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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.

The organization's purpose is to:

- *Integrate* building industry sectors
- *Lead* market transformation
- *Educate* owners and practitioners

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- National nonprofit organization based in Washington, DC
- Diverse membership of organizations
- Consensus-driven
- Committee-based product development
- Developer and administrator of the LEED® Green Building Rating System

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## What is “Green” Design?

Design and construction practices that significantly reduce or eliminate the negative impact of buildings on the environment and occupants in five broad areas:

- **Sustainable site planning**
- **Safeguarding water and water efficiency**
- **Energy efficiency and renewable energy**
- **Conservation of materials and resources**
- **Indoor environmental quality**

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## Environmental Impact of Buildings\*

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

\* Commercial and residential

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## Benefits of Green Building

### Environmental benefits

- **Reduce the impacts of natural resource consumption**

### Economic benefits

- **Improve the bottom line**

### Health and safety benefits

- **Enhance occupant comfort and health**

### Community benefits

- **Minimize strain on local infrastructures and improve quality of life**

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## Economic Benefits

### Competitive first costs

- **Integrated design allows high benefit at low cost by achieving synergies between disciplines and between technologies**

### Reduce operating costs

- **Lower utility costs significantly**

### Optimize life-cycle economic performance

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## Economic Benefits

### Increase building valuation and ROI

- **Using the income-capitalization method: asset value = net operating income (NOI) divided by the capitalization rate (return). If the cap rate is 7%, divide the reduction in annual operating costs by 7% to calculate the increase in the building's asset value**
- **Quantify financial benefit in terms of Return On Investment (ROI) instead of payback time.**

### Decrease vacancy, improve retention

- **Marketing advantages**

### Reduce liability

- **Improve risk management**

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## Productivity Benefits

### Improve occupant performance

- **Estimated \$29 –168 billion in national productivity losses per year <sup>1</sup>**
- **Student performance is better in daylight schools. <sup>2,3</sup>**

### Reduce absenteeism and turnover

- **Providing a healthy workplace improves employee satisfaction**

### Increase retail sales with daylighting

- **Studies have shown ~40% improvement <sup>4</sup>**

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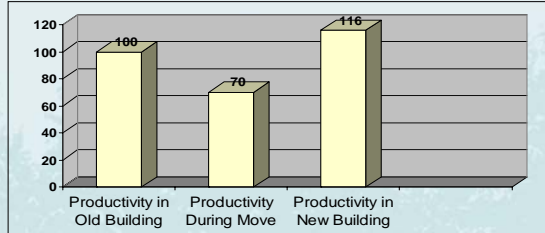
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## West Bend Mutual Insurance Company (West Bend, WI)



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# LEED

GREEN BUILDING RATING SYSTEM

## Leadership in Energy & Environmental Design®

A leading-edge system for designing, constructing, operating and certifying the world's greenest buildings.



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## Why Was LEED® Created?

- Facilitate positive results for the environment, occupant health and financial return
- Define "green" by providing a standard for measurement
- Prevent "greenwashing" (false or exaggerated claims)
- Promote whole-building, integrated design processes

LEED LEADERSHIP IN ENERGY AND ENVIRONMENTAL DESIGN

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## Why Was LEED® Created?

- Use as a design guideline
- Recognize leaders
- Stimulate green competition
- Establish market value with recognizable national “brand”
- Raise consumer awareness
- Transform the marketplace!

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## LEED® Products

LEED covers many different types of buildings and construction. These are covered under the following LEED products:

**LEED-NC:** LEED for New Construction and Major Renovations/Additions (for commercial and institutional buildings, released in 2000)

**LEED-EB:** LEED for Existing Buildings (public release: Fall 2004)

**LEED-CI:** LEED for Commercial Interiors (public release: Fall 2004)

**LEED-CS:** LEED for Core and Shell (public release: 2005)

**LEED-H:** LEED for Homes (public release: 2006)

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## LEED-NC® Market Transformation



- 130 Certified Projects
- 1558 Registered Projects

188 M gsf

50 States

13 Countries

As of 09.20.04

All statistics exclude pilot projects

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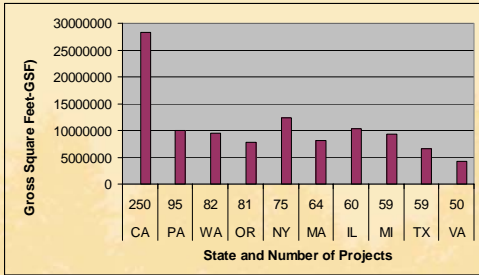
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## LEED-NC® Market Transformation

### Registered Projects by State - Top 10



As of 09.20.04

All statistics exclude pilot projects

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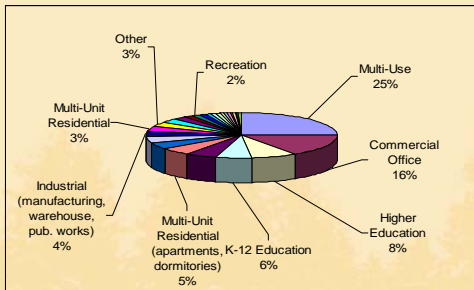
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## LEED-NC® Market Transformation

### Registered Projects by Building Type



As of 09.20.04

All statistics exclude pilot projects

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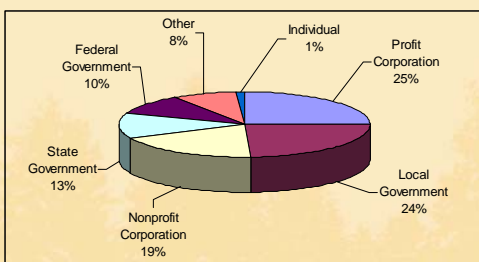
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## LEED-NC® Market Transformation

### Registered Projects by Owner Type



As of 09.20.04

All statistics exclude pilot projects

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## LEED-NC® in the USA

**Federal Government Use:**

- **General Services Administration (GSA)**
  - LEED Certified projects beginning in 2003
- **U.S. Air Force**
  - LEED Application Guide for Lodging
- **U.S. Army Corps of Engineers**
  - Adoption of LEED® (SPIRIT)
- **Department of State**
- **Department of Energy (DOE)**
- **Environmental Protection Agency (EPA)**
  - Grant for LEED Existing Buildings
- **U.S. Navy**
  - Grant for LEED Residential

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## LEED-NC® in the USA

State Government Use\*:      Local Government Use\*:

<ul style="list-style-type: none"> <li>▪ California</li> <li>▪ Maryland</li> <li>▪ Massachusetts</li> <li>▪ New Jersey</li> <li>▪ New York</li> <li>▪ Oregon</li> <li>▪ Pennsylvania</li> <li>▪ Washington</li> </ul>	<ul style="list-style-type: none"> <li>▪ Austin, TX</li> <li>▪ Arlington, VA</li> <li>▪ Boulder, CO</li> <li>▪ Cook County, IL</li> <li>▪ Los Angeles, CA</li> <li>▪ Portland, OR</li> <li>▪ San Diego, CA</li> <li>▪ San Jose, CA</li> <li>▪ San Mateo, CA</li> <li>▪ Seattle, WA</li> </ul>
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\*Not limited to these examples

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### Premier Automotive Group North American Headquarters Ford Motor Company Irvine, California

**Project Highlights:**

**Sustainable Sites**  
\*Alternative Transportation: Three bus routes are located within ¼ mile; bicycle racks and showers provided; 30 electric vehicle recharging stations provided.

**Water Efficiency**  
\*Innovative Wastewater Technologies: All toilets use reclaimed water, accounting for more than 50% of total sewage conveyance.

**Energy and Atmosphere**  
\*Optimize Energy Performance: Exceeds ASHRAE 90.1-1999 by 40% using a high efficiency glazing system, high efficiency lighting with T5 lamps, an underfloor air distribution system in office tower, increased chiller efficiency and a variable speed drive on one chiller.

**Materials and Resources**  
\*Construction Waste Management: 57% of all construction waste was recycled including concrete, asphalt, paper, metal and cardboard.

**Indoor Environmental Quality**  
\*Construction IAQ Management Plan: All ducts and permeable materials were protected against contamination during construction; all construction filtration media was replaced before occupancy.

**LEED® v2 Certified 2001**

**Building Statistics**

Completion Date: *November 2001*

Cost: *\$60 Million*  
*(construction contract only)*

Size: *253,000 gross square feet*

Footprint: *74,000 square feet*

Construction Type: *Commercial/Industrial*

Use Group: *Office and Design Center*

Lot Size: *11.5 acres*

Annual Energy Use: *24,356,010 kBtu/h*

Occupancy: *700*

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## Technical Overview of LEED®

- Green building rating system, currently for commercial and institutional new construction and major renovation.
- Existing, proven technologies
- Evaluates and recognizes performance in accepted green design categories
- LEED product development includes existing buildings, commercial interiors, multiple buildings, core & shell, and homes

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## Technical Overview of LEED®

- Whole-building approach encourages and guides a collaborative, integrated design and construction process
- Optimizes environmental and economic factors
- Four levels of LEED-NC certification:
  - Certified Level 26 - 32 points
  - Silver Level 33 - 38 points
  - Gold Level 39 - 51 points
  - Platinum Level 52+ points (69 possible)

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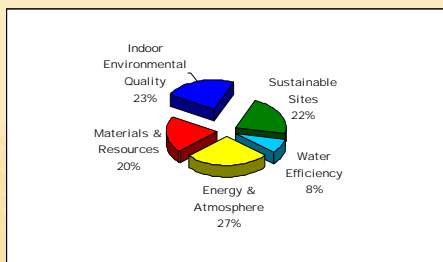
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## LEED-NC® Point Distribution

Five LEED credit categories



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## LEED-NC® Certification Process

A three step process:

- Step 1: Project Registration
  - LEED Letter Templates, CIR access, and on-line project listing
- Step 2: Technical Support
  - Reference Package
  - Credit Inquiries and Rulings (CIR)
- Step 3: Building Certification
  - Upon documentation submittal and USGBC review

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## LEED® 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
- LEED certification plaque to mount on building
- Official certificate
- Receive marketing exposure through USGBC Web site, case studies, media announcements

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## Resources

- LEED Green Building Rating System
- Training Workshop
- Reference Package
- Professional Accreditation
- Welcome Packet
- Credit Rulings
- Website ([www.leadbuilding.org](http://www.leadbuilding.org))
- Email ([leadinfo@usgbc.org](mailto:leadinfo@usgbc.org))

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## Cost of Building Green

- Davis Langdon Adamson Study
- “Costing Green: A Comprehensive Cost Database and Budgeting Methodology”

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## DLA Conclusions

- There is a very large variation in costs of buildings, even within the same building program category
- Cost differences between buildings are due primarily to program type
- There are low cost and high cost green buildings
- There are low cost and high cost non-green buildings

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