

SUSTAINABILITY TRACK

Session 2



Phoenix, AZ
August 3-6, 2008



Greening the Built Environment with LEED for Existing Buildings: Operations & Maintenance

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Adobe Systems Incorporated, West Tower (Almaden)

37% energy savings

41% water savings

94% waste diverted

Source: Cushman & Wakefield of California,
Inc. as an agent for Adobe Systems Inc.





JohnsonDiversey Inc. Global Headquarters

\$90,000

annual energy cost savings

32% water savings

49% waste diverted

Source: JohnsonDiversey Inc.





Leadership in Energy and Environmental Design

A leading-edge system
for certifying the
greenest performing
buildings in the world

LEED® Facts
Building size 12,500 square ft
Type of building

LEED for Core & Shell Development
Certification awarded July 27, 2006

Platinum

Sustainable Sites	13/15
Water Efficiency	5/5
Energy & Atmosphere	12/15
Materials & Resources	6/9
Indoor Environmental Quality	10/13
Innovation & Design	3/5

*Out of a possible 62 points

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LEED®

LEED®

**ENERGY
USE**

30-50%

**CARBON
EMISSIONS**

35%

**WATER
USE**

40%

**SOLID
WASTE**

70%

Average Savings of Green Buildings

Consensus-Based Standards

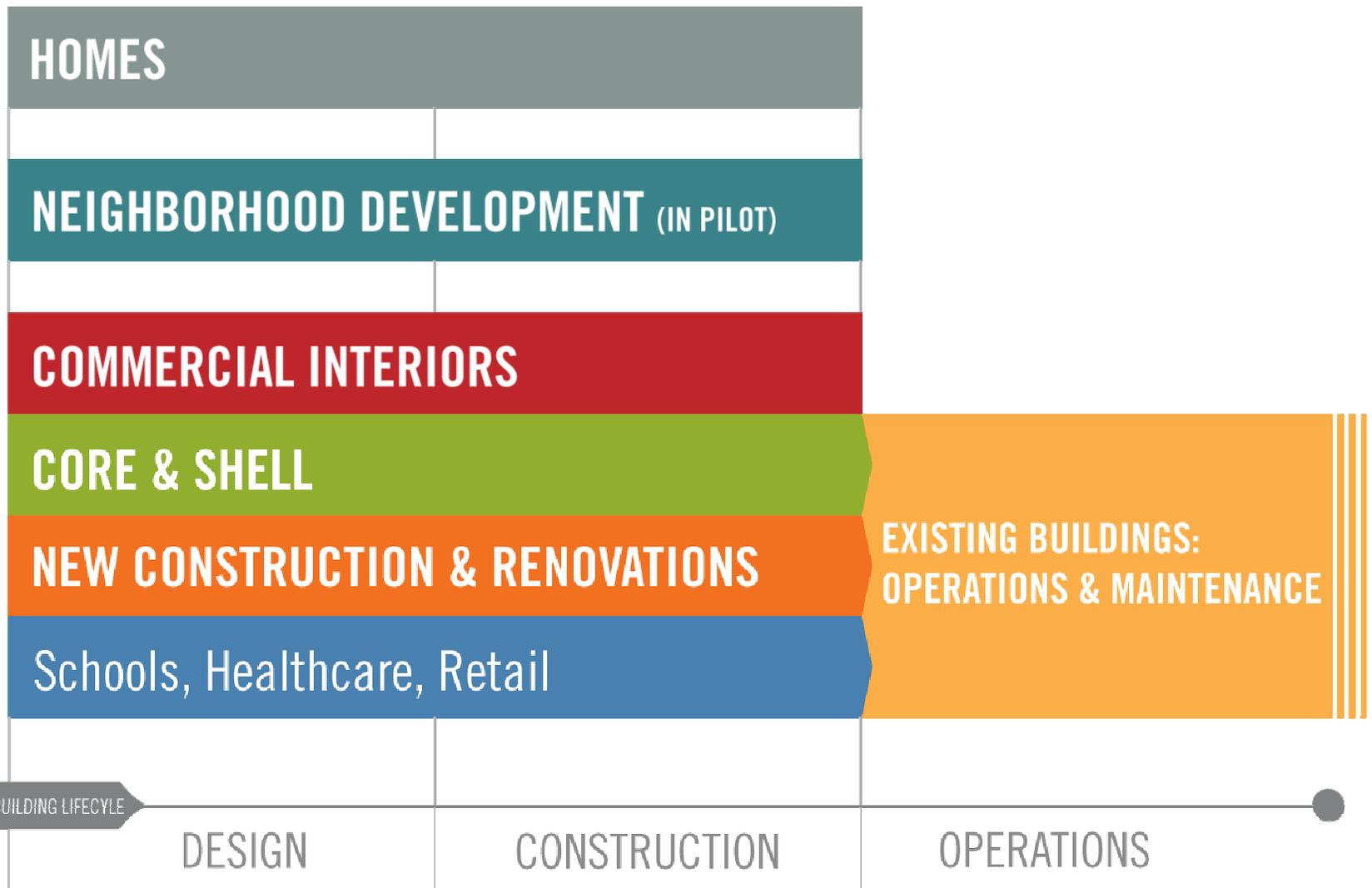
USGBC has four levels of LEED:



What is a Green Building?



LEED addresses the complete lifecycle of buildings:



LEED for Existing Buildings: Operations & Maintenance

Ongoing certification of all projects

The Basics

9 prerequisites

34 credits

3 - month performance period

Minimum Program Requirements

- **Full occupancy for at least 12 continuous months**
- **Applies to whole buildings**
- **Federal, state and local environmental law/regulation compliance**

Strategies

- **Reduced documentation burden**
- **Fewer prerequisites**
- **Greater focus on O&M rather than construction**
- **Ease of scale for use in greening large portfolios**
- **More rewards for environmental performance**
- **Movement away from prescriptive credits**

Credit Categories & Distribution



12 POINTS Sustainable Sites (SS)

10 POINTS Water Efficiency (WE)

30 POINTS Energy & Atmosphere (EA)

14 POINTS Materials & Resources (MR)

19 POINTS Indoor Environmental Quality (EQ)

7 POINTS Innovation in Operations (IO)

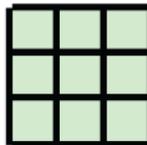
Sustainable Sites (SS)

Yes ? No

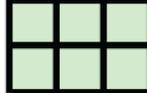
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Sustainable Sites

12 Points



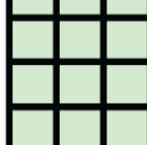
Credit 1 **LEED Certified Design and Construction** 1



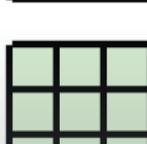
Credit 2 **Building Exterior and Hardscape Management Plan** 1



Credit 3 **Integrated Pest Management, Erosion Control, and Landscape Management Plan** 1



Credit 4 **Alternative Commuting Transportation** 4



4.1 10% 1



4.2 25% 1



4.3 50% 1



4.4 75% or greater 1



Credit 5 **Reduced Site Disturbance - Protect or Restore Open Space** 1

Credit 6 **Stormwater Management** 1

Credit 7 **Heat Island Reduction** 2

7.1 Non-Roof 1

7.2 Roof 1

Credit 8 **Light Pollution Reduction** 1

Yes ? No

0 0 0

Water Efficiency

10 Points

Y

Prereq 1 **Minimum Indoor Plumbing Fixture and Fitting Efficiency** Required



Credit 1 **Water Performance Measurement** 2



1.1 Whole building metering 1



1.2 Submetering 1

Credit 2 **Additional Indoor Plumbing Fixture and Fitting Efficiency** 3

2.1 10% 1

Alternative Commuting Transportation

OLD

- Carpooling
- Telecommuting
- Green vehicles
- Bicycle facilities
- Mass transit proximity



NEW

- Carpooling
- Telecommuting
- Green vehicle usage
- Bicycle usage
- Mass transit usage
- Walking
- Compressed work schedule

10% reduction = 1 point

25% reduction = 2 points

50% reduction = 3 points

75% reduction = 4 points

Water Efficiency (WE)

Yes ? No

0 0 0

Water Efficiency

10 Points

Y

Prereq 1 **Minimum Indoor Plumbing Fixture and Fitting Efficiency**

Required

Credit 1 **Water Performance Measurement**

2

1.1 Whole building metering

1

1.2 Submetering

1

Credit 2 **Additional Indoor Plumbing Fixture and Fitting Efficiency**

3

2.1 10%

1

2.2 20%

1

2.3 30%

1

Credit 3 **Water Efficient Landscaping**

3

3.1 Reduce Potable Water Use by 50%

1

3.2 Reduce Potable Water Use by 75%

1

3.3 Reduce Potable Water Use by 100%

1

Credit 4 **Cooling Tower Water Management**

2

4.1 Chemical Management

1

4.2 Non-Potable Water Source Use

1

Yes ? No

0 0 0

Energy & Atmosphere

30 Points

Y

Prereq 1 **Energy Efficiency Best Management Practices - Planning, Documentation, and Opportunity Assessment**

Required

Y

Prereq 2 **Minimum Energy Efficiency Performance**

Required

Y

Prereq 3 **Refrigerant Management - Ozone Protection**

Required

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Credit 1 **Optimize Energy Efficiency Performance**

15

Minimum Indoor Plumbing Fixture and Fitting Efficiency

OLD

One age group



NEW

Pre-1993

160% of 2006 plumbing code

1993 and later

120% of 2006 plumbing code

Energy & Atmosphere (EA)

Yes ? No

0 0 0

Energy & Atmosphere

30 Points

Y	Prereq 1	Energy Efficiency Best Management Practices - Planning, Documentation, and Opportunity Assessment	Required
Y	Prereq 2	Minimum Energy Efficiency Performance	Required
Y	Prereq 3	Refrigerant Management - Ozone Protection	Required
	Credit 1	Optimize Energy Efficiency Performance	15
	Credit 2	Existing Building Commissioning	6
	2.1	Investigation and Analysis	2
	2.2	Implementation	2
	2.3	Ongoing Commissioning	2
	Credit 3	Performance Measurement	3
	3.1	Building Automation System	1
	3.2	System-Level Metering, 40%	1
	3.3	System-Level Metering, 80%	1
	Credit 4	Renewable Energy	4
	4.1	On-site 3% / Off-site 25%	1
	4.2	On-site 6% / Off-site 50%	1
	4.3	On-site 9% / Off-site 75%	1
	4.4	On-site 12% / Off-site 100%	1
	Credit 5	Refrigerant Management	1
	Credit 6	Emissions Reduction Reporting	1

Yes ? No

0 0 0

Materials & Resources

14 Points

Optimize Energy Efficiency Performance: Improved Path for Unratable Buildings



EPA Portfolio Manager

Materials & Resources (MR)

Yes ? No

0 0 0

Materials & Resources

14 Points

Y
Y

Prereq 1 **Sustainable Purchasing Policy**

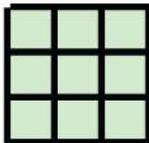
Required

Prereq 2 **Solid Waste Management Policy**

Required

Credit 1 **Sustainable Purchasing**

3



1.1 Ongoing Consumables, 40%

1

1.2 Ongoing Consumables, 60%

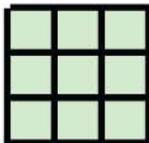
1

1.3 Ongoing Consumables, 80%

1

Credit 2 **Sustainable Purchasing**

2



2.1 Durable Goods, electric

1

2.2 Durable Goods, furniture

1

Credit 3 **Sustainable Purchasing - Facility Alterations and Additions**

1



Credit 4 **Sustainable Purchasing**

2

4.1 Reduced Mercury in Lamps, 90 pg/lum-hr

1

4.2 Reduced Mercury in Lamps, 70 pg/lum-hr

1

Credit 5 **Sustainable Purchasing - Food**

1

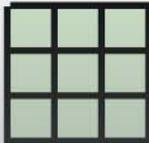


Credit 6 **Solid Waste Management - Waste Stream Audit**

1

Credit 7 **Solid Waste Management**

2



7.1 Ongoing Consumables, 50%

1

7.2 Ongoing Consumables, 70%

1

Credit 8 **Solid Waste Management - Durable Goods**

1

Credit 9 **Solid Waste Management - Facility Alterations and Additions**

1

Yes ? No

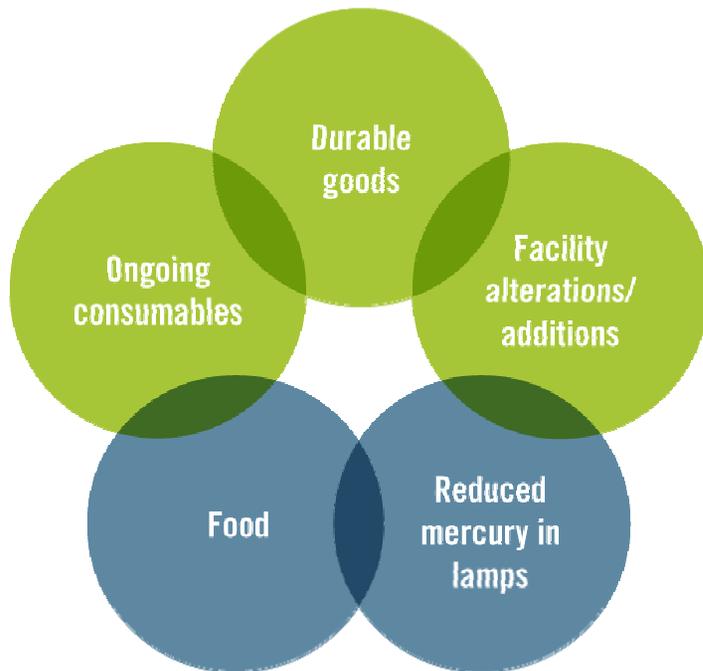
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Indoor Environmental Quality

19 Points

Sustainable Purchasing & Solid Waste Management

Sustainable Purchasing



Solid Waste Management



Indoor Environmental Quality (EQ)

Yes ? No

0 0 0

Indoor Environmental Quality

19 Points

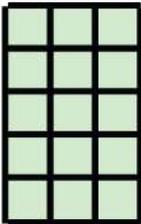
Y
Y
Y

Prereq 1 **Outdoor Air Introduction and Exhaust Systems** Required

Prereq 2 **Environmental Tobacco Smoke (ETS) Control** Required

Prereq 3 **Green Cleaning Policy** Required

Credit 1 **IAQ Best Management Practices** **5**



1.1 IAQ Management Program 1

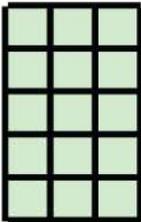
1.2 Outdoor Air Delivery Monitoring 1

1.3 Increased Ventilation 1

1.4 Reduce Particulates in Air Distribution 1

1.5 IAQ Management for Facility Alterations and Additions 1

Credit 2 **Occupant Comfort** **5**



2.1 Occupant Survey 1

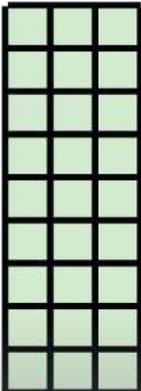
2.2 Occupant Controlled Lighting 1

2.3 Thermal Comfort Monitoring 1

2.4 Daylight and Views, 50% Daylight / 45% Views 1

2.5 Daylight and Views, 75% Daylight / 90% Views 1

Credit 3 **Green Cleaning** **9**



3.1 High Performance Cleaning Program 1

3.2 Custodial Effectiveness Assessment, < 3 1

3.3 Custodial Effectiveness Assessment, < 2 1

3.4 Sustainable Cleaning Products and Materials, 30% 1

3.5 Sustainable Cleaning Products and Materials, 60% 1

3.6 Sustainable Cleaning Products and Materials, 90% 1

3.7 Sustainable Cleaning Equipment 1

3.8 Entryway Systems 1

3.9 Indoor Integrated Pest Management 1

Deleted Credits

-1

Prerequisite 3: Asbestos Removal or Encapsulation

Prerequisite 4: PCB Removal

Credit 4: Documenting Productivity Impacts

-1/2

Credit 6: Controllability of Systems

Credit 8: Daylight & View

Green Cleaning

- **Credit 3.1: High Performance Cleaning Program**
- **Credit 3.2-3: Custodial Effectiveness Assessment**
- **Credit 3.4-6: Sustainable Cleaning Products and Materials, 30%**
- **Credit 3.7: Sustainable Cleaning Equipment**
- **Credit 3.8: Entryway Systems**
- **Credit 3.9: Indoor Integrated Pest Management**

Innovation in Operations (IO)

Yes	?	No	Innovation in Operations		7 Points
0	0	0	Credit 1	Innovation in Operations	4
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1.1	Innovation in Operations	1
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1.2	Innovation in Operations	1
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1.3	Innovation in Operations	1
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1.4	Innovation in Operations	1
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Credit 2	LEED Accredited Professional	1
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Credit 3	Documenting Sustainable Building Cost Impacts	2

Getting Started

1. REGISTER YOUR PROJECT



**2. BUILD A PROJECT TEAM
USING LEED ONLINE**



3. EDUCATE YOUR TEAM



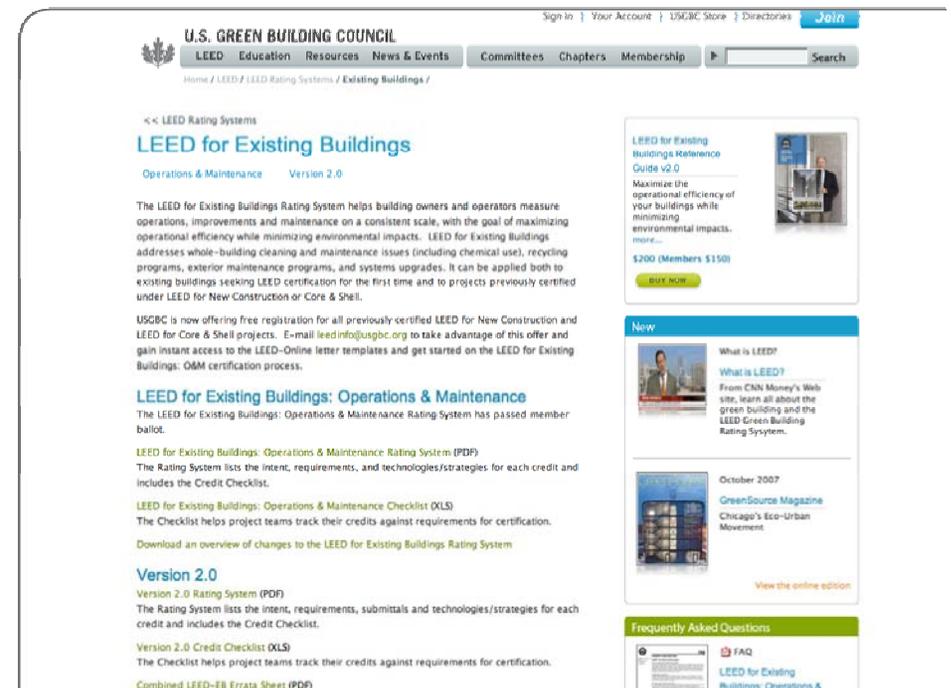
4. SET GOALS

Cross-Functional Team

ENGINEERS OPERATIONS AND MAINTENANCE TEAMS
BUILDING OCCUPANTS BUILDING MANAGERS BUILDING
FACULTY ENVIRONMENTAL HEALTH AND SAFETY STAFF
GROUNDSKEEPERS CAPITAL PLANNING STAFF GROUNDSKEEPERS
STAFF SECURITY/PARKING/TRANSPORTATION STAFF SECURITY
CUSTODIAL TEAM UTILITIES/ENERGY STAFF CUSTODIAL TEAM
HUMAN RESOURCES FOOD SERVICES STAFF HUMAN RESOURCES
PURCHASING STAFF ENVIRONMENTAL GROUPS
ENGINEERS OPERATIONS AND MAINTENANCE TEAMS
BUILDING OCCUPANTS BUILDING MANAGERS BUILDING

Tools

- Rating systems
- Reference guide
- Project checklist
- Credit Interpretation Requests (CIRs)
- LEED Online
- Educational workshops
- Project case studies
- www.usgbc.org





QUESTIONS

ANSWERS



Thank you!

