

## Greening the UW: An analysis of Green Building



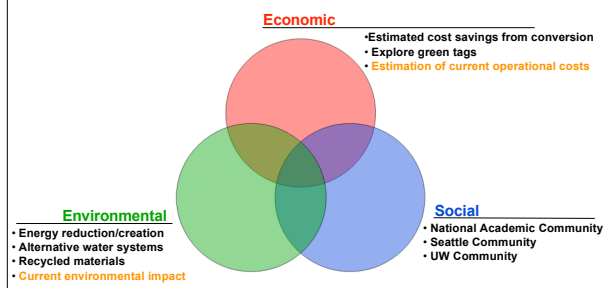
UW Climate Partnership  
March 8, 2007

Carolyn Bell, Monika Panfiglio, Jasmine Robison

## Presentation Overview

- Project Objectives
- Green Building Facts
- Social Benefits
- Environmental Aspects
- Economic Feasibilities
- Next Steps

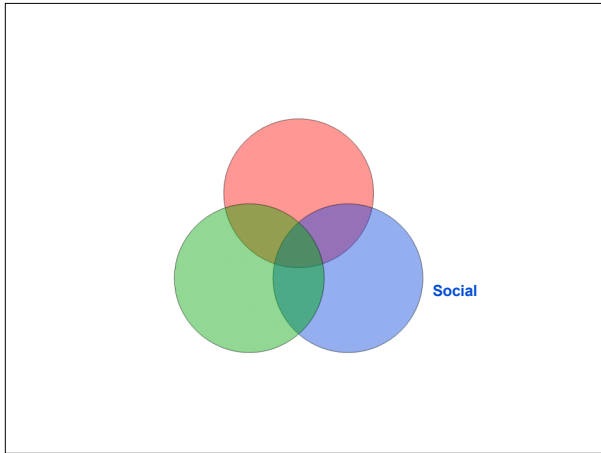
## Project Objectives



## Project Related Facts

- Buildings account for
  - 36% of total energy usage
  - 30% of all greenhouse gas emissions
  - 30% of raw materials
  - 30% of total waste output\*
- LEED (Leadership in Energy and Environmental Design)
  - Nationally accepted benchmark for high performance green buildings
  - 5 Key Areas
    - NC, EB, Interiors, Homes, etc.
- 294 LEED Registered Projects in WA, 116 registered as Seattle projects
- Safeco Property & UW Tower
  - \$130 million purchase
  - 3 office buildings and the tower: 510k sq. ft. (279k for the tower)

\* USGBC



### Health & Productivity Benefits


- Improves more than the environment and operational costs

=

- Verifone
- Student improvement

### The Seattle Effort

- Seattle: the 3rd most sustainable city\*
- Governor Gregoire and LEED-NC
- Seattle Climate Partnership
- Mayor Nickels and the Green Ribbon Commission



	Acres	Sq Ft	% of Seattle
Seattle	58,560	2,550,873,600	100%
UW total	949	41,338,440	1.62%
Vulcan	230	10,000,000	0.39%
Equity Office	110	4,811,596	0.19%
Martin Selig	76	3,300,000	0.13%
City Owned	69	3,000,000	0.12%
Starbucks owned	5	200,000	0.01%

\* Sustainlane Government 2006

### College Green Building Landscape

- "Sustainability": the new metric for comparing universities
- U.S. News and World Report, Best Colleges 2007
- Sustainable Endowment Institute, 2007 College Sustainability Report Card

## 'Top' Colleges & Sustainability

- Rankings are highly correlated
- 9 of 14 Green Building A's also had A- or better in overall sustainability
- **All 5 top ranked schools received an A in green building, at least a B-overall**
- Only 3 colleges received an A in green building and an A- for overall
  - Harvard University (2)
  - Stanford University (4)
  - Dartmouth University (9)

College	Campus Location	School Ranking*	Green Building**	Sustainability Ranking**
Princeton U	NJ	1	A	B-
Harvard U	MA	2	A	A-
Yale U	CT	3	A	B+
MIT	MA	4	A	B-
Stanford U	CA	4	A	A-
U of Washington	WA	42	A	B-

## Leaders of the Pack

- Top 5 ranked colleges and received A's across the board for sustainability



Harvard Green Campus Initiative



THE INITIATIVE ON THE ENVIRONMENT and SUSTAINABILITY  
STANFORD UNIVERSITY

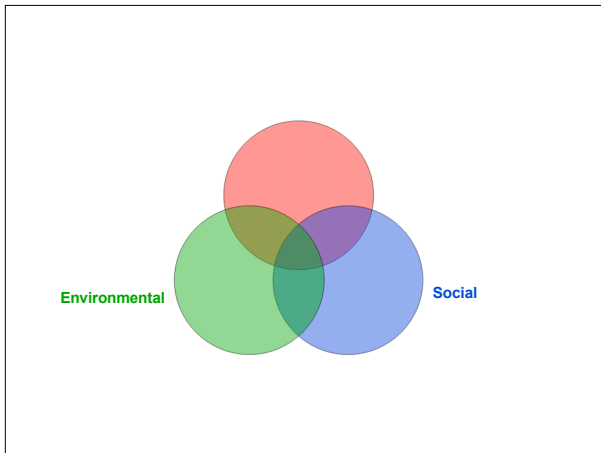
- Campus-wide, explicit initiatives
- Collaborate with community and industry experts, including scientists and research leaders
- Extremely strong student leadership, clubs and engagement in the issues
- Frequently publish sustainability newsletters that outline events, progress and opportunities relating to the initiative

## Green Building is in UW's Best Interest

- Student benefits
  - Increased health, productivity, quality of life
  - Increased level of education
  - Increased real-world experiences through internships
- Seattle benefits
  - Reduced emissions
  - Higher level of community
  - Increased real-world experiences through internships
- UW benefits
  - Create a competitive advantage over other colleges
  - Become a positive member of the Seattle community
  - Engage students on an emotional level
  - Recruit students already passionate about sustainability

## Presentation Roadmap

- Project Objectives ★
- Green Building Facts ★
- Social Benefits ★
- Environmental Aspects
- Economic Feasibilities
- Next Steps

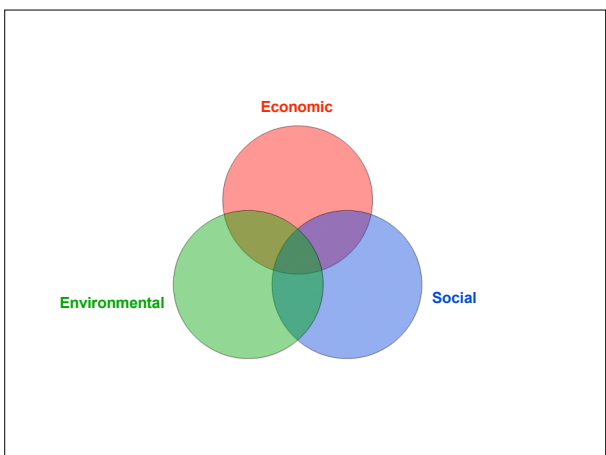


### The Urban Impact

“Buildings are a major contributor to climate change, consuming  
**40%** of total energy  
**70%** of electricity  
 And are responsible for  
**40%** of CO<sub>2</sub> emissions”  
 ~ Rick Fedrizzi

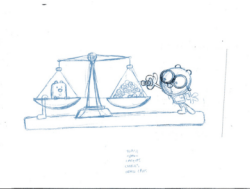
### LEED-EB

- Site Design and Planning
- Energy and Atmosphere
- Water Efficiency
- Materials and Resources
- Indoor Environmental Quality



## The Economic Impact

“That which gets measured gets done.”



## 1. Site Design and Planning

Many advocates of green building believe that the existence of open spaces is vital to creating a positive, livable, energetic urban environment.


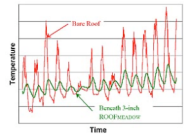


Greg Smith, CEO, Urban Visions,  
Member of the Green Ribbon Commission

## 2. Energy and Atmosphere

Alternatives:


- Energy Star Rated appliances, computer peripherals, etc.  
\$120/computer annually to \$20  
75% increase in lighting efficiency
- Green Roofing  
Seattle Justice Center: \$148k annual savings
- Clean Energy  
Roof-installed solar panels  
Wind turbines  
Green Tags

## 2. Energy and Atmosphere

Case Study: Trizec Properties

Implementation of Energy Conservation Program

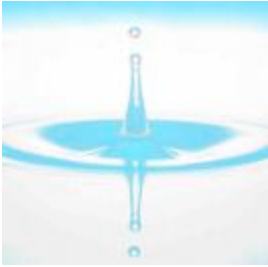


	Square Feet	Cost Savings	CO <sub>2</sub> Emission Reduction*	Reduction in # of Vehicles
Trizec Property Portfolio	37,000,000	\$ 16,000,000	690,000	125,000
Safeco Property Site	510,546	\$ 220,777	9,521	1,725
UW Tower (stand alone)	279,549	\$ 120,886	5,213	944

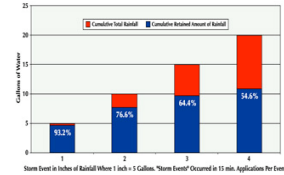
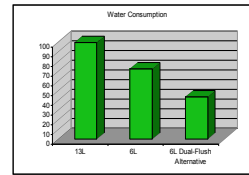
\* Annually, in tons

### 3. Water Efficiency

Less than 3% of the earth's water is fresh water.



### 3. Water Efficiency



- Alternatives
  - Dual-Flush Toilet Fixtures:
    - Up to 56% reduction in flush volumes
  - Reduce Overflow through Green Roofing
    - Up to 93% of storm water retained by plant life

### 4. Materials and Resources

- The construction industry consumes three billion tons of raw materials annually~
- 40% of the total material flow in the global economy



### 4. Materials and Resources

Case Study:

Cambridge City Hall Annex



Material	Tons	Recycling Cost	Avoided Disposal Cost*	Savings
Brick	531	\$22,833	\$71,154	\$48,321
Concrete	29	\$2,407	\$3,866	\$1,479
Wood	112	\$10,640	\$15,008	\$4,368
Metal	15	\$690	\$2,010	\$1,320
Asphalt Roofing	1	\$465	\$134	-\$331
<b>Totals</b>	<b>688</b>	<b>\$37,035</b>	<b>\$92,192</b>	<b>\$55,157</b>

## 4. Materials and Resource

Cambridge City Hall

- Applied Savings

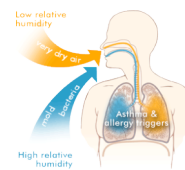


	Square Feet	Cost Savings
Cambridge City Hall Annex	32,000	\$ 55,157
Safeco Property Site	510,546	\$ 880,006
UW Tower (stand alone)	279,459	\$ 481,691

## 5. IEQ

“Americans spend about 90 percent of their time indoors, where concentrations of air pollutants are often much higher than those outside.”

~ National Institute of Building Sciences



## 5. IEQ

- Alternatives
  - Efficient ventilation
  - Low emitting finish materials
  - Low Volatile Organic Compound (VOC) paints & stains
  - Radiant Heat
  - Indoor gardens
  - Materials from Sustainable Sources

## Recommendations & Next Steps

- Estimate and reports current environmental impacts: transparency!
- Explore the option of establishing a Seattle green building standard
- Collaborate with green building industry leaders to establish a campus-wide initiative
  - List and quantify objectives in order to monitor progress
  - Publish the objectives to make available to ALL stakeholders
- Immediately define UW Tower project objectives with consultant DKA Architecture:
  - LEED Silver
  - Announce the commitment to this standard to the community

## Newsflash!

### Announced Today

President Emmert will sign:

#### The American College & University Presidents Climate Commitment

1. Initiate the development of a comprehensive plan to achieve climate neutrality as soon as possible.
2. Initiate two or more of the following tangible actions to reduce greenhouse gases while the more comprehensive plan is being developed.
3. Make the action plan, inventory, and periodic progress reports publicly available by providing them to the Association for the Advancement of Sustainability in Higher Education (AASHE) for posting and dissemination