LEVERAGING CAMPUS BUILDINGS TO EDUCATE OCCUPANTS AND SHIFT BEHAVIOR

John Shorb, Briar Schoon, Katrina Shum Miller
OR Higher Education Sustainability Conference
February 4, 2016
GOALS OF SESSION

• To appreciate the opportunity to leverage built sustainable systems on college campuses to educate students and building users
• To explore the challenges of balancing environmental, social, and economic considerations in decision-making
• To understand the powerful role students can play in campus construction projects and living-laboratory programs
• To have fun in a collaborative learning environment
What is Sustainability?

Valuing Sustainability in Collegiate Recreation

**Sustainability** is meeting the needs of the present without compromising the ability of future generations to meet their own needs.

— The Brundtland Commission, 1987

**Socio-Environmental**
- Stewardship
- Environmental justice
- Resource sharing

**Social**
- Inclusiveness
- Equity/Justice
- Diversity
- Opportunity
- Service

**Healthy People & Communities**
- Fiscal stewardship
- Resource development
- Internal controls
- Return on investment
- Asset management

**Economic**
- Full-cost accounting
- Facility design
- Resource efficiency
- Energy, materials, water
- Operations

**Environmetal**
- Energy renewal
- Carbon footprint
- Waste reduction
- Land use/green spaces

Environment

Society

Economy

Commission for Sustainable Communities, Draft April 2012
SOCIAL CHANGE MODEL OF LEADERSHIP

Group Values
- Collaboration
- Common Purpose
- Controversy with Civility

Change
- Consciousness of Self
- Congruence
- Commitment

Individual Values

Citizenship

Society / Community Values
On a sustainable campus, the built environment, operational systems, research, scholarship, and education are linked as a “living laboratory” for sustainability.

International Sustainable Campus Network-Global University Leaders Forum
Student Leadership in SEC

- Students have held leadership roles in planning process from 2005 to project completion in 2015
- Referendum
- Asking questions
- Campus approval and placement
Student Leadership in SEC

• Concept development
• Design and values
• Legislative approval and schematic design
• Space allocation and policy
SHARED VALUES STATEMENTS

Student-centered

Sustainable focus

Welcoming diverse populations

Accessibility through design
Sustainable focus

Sustainability—social, environmental, and economic—has been present in our decision making at all points, from planning to construction to furnishings.
Eco-Charrette

- August 2012, half day retreat
- OSU students and advisors, architects, landscape architects, engineers, construction reps
- Student leadership
Priorities developed:
• Building as teaching tool
• Demo garden
• Rainwater capture and cleansing
• Local materials
• Solar thermal/photovoltaics
SSI Decision Making/Green Fee

- SSI strategic areas of impact
- SSI strategic goals
- Environmental impact
- Educational impact: Awareness raising
- Educational impact: Building Community
- Visibility and aesthetics
- Innovation
- Marginal cost analysis
- Feasibility
- Sustainable sourcing
College Commitment to Sustainability

“We’re all in this together”

- Requires LEED Silver standards for all new construction & remodels
  - Actively pursue LEED Gold

- PCC Mission Statement
  - “Portland Community College supports student success by delivering access to quality education while advancing economic development and promoting sustainability in a collaborative culture of diversity, equity and inclusion.”
2008 Voter-Approved Bond Measure

PCC’s 2008 voter-approved $374 million bond program is increasing opportunities for residents to access quality, affordable higher education close to where they live and work. Additional classrooms, updated equipment and technology, and advanced workforce training programs are helping to pave the way for future employment options.
Rock Creek Campus
Sustainability Culture at Rock Creek

• 4 acre learning garden
• Closed loop waste system
• Green Operations
Sustainability Culture at Rock Creek

- Sustainability Curriculum
- Student Leadership
  - Student Sustainability Coordinators
  - The Green Initiative Fund
Planning Road Show
Guiding Principles

• **Learning**
  - Enhance opportunities for informal learning.
  - Provide flexible and adaptable learning spaces.
  - Cluster functions that promote cross-program synergies.
  - Envision building as teaching tool.

• **Sustainability**
  - Promote energy efficiency.
  - Consider life-cycle costs and maintainability.
  - Re-invest in existing infrastructure.

• **Health, Wellness and Safety**
  - Improve indoor air quality.
  - Provide abundant natural light and views.
  - Promote healthy environments.

• **Connectivity**
  - Re-invigorate the Campus Core.
  - Engage the Quad.
  - Increase physical connections between buildings and campus features.

• **Community**
  - Provide a variety of gathering spaces embracing a diverse community.
  - Create a welcoming student-centered hub.

• **Aesthetics and Design**
  - Integrate landscape with building.
  - Preserve and Enhance the Quad.
  - Respect the existing campus context.
  - Celebrate Rock Creek’s commitment to the arts.
  - Form follows function.
Guiding Principles

- Student-Centered
- Sustainable Focus
- Welcoming Diverse Populations
- Accessibility through Design

- Learning
- Sustainability
- Health, Wellness and Safety
- Connectivity
- Community
- Aesthetics and Design
STUDENT EXPERIENCE CENTER
CANOPY WATER CELEBRATION
CLEANSING ON SITE
BELOW THE PLAZA
MODULATES STORM FLOWS

WATER WISE
CONSERVE ENERGY
BUILDING ENERGY USE ON SCREEN

GENERATING ENERGY FROM THE SUN
RADIANT CEILING COMFORT
RESPONSIVE LIGHTING CONTROLS
CONSERVE ENERGY
• BUILDING ENERGY USE ON SCREEN

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GENERATING ENERGY FROM THE SUN
RADIANT CEILING COMFORT
RESPONSIVE LIGHTING CONTROLS
**Education**

**Salvaged Lumber**
- Black Walnut Benches
- Red Oak Info Desk & Tables
- Dutch Elm Craft Center Desk & Meditation Room Walls

**Energy Efficient**
- Plaza Canopy Rainwater
- Cleansing on Site
- Storm Flow Modulation
- Low Flow Toilets
- Generating Energy from the Sun
- Radiant Ceiling Efficient Heating
- Responsive Lighting Controls

**Water Wise**

*Oregon State University*
SALVAGED LUMBER
FROM CAMPUS TREES

BLACK WALNUT BENCHES
RED OAK INFO DESK & TABLES
DUTCH ELM CRAFT CENTER DESK
& MEDITATION ROOM WALL
SAVAGED LUMBER
BLACK WALNUT BENCHES
RED OAK INFO DESK & TABLES
DUTCH ELM CRAFT CENTER DESK
& MEDITATION ROOM WALL
FROM CAMPUS TREES
HUMANKIND HAS NOT WOVEN THE WEB OF LIFE
WE ARE BUT ONE THREAD WITHIN IT.
WHATEVER WE DO TO THE THREAD,
WE DO TO OURSELVES.
ALL THINGS ARE BOUND TOGETHER.
ALL THINGS CONNECT.

CHRIST SIMS (SPOTTED)
<table>
<thead>
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<th>Category</th>
<th>Points Achieved</th>
<th>Points Possible</th>
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<tr>
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<tr>
<td>Energy &amp; Atmosphere</td>
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<tr>
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<td>10/15</td>
<td></td>
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<td>Innovation</td>
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<tr>
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<td><strong>Total Anticipated YES Points</strong></td>
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* Gold Level
INSPIRATION
INSPIRATION
PCC Rock Creek Building 7 Addition
Rock Creek Building 7 Addition - Facade
Rock Creek Building 7 Addition – Radiant Heating & Cooling
Rock Creek Building 7 Addition – Natural Ventilation
Rock Creek Building 7 Addition – Nature Connections
PCC Rock Creek - Building 5 Addition
Rock Creek Building 5 – Natural Daylighting
Rock Creek Building 5 – Rural Ties
Rock Creek Building 5 – Nature Connections
Rock Creek Building 5 – Sustainable Materials
# LEED Certification

## PCC RC Building 7 Addition
for New Construction (v2009)

<table>
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<tr>
<th>Category</th>
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<tbody>
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<tr>
<td>Regional Priority</td>
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* 110 possible

## PCC RC Building 5 Addition
for New Construction (v2009)

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<td><strong>Total Points</strong></td>
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<tr>
<td>Sustainable Sites</td>
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* 110 possible
500 kw Solar System
STUDENT EXPERIENCE CENTER
Leadership for Social Change

- SEC sustainability/stewardship guide
- Mouse pads with tips
- Reusable water bottles
- Vending machine (local, non-GMO, healthy)
- Edible landscape/permaculture
- Repurposed pallet sofa and table with Craft Center
- Sustainability screen: Energy reduction competitions
STUDENT EXPERIENCE CENTER

STEWARDSHIP GUIDE
Sustainability has been a core focus of the Student Experience Center since the building’s inception.

The OSU Sustainability office, SEC designers, and SEC architects have integrated sustainability values through building features and design as a gathering place for students and the OSU community. The space is designed to be open and inclusive, creating an environment for innovative collaborations to emerge.

Student leaders joined the SEC design team in August 2012 for a Sustainability Workshop to develop priorities for the building. Priorities included using the building as a teaching tool, cultivating a demonstration garden, visibly reclaiming rainwater, using local building materials, and heating water with solar energy.
What does a living laboratory for sustainability look like?

AASHE describes a living laboratory as “...a given place where problem-based teaching, research and applied work combine to develop actionable solutions that make that place more sustainable.”
Edible Landscape
Bike Fix-It Station
**Tips**

- **Take advantage of the daylight!**
  - Turn off lights during the daylight hours to save energy.

- **Put computers to sleep!**
  - Turn computers to sleep after working if they will be used again soon. Also remember to turn off printers at the end of your day.

- **Unplug it!**
  - Don’t let vampire energy persist! Unplug appliances not being used around the office, like microwaves, and TV screens.

- **Go reusable!**
  - Using a reusable water bottle and coffee cup not only reduces campus waste, but also saves you money on-campus.
PCC ROCK CREEK
Living Lab & Occupant Engagement

- Tours for classes, staff & community members
- Building guide in development for use in curriculum & best practices for staff
- Developing signage & informational campaigns to inform occupants
Living Lab & Occupant Engagement

• Connection to academic programs

• Landscape Tech
• Environmental Studies
• Biology
• Building Construction
• Food & Nutrition
Pioneering Sustainability Behavior Change Efforts

- Waste reduction w/ Mini Max
- Strategic Energy Management
  - Powershift campaign
- Reusable campaigns
  - Waterfill stations
  - OZZI & Preserve to-go containers
Building 5- Hub for Sustainability Activities

- Home to Sustainability team
- Student Activities
- Portlandia Farm Standia
- Dining Services
  - Learning garden produce & local options
  - Meatless Mondays
  - OZZI & preserve containers
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