Leadership in Energy and Environmental design (LEED)

Caroline Clevenger, PE, RA

CEE 115 / 215

2/14/08

some slides courtesy of:

U.S. Green Building Council

www.usgbc.org

Architectural Energy Corporation

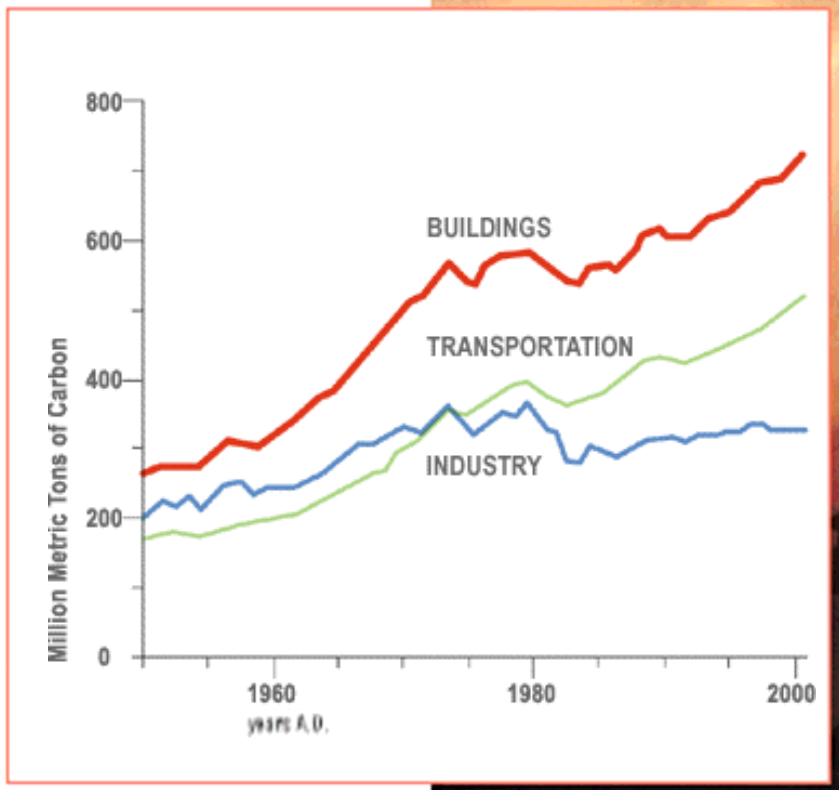
www.archenergy.com

USGBC Mission

to promote the design and construction of buildings that are environmentally responsible, profitable, and healthy places to live and work.

Motivation

Buildings are responsible for approximately 50% of US carbon emissions – Mazria 2004

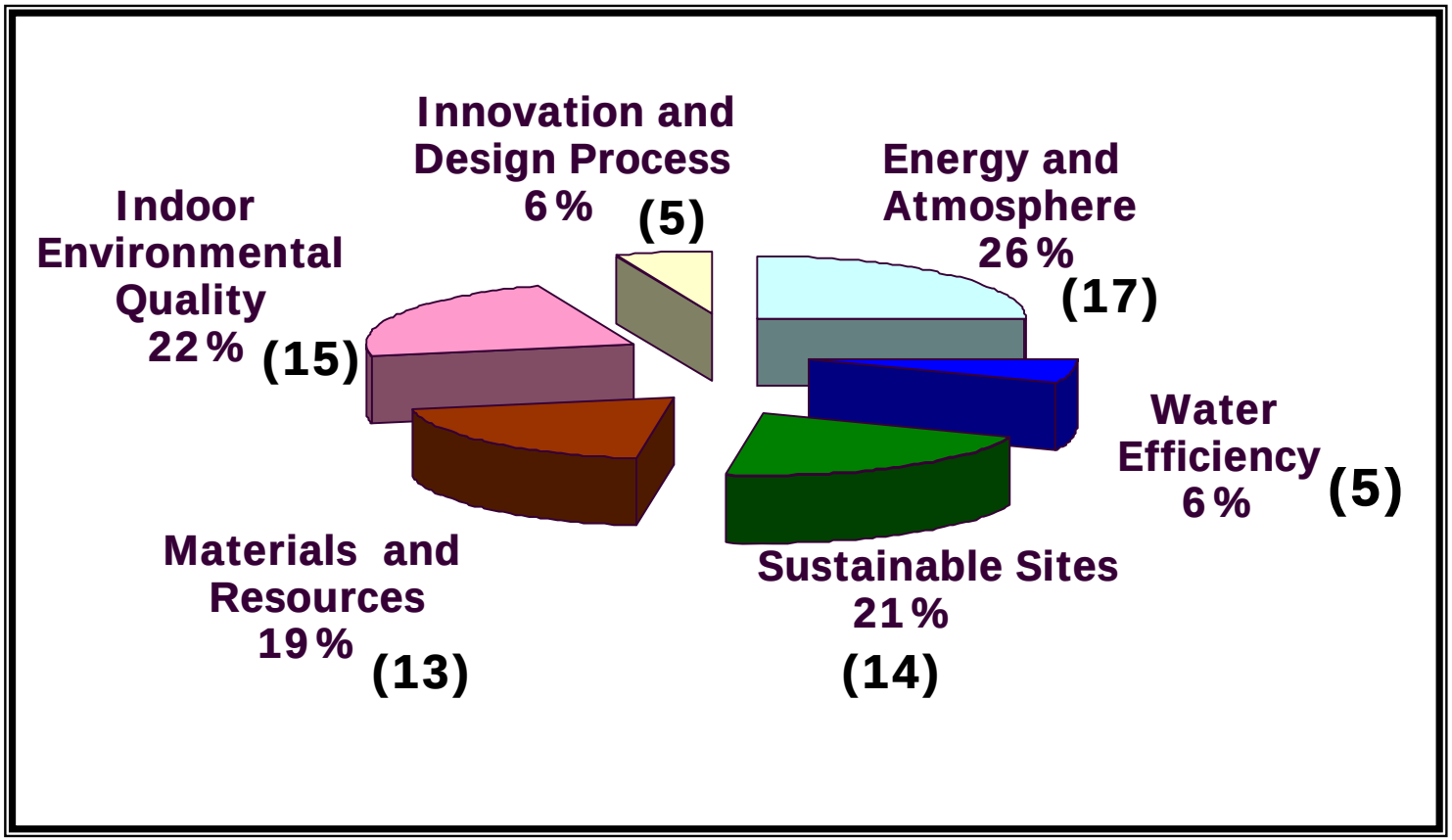


Environmental Impact of Buildings

- 65.2% of total U.S. electricity consumption [1]
- > 36% of total U.S. primary energy use [2]
- 30% of total U.S. greenhouse gas emissions [3]
- 136 million tons of construction and demolition waste in the U.S. (approx. 2.8 lbs/person/day) [4]
- 12% of potable water in the U.S. [5]
- 40% (3 billion tons annually) of raw materials use globally [6]

* Commercial and residential

LEED™ Rating Categories (GOALS)



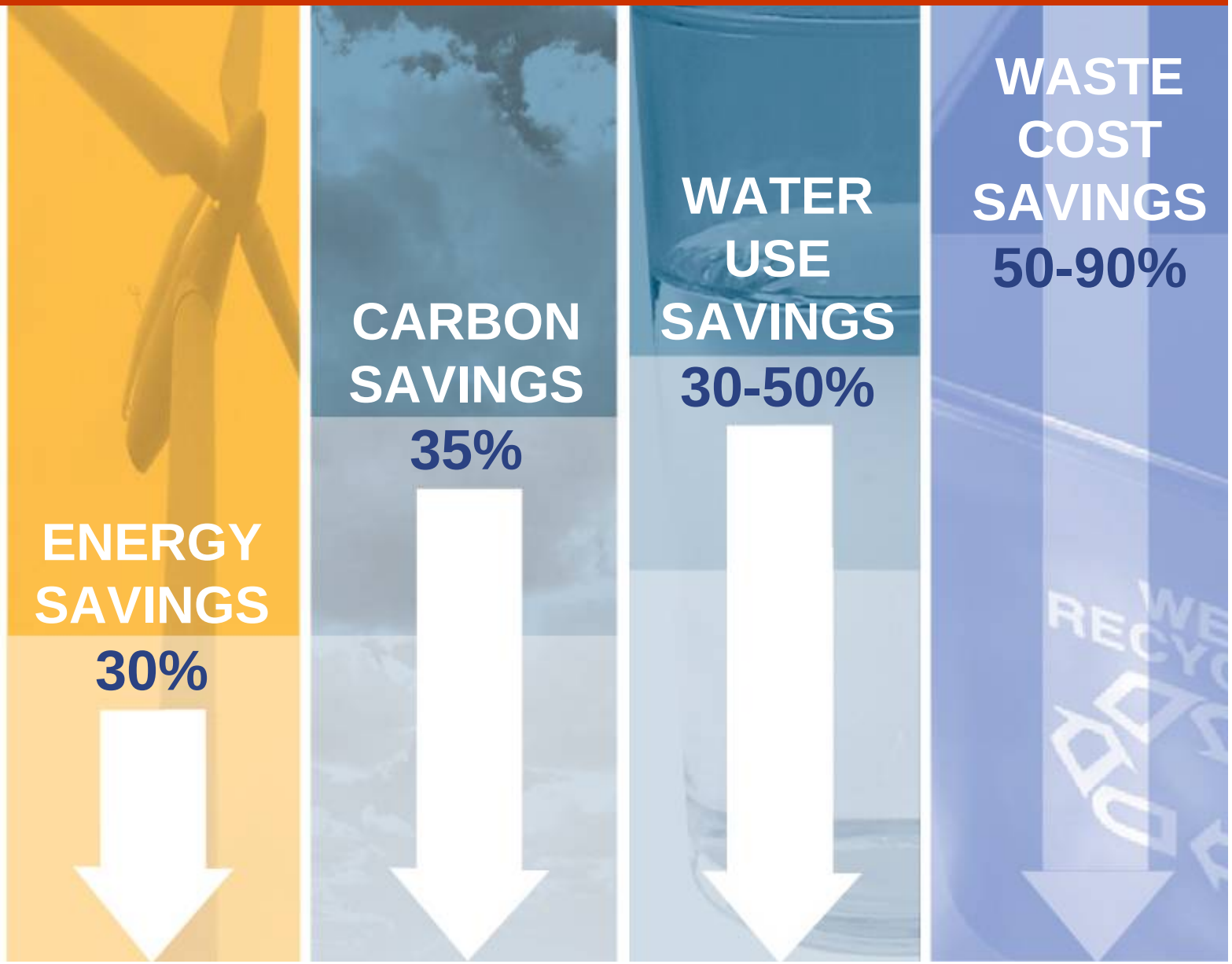
LEED™ categories as % of total points (69)

Prerequisites vs. Credits (PREFERENCES)

- **Project must meet *ALL* Prereq requirements to qualify for certification**
- **Prereqs = 0 points, required**

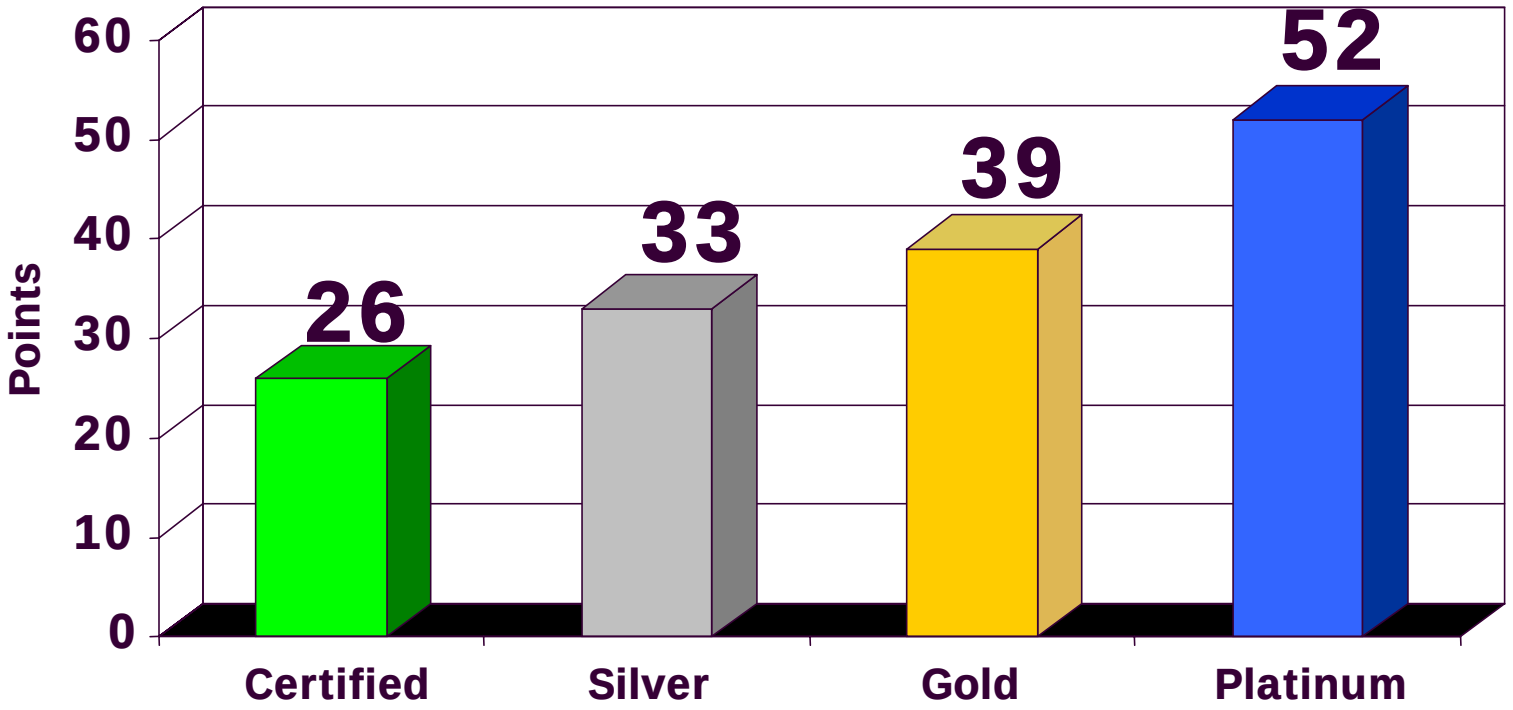
  Credits = 1 point/credit, elective
- **Prereqs:**
  - Erosion & Sedimentation Control
  - Fundamental Cx
  - Minimum Energy Performance
  - CFC Reduction
  - Storage & Collection of Recyclables
  - Minimum IAQ Performance
  - Environmental Tobacco Smoke Control

USGBC: "Green Buildings Average" ANALYSES



Source:
Capital E

LEED™ Certification Levels VALUE

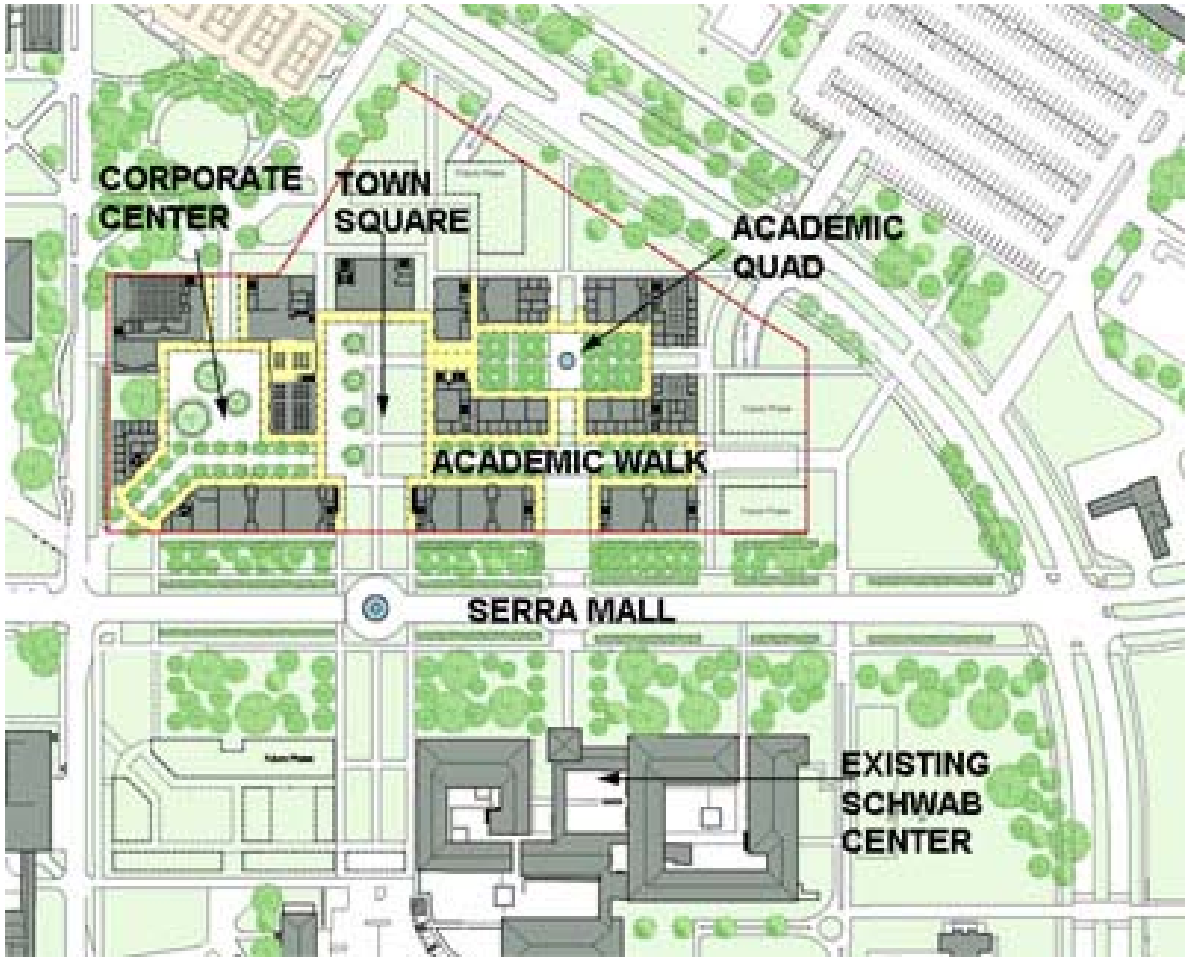


LEED-NC: 7 prerequisites and 69 total points

LEED Platinum?

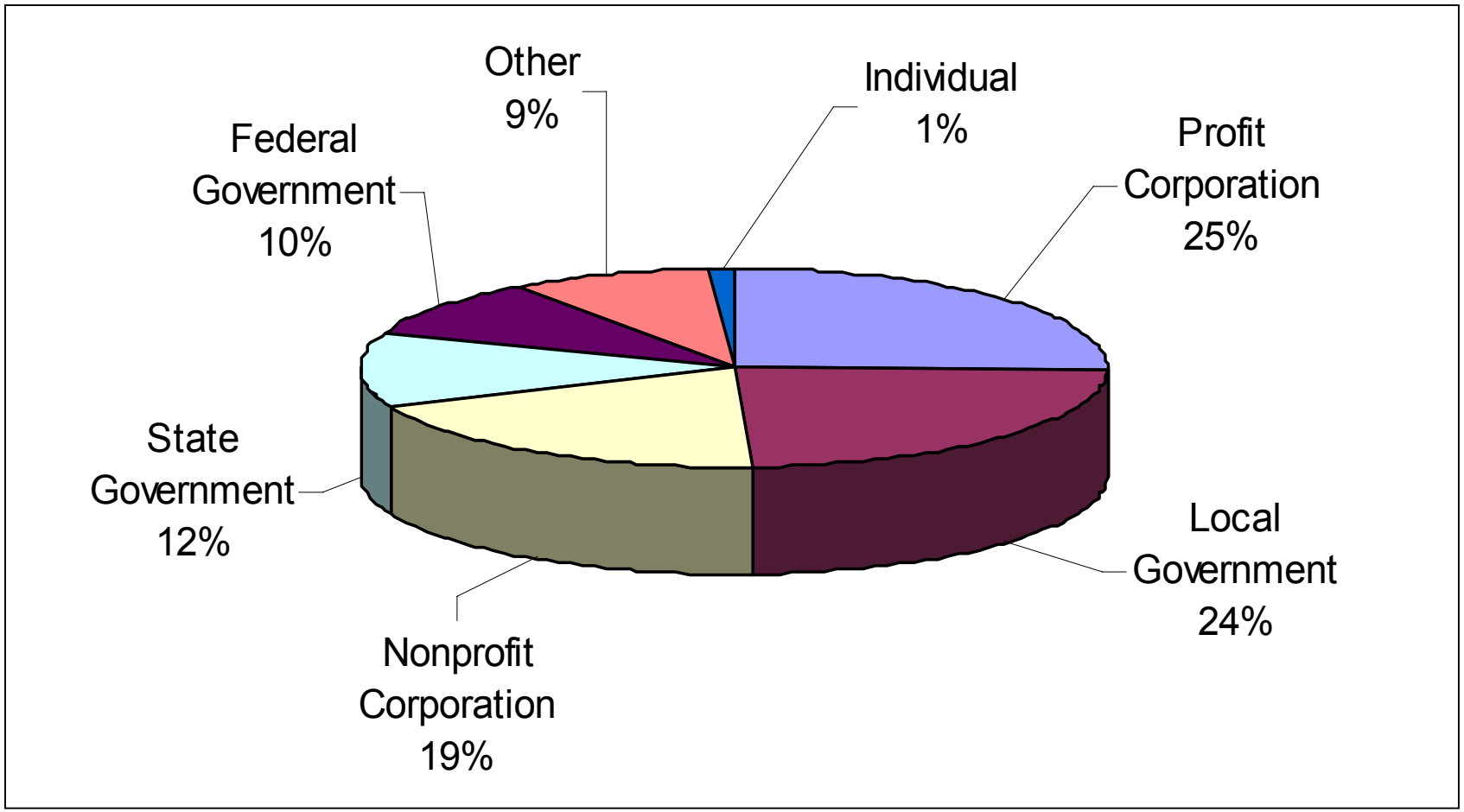
Stanford Graduate School of Business

Phil Knight New Campus: LEED Platinum?



Who's using LEED?

Registered Projects by Owner Type



Green Building Executive Order

- ***Executive Order S-20-04***

1.1.1.2.

All new State buildings and major renovations of 10,000 sq. ft. and over and subject to Title 24 will be designed, constructed and certified at LEED-NC Silver or higher, (or LEED-EB as applicable.) Certification to an equivalent or higher standard is acceptable as approved by the Green Action Team. Life cycle cost assessment methodology as defined in Section 1.1.1.3 shall be used in determining cost effective criteria. Building projects less than 10,000 sq. ft. shall use the same design standard, but certification is not required.

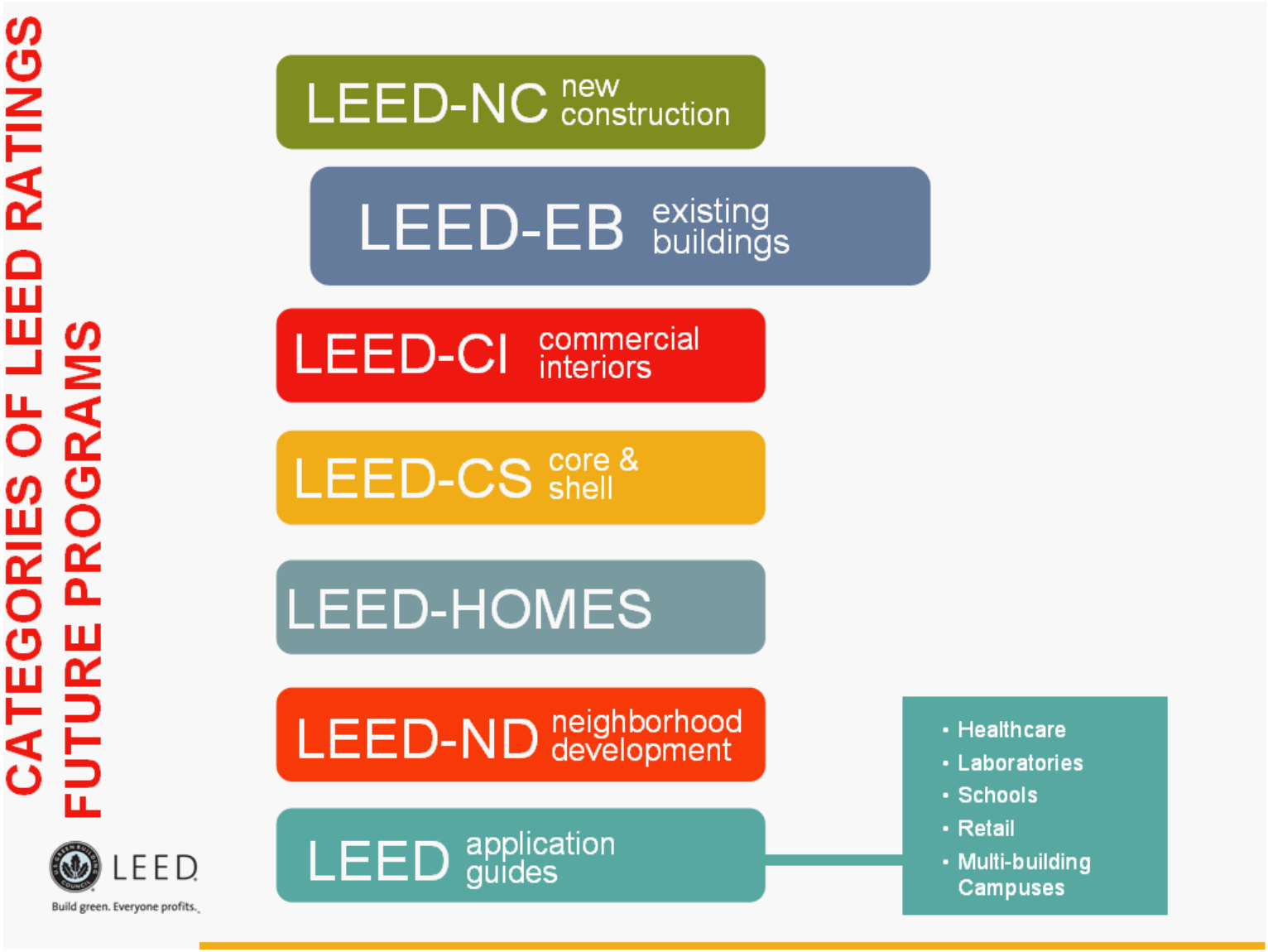
Global Interest

- Australia
- Canada**
- China**
- France
- Hong Kong
- India **
- Japan*
- Spain*
- Mexico*
- Italy*
- Guam*
- Côte d'Ivoire*
- Guatemala*

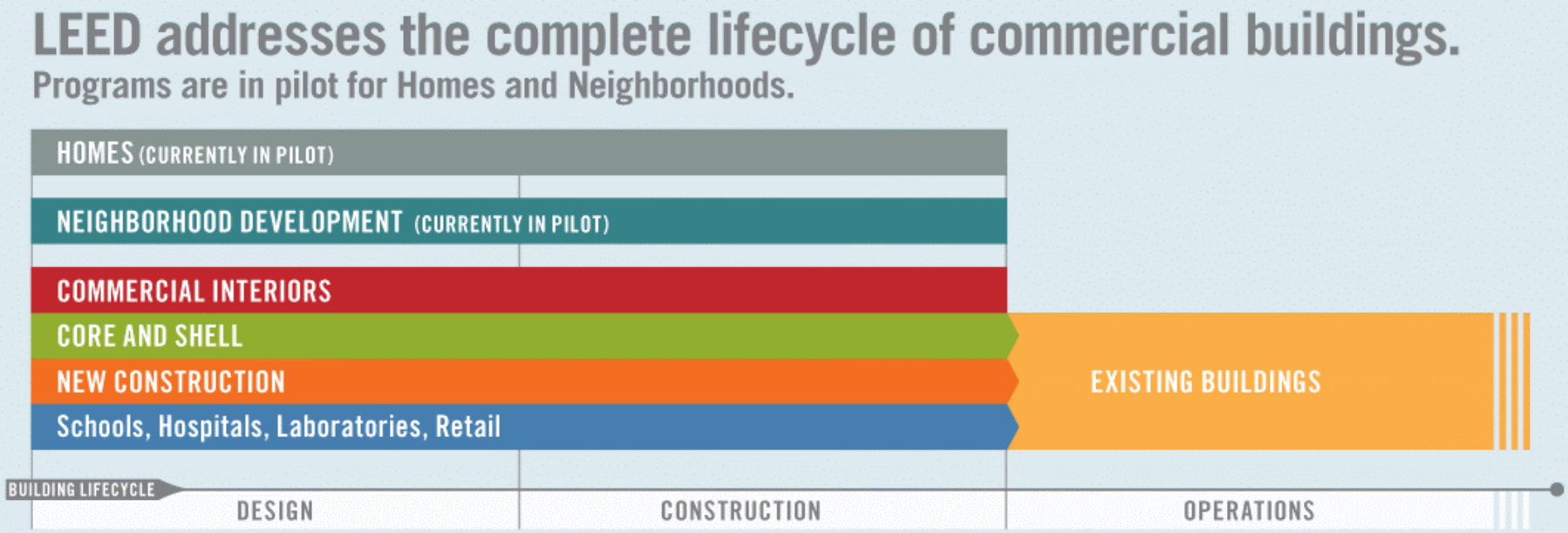
**Certified Projects

*Registered Projects 2006

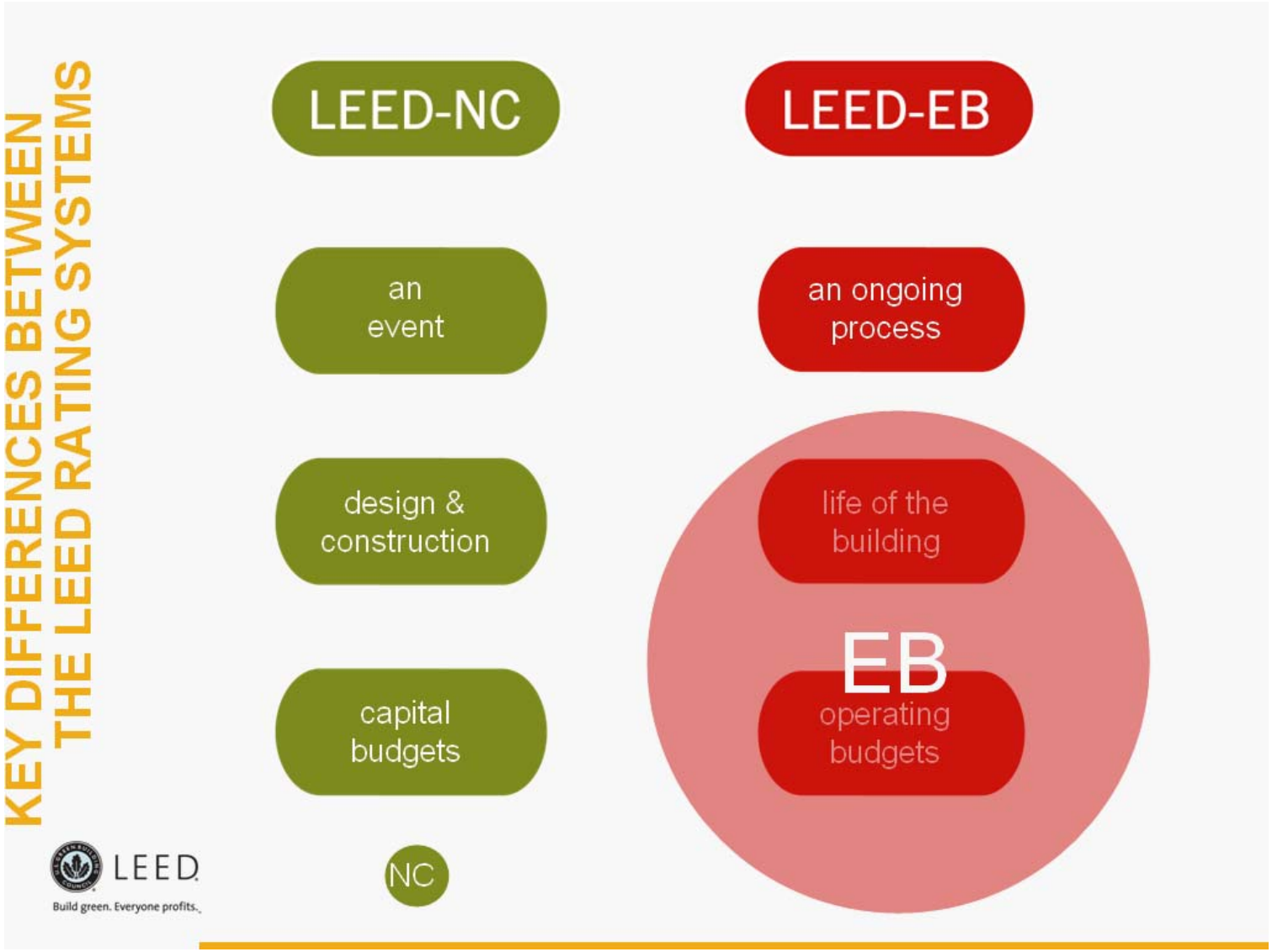
LEED Rating Systems



LEED Phases of Design and Operation



LEED NC vs. LEED EB



Green Building Operations

KEY VALUE DRIVERS for GREEN OPERATIONS

COMMERCIAL REAL ESTATE

- Occupancy Rate
- Operating Cost
- Tenant Retention
- Tenant Satisfaction
- Asset Value
- Shareholder Value

CORPORATE

- Operating Cost
- Employee Relations
- Shareholder Value

GOVERNMENT

- Environmental Stewardship
- Operating Cost
- Employee Satisfaction
- Stakeholder Relations

LEED EB Maintenance Plan

LEED-EB 2.0 Letter Template
EA Credit 3.1: Building Operation & Maintenance: Staff Education

(Responsible Party)

I, _____, declare to USGBC that all building operation and maintenance staff have been provided with at least 24 hours of high quality and relevant building operation and maintenance education on building and building systems operation, maintenance, and achieving sustainable building performance each year as outlined below over the performance period.

Performance period covered for building operation & maintenance education (number or fraction of years)	

Building Operation and Maintenance Education Entry Table
Note: Only use one row per employee as each row is used in equation to comply with 24 hours of education per year.

Staff Member's Na	Dates of Courses	Course Titles	Hours

LEED-EB
LEED FOR EXISTING BUILDINGS 2.0

LEED-EB 2.0 Letter Template
EA Credit 3.2: Building Operation & Maintenance: Building Systems Maintenance

(Responsible Party)

I, _____, declare to USGBC that the comprehensive best practices equipment preventive maintenance program outlined below is an accurate reflection of in-house resources or contractual services delivered over the performance period.

I have provided the following to support the declaration:

☐ Documentation of ongoing operation of the best practices equipment maintenance program over the performance period.

☐ Documentation of in-house resources and/or contractual services to deliver post warranty maintenance.

LEED EB- Measurement and Verification

LEED-EB
LEED FOR EXISTING BUILDINGS 2.0

LEED-EB 2.0 Letter Templat
EA Credit 5.4: Performance Measurement - Emission Reduction Reportin

(Responsible Party)

I, [redacted], declare to USGBC that building performance parameters that reduce energy use and emissions have been identified and documented.

I have provided the following to support the declaration:

☐ Reporting of all buildi

☐ Calculations for all of t

☐ Reporting of renewab

☐ Calculations and repo
dioxide (SO2), nitroge
compounds (VOCs).

LEED-EB
LEED FOR EXISTING BUILDINGS 2.0

LEED-EB 2.0 Letter Template
MR Prerequisite 2: Toxic Material Source Reduction–Reduced Mercury in Light Bulbs

(Responsible Party)

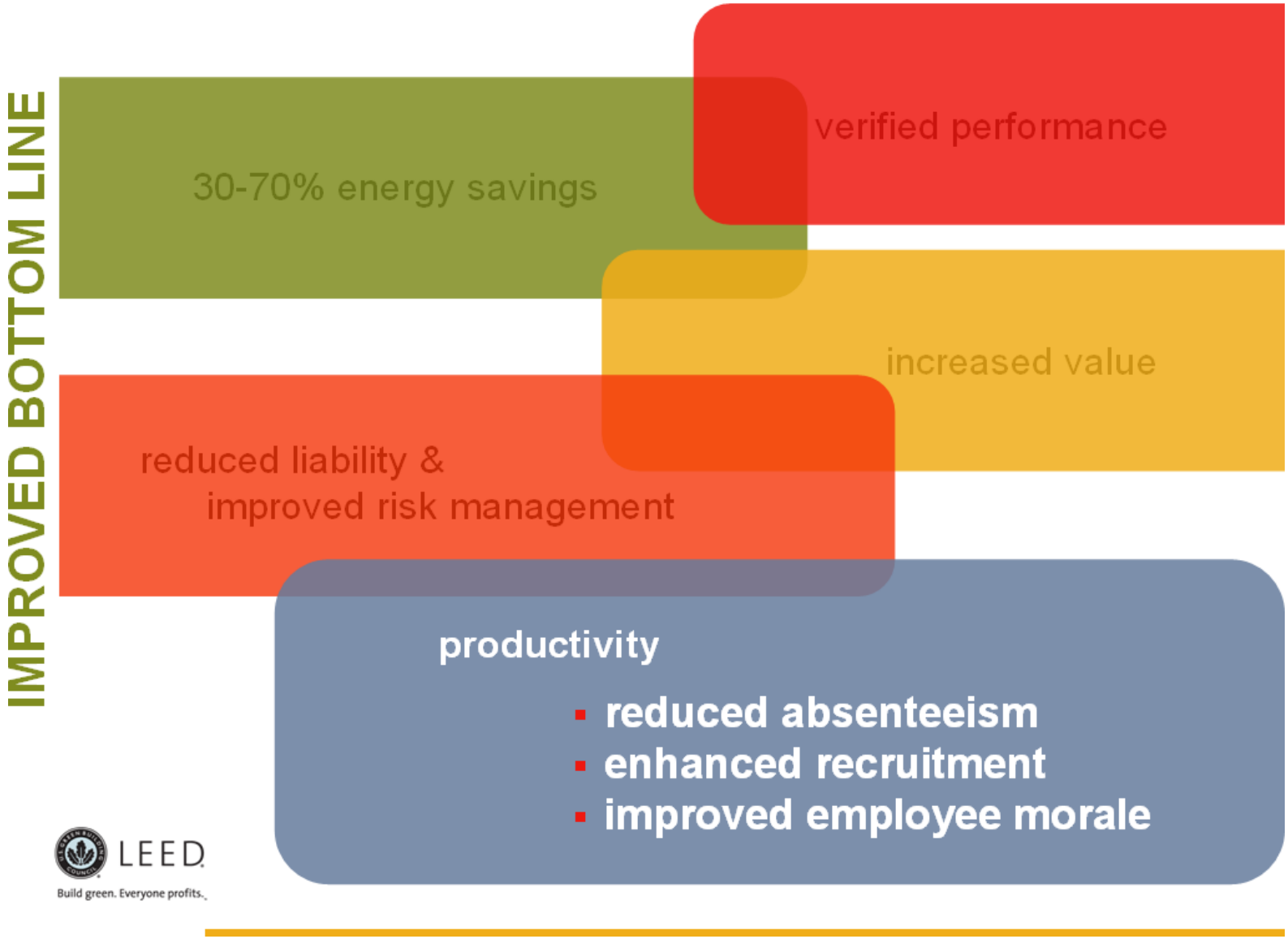
I, [redacted], declare to USGBC that the building has established and maintained a toxic material source reduction program to reduce the amount of mercury brought into buildings through purchases of mercury-containing light bulbs through the following actions:

☐ Maintain mercury content of all mercury containing light bulbs below 100 picograms per lumen hour of light output (picogram/lumen hour), on weighted average, for all mercury containing light bulbs acquired for the existing building and associated grounds.

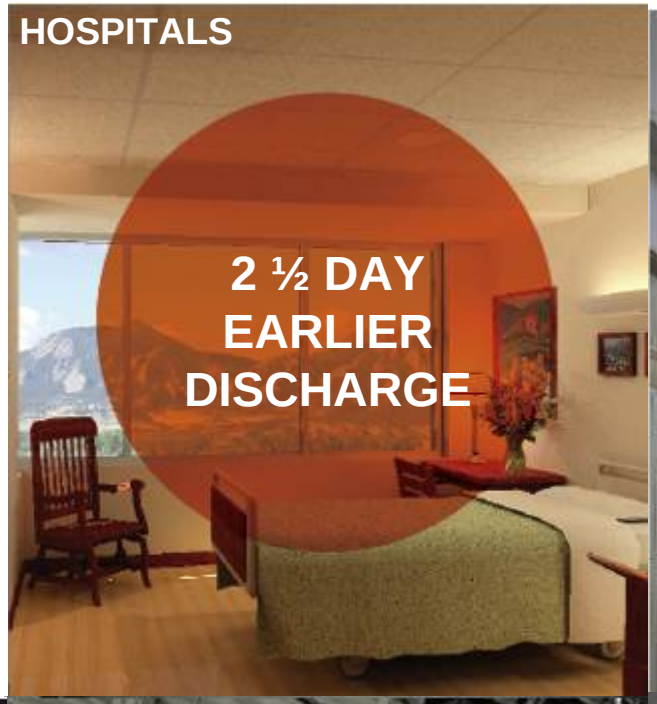
Calculation Methodology (The same calculations apply to both MR Prerequisite 2 and MR Credit 6)

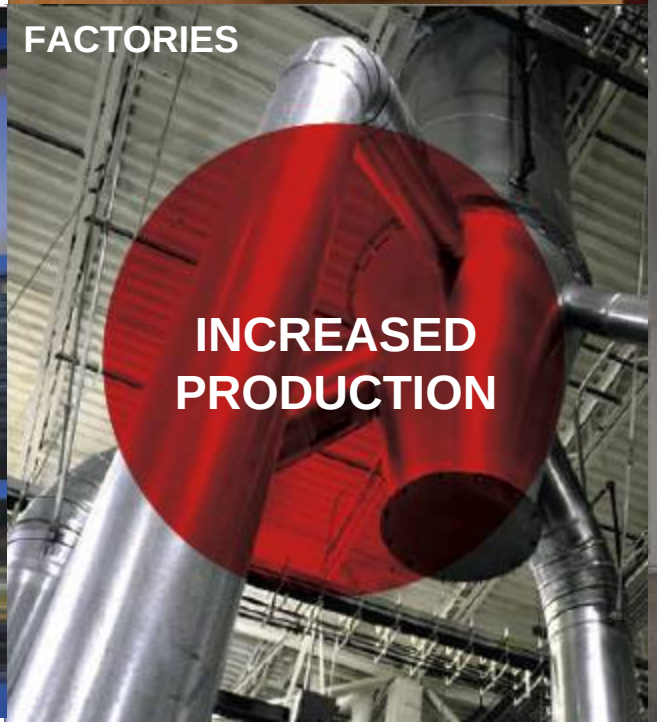
Note on Obtaining Mercury Data:
Successfully completing the picogram per lumen hour calculations requires information about the mercury content in milligrams per bulb for each type of mercury-containing bulb in the building. This information should be obtained from MSDSs or other

Business Drivers

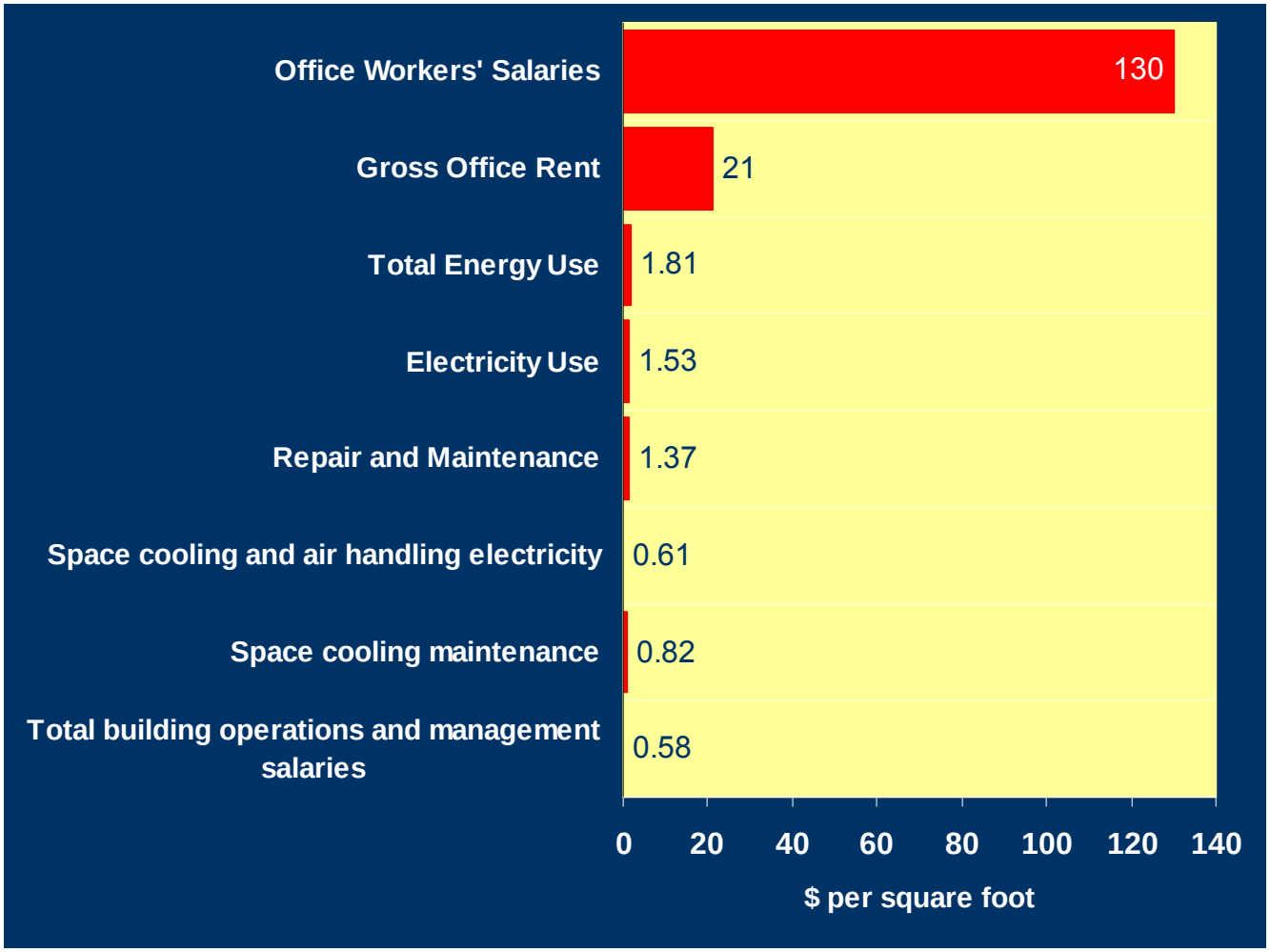


Increased Productivity.





Labor Costs Eclipse Energy Costs



Over a 30-year life, salaries account for 94% of a building's total cost

Additional Economic Benefits

- Overall building maintenance costs reduced
- Reduced liability, risk management
- Tenants/Owners attracted to efficient utility cost savings measures
- Increased building valuation, optimize life-cycle economic performance
- Marketing advantages

Certification Benefits

Recognition of Quality Buildings and Environmental Stewardship

- Third party validation of achievement
- Qualify for growing array of state and local government incentives
- Contribute to growing knowledge base of energy and environmentally responsive buildings
- LEED certification plaque to mount on building
- Receive marketing exposure through USGBC Web site, case studies media announcements
- Official certificate

LEED

The Real Benefit of LEED

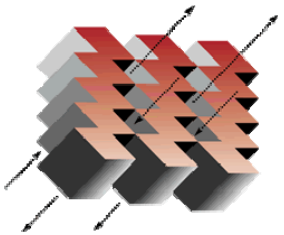
LEED Submittal Responsibilities

- Architectural Design Team **- Dwgs, Specifications, Letter Templates**
- Civil Design Team **- Civil Dwgs, Specifications, Letter Templates, Local Zoning info, LEED Calculator**
- Landscape Design Team **- Landscape Dwgs, Specifications, Letter Templates, LEED Calculator, Narrative**
- MEP Design Team **- MEP Dwgs, Specifications, Cut Sheets, Letter Templates, Narratives, Technical Data**
- Contractor **- Construction Mngmt Plans, Submittals, Cut Sheets, Letter Templates, LEED Calculator, Photographs**
- Owner **- Policies/Plans, Contracts**

Example Project: LEED Credits

Y	M	N	Sustainable Sites	
Y			Prerequisite 1	Erosion and Sedimentation Control
		X	Credit 1	Site Selection
		X	Credit 2	Development Density
	X		Credit 3	Brownfield Redevelopment
X			Credit 4.1	Alternative Transportation, Locate Near Public Transportation
X			Credit 4.2	Alternative Transportation, Bicycle Storage & Changing Rooms
	X		Credit 4.3	Alternative Transportation, Alternative Fuel Refueling Stations
X			Credit 4.4	Alternative Transportation, Minimum or No New Parking
		X	Credit 5.1	Reduced Site Disturbance, Protect or Restore Open Space
X			Credit 5.2	Reduced Site Disturbance, Reduce Footprint & Increase Open Space
		X	Credit 6.1	Stormwater Management, No Net Increase or 25% Decrease
		X	Credit 6.2	Stormwater Management, Treatment Systems
X			Credit 7.1	Landscape & Exterior Design to Reduce Heat Islands, Site Surfaces
X			Credit 7.2	Landscape & Exterior Design to Reduce Heat Islands, Roof Surfaces
X			Credit 8	Light Pollution Reduction
7	**2**	**5**	**14 Possible**	

Y	M	N	Water Efficiency	
X			Credit 1.1	Water Efficient Landscaping, Reduce by 50%
		X	Credit 1.2	Water Efficient Landscaping, Reduce Additional 50% or No Irrigation
		X	Credit 2	Innovative Wastewater Technologies
X			Credit 3.1	Water Use Reduction, 20% Reduction
X			Credit 3.2	Water Use Reduction, Additional 10% Reduction
3	**0**	**2**	**5 Possible**	



Example Credit

SS Credit 6.1: Stormwater Design: Quantity Control
1 Point

Intent

Limit disruption of natural water hydrology by reducing impervious cover, increasing on-site infiltration, reducing or eliminating pollution from stormwater runoff, and eliminating contaminants.

Requirements

CASE 1 — EXISTING IMPERVIOUSNESS IS LESS THAN OR EQUAL TO 50%

Implement a stormwater management plan that prevents the post-development peak discharge rate and quantity from exceeding the pre-development peak discharge rate and quantity for the one- and two-year 24-hour design storms.

OR

Implement a stormwater management plan that protects receiving stream channels from excessive erosion by implementing a stream channel protection strategy and quantity control strategies.

OR

CASE 2 — EXISTING IMPERVIOUSNESS IS GREATER THAN 50%

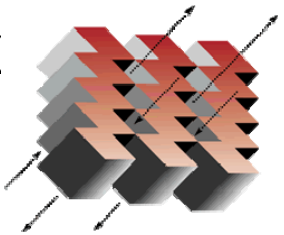
Implement a stormwater management plan that results in a 25% decrease in the volume of stormwater runoff from the two-year 24-hour design storm.

Potential Technologies & Strategies

Design the project site to maintain natural stormwater flows by promoting infiltration. Specify vegetated roofs, pervious paving, and other measures to minimize impervious surfaces. Reuse stormwater volumes generated for

Example Project: LEED Credits

Y	M	N	Energy and Atmosphere	
Y			Prerequisite 1	Fundamental Building Systems Commissioning
Y			Prerequisite 2	Minimum Energy Performance
Y			Prerequisite 3	CFC Reduction in HVAC&R Equipment
X			Credit 1.1	Optimize Energy Performance, (for Title 24) 2.5%
X			Credit 1.2	Optimize Energy Performance,(for Title 24) 7.51%
X			Credit 1.3	Optimize Energy Performance, (for Title 24) 12.51%
	X		Credit 1.4	Optimize Energy Performance, (for Title 24) 17.51%
	X		Credit 1.5	Optimize Energy Performance, (for Title 24) 22.51%
	X		Credit 1.6	Optimize Energy Performance, (for Title 24) 27.51%
	X		Credit 1.7	Optimize Energy Performance, (for Title 24) 32.51%
		X	Credit 1.8	Optimize Energy Performance, (for Title 24) 37.51%
		X	Credit 1.9	Optimize Energy Performance, (for Title 24) 42.51%
		X	Credit 1.10	Optimize Energy Performance, (for Title 24) 47.51%
		X	Credit 2.1	Renewable Energy, 2.5%-7.5% Contribution
		X	Credit 2.2	Renewable Energy, 7.51%-15.5% Contribution
		X	Credit 2.3	Renewable Energy, 15.51% Contribution
X			Credit 3	Additional Commissioning
X			Credit 4	Ozone Depletion
X			Credit 5	Measurement & Verification
X			Credit 6	Green Power
7	**4**	**6**	**17 Possible**	



Example Credit

EA Prerequisite 3: Fundamental Refrigerant Management Required

Intent

Reduce ozone depletion.

Requirements

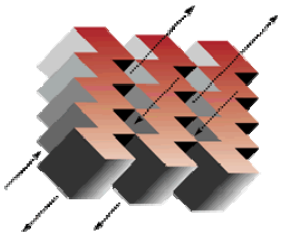
Zero use of CFC-based refrigerants in new base building HVAC&R systems. When reusing existing base building HVAC equipment, complete a comprehensive CFC phase-out conversion prior to project completion. Phase-out plans extending beyond the project completion date will be considered on their merits.

Potential Technologies & Strategies

When reusing existing HVAC systems, conduct an inventory to identify equipment that uses CFC refrigerants and provide a replacement schedule for these refrigerants. For new buildings, specify new HVAC equipment in the base building that uses no CFC refrigerants.

Example Project: LEED Credits

Y	M	N	Materials and Resources	
Y			Prerequisite 1	Storage & Collection of Recyclables
		X	Credit 1.1	Building Reuse, Maintain 75% of Existing Shell
		X	Credit 1.2	Building Reuse, Maintain Additional 25% of Shell
		X	Credit 1.3	Building Reuse, Maintain 100% Shell & 50% Non-Shell
X			Credit 2.1	Construction Waste Management, Salvage or Recycle 50%
X			Credit 2.2	Construction Waste Management, Salvage Additional 25%
		X	Credit 3.1	Resource Reuse, Specify 5% Reuse
		X	Credit 3.2	Resource Reuse, Specify 10% Reuse
X			Credit 4.1	Recycled Content, Specify 5% Recycled Content (PC + 1/2 PI)
X			Credit 4.2	Recycled Content, Specify 10% Recycled Content (PC + 1/2 PI)
X			Credit 5.1	Local/Regional Materials, 20% Manufactured Locally
	X		Credit 5.2	Local/Regional Materials, of 20% Above 50% Harvested Locally
		X	Credit 6	Rapidly Renewable Materials
X			Credit 7	Certified Wood
6	**1**	**6**	**13 Possible**	



Example Credit

MR Credit 6: Rapidly Renewable Materials

1 Point

Intent

Reduce the use and depletion of finite raw materials and long-cycle renewable materials by replacing them with rapidly renewable materials.

Requirements

Use rapidly renewable building materials and products (made from plants that are typically harvested within a ten-year cycle or shorter) for 2.5% of the total value of all building materials and products used in the project, based on cost.

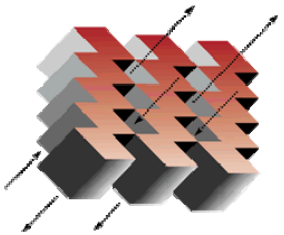
Potential Technologies & Strategies

Establish a project goal for rapidly renewable materials and identify products and suppliers that can support achievement of this goal. Consider materials such as bamboo, wool, cotton insulation, agrifiber, linoleum, wheatboard, strawboard and cork. During construction, ensure that the specified renewable materials are installed.

Example Project: LEED Credits

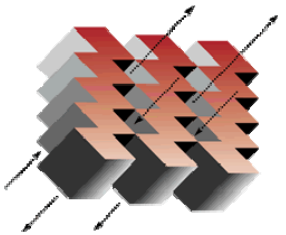
Y	M	N	Indoor Environmental Quality	
Y			Prerequisite 1	Minimum IAQ Performance
Y			Prerequisite 2	Environmental Tobacco Smoke (ETS) Control
X			Credit 1	Carbon Dioxide (CO_2) Monitoring
X			Credit 2	Increase Ventilation Effectiveness
X			Credit 3.1	Construction IAQ Management Plan, During Construction
X			Credit 3.2	Construction IAQ Management Plan, Prior to Occupancy
X			Credit 4.1	Low-Emitting Materials, Adhesives
X			Credit 4.2	Low-Emitting Materials, Paints
X			Credit 4.3	Low-Emitting Materials, Carpet
X			Credit 4.4	Low-Emitting Materials, Composite Wood
X			Credit 5	Indoor Chemical and Pollutant Source Control
		X	Credit 6.1	Controllability of Systems, Operable Window
	X		Credit 6.2	Controllability of Systems, Individual Controls
X			Credit 7.1	Thermal Comfort, Comply with ASHRAE 55-2004
		X	Credit 7.2	Thermal Comfort, Permanent Monitoring System
	X		Credit 8.1	Daylight and Views, Diffuse Sunlight to 75% of Space
X			Credit 8.2	Daylight and Views, Direct Line of Site to 90% of Space
11	**2**	**2**	**15 Possible**	

Y	M	N	Innovation & Design Process	
X			Credit 1.1	Innovation in Design, EAc6 Exceedance
X			Credit 1.2	Innovation in Design, As approved by USGBC
	X		Credit 1.3	Innovation in Design, As approved by USGBC
	X		Credit 1.4	Innovation in Design, As approved by USGBC
X			Credit 2	LEED™ Accredited Professional
3	**2**	**0**	**5 Possible**	



LEED Analysis

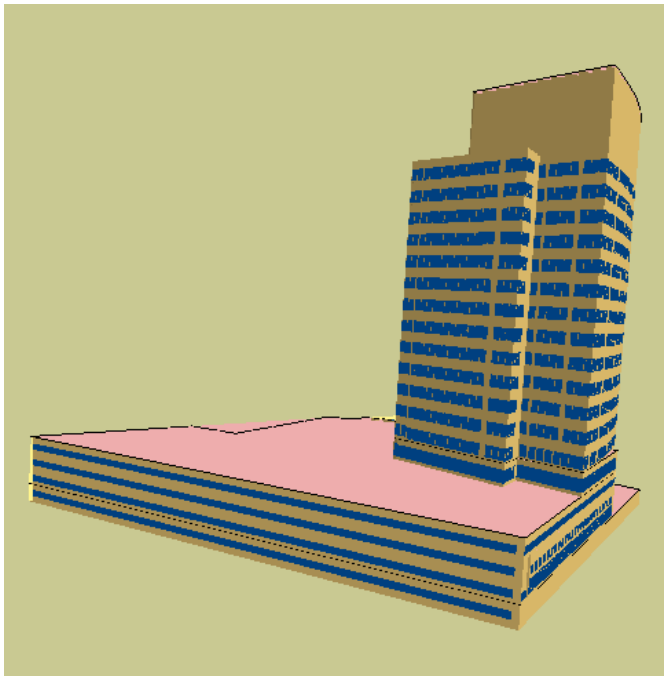
ID	Title	Credits with little or no extra investment	Credits requiring extra investment	Estimated Additional Construction Cost
SS4.3	Alternative Fuel Vehicles		1	$200,000
WE 1.2	Water Efficiency Landscaping		1	$180,000
WE 2	Innovative Wastewater Technologies	1		$10,000
EA 1.4 – 1.7	Optimize Energy Performance	2	1	$115,000
EA 2.1	Renewable Energy		1	$1,840,000
MR 5.2	Local/Regional Materials	1		$50,000
IE 8.1	Daylight and Views, Diffuse Sunlight to 75% of Space	1		None
IE 6.2	Controllability of Systems, Individual Controls	1		None
ID 1.3 – 1.4	Innovation in Design		2	$100,000
	TOTAL CREDITS	6	6	
	TOTAL COST	$60,000	$2,435,000	



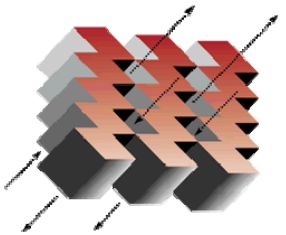
LEED Analysis, cont.

Optimized Energy Performance (EAc1)

- 26.5% savings vs. Title 24-2001 = 5 LEED credits
- 2 more than currently claimed as “yes” credits
- With additional efficiency measures, can reach 6 credits



Title 24 - 2001 New Construction	
% Savings	Points
2.50 - 7.50%	1
7.51 - 12.50%	2
12.51 - 17.50%	3
17.51 - 22.50%	4
22.51 - 27.50%	5
27.51 - 32.50%	6
32.51 - 37.50%	7
37.51 - 42.50%	8
42.51 - 47.50%	9
> 47.51%	10



LEED Analysis, cont.

Optimized Energy Performance (EAc1)

Exterior shading

- Energy savings = $13,000 per year
- Cost = $1,800,000

With overhangs

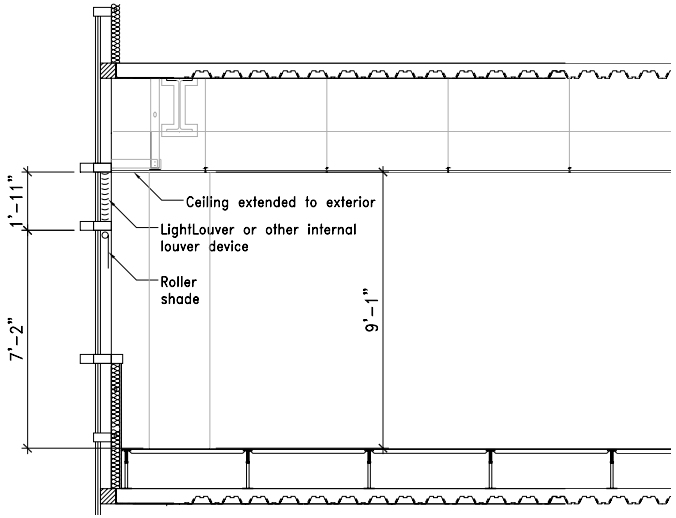
Without overhangs

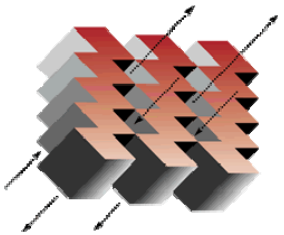
LEED Analysis, cont.

Optimized Energy Performance (EAc1)

Daylight redirecting devices with additional dimming controls

- Energy savings = $6,000 per year
- Cost = $405,000

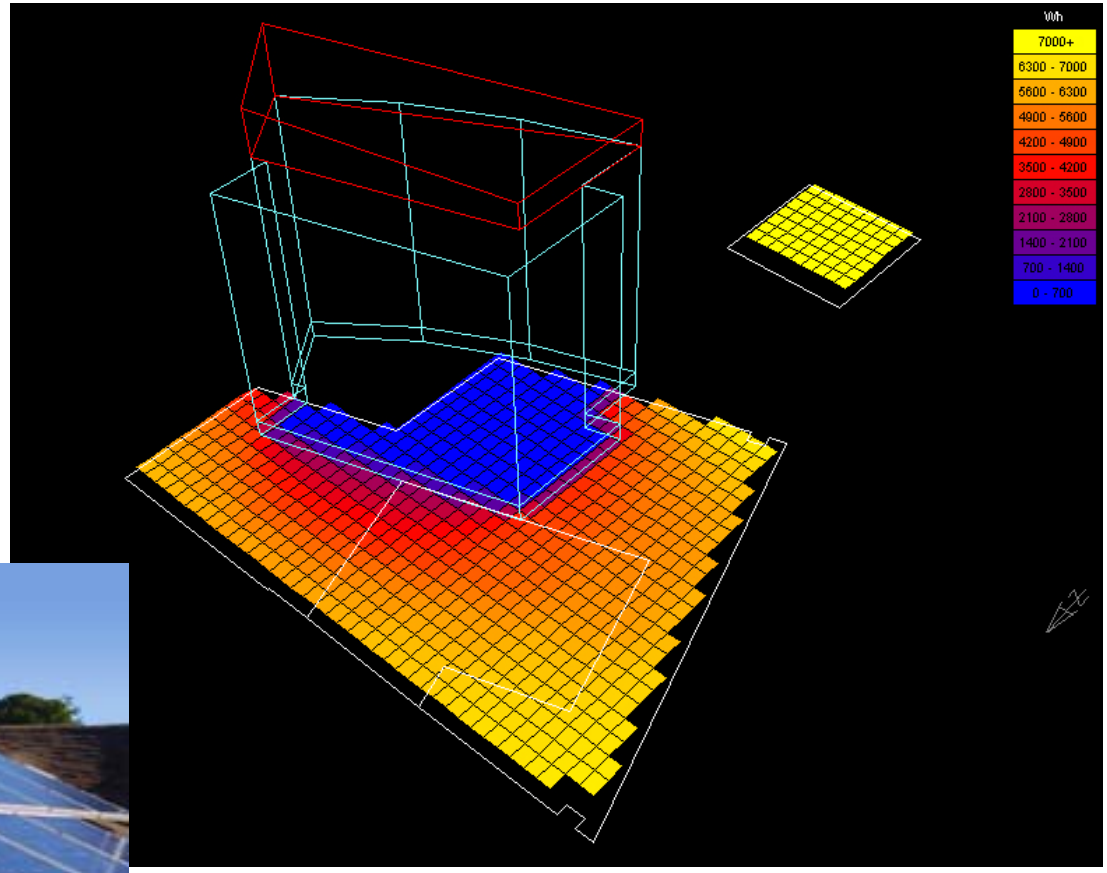


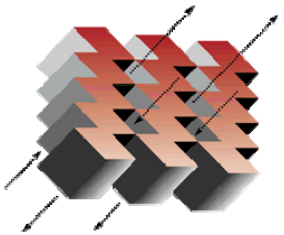


LEED Analysis, cont.

Renewable Energy (EAc2)

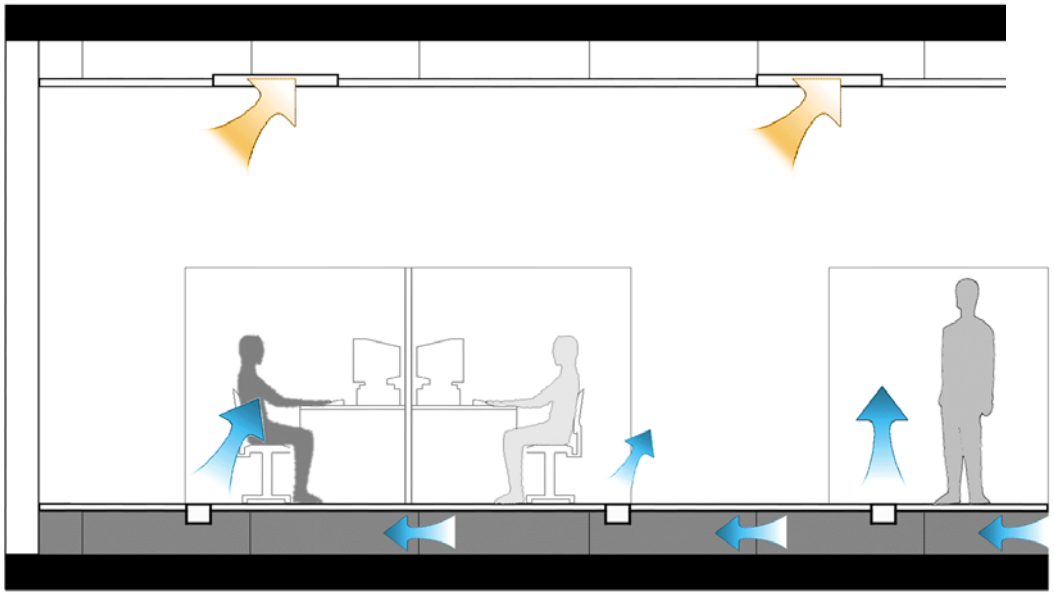
A photovoltaic system that produces 2.5% of the building's energy needs would earn 1 credit

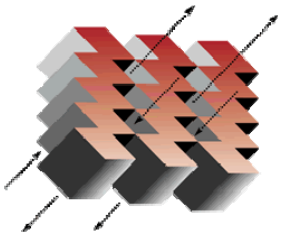




LEED Analysis, cont.

- **Controllability of Systems (IE6.2)**

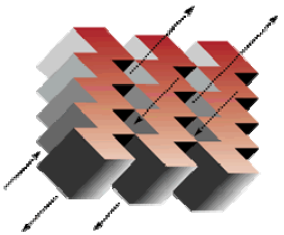




LEED Analysis, cont.

Local Materials (MR5.2)

- Requires that 50% of the materials that are manufactured locally also be harvested locally (500 mile radius)
- Given the location of the RLR3 project, this credit is likely to be achieved.



LEED - Resources

LEED Tools:

- **LEED Letter *Templates***
  - Template for every prerequisite & credit
- **LEED *Calculators***
  - Excel spreadsheets that calculate credits with given project information
- **LEED *Scorecard***
  - Track the project's LEED point progress
- **USGBC *Website***
  - Main source of knowledge about LEED, including the **LEED Reference Guide*, the **Sustainable Building Technical Manual* , and LEED Workshop registration

AE ASSOCIATES

Engineering Successful Building Environments

5587 West 19th Street, Greeley, Colorado 80634
telephone: 970.330.5587 fax: 970.330.3040

EA Credit 4: Ozone Protection

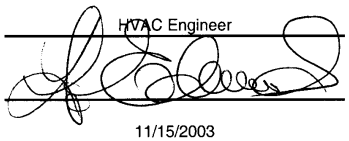
(Architect, HVAC Engineer or Responsible Party)
I, Lawrence A. Edwards, P.Eng., declare that the HVAC&R systems as-built are free of HCFC's and Halons.

	Points Documented
EA Cr 4 (1 possible point): Ozone Protection	1

Name: Lawrence Edwards

Organization: AE Associates

Role in project: HVAC Engineer

Signature: 

Date: 11/15/2003

File last modified: August 1, 2003

LEED-

Letter Template

U.S. GREEN BUILDING COUNCIL MEMBER

LEED Calculator

Design Case Table

Landscape Type	Area [SF]	Species Factor (k_s)		Density Factor (k_d)		Microclimate Factor (k_{mc})		K_L	ET_L	IE		TPWA [gal]
Trees	4,084	1	0.2	1	1.0	1	0.5	0.1	0.71	Drip	0.900	3,213
Shrubs/Mulch	2,895	1	0.2	1	0.5	1	0.5	0.1	0.35	Drip	0.900	1,139
Native Turf	10,766	1	0.2	1	0.6	1	1.0	0.1	0.85	Sprir	0.625	14,635
Manicured Turf (replacement)	222	1	0.6	1	0.6	1	1.0	0.4	2.55	Sprir	0.625	905
		--		--		--				Sprir	0.625	
		--		--		--				Drip	0.900	
		--		--		--				Drip	0.900	
		--		--		--				Sprir	0.625	
Total	**17,967**									Subtotal [gal]		19,892
										July Graywater Harvest [gal]		
										Net GPWA [gal]		**19,892**

Baseline Case Table

Landscape Type	Area [SF]	Species Factor (k_s)		Density Factor (k_d)		Microclimate Factor (k_{mc})		K_L	ET_L	IE		TPWA [gal]
Trees	4,084	1	0.5	1	1.0	1	0.5	0.3	1.77	Sprir	0.625	11,566
Shrubs/Mulch	2,895	1	0.5	1	1.0	1	0.5	0.3	1.77	Sprir	0.625	8,199
Manicured Turf	10,988	1	0.6	1	1.0	1	1.0	0.6	4.25	Sprir	0.625	74,683
		--		--		--				Sprir	0.625	
		--		--		--				Sprir	0.625	
		--		--		--				Drip	0.900	
		--		--		--				Sprir	0.625	
		--		--		--				Drip	0.900	
Total	**17,967**									**Net GPWA** [gal]		**94,448**

Irrigation Potable Water Use Reduction	**79%**

U.S. GREEN BUILDING COUNCIL MEMBER

LEED Scorecard

Y	?	N	Project Points	Possible Points	Credit Category	Credit Title
					Sustainable Sites	
Y			0	0	Prerequisite 1	Erosion and Sedimentation Control
		x	0	1	Credit 1	Site Selection
x			1	1	Credit 2	Urban Redevelopment
		x	0	1	Credit 3	Brownfield Redevelopment
x			1	1	Credit 4.1	Alternative Transportation, Locate Near Public Transportation
x			1	1	Credit 4.2	Alternative Transportation, Bicycle Storage & Changing Rooms
	x		0	1	Credit 4.3	Alternative Transportation, Alternative Fuel Refueling Stations
		x	0	1	Credit 4.4	Alternative Transportation, Minimum or No New Parking
		x	0	1	Credit 5.1	
	x		0	1	Credit 5.2	
x			1	1	Credit 6.1	
x			1	1	Credit 6.2	
x			1	1	Credit 7.1	
x			1	1	Credit 7.2	
x			1	1	Credit 8	
	2	4	8	14	**Subtotal - Sustaina**	

LEED GREEN BUILDING CERTIFICATION LEVELS

	= 26 - 32	**LEED CERTIFIED**
	= 33 - 38	**LEED CERTIFIED SILVER LEVEL**
	= 39 - 51	**LEED CERTIFIED GOLD LEVEL**
	= 52 +	**LEED CERTIFIED PLATINUM LEVEL**


USGBC - U.S. Green Building Council - Mozilla
File Edit View Go Bookmarks Tools Window Help
Back Forward Reload Stop
http://www.usgbc.org/
Search
Print
Home Bookmarks Webmail MIS USGBC Home QwestDex AEC Intranet Index FentressBradburnFTP
USGBC - U.S. Green Building Council
www.usgbc.org
Build green.
search
Go
Products & Services | myUSGBC | Your Account | Contact | Site Index
About USGBC Join LEED Resources News Events Members Chapters
Welcome to the U.S. Green Building Council
The Council is the nation's foremost coalition of leaders from across the building industry working to promote buildings that are environmentally responsible, profitable and healthy places to live and work.
NEWS & INFORMATION
Curriculum Consultant RFP (PDF File)
USGBC Web Site Re-Launch
2005 USGBC Natural Talent Design Competition
U.S. Green Building Council in the News
SPECIAL FEATURE
February 14th, 2005: New USGBC Web Site
USGBC launches new web site and customer portal for easy access to services and resources. Read More...
Ecoworks
LEED-NC v2 Certified
PRODUCTS & SERVICES
LEED
LEED for New Construction
LEED for Existing Buildings
LEED for Commercial Interiors
MEMBERSHIP
Become a member of the U.S. Green Building Council.
GREENBUILD
November 9-11,2005
Atlanta, GA
www.greenbuildexpo.or
LEED Tool -
USGBC Webpage

LEED- USGBC Webpage

- Access to project registration
- Access to technical assistance
- Access to application for LEED certification **
- Submit CIR's **
- View CIR's *, **

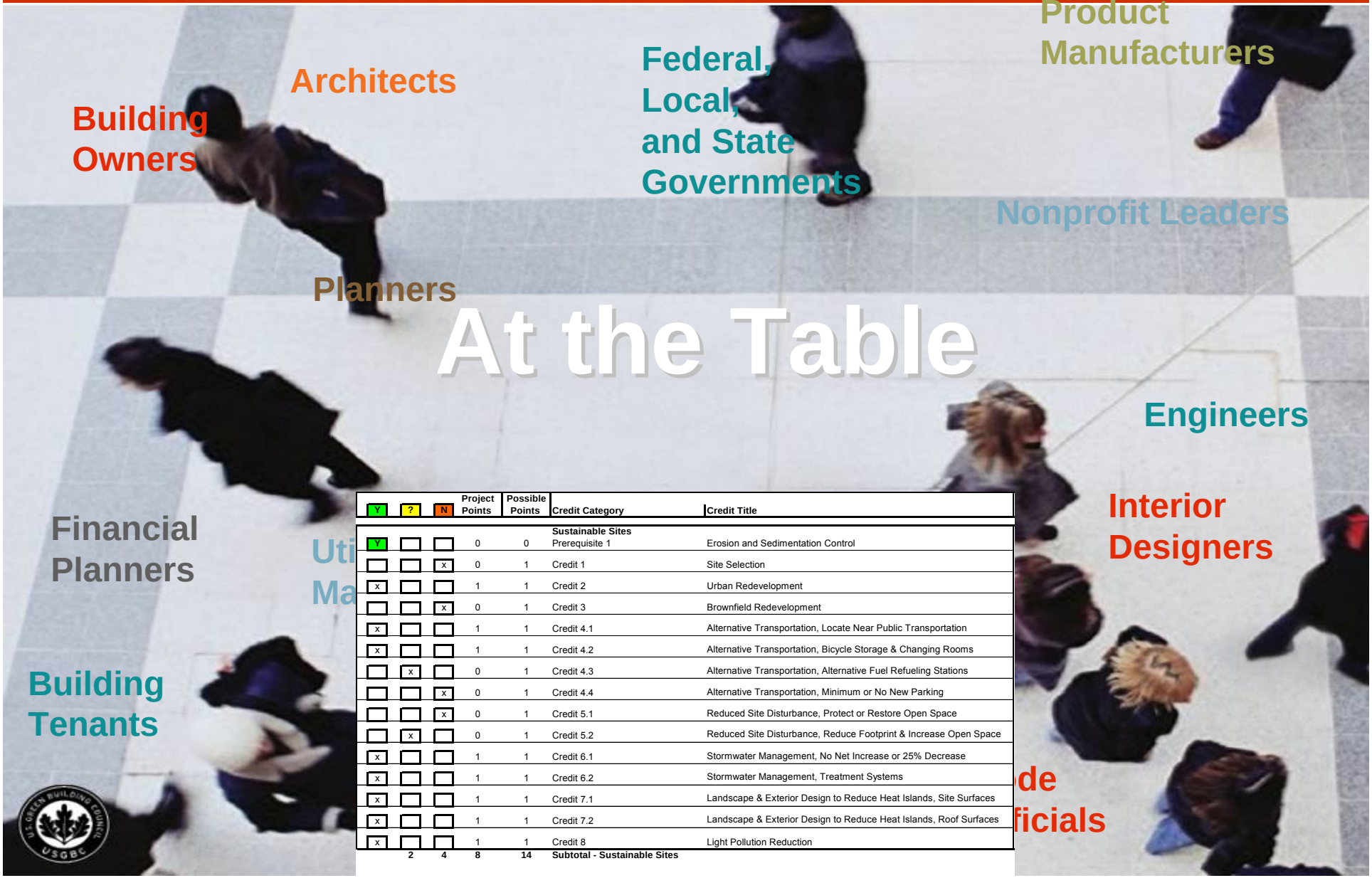
**USGBC Member*

***Registered Projects*

LEED Submittals

- **Credits require supporting documentation to justify the intent of the LEED point is met through design, construction, and operation of the building.**
- **Examples of supporting LEED submittals:**
  - LEED Letter Templates
  - LEED Calculators
  - Drawings
  - Specifications
  - Product Cut Sheets
  - MSDS
  - Manufacturer's statement
  - Photographs
  - Technical data or analysis

The Real Benefit of LEED



Y	?	N	Project Points	Possible Points	Credit Category	Credit Title
					Sustainable Sites	
Y			0	0	Prerequisite 1	Erosion and Sedimentation Control
		x	0	1	Credit 1	Site Selection
x			1	1	Credit 2	Urban Redevelopment
		x	0	1	Credit 3	Brownfield Redevelopment
x			1	1	Credit 4.1	Alternative Transportation, Locate Near Public Transportation
x			1	1	Credit 4.2	Alternative Transportation, Bicycle Storage & Changing Rooms
	x		0	1	Credit 4.3	Alternative Transportation, Alternative Fuel Refueling Stations
		x	0	1	Credit 4.4	Alternative Transportation, Minimum or No New Parking
		x	0	1	Credit 5.1	Reduced Site Disturbance, Protect or Restore Open Space
	x		0	1	Credit 5.2	Reduced Site Disturbance, Reduce Footprint & Increase Open Space
x			1	1	Credit 6.1	Stormwater Management, No Net Increase or 25% Decrease
x			1	1	Credit 6.2	Stormwater Management, Treatment Systems
x			1	1	Credit 7.1	Landscape & Exterior Design to Reduce Heat Islands, Site Surfaces
x			1	1	Credit 7.2	Landscape & Exterior Design to Reduce Heat Islands, Roof Surfaces
x			1	1	Credit 8	Light Pollution Reduction
	2	4	8	14	**Subtotal - Sustainable Sites**	

LEED Accredited Professional

Who can be a LEED AP?

Recommended qualifications for the LEED Professional Accreditation exam:

1. Tenure in green building and construction industry knowledge
2. Familiarity with documentation process for LEED certified projects
3. Knowledge of LEED credit intents, requirements, submittals, technologies and strategies within your discipline
4. Practical experience working with multiple design disciplines
5. Understanding of life cycle cost and benefits of LEED
6. Familiarity with LEED resources and processes