



Operating Strategies for Sustainability

Brenna S. Walraven, RPA, CPM

Executive Managing Director, National Property Management



GovEnergy
www.govenergy.gov





USAA Real Estate Company – Who Are We?

- **USAA, our parent, is Fortune 200 financial services company** with over \$96 billion in owned and managed assets.
- **Investor, Developer and Manager of commercial real estate** through out the United States investing capital in real estate development, build-to-suits and acquisitions
- We have a **strong commitment to customer service, operational excellence and environmental stewardship**
- **5 time Energy Star Partner of the Year-** due to our leadership in energy efficiency management and environmental stewardship
- **One of 14 companies participating in development of the USGBC LEED Portfolio Program**



Then & Now

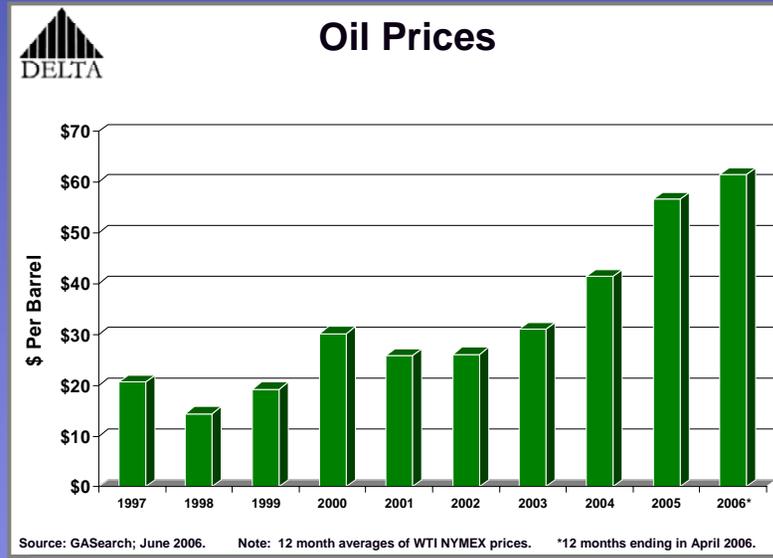
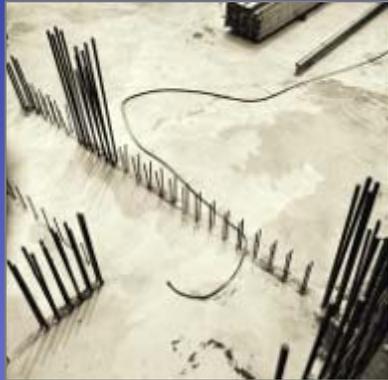


Look at Us!



As an industry, we tend to resist change

Evolve or Perish





Today's Goals

- Overview of “What is a Sustainable Property”
- Business Strategy
- Business Case for Sustainable Operations
- LEED®-EB Rating Tool
- Available Resources and Tools
- Questions



What is a Sustainable Property?

United States

LEED (Leadership in Energy & Environmental Design)

EnergyStar

Global Reporting Initiative

NAHB/ICC Multifamily

Green Globes

Government Guidelines

ASHRAE 189P

Canada

LEED (NC)

BOMA GoGreen (EB)

BREEAM Greenleaf (NB)

United Kingdom

BREEAM (65,000 certified)

Asia

CASBEE: Japan, Korea

HKBEAM: Hong Kong

EEWH: Taiwan

GreenStar: Australia, New Zealand

Europe

Different Systems: Most Countries

India

LEED

Building Performance as a Business Strategy

- Poor building performance impacts not only utility bills and overall property operating costs....
 - property value
 - the health & productivity of occupants
 - the bottom line

How best to Execute on Sustainable Operations?



- Must make the Business Case for sustainable operations
- By Business Case we mean...
 - Improve overall operational efficiency
 - Dramatically improve energy efficiency
 - Reduce water consumption
 - Increase recycling and reduce waste
 - Improve procurement to include “sustainable products”
 - Eliminate toxic chemicals for cleaning & use green cleaning methods
- All of these combine to lower costs by more than it costs to implement “sustainable operational strategies”



Energy Costs

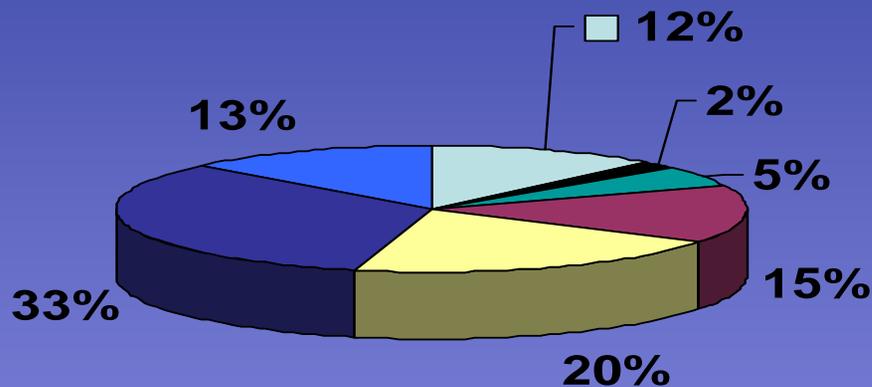


Comfort (HVAC)
Lights
Plugs
Process

Losses
 Inefficient Operations
 Inefficient Systems
(waste)



Why is Energy so Important?



- Cleaning
- Roads/Grounds
- Security
- R&M
- Utilities
- Taxes & Ins. (Fixed Costs)
- Administrative

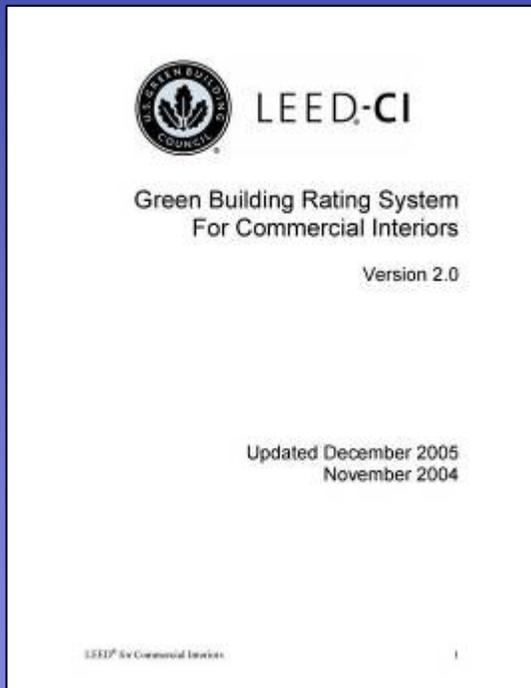
TOTAL OPERATING COSTS

DATA from BOMA 2006 Experience Exchange Report

• LEED or Leeds?

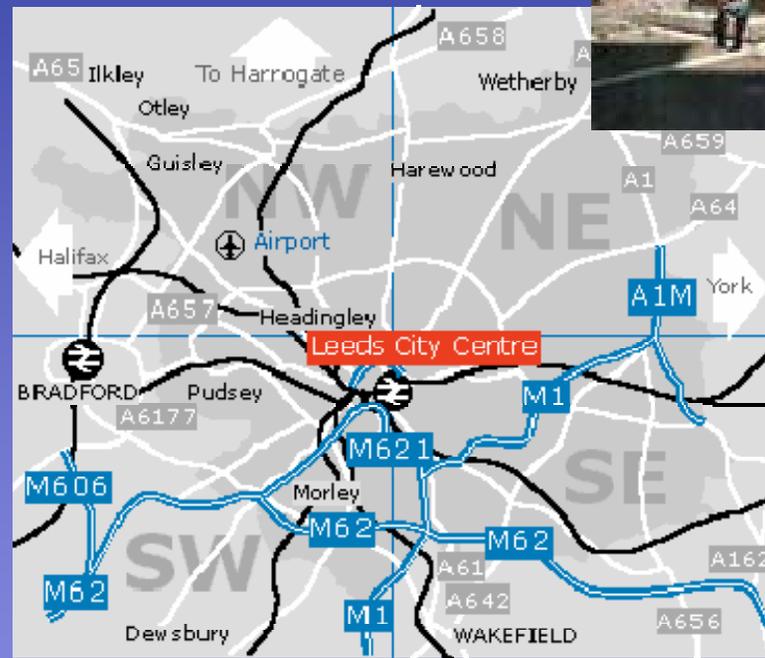


LEED



Green Building Rating System

Leeds



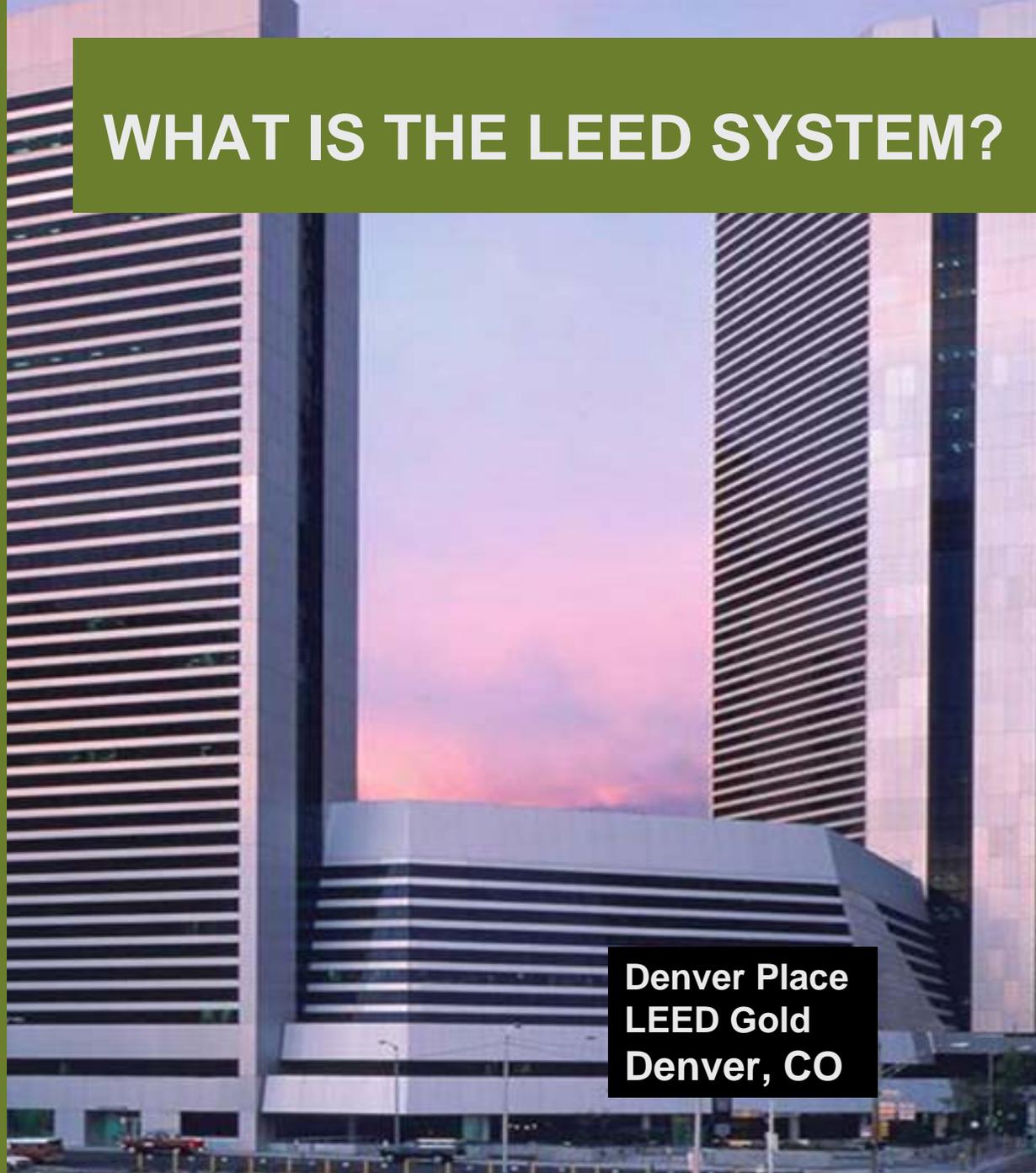
City in the UK

LEADERSHIP in ENERGY and ENVIRONMENTAL DESIGN

A voluntary,
consensus-based
national standard for
developing high-
performance,
sustainable buildings
and interiors

WHAT IS THE LEED SYSTEM?

Denver Place
LEED Gold
Denver, CO





LEED

- Leadership in Energy and Environmental Design (LEED)
 - Provides a framework for assessing building performance & meeting sustainability goals.
 - Use LEED as guideline to implement green practices

LEED-NC NEW CONSTRUCTION & MAJOR RENOVATION version 2.1	LEED-EB EXISTING BUILDINGS version 2.0	LEED-CI COMMERCIAL INTERIORS version 2.0
LEED-CS CORE & SHELL PILOT	LEED-H HOMES PILOT	LEED-ND NEIGHBORHOOD DEVELOPMENTS UNDER DEVELOPMENT

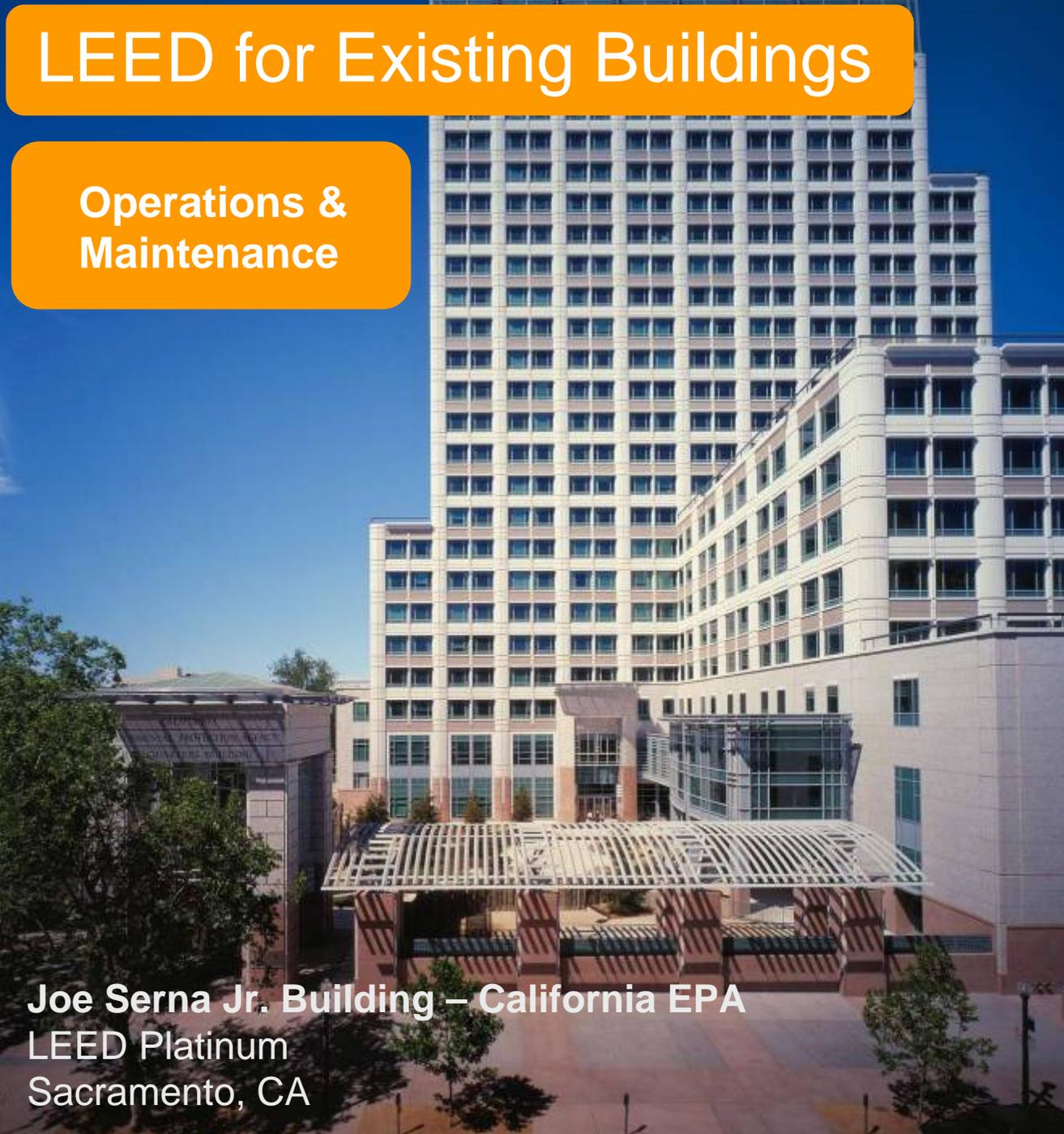


The LEED-EB Difference

- LEED for Existing Buildings
 - Focuses on building performance
 - Helps building teams reduce the environmental impacts of their facilities
- LEED for New Construction
 - Focuses on building design and construction

LEED for Existing Buildings

Operations &
Maintenance

A photograph of the Joe Serna Jr. Building, a tall, modern office building with a grid-like facade of windows. The building is set against a clear blue sky. In the foreground, there is a paved plaza with a large, curved, white metal structure that appears to be a canopy or part of a walkway. There are some trees and a smaller building to the left of the main building.

Joe Serna Jr. Building – California EPA
LEED Platinum
Sacramento, CA

LEED-EB is **HOW** you manage your building.

Energy Efficiency

Water Conservation

Waste Management

Air Quality





LEED EB Program Basics

- Must Meet All 14 Prerequisites
- 92 Points Organized as Credits
- Credits Divided Into Five Categories
 - Sustainable Sites
 - Water Efficiency
 - Energy and Atmosphere
 - Materials and Resources
 - Indoor Environmental Quality



LEED EB Program Basics

- Performance Period
 - **3 months** of data
- Can Re-certify Every 1 to 5 Years
- Certification Levels:
 - **Certified** **34 to 42 Points**
 - **Silver** **43 to 50 Points**
 - **Gold** **51 to 67 Points**
 - **Platinum** **68 +**





LEED EB is not that hard to do once you get started...

- | | |
|--|----------|
| 1. Location of Building in an Urban Area | 1 point |
| 2. Alternative Transportation – Proximity to Mass Transit & Hybrid Parking | 2 points |
| 3. Energy (Score of 83) – EPA Energy Star Rating | 6 points |
| 4. Waste Stream – 40% reduction | 2 points |
| 5. Water Efficiency –50% reduction in irrigation | 1 points |
| 6. Native Landscaping – 75% of site | 2 points |
| 7. Green Cleaning | 7 points |
| 8. Construction Management Plan (50%) | 1 point |
| 9. IAQ Program – Construction – Response – Testing | 3 points |
| 10. Maintenance Staff Training | 1 point |
| 11. Preventative Maintenance Program | 1 point |
| 12. HVAC – Filters Ratings/Outdoor Air Volume | 2 points |
| 13. Documenting Sustainable Cost Impact | 1 point |
| 14. Innovation Credit | 1 point |
| 15. LEED Accredited Professional | 1 point |

**TOTAL: 32 POINTS
CERTIFIED!**



LEED for Existing Buildings v2008



Date last updated:

Project Name: **PROJECT NAME**

Start Performance Period: **TBD**

If all Pendlings are achieved: *Not Certified*

If all Pendlings and half of the Maybes are achieved: *Not Certified*

0	0	0	0	Total Points	Possible Points	90
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Certified 32 to 39 Points; Silver 40 to 47 Points; Gold 48 to 63 Points; Platinum 64 to 85

0	0	0	0	High Performance Operations	42	Champion
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YES	Pending	MAYBE	NO			
				EA p1	Systems Documentation	Reqd
				EA p2	Minimum Energy Performance	Reqd
				EA c1.1-15	Optimize Energy - Energy Star:63/66/69/72/75/77/79/81/83/85/87/89/91/93/95	15
				EA c6	Emission Reduction Reporting	1
				EA c3.1	Performance Measurement: Building Automation System	1
				EA c3.2-4	Performance Measurement: System-Level Metering	3
				EQ c2.3	Thermal Comfort: Permanent Monitoring	1
				EQ c2.1	Controllability: Lighting	1
				EQ c2.2	Controllability: Temperature and Ventilation	1
				EA p3	Ozone Protection	Reqd
				EA c5	Additional Ozone Protection	1
				EQ p1	Outside Air and Exhaust	Reqd
				EQ c1.2	IAQ Best Management Practices: Outdoor Air Delivery Monitoring	1
				EQ c1.3	IAQ Best Management Practices: Increased Ventilation	1
				EQ c1.4	IAQ Best Management Practices: Reduce Particulates in Air Distribution	1
				EQ c1.1	IAQ Best Management Practices: IAQ Management Plan	1
				EA c2.1-2	Existing Building Commissioning: Investigation & Analysis	2
				EA c2.3-4	Existing Building Commissioning: Implementation	2
				EA c2.5-6	Existing Building Commissioning: Continuous Commissioning	2
				WE r1	Minimum Indoor Plumbing Fixture Efficiency	Reqd
				WE c1.1	Water Performance Measurement - Whole Building Water Meter	1

Page 1

Many Easy Areas to Make Improvements

- General
 - Benchmark in Energy Star
 - Audit Energy & water bills, recover billing errors
 - Energy Star best practice Training
 - Shift to day cleaning
 - Audit lease agreements & utility bills, recover errors/re-negotiate terms.
- HVAC
 - Reduce HVAC operating hours
 - Adjust space temperatures
 - Install programmable thermostats
 - Optimize reset schedules
 - Repair airside economizers
 - Clean evaporator/condenser coils
 - Repair duct leaks and insulation.
 - Reduce fan speeds
 - Install CO2 controls
 - Occupancy sensor interlock
- Water
 - Separately meter irrigation and cooling tower water.
 - Install water saving fixtures.
 - Retro-commission irrigation controls
- Lighting
 - Reduce lighting operating hours (timers, occupancy sensors, overrides)
 - Reduce lighting levels
 - Group relamping (F26T8)
 - Install lighting occupancy sensors
 - Retrofit exit and signage with LEDs
- WorkPlace
 - PC power management
 - Equipment OFF tagging and employee training
 - Janitorial OFF sweep
 - Vending misers
- Building/Envelope
 - Cool roofing
 - Weather-stripping

Source: CB Richard Ellis, 2007



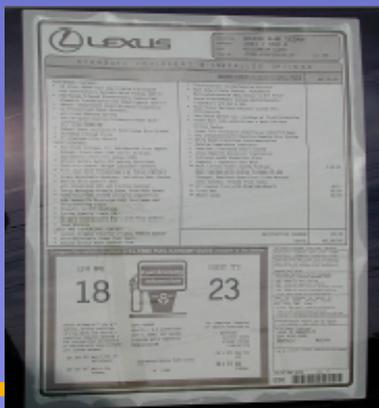
Energy Star Performance Rating

Is 10 MPG high or low for an automobile?

Is 80 kBtu/SF/YR high or low for a building?



Fuel Efficiency
MPG



Energy Efficiency Rating
1 - 100





Statement of Energy Performance

STATEMENT OF ENERGY PERFORMANCE
Building Name Here - 2/11/1999

BUILDING
Building Name
Street Address
City, ST Zipcode
Gross Building Area (ft²):
Constructed in

BUILDING OWNER
Name, Street Address
City, ST Zipcode
Contact Name
Phone: Phone

BUILDING SPACE USE SUMMARY
Area (ft²): Occupants Operation (Hrs/Wk) Computers

OFFICE:
DATA CENTER:
GARAGE:

UTILITY BILL SUMMARY
Year Start to Finish
Electricity (kBtu) Natural Gas (kBtu) Oil (kBtu) Steam (kBtu) Other (kBtu) Total Utilities (kBtu)

ENERGY STAR BENCHMARKING ASSESSMENT

This building qualifies for the ENERGY STAR Label for Buildings.

NORMALIZED BENCHMARK DATA		YOUR	Per
ENERGY STAR TARGET	BUILDING	BUILDING	Year
75	BMg Score		Out of 100

BENCHMARKING SCORE: 75

ENERGY USE:
SITE: kWh/ft²
SOURCE: kWh/ft²

POLLUTION:
CO₂: lbs/ft²
SO₂: lbs/ft²
NO_x: lbs/ft²

ENERGY COST:
\$ \$/ft²

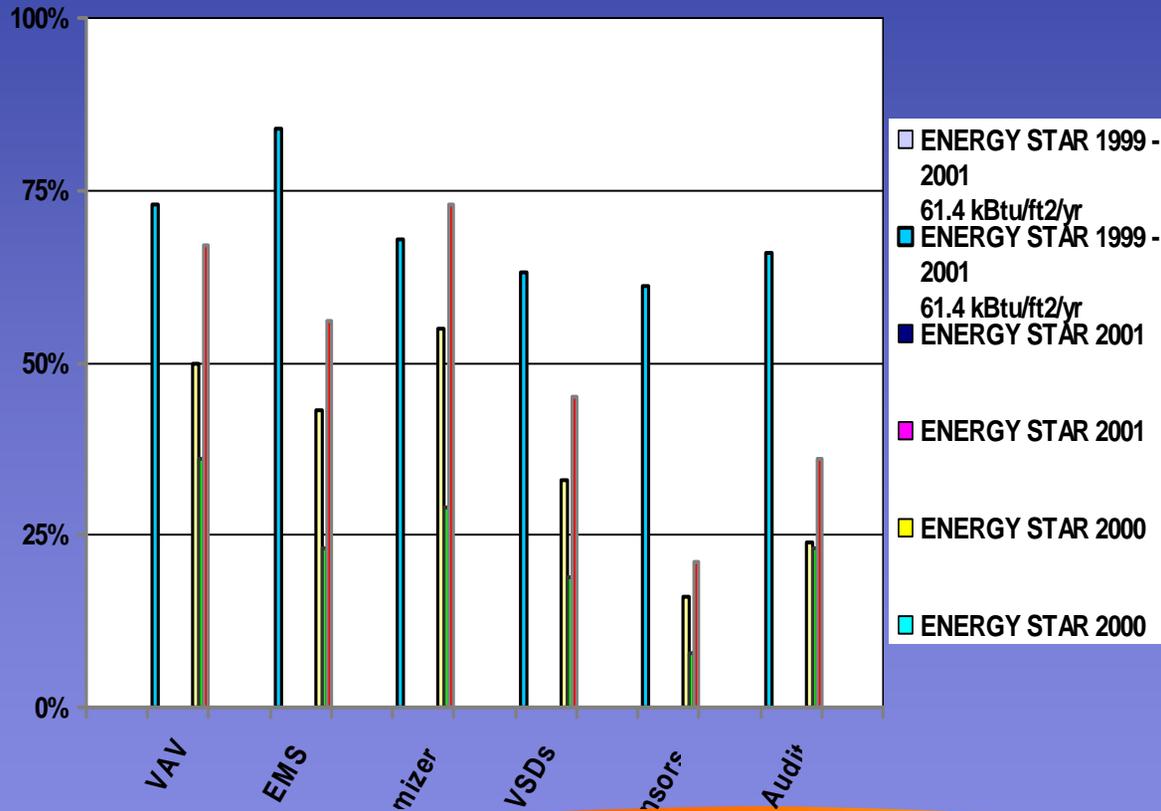
INDOOR ENVIRONMENT CRITERIA
INDOOR AIR POLLUTANTS CONTROLLED?
ADEQUATE VENTILATION PROVIDED?
THERMAL CONDITIONS MET?
ADEQUATE ILLUMINATION PROVIDED?

PROFESSIONAL VERIFICATION
Professional Engineer Stamp
Based on the conditions observed at the time of my visit to this building, I certify that this statement is accurate.

Normalized Benchmark Data	ENERGY STAR	Your Bldg.
Energy Performance Rating:	75	60
Energy Consumption: (kBtu/ft2-yr):	95	123
Energy Costs/SF/YR:	\$1.75	\$2.50
Emissions:		
CO2 (1000 lbs/yr):	5,465	7,100
SO2 (1000 lbs/yr):	23	30
NOX (1000 lbs/yr):	187	140



Technology Doesn't Always Equal Performance ...



Energy & Atmosphere

1 Low Hanging Fruit	2 Zone of Leverage
3 Small Wins	4 Proceed with Caution

Portfolio Opportunity	Type	Payback	Value		
			Savings	Reputation	Leadership
Energy & Atmosphere					
A&E.1 Improve Tracking of Energy Consumption	1	< 1yr	X	X	
A&E.2 Wholistic Accounting of Greenhouse Gases	2	na			X
A&E.3 Improve Truck & Vehicle Fleet Efficiency	2	na		X	X
A&E.4 Occupancy Sensors	1	1-3yr	X	X	
A&E.5 Day Cleaning for Janitorial Services	3	< 1yr	X		
A&E.6 Group Re-lamping with Super T-8	1	1-3 yr	X	X	
A&E.7 Identify and Maximize Energy Retrofits.	2	1-5 yr	X	X	
A&E.8 Photovoltaics	2	5-10yr	X	X	X
A&E.9 Daylighting and Controls	2	3-5yr	X	X	
A&E.10 Additional Ozone Protection	4	na		X	
A&E.11 Demand Response	1	<1yr	X	X	



Regular Discussion is Key

- Recurring group & one on one meetings
 - Intro; Green Cleaning; Site
 - High Performance Operations
 - HVAC, plumbing; lighting
 - Purchasing (paper); recycling; misc.
 - Performance period
 - Final submission



The Path to LEED-EB Certification

- Focus on the business case approach
- Get “top down” commitment for efforts
- Each property designates a team leader
- Overview of all credits
 - Reality check of actual current practices
 - Realize credits for existing practices
 - Portfolio credits
- Assign champion(s)
 - Responsible for credit completion



Toolkit

- Project Toolkit
 - Building Operating Plan template
 - Data Collection sheets
 - Submittal tracker
 - LEED calculators





What is LEED-EB?

- Flexible
 - Align credits to match your organization structure
 - Use synergies to develop your program
- Business Tool to Measure Your Success
 - *“You can’t manage what you can’t measure”*



Why LEED-EB?

- LEED-EB Helps:
 - Solve building-operation problems
 - Reduce building-operating costs
 - Improve indoor environmental quality
 - Provide a framework for sustainability, as part of the organization's culture
 - Report environmental stewardship efforts to customers and communities
 - Communicate the need for good O&M practices
- LEED-EB is Flexible and Non-Prescriptive



Triple Bottom Line...



**ENVIRONMENTAL
PERFORMANCE**



**HUMAN
PERFORMANCE**



**ECONOMIC
PERFORMANCE**

Select “Green” Industry Citations of Health & Productivity Benefits



1. GSA Innovative Workplaces: Benefits & Best Practices, 2006

- “Employees planning to leave are 25% less satisfied with physical workspace.”
- “15% reduction in absenteeism confirmed by two studies.”
- 3% productivity increase based on two studies.

2. USGBC “Making the Business Case

- “A recent Lawrence Berkeley National Laboratory study reported that feasible and commonly recommended improvements to indoor environments could reduce health care cost and work losses from communicable respiratory diseases by 9 to 20%; from reduced allergies and asthma by 18 to 25%; and from other nonspecific health and discomfort effects by 20 to 50%.”

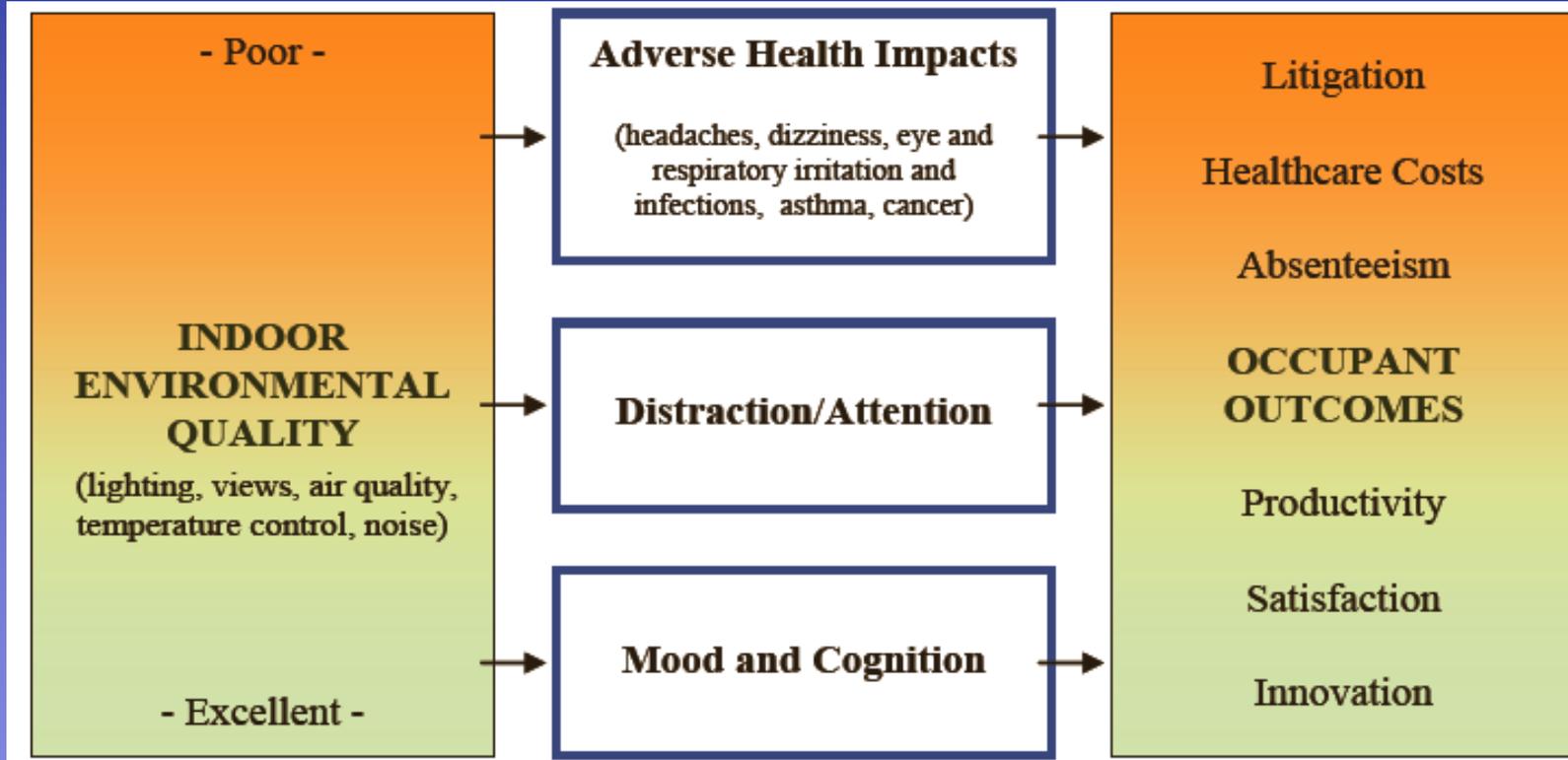
Select “Green” Industry Citations of Health & Productivity Benefits (cont.)

3. Building Design & Construction, November 2006

- Seven case studies demonstrating that high-performance ventilation systems cut respiratory illnesses (including asthma and allergies) by 10-90%.
- Thirteen studies that suggest individual productivity gains from HVAC improvements; 14 studies that link temperature control to performance gains of 0.2-7%.
- A 74% reduction in the incidence of headaches from replacing noisy magnetic ballasts with noise-free electronic ballasts in fluorescent lamps.
- Twelve studies that indicate that improved lighting design enhances individual productivity between 0.7-23%.



Linking IEQ To Value



Source: Jackson Lehr, GBFC, Dec. 2006





How Can We Help? (education, education, education)

- Educate the Owner
- Educate the Occupants
- Educate the Vendor
- Educate Ourselves
- Know Current Costs
- Know Current Products



...Creates Business Value

- Lower costs of production
More efficient operations



- Environmentally superior services
Occupant comfort, health, and productivity



Available Resources

- **ENERGY STAR** – become an ENERGY STAR Partner and learn about the available tools, including the Energy Performance Rating benchmarking tool – www.energystar.gov
- Property Management provider partner – make sure they understand organizational goals & ask for them to provide support
- **BOMA's Energy Efficiency Program** – will provide training and additional resources – www.boma.org/aboutboma/BEEP
- **Green Resource Energy & Environment Network (G.R.E.E.N.):** www.boma.org/AboutBOMA/TheGreen
- **US Green Building Council** – has tools, templates, training available at www.usgbc.org



How Can You Partner to Improve Results

BOMA Energy Efficiency Program (BEEP) Overview

Six web-assisted audio seminars:

- Introduction to Energy Performance
- How to Benchmark Energy Performance
- Energy Audit Concepts & Economic Benefits
- No- and Low-Cost Adjustments to Improve Energy Performance
- Valuing Energy Enhancement Projects & Financial Returns
- Building an Energy Awareness Program

BOMA Energy Efficiency Program schedule can be found at www.boma.org

Clinton Climate Initiative: Energy Efficiency Retrofit Program



- Four ESCO's audit public and large private Buildings.
- ESCO's guarantee energy savings in projects managed
- Five Banks committed \$1 billion to finance projects
- 16 Cities streamline permits and offer private incentives
- CCI manages, coordinates training, shares practices

Key ideas: Mitigate split incentive problem; catalyze growth; market size reduces cost; ESCO costs reduced by streamlining, shorter project lifecycles, etc.; Banks make money.



Tools and Techniques :

- Tools and techniques to maximize the sustainable aspects of all projects
 - LEED Project Checklist
 - Materials Certification Form
 - Recycled Content / Local/Regional Materials Spreadsheet
 - Waste Management Monthly Project Report
 - Erosion and Sediment Control Plan
 - IAQ Plan During Construction
 - Fundamental Commissioning Requirements



Summary & Conclusions

- Identify organizational goals & how energy efficiency/environmental stewardship fit
- Develop a strategic plan
- Assess where you are today – Benchmarking & Audits
- Look for leveraging of partnerships
- **Take advantage of all training opportunities**
- Remember continuous improvement – process is on going
- **Continue to measure and report your results – results sell change**

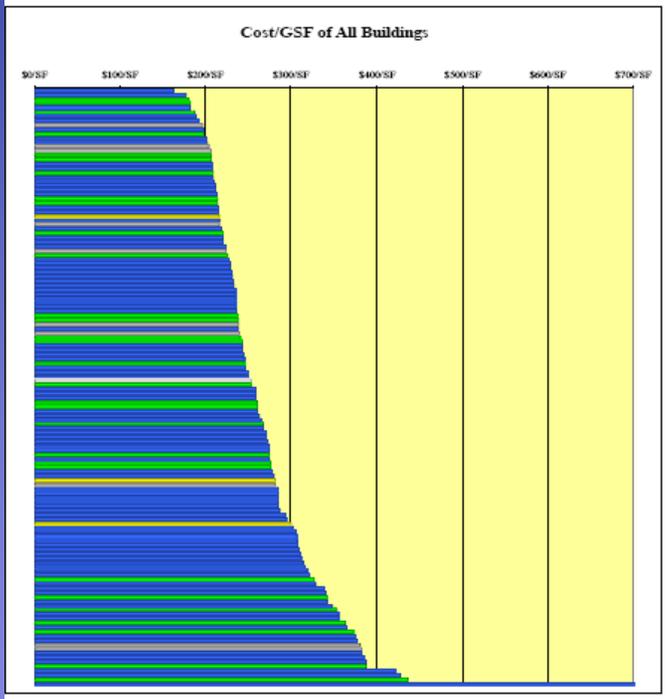
Make the Business Case for Sustainability Efforts

- Understand what the key performance goals are
- Present changes, investments, new ideas in terms of organizational goals
 - speak in terms of employee comfort,
 - return on investment,
 - cost reductions,
 - payback and
 - environmental & climate achievements
- Most decision makers **need to understand financial, environmental as well as employee/tenant comfort benefits** to make an informed decision and support these kinds of efforts



Operating Green Won't Take More Green

- Portfolio Program will drive down costs.
- “Green” is really about doing twice as well using half the resources



Benefits of Certification - Does it Matter?

- Issue: the cost/benefit of LEED Certification (versus the cost/benefit of green) – do you need to certify?
- What is the value of 3rd party certification? My building got LEED certified and all I got was this crummy plaque.
- If a tree falls in the forest when no one is around, is it FSC certified? Who can tell? Unverified claims are empty claims.

What is The Future of Green?

ASHRAE 189 – Green written as code

Architecture (AIA) 2030 – Net zero emissions

Over 10 pieces of current legislation on issues of energy and emissions

31 States have committed to National Climate Registry to track emissions

Over 400 mayors have committed to Kyoto like emission reductions

What does that mean for us?

Green building and sustainable operations are not a “value-added service” but increasingly a requirement for how to operate



What's Ahead

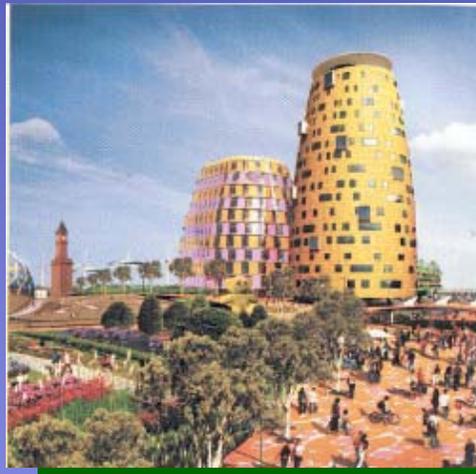
Make an Impact
Go Zero



- Vertical Cities
- Zero-Energy Buildings
- Carbon Neutral Cities



Bionic Tower



Mata de Sesimbra, Portugal



BedZED Development



Increasingly
we will be
asked what
our industry
is doing...





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