The Whole Institution Approach: A Model for a Sustainable University?

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# Top 10 trends of 2015

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UBC: 1915-2015

1914
Endowment Lands
14 km from Downtown

2015
4.02 km² (993-acre)
50,000 students
We are caring for this land
Commuter Campus

Downtown

UBC

14 km
Eliminating the Parking Lot

1974

2015
U-Town Sustainable Community

On-campus Population: 16,000

On-campus Population: 40,000

2012

2040
UBC Neighbourhoods

- 2001: ~11,000 inhabitants
- 2012: ~16,000 inhabitants
- 2040: ~40,000 inhabitants
Sustainable Community Indicators

- Daytime Population
- Auto Trips
- Parking
- Transit
- Residents

Increase/Decrease Relative to 1997
Whole Institution Approach

Administration
Faculty
Operations
Students
Whole Institution Approach

Administration
Faculty
Academic
Students
Operations
A Shared Responsibility
Visual Identity for Sustainability
Whole Institution Approach

- Administration
- Faculty
- Operations
- Students
Key Sustainability Initiatives & Outcomes

- Adopts sustainable development policy
- Opens Campus Sustainability Office
- Integrates sustainability as core pillar in UBC’s strategic plan: Place & Promise
- Develops Sustainability Academic Strategy
- Establishes University Sustainability Initiative (USI)
- Integrates sustainability as core pillar in UBC’s strategic plan: Place & Promise
- Sets bold targets to reduce GHG emissions
- Receives Canada’s first Gold rating in STARS
- Embeds Regenerative Sustainability into 20-year Plan
Key Sustainability Initiatives & Outcomes

Adopts sustainable development policy
Opens Campus Sustainability Office
Integrates sustainability as core pillar in UBC’s strategic plan
Develops Sustainability Academic Strategy
Establishes USI
Embeds Regenerative Sustainability into 20-year Plan

1996
1998
2007
2009
2010
2011
2014

Faculty interest
Regulatory Context
Strong societal interest
Leadership

Meets Kyoto Protocol GHG reduction targets
Sets bold targets to reduce GHG emissions
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Key Sustainability Initiatives & Outcomes

Place & Promise

• Create exceptional learning environment that advances a civil and sustainable society.

Sustainability Academic Strategy

• Explore various dimensions of sustainability through research, teaching and learning

• Exemplify sustainability in its operations
Regenerative Sustainability

Goal:
To simultaneously increase human & environmental well-being.

Questions:
For what processes? At what scale? Over what time-scales?

What is the role of universities?
Campus as Sustainability Test-Bed

Universities uniquely suited to explore & test regenerative sustainability:

• Are single (owner-) occupiers
• Have a public mandate
• Teach
• Research
2002 Ecotrek Project

Reduced energy use intensity by 23%

150,000 GJ Savings in Natural Gas per year
Current Signature Projects

Demand-Side

Continuous Optimization of Campus Buildings
Centre for Interactive Research on Sustainability (CIRS)

Supply-Side

Steam to Hot Water Conversion of Campus District Energy System
Bioenergy Research and Demonstration Project

$150 million of capital investment
Continuous Optimization in Buildings

- $3$ million investment

- Partnership with BC Hydro & Pulse Energy

- 72 academic buildings completed in 4 phases 2010-16

10% Reduction in GHG emissions
Steam Distribution

~270 core buildings

190 °C
Academic District Energy System: Steam to Hotwater conversion

- 24% Thermal energy use
- 22% GHG emissions
- $5.5m Annual operational & energy cost savings

80 °C
UBC Bioenergy Research & Demonstration Facility

- $28 million investment

- Cogen mode: `  
  2MW (elec)  
  + 6MW (heat)  
  + 2.4MW (heat recovery)

9-15% Reduction in GHG emissions
Student enrollment +7%  
Floor space +11%  
GHG emissions -14%  

GHG Emissions & Drivers: 2007-2013  

Relative Increase/Decrease relative to 2007  

Floor space +11%  
Student enrollment +7%  
GHG emissions -14%  

>50,000 Students  
972 Students  
1925 Students  
2015
Whole Institution Approach

Administration

Faculty

Academic

Students

Operations
Universities & Sustainability

Sustainability Education

Improving buildings & Operations
Institutional Culture Change

- Academic
- Operational
Institutional Culture Change

Academic

Operational
Institutional Culture Change

Campus as Living Laboratory

Academic
Operational
Institutional Culture Change

University as an Agent of Change

Campus as Living Laboratory

Academic

Operational
“…a kind of giant sandbox in which there is the freedom to explore—creatively & collaboratively—the technological, environmental, economic & societal aspects of sustainability.”
Campus as a Living Lab

Campus as Living Lab

Building as Research Instrument
Center for Interactive Research on Sustainability
Resource Exchange between Buildings

Earth & Ocean Sciences (EOS)

CIRS

Low-grade Heat

High-grade Heat
Expanding Boundaries
Co-evolution of Performance & Process

Performance

Process

Commitment & Capability

Performance Improvements
Whole Institution Approach

- Faculty
- Administration
- Operations
- Students
Starting a University
Saving what is important
UBC Farm
Select UBC Student Initiatives

- Bike Co-op
- Common Energy
- Friends of the Farm
- Sustainability in Residence
- AMS Sustainability
- Chemical & Biological Engineering
- Commerce Undergraduate Students
- Geography Students Association
- Sustainability Ambassadors
- Sprouts
UBC/COV Sustainability Collaborative

UBC Sustainability Initiative

Shared Sustainability Goals

City of Vancouver

Greenest City 2020
Greenest City Scholars Program

59 students (2010-14); 8/40 hired in first four years
Each student, regardless of their degree program, should have access to an education in sustainability via a “sustainability learning pathway”

UBC Sustainability Academic Strategy, 2009
Sustainability Learning Pathway

Equip students with:

• Holistic Systems Thinking
• Sustainability Knowledge
• Awareness & Integration
• Acting for Positive Change
Sustainability Learning Pathway

Create Your Own Path

Build Your Career
- Seeds Program
- Collaborative Research
- Internships
- Sustainability Scholars
- Mentorship
- Work Learn

Sustainability

Learn
- 500+ Courses
- 40+ Programs
- UBC Reads Sustainability
- Sustainability Tours

Give Back
- Sustainability Ambassador Program
- UBC Farm
- Community Engaged Learning

Have Fun
- 30+ Sustainability Clubs
- Networking Events
- Sustain in REZ
Whole Institution Approach

Social Sustainability & Well-being

Administration
Faculty
Operations
Students
Social Sustainability ↔ Human Wellbeing

http://sustainability.umw.edu/dot/social-sustainability/

www.wikigender.org
UBC Well-being Initiative:
Promote wellbeing, health & social sustainability

http://sustainability.umw.edu/dot/social-sustainability/

www.wikigender.org
Social Sustainability

UBC Wellbeing Initiative

- Mental health
- Physical activity
- Inclusion & connection
- Food & nutrition
- Transportation
- Natural & built environments
The Well-being Initiative

UBC Wellbeing Initiative

- Access & diversity
- Intercultural understanding
- First Nations
- Sport & Sustainability
- Healthy Campus initiative
- Community Engagement initiative
- Community Service Learning
A Higher Education Imperative

“[Sustainability] is a problem in which the discovery and dissemination of knowledge will play a critical role. And it is a problem that must be faced ... in ways that universities are uniquely suited to model.”
President Drew Gilpin Faust, Harvard University

“...we have a responsibility to promote sustainability for our planet. Our goal is to lead the way—through research, educational programs and campus operations.”
President John Leroy Hennessy, Stanford University

“We have a responsibility to future generations to ensure that sustainable practices are at the heart of our university.”
President Peter Salovey, Yale University
UBC 20-Year Sustainability Strategy

At UBC’s Vancouver campus, sustainability means simultaneous improvements in human and environmental wellbeing, not just reductions in damage or harm.

By 2035, such regenerative sustainability is embedded across the University throughout teaching, learning, research, partnerships, operations and infrastructure, and the UBC community.

UBC is a vibrant, healthy and resilient community deeply engaged with its neighbours, surrounding region, partners around the world, and in a supportive and mutually respectful relationship with the Musqueam people.