Sustainability Initiatives on Campuses

Brown is Green

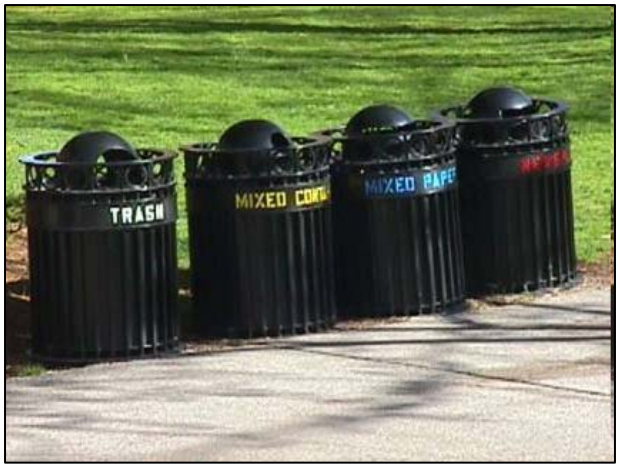
Brown University

Green Campus Initiative

Harvard University

Blueprint for a Sustainable Campus/UC Green Building Policy

University of California at Santa Cruz



Outdoor Recycling Stations at Brown University, a project begun by students and refined by Facilities Management.

W. Duncan Macmillan Hall at Brown University, One of the most recent Green Building Projects on the Brown campus.

Brown is Green

Brown University

"Brown Is Green (BIG) is an environmental education and advocacy initiative established at Brown University in 1990 that links student research and education efforts with administrative offices, to implement programs that reduce the environmental impacts of operations. "

- To expand the involvement of undergraduates in the research and analysis of environmental problems related to University operations and provide a model for active learning that can be replicated nationally.

- Environmentally responsible design has the objective of designing, constructing and retrofitting buildings to minimize the environmental impacts of the construction process and over the life of the building.. Measures include reducing the energy load of the heating, cooling and lighting systems, as well as substituting non-toxic, renewable or recycled-content materials

- Primary Elements of Brown is Green
  - Building Design
  - Resource Recovery
  - Energy Efficiency
  - Water Conservation
  - Transportation
  - Land & Food
  - IEQ and Health
  - ES41 Course

Website: http://www.brown.edu/Departments/Brown_Is_Green/

Green Campus Initiative

Harvard University

The University is committed to developing and maintaining an environment that enhances human health and fosters a transition toward sustainability. Sustainability should be advanced through research, analysis, and experience gained over time. To that end, Harvard University is committed to continuous improvement in:

Six Sustainability Principles

- Demonstrating institutional practices that promote sustainability, including measures to increase efficiency and use of renewable resources, and to decrease production of waste and hazardous materials, both in Harvard's own operations and in those of its suppliers.

- Promoting health, productivity and safety of the University community through design and maintenance of the built environment.

- Enhancing the health of campus ecosystems and increasing the diversity of native species.

- Developing planning tools to enable comparative analysis of sustainability implications and to support long-term economic, environmental and socially responsible decision-making.

- Encouraging environmental inquiry and institutional learning throughout the University community.

- Establishing indicators for sustainability that will enable monitoring reporting and continuous improvement.

Website: http://www.greencampus.harvard.edu/

Blueprint for a Sustainable Campus/ UC Green Building Initiative

UC at Santa Cruz

- **"The Blueprint for Sustainable Campus is a living document that describes UC – Santa Cruz's commitments and plans for improving the sustainability of our campus community. The collaborative nature of the Blueprint allows for a systems approach to thoughtful, responsible planning, ensuring that we have a fertile, vibrant world for generations to come, beginning with the University of California at Santa Cruz."**

- **"The University of California is committed to reducing environmental consequences when designed and constructing new buildings and renewing existing structures. As efficient energy is a central element of sustainability, it is expected that implementation of this policy will also provide a means to help stabilize this portion of campus budgets."**

  - Policy on Green Building Design and Clean Energy Standards
  - This policy derives from the July 1, 2003 Regents' approval of the recommendation of the Committee on Ground and Buildings to authorize the President:
    - To adopt as University policy for all capital projects the principles of energy efficiency and sustainability within budgetary constraints and regulatory and programmatic requirements;
    - To implement programs to reduce consumption of non-renewable energy by creating a portfolio approach to energy use, including energy efficiency, local renewable power and green power purchase from the grid, with the intent of minimizing increased use of non-renewable energy for the University's built environment during this next decade of growth

Websites: http://www.ucop.edu/facil/greenbldgs/
http://www.ucscsec.org/about.html

Origins

Brown University

Faculty and Students

- Environmental Studies program grows substantially in the 1970s and 80s.
- 1990 - Faculty at the Center for Environmental Studies push for program that investigates opportunities for reducing environmental impacts on campus.
- Program created in response to rising energy costs, concerns over low participation in the campus recycling program, and a perception of wasteful behavior on campus.
- 1st student project consists of retrofitting all lighting fixtures in four dormitories. This qualified the University for more than $100,000 in rebates from the local power company, which covered the costs of the switch.
- More resource-saving ideas developed by students. President appoints Brown is Green committee to look into opportunities. The committee is chaired by the Provost.
- The committee develops a number of policies aimed at increasing the resource efficiency on campus. The success of the committee moves control of BIG program away from Academic side and into Administration/Facilities.
- Establishment of staff positions to research and implement program goals. Originally planning called for an Environmental Coordinator, an academic position, and an Environmental Engineer, under Facilities Management.
- As most of the resource conservation and efficiency measures related to utilities and construction projects, the position was shifted to a single position – Resource Efficiency Manager and Adjunct Lecturer. This position reports to the Vice President of Facilities Management.

Origins

Harvard University

Intra-Campus Efforts

- 1999 – Interfaculty Group of faculty, staff and students meet to discuss campus sustainability. Many ideas presented, but unable to move forward due to lack of funds and staff.
- Group views presentation of an overview of the campus sustainability efforts at the University of New South Wales. Underlying success relying upon successful fund-raising efforts, engagement of entire campus community, and establishment of 10 person staff.
- Co-Chairs of Interfaculty group and Director of EH&S recruit director of Australian program to establish a program at Harvard. They secure a one-year grant for her employment.
- New Sustainability Director works to publish strategic plan for Harvard University to green the campus. Harvard Green Initiative born.
- Funding secured in 2001 for five years at $150,000 a year plus $3M Campus Loan Fund with 5 full-time staff, 4 half-time staff, 2 interns and 17 part-time students.

Origins

UC at Santa Cruz

Student Grass Roots

- 2001 – Students form Student Environmental Center (SEC) to organize student involvement in collaboration with the University, to implement environmentally sound practices on campus.
- 2003 – SEC instrumental in the passage of Ballot Measure 9 (Campus Sustainability Programs Fee), which created the Campus Sustainability Council which would be funded by a $3 undergraduate fee.
- Established the *Blueprint for a Sustainable Campus* – modeled on CU Boulder's *Blueprint for a Green Campus*. The Blueprint is a collaborative document that allows for a systems approach to responsible environmental and sustainable planning. The Blueprint is updated annually.

University of California

- Student led movement across University of California system leads UC Regents to establish Green Building Policy and Sustainability Policies.
- 2003 – UC Regents approve recommendations, including to adopt as University policy for all capital projects the principles of energy efficiency and sustainability within budgetary constraints
- All state funded projects beginning after June, 2006 have to achieve LEED or LEED equivalent status. Due to budget shortfalls in the State of California, this is in reality an "unfunded mandate"

Key Elements- Cost Reduction

Brown University

- Building Design
  - Creation of Sustainable Design Standards and Guidelines that are implemented consistently across projects.
  - LEED
    - Used as guidelines for building projects, but not strictly. Projects implemented with LEEDS goals in mind, but if project meets sustainable resource goals without meeting LEEDS standards, this is acceptable.
- Resource Recovery
  - Department of Facilities Management operates a recycling program that encompasses 86 office buildings, 41 dormitories and 70 rental properties.
  - Origins of program in 1984 provided the background for the design of the first statewide mandatory recycling program in the country.
- Energy Efficiency
  - Initiative to reduce emissions related to electrical and mechanical energy use on campus. Every major new building project on campus targets 20% – 30% lower energy emissions than base code requires.
- Transportation
  - Facilities Management works closely with the Campus Transportation Office to implement employee trip reduction programs to facilitate ridesharing
  - Center for Environmental Studies uses dedicated compressed natural gas van for field studies. Facilities Management uses a small fleet of electric vehicles along with biodiesel fuel in its diesel truck.

Key Elements – Participation & Service

Harvard University

- **Sustainable Buildings Program**
  - Green Initiative has worked closely with HRES for 3 years on a range of projects that include Green Buildings, Environmental Procurement Trials, Building Upgrades, and Case Studies in an efforts to address sustainability in campus development.
- **Best Practices Exchange**
  - Hosts forums for bringing university professionals together to learn about best practice in campus sustainability
- **Clean & Renewable Energy**
  - Commitment to reduce greenhouse gas emissions by researching a switch to clean and renewable energy sources.
- **FAS – Computer Energy Reduction Program**
  - Program to save energy by convincing 10,000 computer users to shut down computers when not in use, and to activate sleep software for monitors.
- **FAS – Resource Efficiency Program**
  - Program of peer to peer education for undergraduates concerning a range of campus sustainability initiatives such as water and paper conservation and minimization of food waste.
- **Green Campus Loan Fund**
  - An interest free revolving five-year loan fund made available to any project on campus that demonstrably reduces the environmental impact on campus.
- **Greenhouse Gas Inventory**
  - The first ever Greenhouse Gas Inventory for the Cambridge, Allston and Longwood Campuses will evolve into annual inventories to assess greenhouse gases on campus.
- **High Performance Building Service**
  - Provision of a service that analyzes existing buildings for improvements they can make towards reducing their environmental impact.

Key Elements – Education & Compliance

UC at Santa Cruz

Student Environmental Center

- Example of 2004 Action Items in the *Blueprint for a Sustainable Campus*.
  - Campus Food Systems
  - Transportation
  - Long range Planning
  - Curriculum
  - Waste Prevention
  - Green Purchasing
  - Green Building and Renewable Energy
  - Campus Ecosystem Preservation
- Campus Earth Summit
- Annual Sustainability Conference

Facilities Department

- Goals for all projects after start of FY 2004-05
  - Outperform required provisions of the California Energy Code's energy-efficiency standards by at least 20%
  - Incorporate the mandatory measures of the Development of Campus Baseline UCGBG Scoresheet
  - Achieve the equivalent of a LEED 2.1 "Certified" rating

Participatory Process

- Brown
  - Faculty and Students in the Center for Environmental Studies heavily involved in Brown is Green, but limited involvement from the rest of campus.
  - Top - Down Philosophy. As long as Administration and Facilities staff knowledgeable of sustainable goals and implementation process, the rest of campus can follow.
  - Has not yet developed a successful practice of involving students in sustainable design and planning efforts.
- Harvard
  - Extensive programs to involve as many students, faculty and staff into sustainable movement.
    - Resource Efficiency Program employs students to engage in peer-to-peer training and education.
    - Numerous Steering and Advisory Groups bring together hundreds of faculty, staff and students to provide input to the Green Campus Initiative.
- Santa Cruz
  - Best example of campus participation. Student Environmental Center establishes Campus Sustainability Council and later, the Blueprint for a Sustainable Campus.
  - Large Faculty, Staff and Student input into campus planning processes, including the Long Range Development Plan.

Organizational Structure

- Brown
  - Primary Staff: Resource Efficiency Manager and Adjunct Lecturer.
    - Reports to Vice President for Facilities
  - Other Staff: Facilities Management, Student Interns
- Harvard
  - Primary Staff: Director of Green Campus Initiative. Co-Chairs are Professor of Environmental Health and Human Habitation and the Associate Vice President for Facilities and Environmental Services.
  - Other Staff: 5 full-time, 4 half-time, 2 student interns and 17 part-time students.
- UC at Santa Cruz
  - Student Environmental Center run by Board of Advisors that include members of the faculty, staff, students and community members that provides assistance to the Steering Committee, also made up of faculty, staff and students.
  - No specific point person with the Facilities Department. Director of Design and Construction and Director of Planning work together to implement guidelines in design and planning.

Implementation

Brown University

Center for Environmental Studies

- Student projects serve as the base of research for moving specific conservation proposals toward implementation. Economic feasibility is a critical component of the analysis. Student interns address a specific type of resource consumption, identify how individual choices and behavior affect the aggregate impact of the University community, and attempt to encourage more responsible behavior.
  - Projects include energy conservation and pollution reduction through: reduction in electrical consumption associated with lighting, reduction in water consumption and septic disposal, and solid waste reduction through source reduction, recycling and reuse strategies.

Facilities Department

- Resource Efficiency Manager works under Director of Facilities to implement design and planning goals.
  - Produces documents for consultants outlining Brown sustainability requirements for building and planning projects
  - Action Plan of the Physical Planning Framework will eventually be produced to better communicate to the campus community and consultants the University's goals for sustainable practices.
- See handout on W. Duncan Macmillan Hall

Implementation

Harvard University

Implementation Framework

- **Capital Planning and Construction –**
  - The University's capital planning and approvals process for new construction and major renovation of existing campus facilities will be expanded to incorporate the Sustainability Principles in its review.
  - Each school and administrative department proposing a capital project will be required to establish specific objectives consistent with the Principles as part of the formal approval process for capital projects, as is done currently for numerous other priority financial, technical and regulatory issues.

- **Annual Financial and Budget Planning –**
  - Each School and Department will be requested to set specific goals and to report on how expenditures for facilities, support services, procurement and other activities are consistent with the University's commitment to continuous improvement towards campus sustainability.

- **Supporting the Schools and Departments –**
  - The University will continue to invest in support systems for sustainability, such as the Harvard Green Campus Initiative (HGCI), to facilitate the implementation of the Sustainability Principles by providing schools and administrative departments with: a clearinghouse of proven planning tools, guidelines, preferred technologies, products and design solutions; campus specific research and innovation; cost effective financial incentives; training and expertise; assistance in meeting planning and reporting requirements; and a means of facilitating broad community engagement.

- **Broad-based Continued Review –**
  - The University will continue the work that led to the development of the Sustainability Principles by appointing a standing sustainability advisory group consisting of members of the faculty, administration and student body.
  - This group will be charged with advising in the development of sustainability indicators, monitoring progress and providing recommendations for improving the Sustainability Principles and Implementation Framework.

Implementation

UC at Santa Cruz

Implementation Process

- Each UC new building project submitted for first formal scope and budget approval after the start of FY 2004-05 shall comply with the terms of Green Building Design policy and the UC Green Building Guide
  - **Submittal and approval of project budgets**
    - The final scope of each project shall be confirmed. If a project is not projected to meet the requirements of the Green Building policy, the campus must request a waiver of the requirements of the discretionary components of this policy.
  - **Enrollment in Savings by Design**
    - All new UC building projects must be in compliance with this program, which is a new construction and renovation/remodel envery efficiency program. It is administered statewide and funded by utility customers through a surcharge applied to gas and electrical services.
  - **Submittal for Design Approval**
    - Campuss shall submit two items to the Regents' Design Review; The UC Green Building Guide score sheet identifying prerequisites and points to be incorporated into the project and the projections of energy use calculated using the Savings by Design Whole Building method.
  - **Major Capital Projects Implementation Report**
    - After Approval by Design, campuses shall continue to verify compliance annually through filing of the Notice of Completion.
- Documents used to implement sustainable practices in campus planning and development.
  - Long-Range Development Plan/Environmental Impact Review
  - Campus Building Standards
  - LEED

Measurements of Success

- Brown is Green – Brown University
  - Primarily oriented to cost reduction. All projects evaluated by present or future monetary savings.
  - Building projects also evaluated on energy efficiency
  - Center for Environmental Studies dedication to guiding research by students and faculty, as well as involving students with the Facilities side of BIG.
- Green Campus Initiative – Harvard University
  - More holistic approach. Cost Reduction and building efficiency important, but also the concept of being a "service" by lending expertise in the fields of health and productivity of the University community, development of planning tools to enhance sustainable efforts on campus and encouraging education and involvement from the entire campus community.
  - Oriented towards an approach that is always seeking and establishing new and different methods for sustainability on campus.
- Blueprint for a Sustainable Campus/UC Green Building Initiative – UC at Santa Cruz
  - Student Environment Center: Participation & Education are primary elements. The center holds the Campus Earth Summit, Sustainability Conference, and various other education seminars. Also, Action steps provided in each annual update to the Blueprint for a Sustainable Campus to measure progress.
  - Facilities/UC: Success measures focused around meeting LEED or LEED equivalent standards for new buildings on campus. With the present budget shortfalls in California, projects can be considered successful if they are close to meeting these requirements after value engineering due to constrained budgets