The University of Oregon’s Sustainable Development Plan
A sustainable endeavor which supports the mission of a research University

University of Oregon
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Designs which address environmental concerns have moved beyond the level of philosophical musings in journals and classrooms and into the reality of practice. Because universities are often the first places to explore new initiatives, university campuses are being asked to incorporate environmentally sustainable ideas into the methodologies employed for their development. On campuses, such ideas present a progressive image, can unify faculty, students and staff around a common goal, and often result in operational savings.

The University of Oregon’s Campus Planning Committee requested that the University, through its president, charge them with creating a process that allows the university to become “…a world leader in creating and maintaining an environmentally sustainable institution. The University should set examples in the design, construction, and operation of the campus, the management of its fiscal and human resources, and the actions of its faculty, staff, and students.”

The Sustainable Development Plan was developed by the University’s Campus Planning Committee and its Planning Office staff over the course of two academic years (1998-1999 and 1999-2000). The plan is a 24-page document utilizing the principals set forth by Christopher Alexander’s book (The Oregon Experiment) and codified by the 1991 Long Range Campus Development Plan which call for the direct involvement of the users and the use of a shared language in the development of planning practices.

The result is a bottom-up, process-based plan containing one primary pattern and 13 secondary patterns dictating a realistically achievable implementation of sustainable development practices on the campus.

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Fun facts about sustainability

• More than 60% of all electricity and more than 30% of all energy consumed in the United States are used in buildings.
• More than 35% of all municipal solid waste comes from building construction and operations. Current construction practices create 2 to 2-1/2 pounds of solid waste per square foot.
• Buildings consume 40% of raw stone, gravel and sand, and 25% of virgin wood used each year.
• 25% of all treated water is used in buildings.
• Recent studies show that making a building environmentally responsive can increase worker productivity by 6% to 15% or more.
• Recycling demolition materials can substantially reduce the amount of solid waste produced and lower landfill fees.
• Building restoration, historic preservation, renovation, and adaptive re-use offer the greatest opportunities for conservation of embodied energy - the amount of energy required to produce, transport, construct, install, maintain, and dispose of a material - in a building.
• Reducing water usage and increasing on-site storm water drainage preserve water quality and lower operating costs.

Data from: The U.S. Green Building Council and The Ecology of Architecture by Laura Zelier, 1996, which includes statistics from the Rocky Mountain Institute’s Primer on Sustainable Building.
The Story

The initiative for developing a program for sustainable campus development began during a Campus Planning Committee review of a project when a member asked a simple question: “Why can’t that huge roof be used as a solar collector?” The ensuing discussion, with staff encouragement, grew to include concerns that the committee, and by extension the University, should be doing more to promote sustainable practices in design. The outcome of that conversation became a memorandum from the chair of the committee to the University’s president which included the following statement:

“Future generations may well remember the late 20th and early 21st century as a period of critical, perhaps irreversible, activity that defined the environmental character of the biosphere. The State of Oregon has often been on the cutting edge of environmental policy and many university faculty are internationally known for their contributions to creating and disseminating knowledge about sustainable structures and processes.

Because of its special position within a milieu that values the environment and its concentration of intellectual resources, the university has an obligation to the people of the State to lead the way in the creation of a sustainable world.”

In accepting the committee’s call for action the Vice President for Administration charged the committee as follows:

“As the committee goes about its work, it needs to keep in mind that such efforts must fit into the existing context of the university. The creation of new policies must support the institution’s missions in teaching, research, and service to the State of Oregon. Furthermore, new policies should fit into the existing framework of policies and patterns of the Long Range Campus Development Plan. Also, it is important to remember that proposed actions should be attainable with the limited staff time and resources currently available.

Therefore, the university may be able to adopt more rigorous policies (as guidelines) as recommended in the Environmental Policy Position Paper, but it may not be able to fully attain the stated goals of ‘requiring’ state-of-the-art sustainable structures and processes and measurable goals.”

One of the goals of the committee in creating the plan was to have measurable standards by which the sustainability of proposed developments could be judged. The committee settled on the LEED Green Building Rating System as the basis for measurement. The plan recognizes that the system is imperfect with regard to the unique aspects of campus buildings, but utilizes the system as the benchmark for measurement.
A Summary of the Plan

In keeping with the principles of the Long Range Campus Development Plan, the document is organized around 13 patterns of sustainable practice identified by the committee. The patterns are arranged into seven categories.

Each pattern is followed in the plan by a series of approaches or examples of how the pattern might be applied in the development of the campus.

Planning and Design Process:

- **Performance Standards**
  Sustainable principles must be measured and enforced by a defined set of standards to ensure effective implementation.

  Therefore: All new construction projects that are required to comply with the State Energy Efficiency Design (SEED) program shall be rated according to the current LEED Green Building Rating System. These projects shall achieve the equivalence of the base level of LEED certification (and strive for a higher level) unless there is a compelling reason why this is not possible.

- **Project Management**
  Effective sustainable development begins when the project is conceived. Management of the project design and construction process will affect the overall success of sustainable development.

  Therefore: Integrate sustainable practices into the entire design and construction process.

- **Living Design**
  The people who occupy, operate, and maintain the completed building/site will determine whether sustainable principles embodied in the building/site design are successful over time.

  Therefore: Design the building/site to encourage the people who occupy, operate, and maintain the building/site to practice environmentally sustainable methods.

User involvement in the development process allows individuals to inject their own values (including concepts of sustainable growth) into the decision-making process.

Keeping it simple avoids complicated high cost systems that are difficult to operate, maintain, and repair.
• **Connection to the Environment**
When people feel connected to and are knowledgeable about their environment, they will take better care of it. The university provides an ideal setting for sharing this knowledge.

Therefore: The campus development process and resulting designs/policies will provide opportunities to educate people about the university’s cultural and environmental features.

**Land Use/Transportation:**

• **Use What We Have Wisely**
New construction uses up limited land and valuable natural resources on and off campus. In addition, green open spaces, landscape features, and historic resources help define the university’s cultural character and are vital to providing a stimulating intellectual environment.

Therefore: All new campus growth should promote efficient development and, whenever beneficial, make use of existing facilities to preserve valuable open space and historic resources.

• **Carless Commuting**
Even the most energy efficient, state-of-the-art green campus will carry a significant environmental burden if people get in their cars each day to get to campus. If ways can be found to make it easier and cheaper to get around without a car, people will leave their cars at home.

Therefore: The university will provide incentives for walking, bicycling, busing, and ride sharing, will discourage the use of single-occupancy cars, and will strive to link transportation planning to land-use planning.
Sites/Landscaping:

- **Site Benefits**
  Every site is unique and has local environmental qualities which can be used to enhance the sustainability of development.

  Therefore: All new development will site and orient the building and landscape features to take advantage of site conditions and context within the parameters of the established organizational framework of the campus.

- **Healthy Ecosystems**
  Ecologically healthy landscapes are essential to long term maintenance of local ecosystems and biodiversity. Each site consists of interconnected living systems, all linked to the environment beyond the site’s boundaries.

  Therefore: All development will protect the existing ecosystems to the greatest extent possible.

- **Campus Trees**
  The university’s trees provide significant defining features on campus and are vital components of the local ecosystems.

  Therefore: Development will preserve and protect existing trees to the maximum extent possible and plan for continued enhancement of the campus’ forest.
Water:

- **Water**
  Oregon’s water is one of the state’s most precious resources. Every building site is in a watershed connected to waterways and wetlands.

Therefore: All development will protect and augment natural drainage, and treat storm water runoff on site to the maximum extent possible.

Energy:

- **Save Energy**
  The ongoing energy use is probably the single greatest environmental impact of a building. Decisions made during the design and construction of a building will affect the environmental performance of that building for decades to come through its energy consumption.

Therefore: Retrofitting existing buildings and designing new buildings for low energy use shall be a priority. Designs will maximize use of passive systems and take advantage of the interactions between separate building elements, such as windows, lighting, and mechanical systems.

Materials and Resources:

- **Life Cycle Costs**
  Most of the environmental impacts associated with construction materials have already occurred by the time the materials are installed. The longer a building or constructed landscape and associated materials last, the longer the environmental impacts from the building can be amortized.

Therefore: Consider the full range of life cycle costs for materials (source extraction, manufacturing, and shipping) and in the building/site design. Maximize longevity and reduce material use, reuse, and recycle (in that order of priority) to the greatest extent possible.
Indoor Environmental Quality:

- **Local Occupancy Control**
  Every building serves a different purpose and every occupant has a different comfort level. Often users are willing to accommodate a greater range of interior temperature, thus reducing demand on the HVAC system, if they have some degree of local control. Also, comfortable spaces increase occupant productivity.

Therefore: Design systems to accommodate the intended occupancy use patterns. Maximize the flexibility and control of the occupant’s local environment (i.e. office) to the greatest degree possible so the efficiency of the entire system is not taxed by or superseded by differing individual needs.
Lessons Learned

Leadership: It is hard to be a knowledgeable design professional these days without being interested in sustainable design issues. However, this personal interest needs to be tempered by recognizing when the rest of the campus is ready to follow the lead of the campus architect on new initiatives. In this instance my interest in sustainable design goes back several years before the committee expressed an interest. By being patient and supporting their interest when it arrived, I was able to create a climate where the initiative for change came from the community itself and not from the administration.

Breadth of sustainable practices: What one quickly finds when studying sustainability is that almost all parts of an organization need to be included if the organization itself is to become sustainable. For facilities alone, operations and maintenance over the life of a building can be more important than the initial design. It has been important to continuously remind the committee of its scope of influence. In the end the committee urged the university president to create a centralized “sustainability czar” who would advocate for sustainable practices across campus.

Knowledge of the mission: The committee also needed to be reminded that whatever guidelines they adopted would not be effective if they threatened the ability of the university to carry out its mission. For example, the desire to become a national leader in sustainable development could not impede the desire to develop the nation’s leading research programs.

Measuring success: A rational way to measure the sustainability of a proposed design was identified early as a necessary tool for the committee and the design professional alike. Unfortunately, and in spite of significant research efforts by our staff, we were unable to find good models to follow. The LEED System was not developed with the campus in mind, but for now, it is the best benchmark for us.