

Sustainable Energy Management Programs for Existing Buildings

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What is Green? What is Sustainable?

A building may be termed “Green” or “Sustainable” if it satisfies one or more of the following criteria:

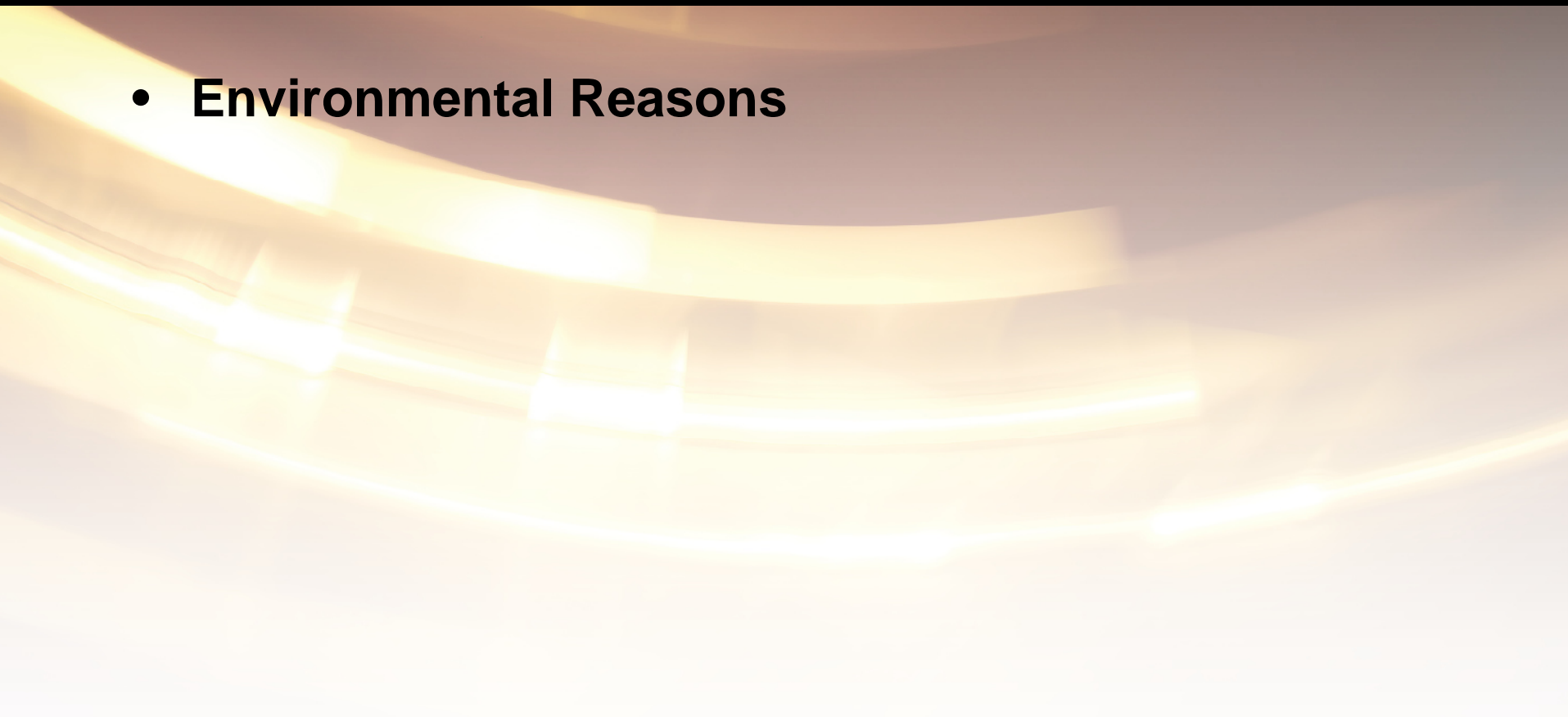
“environmentally responsible, economically profitable, and health places to live and work” - USGBC

- Minimal **energy consumption**
- Minimal **atmospheric emissions**
- Minimal discharge of **harmful wastes**
- Minimal negative impacts of **site ecosystems**
- Maximum quality of the **indoor environment**



Why should an EXISTING BUILDING owner/operator want to be "Green"?

- **Environmental Reasons**





Environmental Impact of Existing Buildings


Existing buildings consume

- 30% of the nation's energy
- 71% of the nation's electricity and
- over 5 billion gallons of potable water daily

Existing buildings generate

- 70% of all landfill waste
- 39% of all CO2 emissions

Source: USGBC

An aerial photograph of a multi-lane highway filled with cars, illustrating a traffic jam. The cars are packed closely together in several lanes, with some vehicles appearing to be stopped or moving very slowly. The perspective is from directly above, showing the grid-like pattern of the road lanes and the dense flow of vehicles.

**10% reduction =
30,000,000 vehicles**



Why should an existing building owner/operator want to be "Green"?

- Environmental Reasons
- **Enhanced Work Place**
 - Increases worker productivity
 - Reduces liability relating to IAQ
 - Reduces sick days



Why should an existing building owner/operator want to be "Green"?

- Environmental Reasons
- Employee productivity & Enhanced Work Place
 - Increases worker productivity
 - Reduces liability relating to IAQ
 - Reduces sick days
- **Marketing and PR**



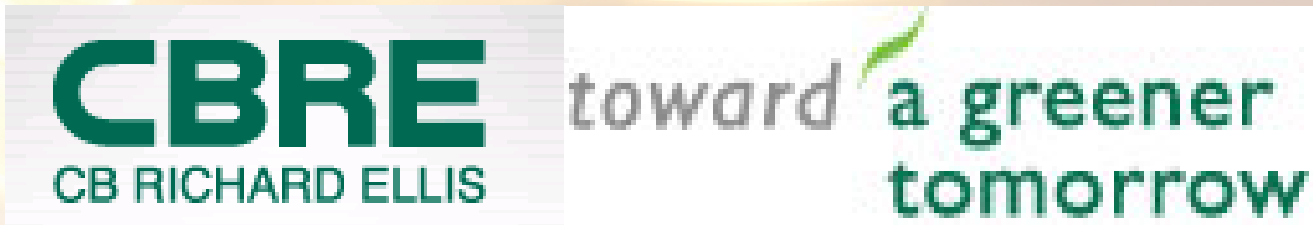
Marketing & PR





Increased Marketability

- Lower utility costs
- Better work environment





Why should an existing building owner/operator want to be "Green"?

- Environmental Reasons
- Employee productivity & Enhanced Work Place
 - Increases worker productivity
 - Reduces liability relating to IAQ
 - Reduces sick days
- Marketing and PR
- **Financial Reasons**
 - **Lower Operating Costs**
 - **Increased Profits**
 - **Increase Building Value**



1. Lower Operating Costs

“Almost every commercial building can have its energy costs reduced by at least 10 percent with measures that pay for themselves in less than three years”

– *www.energystar.gov*



2. Increased Profits

Grocery Store Example:

- Annual Energy Savings (Profit): \$25,000
- Average Net Margins: 2%

Equivalent Sales necessary to achieve same level of profit:

\$1,250,000



3. Increased building value

Building Value = NOI / cap rate

$$15\% = 1.5\% / 10\%$$

A 10% decrease in energy costs can equate to a 1.5% increase in net operating income. – *Energy Star*

Assuming a 10% cap rate, these savings result in a 15% increase in building value.



Energy Management Programs

- **Defined Programs**
- **Customized Programs**



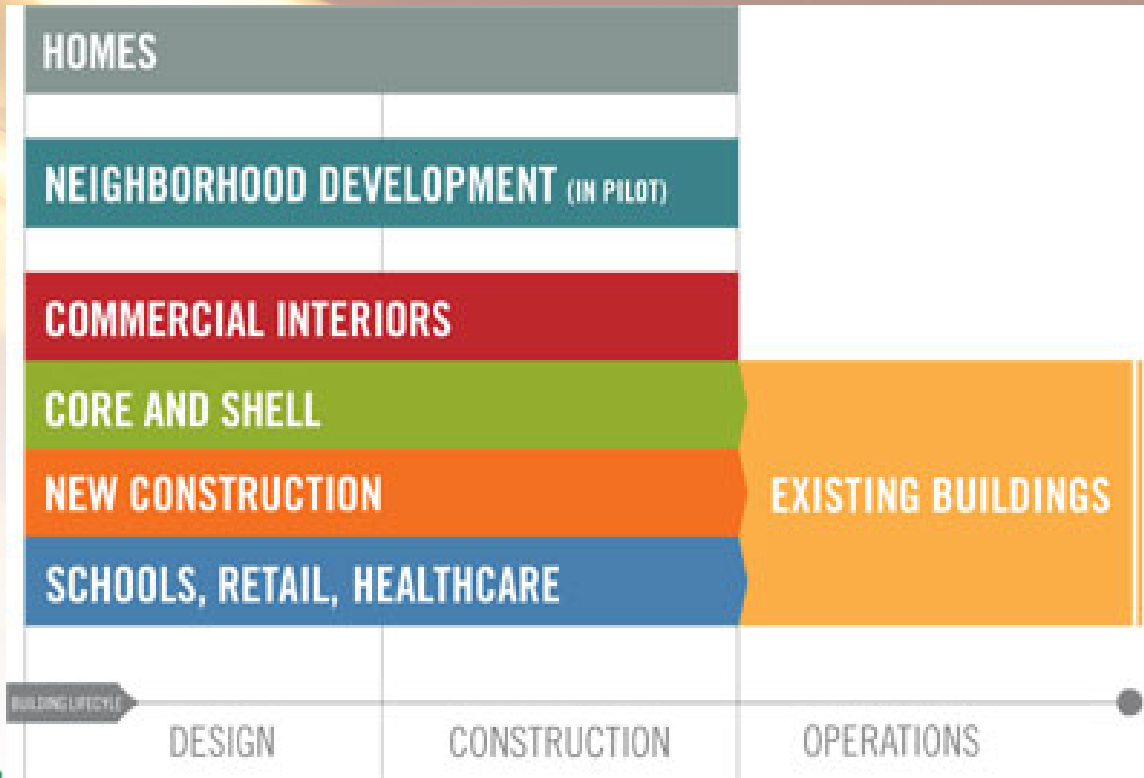


Energy Management Programs





LEED EB Overview



GOAL: Maximize operational efficiency while minimizing environmental impacts.





Certification Levels

Sustainable Sites	12 Points
Water Efficiency	10 Points
Energy & Atmosphere	30 Points
Materials & Resources	14 Points
Indoor Environmental Quality	19 Points
Innovation & Design Process	7 Points
Project Totals (pre-certification estimates)	92 Points

Certified	34-42 Points
Silver	43-50 Points
Gold	51-67 Points
Platinum	68-92 Points



Changes to LEED O&M

- Streamlined reporting
- Fewer prerequisites: reduced from 13 to 9. Challenging prerequisites are now credits
- Greater focus on O&M: New construction credits & prerequisites removed
- More rewards for measured environmental performance
- Energy efficiency – 50% more points
- Water efficiency – double the number of points



ENERGY STAR

GOAL: Save Money and protect the environment through energy efficient products and practices.





Energy Star Rating System

	actual	benchmark data			
Rating (1-100)	17	25	50	75	100
% Reduction in Energy		10%	30%	48%	79%
Utility Bill Reduction		\$ 10,448	\$ 31,344	\$ 50,150	\$ 82,539
Total Annual Utility Bill	\$ 104,201	\$ 93,753	\$ 72,857	\$ 54,051	\$ 21,662
Cost / SF	\$ 1.39	\$ 1.25	\$ 0.97	\$ 0.72	\$ 0.29



LEED vs ENERGY STAR

Sustainable Sites	12 Points
Water Efficiency	10 Points
Energy & Atmosphere	30 Points
Materials & Resources	14 Points
Indoor Environmental Quality	19 Points
Innovation & Design Process	7 Points
Project Totals (pre-certification estimates)	85 Points



- Comprehensive of LEED A (33 points)
- More costly & time intensive
- Less costly & time intensive





Custom Energy Program

Common Project Goals

- Reduce Operating Costs / Increase Profitability
- Upgrade Facility in an Energy Efficient Manner
- Reduce Energy / Protect the Environment Comply with Energy Regulations
- Behavior Changes

Be specific when setting project goals.



Energy Project Best Practices

1. **Select Project Team**
2. Determine Project Goals up front
3. Communicate, Track and Maintain



1. Select your project team

- FINANCIAL DECISION MAKER
- Facilities Staff Representative
- Operations Representative
- Energy Partner
 - Partnering Ability
 - Scope & Capabilities
 - Product Ties
 - Depth of analysis
 - Cost of Services





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3. Communicate, Track, Maintain

Facility Summary: **Murphy Headquarters**

[How do I use this page?](#)

Building ID: 1088999

Level of Access: Building Data Administrator

Electric Distribution Utility: AmerenUE - Union Electric Co

Regional Power Grid: [SERC Midwest](#)

[Select my Power Generation Plant](#) to calculate my emissions rate

Electric CO₂ Emissions Rate (lbs/MWh): 1844.344 ([what is this?](#))

[Generate a Statement of Energy Performance](#) for uses other than applying for the ENERGY STAR.

General Information [Edit](#)

Address: 1233 North Price Road
St. Louis, MO 63017

Year Built: 2000

Property Type: Single Facility

Baseline Rating: 76

Current Rating: 82

Eligibility for the ENERGY STAR

Not Eligible: ENERGY STAR Application In Process

Facility Performance [Set Baseline Period](#) | [Set Energy Performance Target](#)

Select View: [Create View](#) | [Edit View](#)

12 Months Ending	Current Energy Period Ending Date	Total Floor Space (Sq. Ft.)	Current Site Electric Use (kWh (thousand Watt-hours))	Current Site Energy Intensity (kBtu/Sq. Ft.)	National Average Site EUI (kBtu/Sq. Ft.)
July 2006 (Baseline)	02/29/2008	57,155	975,476.1	58.2	78.5
February 2008 (Current)	02/29/2008	57,155	893,875.4	53.4	79.4
Change		0	-81,600.7	-4.8	0.9

REFRESH VIEW





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THANK YOU

QUESTIONS??

