transportation is focusing transportation demand efforts on reducing automobile dependency. Utilizing twelve years of annual survey data, the University is instituting a flex time program that replaces five eight hour days with four ten hour days in order to reduce rush hour congestion and respective air pollutants that could increase probability of non-attainment. UW is designating shared parking spaces, coordinating parking schedules, and offering parking passes for limited days per week.

University of North Carolina

The University of North Carolina at Chapel Hill has designed an innovative program to encourage ride sharing. The program, run by an excel database, matches vans to carpool lists, and is coordinated by 270 coordination specialists. Representatives from all departments post announcements, provide information and talk to new employees. Rideshare participants are encouraged by the allotment of multiple licenses on a parking permit. This enables car-poolers to rotate vehicles and share permit costs. In addition, confidence is assured through an assistance program which jump starts vehicles, fixes flats and retrieves locked keys.

Cornell University

Cornell University, when faced with a 2,500 parking space shortfall in the early 1990s, decided not to build but instead to figure out other ways to get the university's faculty and staff to and from work spaces (and thereby preserve campus green space). They created a package of alternatives to single-occupancy commuter vehicles and in the process have saved about three million dollars a year, not to mention the beneficial environmental effects of 10 million fewer car miles traveled to and from Cornell each year.

University of Illinois

University of Illinois at Urbana-Champaign, a combined initiative involving students, Parking Services, and the local transit authority, has resulted in more frequent bus runs and modifications in bus routes to service high-density off-campus student housing. As a result, city bus use by students has increased tenfold.

Northland College

Northland College has introduced a "community share" bike program to its campus in which old bikes are donated to the college and students and community members paint and repair them. New bike racks specifically for community bikes have also been built around campus.

Utah State University Criteria for Best Practices in Campus Sustainability

TRANSPORTATION

September 1, 2003

What Utah State Can Do

Short-Term Actions (Less Than One Year)	Midterm Actions (1-3 Years)	Long-Term Actions (3-5 Years)
Promote fuel-efficient driving of University Motor Pool vehicles (especially busses and trucks).	Work with the Cache County Planning Commission to promote traffic calming measures such as the narrowing of existing roads, lowering and enforcing of speed limits, and preferentially granting right-of-way to pedestrians and bicyclists.	Operation of University Motor Pool busses on alternative fuels (e.g., CNG, hydrogen).
Promote alternative transportation methods through the Master Planning process.	Shift to 100 percent alternative-fuels passenger cars in the University Motor Pool within five years.	Develop a plan to reduce car use by 25 percent over the next 10 years through a package of incentives (and disincentives) that discourages members of the Utah State community from bringing cars to campus.
	Decrease the proportion of people driving single-occupancy motorized vehicles to campus on a daily basis to 20% of the population within 5 years.	Utah State, with its technical expertise and state and national connections, should be exemplar in the development of a forward-looking, sustainable transport system for northern Utah.
		Utah State should use its expertise and vision to create a northern Utah with fewer rather than more roads, better public transportation, enforcement of urban growth

Utah State University Criteria for Best Practices in Campus Sustainability

TRANSPORTATION

September 1, 2003

		boundaries, and protection of open spaces in sacred trust for future generations, and vibrant, people-centered town centers.
--	--	--

Additional Recommendations

- Encourage travel by carpooling, public transportation, bicycling, walking.
- Convert vehicle fleet to alternative fuel, e.g., natural gas.
- Make campus more pedestrian/bicycle-friendly. Vehicles are a nuisance and pose a hazard to pedestrians and bicyclists in the inner campus.
- Consider a more rigorous policy on vehicles entering and driving within the campus proper that includes smaller vehicles, driven slower.
- Consider closing 7th North through the campus to all but essential vehicles, in essence, making this street a pedestrian zone, much in the same sense as the central campus. The University teaching buildings on the north side of 7th North, the HPER Building, and the dorms could then be more closely integrated to the central campus and travel to and from buildings could be made much safer.
- The University should work with Logan City to “sensitively” improve the “Island” trails, which would encourage their use and lessen the number of cars driven to campus and the need for additional parking.
- Stronger encouragement by the University for the use of public transportation.
- Add a 7:45 a.m. and 8:15 a.m. campus express route to significantly alleviate congestion.
- Replace current vehicles with more fuel-efficient and alternative-fuel powered vehicles at their normal replacement times.
- Establish an ongoing committee to coordinate and promote the reduction of vehicle emissions on campus. Efforts would focus on alternate methods of transportation and the enhancement of bike and walking trails as well as improved shuttle service. The committee will establish recommendations and guidelines for vehicle purchases to ensure alternative fuels are used whenever possible. The committee should include the Campus Fleet Manager, Parking and Transportation Manager, Air Quality Manager, Environmental Health and Safety Manager, and student representatives.

Sustainability Indicators Dashboard

- ✓ Car dependence
- ✓ Green space converted to parking space
- ✓ Transport-related safety

Utah State University Criteria for Best Practices in Campus Sustainability

DECISION MAKING AND SUSTAINABLE PRACTICES

September 1, 2003

Category: *Decision-Making and Sustainable Practices

*Note:

A Utah decision-making structure was in part addressed within the Environmental Task Force Report under **Policies, Practices, and Procedures** as well as the students who participated. This chapter seeks to tackle it in greater depth as **Decision Making and Practices**. The topic appears under Administration or Management on virtually every campus sustainability report, is a NWF Criteria for Exemplary Schools, and considered a vital indicator. Therefore, until there is a sustainability audit, with prioritized actions, these criteria will not be complete and suggestions reflect general issues found in peer audits and reports.

A decision-making and practices structure that promotes sustainability has the following characteristics:

- **Decisions are based on deep-seated values.** Sustainable institutions recognize that economic considerations alone are not adequate bases for wise decision-making; deep-seated values and ethics are central to sound decisions.

Introduction

There is no high level, centralized support or decision-making body or published practices for improving USU's environmental performance. Nor is there an entity on campus that exists to review the environmental impact of campus policies, purchasing, building projects or programs, or to create new environmental policies. While there are many individual entities that fill parts of this role, they do not provide a comprehensive overview. Thus, many changes get implemented with no consideration of environmental impacts or discussion of alternatives.

Many of the positive steps toward sustainability that are taken are driven by the efforts of visionary administrators. This stands in contrast to schools such as the University of Texas in Houston, Brown University, or George Washington, where efforts to "green the campus" are coordinated and funded at the highest levels. Adoption of improved environmental programs at Utah State requires a major campaign effort by the administration with grass roots collaboration and support by students and faculty. The creation of a Utah State University Environmental Council (USU/EC) [AggiEcology Council], which could serve to advise the president, with staff support, would be an important step toward developing an AggieEcology Plan.

NWF Criteria for Exemplary Schools

- Has a written declaration committing to the promotion of environmental responsibility.
- Has a written declaration that educating students about environmental responsibility is part of its academic mission and sets and reviews or has written policies in most of the nine environmental activities.
- Plans to do more in setting and reviewing goals and written policies.
- Has hired all four of the following: a fulltime administrator who manages environmental issues beyond regulatory compliance; a recycling coordinator; an energy conservation coordinator; and a green purchasing coordinator.
- Requires environmental accountability campus-wide not just in some campus units.

Utah State University Criteria for Best Practices in Campus Sustainability

DECISION MAKING AND SUSTAINABLE PRACTICES

September 1, 2003

Goals

- Ground decisions and practices in Sustainability Principles.
- Meet or exceed NWF Criteria for Exemplary Schools in Decision-Making and Practices that promote sustainability characteristics.

Suggested Audit Topics

1. Some campuses have a written declaration that they are committed to promoting environmental responsibility, while other campuses do not have such a statement. Does Utah State have a written declaration of commitment to environmental responsibility?
2. Does Utah State have a written declaration that educating students about environmental responsibility is part of its academic mission?
3. Does Utah State regularly set and review goals for:
 - reducing solid waste and maximizing recycling conserving energy?
 - conserving water?
 - reducing pollution?
 - protecting natural habitats?
 - purchasing environmentally sound goods?
 - purchasing organic food?
 - the environmental performance in the design of buildings?
 - making environmentally responsible investments?
4. Does Utah State have a formal system for:
 - holding campus units accountable for environmental performance, through incentives and/or penalties?
 - considering environmental impact when master planning decisions are made?
5. Does Utah State have plans to do more as far as a formal system for:
 - holding campus units accountable for environmental performance, through incentives and/or penalties?
 - considering environmental impact when master planning decisions are made?
6. Which of the following best describes our campus?
 - We have an environmental council that does not include students.
 - We have an environmental council that includes students.
 - We do not have any environmental council.
7. Does Utah State have, and if not, are there plans to do more in the specified area:
 - a full-time administrator who manages environmental issues beyond regulatory compliance?
 - a recycling coordinator?
 - an energy conservation coordinator?
 - a green purchasing coordinator?
8. Does Utah State offer an orientation session about campus environmental programs for students, faculty, and staff?
9. Do you have plans to do more as far as offering an orientation session about campus environmental sustainability for students, faculty, and staff?
10. How much of a challenge is it for our campus to expand its environmental programs?

Utah State University Criteria for Best Practices in Campus Sustainability

DECISION MAKING AND SUSTAINABLE PRACTICES

September 1, 2003

- inadequate funding?
 - inadequate staff time?
 - inadequate information about what problems to address and/or what strategies to implement?
 - disagreement about what problems to address and/or what strategies to implement?
 - concern that environmental programs are not cost-effective?
 - concern that other campus needs are more pressing?
 - lack of commitment among top-level administrators?
 - lack of commitment among mid-level managers in key departments?
 - lack of student interest in participating in environmental programs?
 - lack of faculty and staff interest in participating in environmental programs?
11. To what extent have the following played a role in encouraging our campus to implement environmental programs?
- student interest?
 - faculty interest?
 - staff interest?
 - alumni interest?
 - government regulations?
12. To what extent has our campus been encouraged to implement environmental programs because it:
- has found them to be cost-effective?
 - has found environmental programs are good public relations?
 - has found environmental programs help recruit students?
 - feel environmental programs fit in with the culture and values of the campus?
13. Does Utah State house any research institutes that study environmental issues?
14. Does Utah State have plans to do more as far as housing any research institutes that study environmental issues?
15. Are there plans to do more as far as specifying?
- that office paper purchased must contain a minimum 25 percent post-consumer waste?
 - any chlorine-free requirements for office paper?
16. Does Utah State have any programs in place to encourage environmentally sound purchasing? For example, specifying that products must contain recycled content, be energy-efficient or come from sustainable, managed sources?
17. Does Utah State have plans to do more as far as any programs to encourage environmentally sound purchasing?

Utah State University Criteria for Best Practices in Campus Sustainability

DECISION MAKING AND SUSTAINABLE PRACTICES

September 1, 2003

Decision-Making at other Universities

“**Green Investment, Green Return,**” demonstrated that 23 sustainability initiatives at 15 U.S. colleges and universities are saving \$17 million each year (National Wildlife Federation, 1998).

Duke University

Duke University has recently passed a “code of conduct” for all companies that manufacture products emblazoned with the Duke name and/or logo. The code requires companies, such as Nike (which currently manufactures both PSU’s and Duke’s athletic apparel), to disclose the location of all factories and permits Duke to examine working conditions and labor practices at these factories. If contractors are found to be in persistent violation of the code, Duke will terminate the contract.

Penn State

Penn State has recently joined more than 100 other universities in signing the Fair Labor Association (FLA) Agreement. This agreement requires Nike and other university licensees to disclose factory locations (www.nikebiz.com/labor/index/html) and bans child and forced labor within factories. Penn State President Graham Spanier also is developing a relationship with the Global Alliance for Workers and Communities that represents a partnership among private, public, and nonprofit institutions committed to improving the work and life opportunities for factory workers.

Harvard, Johns Hopkins, Tufts, and Northwestern

Harvard, Johns Hopkins, Tufts, and Northwestern do not invest in companies that manufacture tobacco products. Tufts includes manufacturers of alcoholic beverages in its “screen.”

What Utah State Can Do

Short-Term Actions (Less Than One Year)	Midterm Actions (1-3 Years)	Long-Term Actions (3-5 Years)
<p>*****IMPORTANT*****</p> <p>Conduct and complete an environmental audit under the direction of the National Wildlife Federation’s Campus Conservation Program or the University Leaders for a Sustainable Future.</p> <p>Develop and implement environmental management</p>	<p>Modify the university's home page with a link to pages that explain what we are trying to do, what we have accomplished, what our immediate goals are, and how well we are progressing towards the attainment of these goals.</p>	

Utah State University Criteria for Best Practices in Campus Sustainability

DECISION MAKING AND SUSTAINABLE PRACTICES

September 1, 2003

Short-Term Actions (Less Than One Year)	Midterm Actions (1-3 Years)	Long-Term Actions (3-5 Years)
systems to ensure that strategies are established to support environmental leadership programs, policies, and procedures and senior level administrators explicitly and actively endorse these strategies.		
Obtain a clear commitment from the President, Provost and Vice President for Administrative Services to ensure administrative support of environmental initiatives.	Publish an annual report of subcommittee accomplishments, policy effectiveness assessments and goals for the next academic year to encourage a proactive approach to environmental problem solving. Distribute it through the Internet and publicize it through local and campus media.	
Consistently measure and report campus environmental performance	The internal campus "marketplace" should be adjusted to more accurately reflect true costs. Currently, many of the incentives set by the campus market encourage resource consumption.	
Comply with environmental regulations by establishing and implementing environmental compliance audit programs and policies.	Create a grant fund to support activities that would assist the university in being an environmental university.	
Develop a clear mission statement which speaks to both the academic and operational needs of a sustainable university, and empower the (USU/EC) to advocate positive environmental changes throughout the University.	Appoint an Environmental Assistant to the President.	
Establish criteria for an incentive	Develop a set of	

Utah State University Criteria for Best Practices in Campus Sustainability

DECISION MAKING AND SUSTAINABLE PRACTICES

September 1, 2003

Short-Term Actions (Less Than One Year)	Midterm Actions (1-3 Years)	Long-Term Actions (3-5 Years)
program that would encourage and reward environmentally responsible behavior.	environmental criteria to evaluate potential investments.	
Implement an environmentally-friendly products purchasing policy, i.e., buy only products which are durable, reusable, recyclable, made of recycled materials, non-hazardous, energy efficient, sustainably harvested, produced in an environmentally sound manner, etc.	Require all employees to attend workshops on environmentally-responsible behavior.	
Appoint a (AggiEcology?) Utah State Environmental Council (USU/EC) to provide a forum in which the multiple green activities campus-wide can be shared, information documented for formal dissemination, and proposals facilitated.		
Appoint a Council Chair to serve as liaison to the Provost. That person would be responsible for working with the USU/EC membership and Provost to orchestrate the resources dedicated to this work i.e., the assignment of responsibility and loading to University personnel and/or the budgeting of internal monies.		
Appoint a AggiEcology Funding Specialist.		
Implement education/information/interpretation/demonstration programs to increase awareness of on-going efforts related to environmentally-responsible behavior and actions by the university community		

Utah State University Criteria for Best Practices in Campus Sustainability

DECISION MAKING AND SUSTAINABLE PRACTICES

September 1, 2003

Short-Term Actions (Less Than One Year)	Midterm Actions (1-3 Years)	Long-Term Actions (3-5 Years)
Appoint an AggiEcology Coordinator to work with the Council, its Chair and members of the University community to facilitate ongoing campus-wide programs and activities.		
Present a presidential "State of the University's Environmental Performance" report on Earth Day each year.		

Additional Recommendations

- Purchase wood products and wood derivatives from companies that do not cut timber in old growth forests, whether tropical or temperate.
- Establish a system for examining the environmental records of vendors and the products the University purchases.
- Work to incorporate environmental criterion into all purchase bid specifications.
- Research methods to expedite changes in purchasing.
- Consider a premium for investments with companies with environmentally responsible records.
- Identify an individual(s) to advise Utah State on alternative investment possibilities.
- Recognize the effects of University investments on the environment and on future economic opportunities for taxpayers.
- Attempt to increase economic security through the preservation of natural resources and the minimization of pollution.
- Utilize stockholder influence to encourage environmentally responsible business practices on University-wide initiatives.
- Sponsor a USU Presidential commitment to the Talloires Declaration, an "international consortium of colleges and universities united in a cooperative movement to encourage, facilitate and promote an environmentally sustainable future."
- Work with the office of the President to sponsor an annual AggiEcology Award to celebrate excellence in environmental teaching, research, activism, and commitment.
- Recognize the urgency associated with the shift to sustainability and develop aggressive strategies for change. Challenge the University's complacent response to high commuter flows, low recycling rates and ignored energy conservation policies.
- Strive to have equal representation of faculty and administrative staff to address the dual nature of the University's environmental initiatives: education and operations.
- Share environmental information and strategies for environmental sustainability with other institutions. Develop an incentive system for compliance with University

Utah State University Criteria for Best Practices in Campus Sustainability

DECISION MAKING AND SUSTAINABLE PRACTICES

September 1, 2003

environmental initiatives and/or a disincentive program for non-compliance and environmental offenses.

- Organize the USU/EC subcommittee to address the dual nature of the University: academic and operational. In addition, subcommittees should address the University's affect on all components of local and global ecosystems including air, water, soil, vegetation, wildlife and energy.
- Include students in University environmental initiatives through formal student representatives and the creation of two student internship positions for each subcommittee.
- Develop a series of organizational by-laws to define the role of the USU/EC, its relationship to the administration of University business and the responsibilities of the USU/EC chair, USU/EC members, subcommittee chairs and subcommittee members. Include information on membership criteria, chair terms, chair eligibility, voting requirements and expense reimbursement.
- Create an environmental marketing strategy to promote personal environmental integrity, University environmental programs and the status of global ecosystems. Utilize multi-media opportunities to minimize paper waste.
- Make environmental concerns an integral part of all decision-making.
- Embrace business practices that promote the health and safety of Utah State's employees, students, and constituents.
- Foster increased understanding of the environmental, social, and economic impact of both institutional and personal decisions among those that it employs and those it serves.
- Appoint a web manager who will work with the Council Chair to create a web site for disseminating information about campus-wide green activities.
- Provide stipends to support faculty wishing to develop requests for outside funding.
- Provide a budget line to support associated travel, supplies and expenses.
- Host a briefing session for senior staff to prepare the respective vice presidents for the tasks of appointing membership to the Environment Council and implementing action items.
- Present the Utah State story before the Greening of the Campus Conference in fall 2004.
- Replace virgin-material office paper with 100 percent post-consumer recycled, non-chlorine bleached paper.
- Buy only computers, office equipment and appliances compliant with EPA Energy Star program.
- Incorporate environmental standards in all contracts for goods and services.
- Create a pamphlet describing the University's environmental goals and progress and make it available to those staying in the University Inn and/or attending conferences at the university.
- Link the University home page to a statement of the University's environmental policy and to information on existing environmental achievements and activities.
- Educate campus visitors on Utah State's contributions to the achievement of its environmental goals.

Utah State University Criteria for Best Practices in Campus Sustainability

DECISION MAKING AND SUSTAINABLE PRACTICES

September 1, 2003

- Investigate the use of recycled paper throughout the campus and provide more choices to purchase products from recycled materials, especially in the Bookstore.
- Establish environmental criteria for financial investments.
- Use stockholder influence to encourage environmentally responsible business practices.
- Provide incentives for various units on campus to undertake actions that contribute to the improvement of USU as an environmental university, starting in 2003-2004.
- Establish a campus-wide committee comprised of key administrators involved in the normal day to day purchase of supplies and materials. Committee should include the Director of Purchasing, Paper Buyer, Facilities Buyer, Bookstore Buyer, PDP Buyer, and others as deemed necessary. Committee to be charged with annual report of amount and quantity of material purchased with recycled content and to look for areas to expand and further implement recycled content purchases.

Indicators of Sustainability Dashboard

- ✓ Core values guiding decisions
- ✓ Openness

Utah State University Criteria for Best Practices in Campus Sustainability

SUSTAINABILITY DASHBOARDS

September 1, 2003

Sustainability Education	Energy
# Living on Earth Courses completed	% Total and per capita energy consumption
	% Carbon dioxide emissions
Food	Decision Making & Sustainable Practices
% Foods produced using sustainable practices	% Investments with environmentally responsible companies
	% Purchases with environmentally responsible businesses.
	# Environmental audits completed
Land	Material Resources & Waste Disposal
% Native vs. exotic plants on campus	% Total waste production
% Landscape designed to be low input, low maintenance.	% Recycled solid waste
	% Paper consumption office paper chlorine-free and minimum 25% post-consumer waste
Sustainable Research	Transportation
% of Faculty research in sustainability	# Parking Permits issued
	% Green space converted to parking space
Built Environment	Water
Attain/Maintain LEED Green Building Rating System Silver Rating	% Total and per capita water consumption
	% Waste water disposal