Real-World Solutions for a Simple, Sustainable Lifestyle
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Agenda

• Objectives
• Campus Overview
• Define Sustainability
• Establish Goals
• Process for Implementing Campus Sustainability
• Design Team Process for Identifying Sustainability
• Measure and Broadcast Results
• Case Study- Deep Green Residence Hall
Agenda

• Objectives

1. Implement a planning and design process that incorporates meaningful, broad input from campus constituents.

2. Integrate innovative sustainable design strategies that reflect institutional mission and vision throughout a facility.

3. Create living/learning environments for students that encourage personal responsibility and awareness of energy consumption.
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Berea College Founded in 1855 – First Graduating Class
Work College – Tuition Promise
$0

The amount of money 1,623 Berea College students paid for tuition.

1 in 3

The number of Berea students who graduated with $0 debt in 2013.

Of those Berea students who accrued debt, the average amount declined by $572 from the year before, to an average of $6,652 for the class of 2013.

AVERAGE DEBT AT GRADUATION

NATIONAL

$29,400 TOTAL DEBT

UP IN 2013

+$2,800

AVERAGE DEBT AT GRADUATION

BEREA

$6,652 TOTAL DEBT

DOWN IN 2013

-$572
Commitment #7 Speaks to Sustainable Living
A Culture of Sustainability and History of Firsts
Deep Green Residence Hall: LEED Platinum & Living Building Petal Recognition
Deep Green Impacts Future Efforts and Quest for Understanding

HEALTH IS A HUMAN RIGHT.
GREEN BUILDING CAN HELP.

A REPORT FROM
THE SUMMIT ON GREEN BUILDING & HUMAN HEALTH
JANUARY 2013
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Definition of Sustainability

- Environmental sustainability is the rates of renewable resource harvest, pollution creation, and non-renewable resource depletion that can be continued indefinitely. If they cannot be continued indefinitely then they are not sustainable.
Methods of Measuring of Sustainability

- LEED (Leadership in Energy and Environmental Design)
- Green Globes
- Living Building Challenge
- STARS (Sustainability Tracking, Assessment and Rating System)
LEED - www.usgbc.org

- Established by US Green Building Council (USGBC)
- Current version 4
- Certification Based on Point Structure (Certified, Silver, Gold, Platinum)
- Categories
  - Building Design + Construction
  - Interior Design + Construction
  - Building Operations and Maintenance
  - Neighborhood Development
  - Homes
LEED

• Certification Credit Categories
  • Integrated Practice (IP) 1 point
  • Location and Transportation (LT) 16 points
  • Sustainable Sites (SS) 10 points
  • Water Efficiency (WE) 11 points
  • Energy and Atmosphere (EA) 33 points
  • Materials and Resources (MR) 13 points
  • Indoor Environmental Quality (EQ) 16 points
  • Innovation (IN) 6 points
  • Regional Priority Credits (RP) 4 points

Total 110 points
Green Globes – [www.greenglobes.com](http://www.greenglobes.com)

- Established by ECD Energy and Environment Canada
- Green Building Initiative (GBI) acquired rights in US
- Modules
  - Design of New Construction or Significant Renovation
  - Commercial Interiors
  - Existing Buildings
Green Globes

- Green Globes is structured as a self-assessment. The system is questionnaire-based with pop-up tips, which show the applicable technical tables that are needed to reply to the questions.

- Point system with a total of 1,000 points
  - One Globe = 35% - 54%
  - Two Globes = 55% - 69%
  - Three Globes = 70% - 84%
  - Four Globes = 85% - 100%
Living Building Challenge- https://ilbi.org

• Administered by the International Living Future Institute

• Measured in Petals
  • Site
  • Water
  • Energy
  • Health
  • Materials
  • Equity
  • Beauty
STARS (Sustainability Tracking, Assessment & Tracking System)
https://stars.aashe.org

- Association for the Advancement of Sustainability in Higher Education
- Self-reporting framework for colleges and universities to measure sustainability
- Credits earned to achieve levels of:
  - Bronze
  - Silver
  - Gold
  - Platinum
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Establish Sustainability Goals

- Establish a Committee
  - Faculty
  - Students
  - Community Members
  - Upper Level Administration

- Conduct Surveys to Identify Goals
  - Online
  - Students and Faculty

I am personally willing to take concrete actions in my residence to be more environmentally sustainable. (scale of 1 to 5)
Establish Sustainability Goals

• Share Survey Results and Discuss Priorities
• Measuring Sustainability
  • Trial and Error (LEED, Green Globes, LBC)
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Process for Implementing Campus Sustainability

• Established a Sustainability Committee comprised of elected staff, faculty, and students; VP of Operations and Sustainability, and co-chaired by staff Sustainability Coordinator and faculty Compton Chair for Sustainability

• Utilize STARS to guide the work of the Sustainability Committee

• Measure Greenhouse Gas Emissions annually through ACUPCC Cool Planet Calculator

• The college increased number of student work positions in the Office of Sustainability from four to 12 in past two years
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Hire a Qualified Design Team

• Number of Relevant Sustainable Projects
• Team Includes:
  • Civil Engineer
  • Architects
  • Interior Designers
  • Mechanical, Electrical, Plumbing Engineers
  • Sustainability Consultant
Monitoring Sustainability through Design

- Develop Sustainability Goals for Project
- Prioritize Goals
- Each Phase of Design to have Checklist:
  - Schematic Design
  - Design Development
  - Construction Documents
  - Bidding
  - Construction
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Conceptual Design Phase

*Importance of Conceptual Design Phase to explore options, set budgets & goals and establish consensus!*

2 Full Day Charrettes with Administration, Staff, Students and Design Team.

Explore Unique Aspects of Berea College
- Student Labor Program
- Student Crafts
- History of Student Construction
- 8,000 acre Berea College Forest
- Art Department

LEED Platinum – Living Building Challenge Stretch Goal
EUI = 29kBTU/sf/yr!

Integrate Pedagogical Opportunities into the Design, Construction Process and Daily Living “Learning by Living”

Goal Setting
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Deep Green Residence Hall Statistics

• Awarded 90 of 110 points (Certified LEED Platinum)
• Sustainable Features
  • Operable Windows that shut off Mechanical System when opened
  • Geothermal Well Field
  • Photovoltaic Roof Panels
  • Locally Harvested Building Materials
  • Brick Made of 100% Recycled Material
  • Rainwater Re-use
Deep Green Residence Hall Statistics

• Sustainable Goals Established in Conceptual Design
• Sustainable Features Cut from Project
  • Natural Ventilation
  • Composting Toilets
  • Black Water Treatment
  • Heavy Timber Structural System
SKIDDING LOGS WITH A MULE TEAM
FSC Certified Wood from Berea Forest
10 STUDENTS ALLOCATED FROM LABOR PROGRAM TO BUILD THE FURNITURE OVER A 1-YEAR PERIOD.

1 STAFF CRAFTSMAN HIRED FOR 1 YEAR TO ORGANIZE + ASSIST
Student Crafts Furniture

A Team of 15 Students

and a Master Craftsman
Natural Patterns and Processes
• Residents control their energy use and environmental impacts by their actions

• Nearly every building feature, inside and out, is designed to teach

• Collaborative, creative learning opportunities were integral to making this project a reality

• The Building Dashboard provides real-time feedback on energy, water and overall performance
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