

Sustainability at OSU
A Report to the Provost from the Sustainability Council
June 2005

Executive Summary

The OSU Sustainability Council was appointed by the Provost in November 2004 and consists of representatives from all Colleges, Operations, and the student body. The Council collected data about the current status of sustainability at OSU from a wide variety of people both on and off campus and makes the following recommendations to the Provost. Detailed information is provided in the main body of the attached report.

The Sustainability Council is impressed with the breadth and, in some cases, the depth of sustainability activities in which members of the OSU community are currently involved. Sustainability is addressed in curriculum around campus, research projects in multiple units, outreach efforts around the state, and the way we conduct our day-to-day business. Many people in the OSU Community have engaged sustainability to a considerable degree. Specific opportunities to increase our involvement include:

- A. Consolidating excellence of existing classes, on-going projects, and learning opportunities into a transparent package that students, employers, and community members can recognize as a mastery of sustainability practices.
- B. Strengthening the core of OSU expertise, experience, and facilities focused on alternative energy and energy systems to engage with public and private partners in developing and implementing new technology.
- C. Capitalizing on traditional reputation and partnerships to build expertise in sustainable management practices for production agriculture, fisheries, and forestry.
- D. Encouraging continued transformation of OSU operations toward sustainable design and practices and taking advantage of appropriate partnerships that can link operations, academic programs, and students and staff.

The increasing array of sustainability efforts at OSU are hampered by limitations seen in most new initiatives including shortage of resources, strategy, and organizational structure. Sustainability, like other interdisciplinary efforts, also suffers from a lack of coordination and collaboration across the multiple units, projects, relationships, and partnerships. As OSU becomes more involved in sustainability activities, this weakness is likely to limit the full potential of faculty, staff, and students to engage in funded efforts.

To that end, the Sustainability Council recommends that the Provost create a full time Sustainability Coordinator position that is co-funded by Facilities and Operations and the Provost's Office in order to capture the synergy of mission and operations activities that will be the hallmark of successful institutionalization of sustainability on campus. The Sustainability Council would act as the Advisory Board to the Sustainability Coordinator, who would report to the Provost or his appointee. The Sustainability Coordinator would

be responsible for formulating a strategic plan and organizational structure, including a fiscally prudent budget for implementing specific projects, and collecting and charting information about progress. The Coordinator would also be responsible for increasing the visibility of sustainability at OSU.

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I. Introduction

The university is a natural laboratory for society to test new ideas and provides the opportunity to further knowledge about sustainability and sustainable practices, develop new technology that decreases costs while increasing community and environmental benefits, and transfer results to the citizens of Oregon. The Provost and the Provost's Council have made a commitment to institutionalizing sustainability at OSU through its traditional land grant missions of education, research, and outreach, and in its day to day operations and practices. OSU currently has considerable expertise and experience in sustainability across many colleges and one challenge is to organize that excellence to make it visible. The other challenge is to ensure that the university is nimble enough to work with a wide array of partners – both traditional and non-traditional – in this quickly emerging and changing field.

The OSU Sustainability Council was convened in November 2004 with directions from the Provost to help OSU develop strategic directions for sustainability that will position OSU as a leader in this area. A list of Sustainability Council members is attached as Appendix A to this report. The Council proposed to complete two main activities this year: **(1) Identify opportunities to create a competitive advantage for OSU; and (2) to track and promote sustainability at OSU.** In addition to completing the analysis for this report, the Sustainability Council also provided “success stories” about sustainability at OSU to the Governor's Office (attached as Appendix B), developed a framework for collecting information about sustainability (attached as Appendix C), and prepared this report with recommendations for the Provost.

II. Identifying Opportunities

Sustainability efforts at OSU can best be implemented if they reflect the strengths of the university, honor its history and diversity, and recognize both global and local challenges. We must be able to count on our traditional constituents as well as seek new partners as we move forward into this arena. We must also recognize that sustainability is a consideration that may lead people and institutions to choices not necessarily indicated by internal or economic concerns alone.

In order to gather information about current sustainability activities and opportunities a SWOT analysis was conducted looking at OSU's Strengths, Weaknesses, Opportunities, and Threats relative to sustainability. The Council convened four groups of interested and engaged people including about 15 faculty, staff, and students at each meeting to gather information about OSU's strengths and challenges regarding sustainability. After a brief description of the Sustainability Council and the purposes of the analysis, participants were asked to provide specific examples of sustainability activities currently underway, barriers and challenges to existing and new activities, and opportunities that will allow OSU to capitalize on our strengths and current programs and practices.

The data from the sessions were compiled and reviewed by members of the Sustainability Council and a few major efforts were identified that could move OSU forward in its Strategic Plan and sustainability goals. The strategic areas are specifically designed to bring new ideas and resources into the university. These are described in some detail below.

A. Sustainability Curriculum - Summary

The most obvious opportunity for OSU right now is to consolidate existing excellence in classes, on-going projects, and learning opportunities into a transparent package that students and community members can recognize as sustainability. Currently, there are efforts in multiple colleges and departments including individual classes, certificate programs, “master” training programs, and short course training sessions. There are potential opportunities to link university operations (e.g., green building, energy systems, eco-roofs, etc.) with interested students, classes, and research projects. However, there is no up-to-date comprehensive list of courses across multiple colleges, introductory course on sustainability, or transcript-visible program.

Industry needs and student employability have driven changes in the Colleges of Business, Engineering, Forestry, and Health and Human Sciences - all sectors outside the university which have undertaken substantial sustainability efforts. The College of Agricultural Sciences is also responding to existing and new constituents to ensure that graduates understand sustainable agricultural practices. Programs at other universities and colleges that focus on sustainability have seen enrollment increase as students look for those programs that will help them find jobs in these changing fields. Some of OSU’s traditional constituents are not totally convinced yet that sustainable practices aren’t code words for “increased environmental regulation,” so care is encouraged in how we go about implementing sustainability in the curriculum. There are opportunities for OSU to secure funding from agencies such as NSF and USDA, both with programs aimed at increasing sustainability knowledge and awareness. These resources could enhance an already impressive array of classes that can be re-packaged as a sustainability curriculum.

Potential Projects

- Create case studies of early efforts at the college level (e.g., College of Business) and at the department/classroom level (e.g., geosciences, plant science, environmental health and occupational safety management, design, and forest science) that can be used by others as models for how to integrate sustainability into curriculum. These case studies can include examples of ways to integrate sustainability into strategic plans, syllabi for sustainability courses, and links to more information.
- Develop a graduate minor in sustainability that provides opportunity for graduate students to create a transcript-visible core of expertise in the topic.
- Create sustainability courses that can meet graduation requirements.
- Develop sustainability courses that provide students with opportunities to conduct original, interdisciplinary research on sustainability and/or participate in internships to learn more about sustainability practices.

- Find ways to link university operations with classroom instruction; in particular, work closely with Facilities and Operations during activities such as new buildings, remodels, new energy system development, and landscaping.

B. Alternative Energy and Energy Systems - Summary

A core of expertise, experience, and facilities to study and implement alternative energy and energy systems is quickly developing at OSU. Researchers in the Colleges of Agricultural Sciences, Engineering, Forestry, and Oceanic and Atmospheric Sciences are exploring a range of alternative energy sources including bio, wind, wave, and solar. A few examples can describe the breadth of activities underway. A group of undergraduate students has been involved in developing expertise in biofuels for the past several years and recently participated in an EPA-sponsored program to develop new technology. Researchers in plant science are examining ways to replace oil-based energy and other products with cell-based equivalents. OSU was named a Sun Grant university in recognition of its ability to bring many participants together to focus on bio-based energy and sustainable agricultural production. The university is proposing an innovative co-generator that will optimally supply not only the whole campus with energy but also provide “nega-watts,” or excess energy that can be sold to other users. Researchers in Engineering have worked with external partners to create a successful wave energy program, developing technologies to take advantage of wave power.

Like other emerging areas, however, energy researchers at OSU are spread across multiple colleges and departments with little coordination and communication; this is starting to change. There is yet no unified message that alternative energy initiatives are a campus-wide priority. And, while student interest in alternative energy is high, we have few classes where students can learn more about, or get experience with, alternative energy systems. This is a topic of strong interest at both the state and national level and OSU has only begun to tap into potential partners in both the public and private sectors. It is also an area that can provide development and patenting of new technologies that will change energy production and use. There is considerable competition in this area, however, and we will need to formulate strategies quickly to take advantage of our currently state-of-the-art knowledge before the field moves on to newer ideas.

Potential Projects

- Create Center for Renewable Energy as described by Research Office to leverage existing excellence. While ONAMI may be an appropriate model for this effort, we suggest that reconnaissance be conducted to develop the business case for partners. This will include determining the appropriate organizational structure for coordinating expertise across OSU and partners.
- Conduct an inventory and assessment of research and education capabilities in energy systems and alternative energy. This information should also be made available on the OSU web site. Some of this preparatory work may have been done for the OUS AEED process and should be completed at the earliest possible date.

- Convene one or more cross-disciplinary groups comprised of college representatives who are knowledgeable of efforts in their units. These groups can act as the bridge to other interested parties in the private and public sectors as well as with community members.

C. Sustainable Natural Resources - Summary

OSU is widely recognized for its commitment to natural resources and has a long history of supporting research and education managing agricultural, forestry, and fishing production systems. It is recognized that these systems are critical to the economy and culture of the state. OSU also has a more recent commitment to research, education, and outreach that focuses on sustainable management of the same systems. A graduate certificate program in Sustainable Natural Resources, for example, has been created. A student-run organic farm is supported by an increased number of courses in sustainable agriculture. Finding uses for renewable plant systems for everything from medicine to remediation provide the impetus for the SPROUT program. And, while these programs are also spread across campus and the state, there is more coordination and communication of efforts between the two primary colleges (Agricultural Sciences and Forestry) that are working to integrate curriculum, research, and outreach activities on several topics.

However, to date, the expertise and experience of faculty and students in Colleges of Business and Engineering have not been fully engaged to help think about building the business case for sustainability or engineering sustainable solutions to resource problems. A large opportunity exists for OSU to develop new knowledge and technology for creating sustainable natural resource production systems. These may include, for example, innovative “closed loop” systems in agriculture and forestry as well as more traditional efforts that mitigate or restore impacts from current practices. Increased funding for research and training about sustainable resource practices include the Sun Grant Initiative, the 2002 Farm Bill Energy Title, various specialty crop programs, and others. Several of the Provost’s Initiatives including the Institute for Water and Watersheds and the Rural Community Initiative will provide internal development resources.

The threats to these opportunities include historic constituents who may perceive that attention to new practices will eliminate support they need. Given financial resource shortages in the state, this concern is recognized as serious. Another threat to improving our capacity for developing sustainable natural resource production systems is the declining commitment to research in several resource agencies including the USDA (Agriculture and Forestry), USDOJ (USGS and Park Service), and Commerce (NOAA Fisheries). While we have been successful to date with these agencies given our current strengths, the decline in total budgets combined with emerging areas that may not be our strengths, requires us to move quickly to fashion transparent expertise in sustainable resource practices.

Potential Projects

- Develop demonstration projects that focus on sustainable production forestry, agriculture, and fishing to show how to reduce economic, environmental and social costs while increasing benefits.
- Work with Colleges of Business and Engineering to create “business effective” sustainable production practices.
- Use existing funds, resources, and relationships in the Colleges of Agricultural Sciences and Forestry to re-orient (both internally and externally) thinking about natural resource production.
- Focus Research Office funds on developing expertise in “green” infrastructure, transportation, and building as well as in sustainable agriculture and forestry. This may include faculty and department incentives to develop new courses, write interdisciplinary proposals, or form cross-disciplinary development teams.
- Make sure that existing and emerging expertise at OSU regarding sustainable natural resource production is visible to constituents, funders, and students. Oregon Invests! serves as an example of one way to compile information about sustainability expertise.

D. Sustainable Operations - Summary

Commitment to sustainability – at both the individual and organizational level – is increasing throughout the various operations organizations at OSU. Campus planning addresses sprawl and growth patterns, the fleet of hybrid and flex-fuel vehicles in the Motor Pool is growing, new construction and large remodel projects now meet or exceed environmental standards, and a proposed heat plant will in part use methane generated on campus to power and heat campus. Improvements to existing infrastructure are also being made. Shop workers are exploring less expensive and polluting paint and painting systems, grounds keepers are installing lower impact landscaping, biodiesel is run in two major campus vehicles, and safety is ensured through well-run ergonomics and asbestos programs. Outreach and services to campus have also improved. Recycled paper is now standard at Printing and Mailing, which sells recycled paper to other campus units for the same price as cheap non-recycled paper. In addition, the Recycling Program, working with student leadership, has created a post-consumer food waste composting program.

While State government is supportive of the concept of sustainable practices, sometimes State regulations can be obstacles to implementing new practices. Occupant changes to state buildings, distributed decision-making, and decentralized purchasing, shipping and receiving all limit the ability of operations groups to ensure choices that make OSU more sustainable. Other concerns include market fluctuation, product availability, pricing, product information and quality of building materials. Although belief that sustainable actions are the most expensive choices is slowly changing, it is still prevalent and often routes decision making toward the status quo. Although we strive to be a leader in sustainable practices, it’s important to acknowledge that competition from outsourcing (e.g., hiring off-campus paint contractors) can be a factor if internal limits are too aggressive.

There are some unique opportunities for OSU operations to pursue in creating a sustainable campus including partnerships with academic programs and student groups. The lack of

resources for updating the aging and diverse campus plant may be offset by working with students and instructors who can provide appropriate expertise and/or learning opportunities that can lead to an increase in resources from foundations and individual or corporate donors. For example, with the new roofing project at the Memorial Union, a grant could be pursued to build an “eco-roof” that the student-led Organic Grower’s Club could use to provide vegetables to Pangea restaurant, another student operated initiative. Students would gain experience in multiple disciplines while the university can make its needed improvements.

Potential Projects

- Energy reduction is an area where OSU can use the campus intellectual and physical infrastructure as an example of how to improve sustainable practices. This process would engage students, courses, and faculty in the establishment of energy efficiency targets, a plan of action, and a monitoring strategy that will be conducive to innovation and accountability. This applied process should be integrated with the ongoing research in this area with a goal of making OSU energy-sustainable within a targeted number of years (e.g., 25). Energy-sustainable means OSU will have aligned usage and supply so that campus activity does not contribute to global warming or depletion of finite resources.
- While recently completed projects embody best practices, there may still be innovation potential in our standard operating procedures. To move forward, it will be critical to document what works and what doesn’t at OSU as future improvements are planned. Pre-design processes, for example, should incorporate wide-ranging consideration of environmental and social impacts along with sustainable design. In order to increase our expertise, sustainable design of OSU facilities should be closely coupled with research and teaching to provide not just sustainable buildings but to equip future generations with knowledge of sustainable practices.
- Pursue development of a “green purchasing consortia” with the Oregon University System to address some aspects of purchasing and inventory control. This could include green building materials, verification of any sustainability criteria attached to specific products, and support for local suppliers and growers.
- Each area where OSU desires sustainable practices must have a process for the evaluation and commitment of resources required to satisfy this outcome. Key provisions could include financial budgeting with >20 yr horizons; regular energy audits and targets for efficiency; coordination of units sharing responsibility for core mission elements (teaching, research, extension) to identify connections and procedures for the maintenance of institutional capabilities; and human environment audits to assure healthy environments upon which will follow a healthy institution. Setting objectives and tracking progress towards sustainability goals will help OSU create a targeted message about sustainability on campus.

III. Tracking and promoting sustainability

During the SWOT meetings we heard about many sustainability efforts, activities, and practices across campus. Most of us are impressed with how much is actually going on, although we also heard that it is difficult to find information about sustainability activities

at OSU. Currently, there are multiple individuals and organizations – both official and *ad hoc* - tracking and promoting sustainability at the institutional level. There are also specific sustainability efforts that are promoted at the unit level (e.g., Colleges of Agricultural Sciences, Business, Engineering, Forestry, and Health and Human Sciences) and project level (e.g., biofuels, Sustainable Communities, Sustainable Natural Resources Graduate Certificate Program). However, there is no single, comprehensive way to easily find information about sustainability at OSU. Currently sustainability information is provided through six different organizations described below.

A. *Center for Water and Environmental Sustainability (CWEST)*

Web page: contains basic information about sustainability at OSU, numerous links to on and off campus efforts, a sustainability calendar updated regularly, and a nascent inventory of activities started by a now defunct faculty sustainability group. For more information:

<http://cwest.oregonstate.edu/sustain/index.htm>

Newsletter: regular newsletter highlighting sustainability efforts by OSU campus community. For more information:

<http://cwest.oregonstate.edu/OSUsustainability/newsletter/index.htm>

B. *Institute for Natural Resources (INR)*

Created by the Oregon Legislature in the Sustainability Act of 2001, the INR Director works with the Oregon University System and the Chancellor's Office to represent OSU in the development of state-wide sustainability efforts. For more information:

<http://inr.oregonstate.edu/index.html>

B. *OSU Operations*

Sustainability Coordinator: Part time (.25 FTE) position funded by Director of Facilities to assist in sustainability project implementation.

Web page: Compiled by Sustainability Coordinator, focus on sustainable operations although information does overlap with information on CWEST web page. For more information: <http://oregonstate.edu/sustainability/index.html>

C. *Sustainability Group*

Coordinated by Linda Hunn on her own time, the Sustainability Group meets regularly to talk about on and off-campus sustainability projects. In addition, Linda prepares a regular *newsletter* describing sustainability efforts both on and off campus that may be of interest to OSU community. Calendar over-lap with CWEST web page and newsletter.

D. *Sustainability Council*

The Council was created by the Provost in late 2004 to develop strategic directions for sustainability at OSU. Currently, the Council is developing recommendations for future activities.

E. Oregon University System Sustainability Plan

The OUS Plan provides a limited framework in which to coordinate with other campuses. An OUS sustainability coordinators network for sharing general information and best practices will soon be initialized. The OUS sustainability coordinator has contracted with Good Company of Eugene to provide reports on campus sustainability governance structures and campus emissions. The Plan also serves as a checkpoint for the Oregon Sustainability Board.

<http://www.sustainableoregon.net/oregon/index.cfm>

As described in Table 1 below, there is considerable overlap in the multiple functions served by these various efforts. All groups consider communicating and raising visibility for sustainability at OSU as part of their mission. CWEST, INR, and Operations have all devoted resources (people and money) to making the communication happen. While it is critical that raising visibility be the responsibility of many parties, it should not be difficult for someone to find a point of entry for information about sustainability at OSU.

	CWEST ¹	INR	Facilities & Operations	Sustainability Group	Sustainability Council
Compiling Information	X		X		X
Internal Communication	X		X	X	X
External Communication	X	X	X	X	
Contact with OUS		X	X		
Prioritizing and Recommending Projects		X	X		X
Raising Visibility	X	X	X	X	X

Table 1: Responsibility for Tracking and Promoting Sustainability at OSU

In an analysis of “sustainability star” institutions² conducted during spring 2004, OSU graduate students found that these universities had several practices in common: they all have a standing committee like the Sustainability Council, a sustainability strategic plan with objectives and performance measures, and a sustainability center located in its own green building. In sum, these universities have a coordinated and visible presence on their campuses. As shown in Table 1, there is no single organization at OSU responsible for setting sustainability goals, compiling information, making recommendations for improvements, or reporting on a regular basis. Resources are currently not available to ensure that these efforts are completed on a comprehensive or timely basis.

Many institutions find a sustainability coordinator position valuable in organizing and expanding sustainability-related activities and as a single, initial point of contact for

¹ CWEST will be transitioning to the Institute for Water and Watersheds (IWW) during the next six months. Most of its sustainability responsibilities will be transferred to the Institute for Natural Resources, including the web site and newsletter.

² Star institutions included Ball State University, Oberlin College, Pennsylvania State University, and the University of South Carolina.

external requests and internal communication. This decreases response time and minimizes workload for Sustainability Council members.

Recommendation:

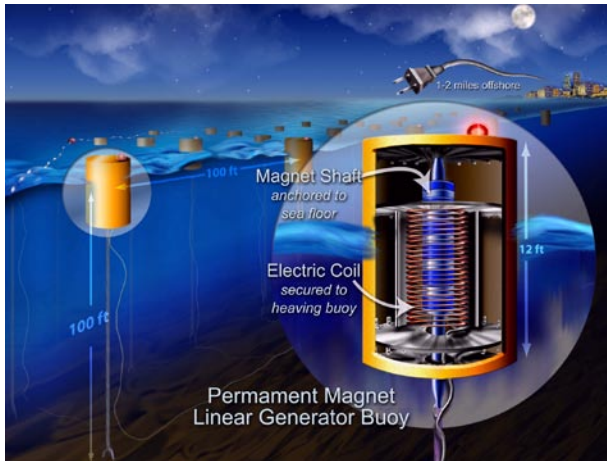
Based on our findings of the myriad sustainability activities currently pursued by OSU students, faculty, and staff, the lack of coordination, and the duplication of effort in making sustainability visible, the Sustainability Council recommends that a full time Sustainability Coordinator position be created. This position would be co-funded by Facilities and Operations and the Provost's Office in order to capture the synergy of mission and operations activities that will be the hallmark of successful implementation of sustainability activities on campus. The Sustainability Council would act as the Advisory Board to the Sustainability Council, who would report to the Provost or his appointee. The Sustainability Coordinator would be responsible for developing a Sustainability Plan that includes specific goals and objective, implementing specific projects like those identified in this report, and collecting information about progress towards goals. The Coordinator would also be responsible for increasing the visibility of sustainability at OSU, maintaining the web page and publishing a periodic newsletter, and serving as the point of contact for both internal and external questions about sustainability at OSU.

In addition, the Sustainability Council recommends creating two annual Provost's Sustainability Awards to recognize the services and innovation of (1) faculty and staff and (2) students.

Appendix A: OSU Sustainability Council Members

Gail Achterman, Institute of Natural Resources
Carol Caughey, Design/Human Environment
Robert Collier, COAS
Steve Cook, Geosciences (resigned)
Kristen Downey, ASOSU
Jesse Ford, Fisheries and Wildlife
Denise Lach, Sociology (Co-Chair)
Jim Lloyd, Facilities Services
Bill Lunch, Political Science
Mark Pagell, Management
Steve Radosevich, Forest Science
John Selker, Bioengineering
Brandon Trelstad, Government Relations
Anthony Veltri, Public Health
Ken Williamson, Civil, Construction, and Environmental Engineering (Co-Chair)

Appendix B: Sustainability Success Stories



Conceptual Vision of Oregon State University Wave Park

College of Engineering O. H. Hinsdale Wave Lab

It is estimated that if only 0.2% of the ocean's untapped energy could be harnessed, it could provide enough power for the entire world. Research shows that the Oregon coastline presents some of the richest ocean wave energy potential in the world. Ground breaking research on efficient wave energy extraction devices is being conducted at OSU in the following facilities::

- The nation's highest power university-based energy systems laboratory with 750kVA dedicated power supply fully capable of regenerating energy back onto the power grid
- The O.H. Hinsdale Wave Research Lab with world class wave tank facilities

The potential for wave energy along Oregon's coastline in combination with the faculty leadership and excellent facilities puts OSU in the position of forming a U.S. Energy Research and Demonstration Center in Oregon. The Research Center would be located at OSU coupled with a demonstration site off Reedsport, Oregon, creating jobs and bringing research jobs to both cities. Reedsport has been identified as an optimal location for wave energy extraction due to the nature and magnitude of the wave energy source as well as coastline geometrics and access to an existing electrical grid. A preliminary estimate suggests that an 800 by 500 foot offshore wave "park" would contain 40 floating buoys and power approximately 7000 homes.

For more information:

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College of Engineering

More than 40 engineering, liberal arts, and science undergraduates and high school students are working with Dr. David Hacklemen of the Chemical Engineering Department on an EPA sponsored research project to ***develop biodiesel processor technology and operate an on-campus pilot-scale facility.***

- They completed the construction of a student-designed, pilot scale processing facility in March 2005
- They have demonstrated the use of biodiesel fuel use in multiple engine formats including a stationary vertical test engine and a Volkswagen diesel engine
- They began providing fuel for campus vehicles – the three OSU courtesy shuttles used by students, faculty, and community members

The Student Biodiesel Team will be competing in Washington, D.C. in the EPA P3 competition, which brings together 66 teams from around the country to exhibit their designs for sustainability. Participating in the P3 program – People, Prosperity, and Planet – allows OSU students to research, develop, and design scientific and policy solutions to sustainability challenges. The National Academies of Science has convened the panel of judges to review the projects in May 2005.

In the meantime, students are making presentations and demonstrations of their project:

- Earth day fairs in 2004 and 2005
- House committees
- Legislators and citizens at the Biofuels day at the State Capitol
- Stories in local and regional papers



College of Business

The mission of the College of Business at OSS is to educate current and future students for success in managing and developing sustainable enterprises.

2300 undergraduates take classes in the College of Business every term. 65% of the core curriculum includes sustainability ideas in a meaningful way. The College is actively working to include information, practices, and experience in sustainability in 100% of its undergraduate curriculum.

Examples of what undergraduate students in the College of Business are learning in their core classes:

- Triple bottom line costing and reporting in introductory accounting classes
- How environmental regulations affect real organizations in business law classes
- Waste reduction and pollution prevention best practices in operations management classes
- How equity and diversity affect business in organizational behavior classes
- A capstone project that asks students to consider sustainability in their analysis
- Is Sustainability Good Business? A 10-week seminar series for students, faculty, and community members.
- Intergenerational Commerce: a “New Ideas” seminar to introduce students and faculty to innovative thinking.

Agricultural Experiment Station

Playing with Food: What do you get when you cross an egg white with a crabshell? You get a thin film, sort of like Saran Wrap, that prevents food from spoiling and can be eaten along with the food that it wraps. It can even be fortified with vitamins and minerals so the food and the film together make a more nutritious fare.



Su-il Park peers through the super food wrap he helped develop at OSU's Food Science and Technology Department.
Photo: Lynn Ketchum

This super packaging is the latest technology to come out of Oregon State University's Department of Food Science and Technology. The film combines two key ingredients: a fiber from shellfish (chitosan) and a protein from egg whites (lysozyme). Because it is made entirely from food products, the wrap is edible. It's so thin that it doesn't interfere with the texture of the food it covers. And it is made from powerful natural antimicrobials, so it keeps fresh food from spoiling.

Rural Science Education Program: OSU graduate and undergraduate students in OSU's Rural Science Education Program bring cutting-edge science to six middle- and high-school schools in rural Oregon. Rural communities that may have only one science teacher in the entire school now have access to sophisticated lessons in genetics and bio-technology. Classrooms are energized and students are inspired by the creative fellows in this outreach program.

Supporting Oregon's Wine Industry

- **Sustainable wine grape production:** OSU viticulturists are helping Oregon's \$33 million wine-grape industry develop integrated production systems with far less environmental impact. New research helps growers meet certification standards of sustainable production and open new marketing possibilities.
- **New products from waste products:** OSU microbiologist Mark Daeschel has developed a new antimicrobial disinfectant that is made from left-over wine, a new use for a waste-product that was once dumped down the drain in huge quantities. Environmental regulations no longer allow waste wine to be dumped, so vintners are interested in turning their sour grapes into a hot commodity.

OSU Paint Shop

With financial support from industry partner Miller Paint Company, the OSU Paint Shop and Oregon Natural Step Network recently completed long-term planning and are taking short-term actions to reduce the environmental impact of the shop. The Paint Shop had already taken many steps to reduce its impact but found The Natural Step (TNS) provided an overall framework and cohesion for moving even more quickly toward true sustainability.

The Shop crew began by identifying violations of the TNS System Conditions and created a “ranking” of violations. The “low hanging fruit” violations are currently being addressed or have already been changed, while one-, five-, and ten-year goals have been set to address the other violations. Actions include:

- Creating a color selection program to minimize paint inventoried and wasted
- Setting specific electricity, water, and steam use reduction goals
- Measuring, capturing, and treating Shop wastewater
- Working with Miller Paint to create a “closed loop” paint can exchange
- Adding a recycling center in the Shop and monitoring outgoing solid waste
- Phasing out gasoline vans in favor of diesel vans running on biodiesel
- Using bicycles for on-campus errands and site visits

Knowledge about sustainability and success in implementing new practices enables the paint crew to continue identifying and proactively addressing barriers to sustainability as they arise. Painters also gained new job skills that could translate to other organizations looking for employees experienced in creating more sustainable workplaces.

For more information:

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Appendix C: OSU Sustainability Framework

The proposed framework for tracking sustainability efforts and projects at OSU is based on a flexible, network configuration and is designed to be web-based and searchable. Using information from the SWOT analysis, we selected the nine "strongest" sustainability areas identified by participants. These areas then became the main nodes in the network. The "main nodes" can change if new areas of strength emerge at OSU or there are specific initiatives that we think should be highlighted. Within each node, further specialized topics and highlight information are available, many linked directly to project websites. Specialized topics can be linked to all appropriate nodes so that a viewer doesn't have to decide whether information about "biodiesel," for example, would be listed under alternative energy, operations (as used in Campus Shuttles), or courses. Biodiesel will be linked to all these nodes.

This framework is currently designed with local pictures as background for the nodes, these can change to reflect current activities. It is only partially populated so as to make it readable on the page. While the framework should be hosted on the OSU sustainability web site, one of the primary responsibilities of the Sustainability Council will be to provide content for the framework about activities in their colleges. In addition, the Sustainability Council will assess each year whether the nodes represent our current sustainability strengths or should be changed.

Appendix C: OSU Sustainability Framework

