



**UILDING COUNCIL**  
**and the**

**LEED™ GREEN BUILDING RATING SYSTEM**

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Strategic Standardization

*“The LEED (Leadership in Energy and Environmental Design) Green Building Rating System® is a voluntary, consensus-based national standard for developing high-performance, sustainable buildings. USGBC's members, representing every sector of the building industry, developed and continue to refine LEED.”<sup>1</sup>*

There are currently LEED standards developed for the following building industries and concentrations:

- LEED-NC: New commercial construction and major renovation projects
- LEED-EB: Existing building operations
- LEED-CI: Commercial interiors projects
- LEED-CS: Core and shell projects
- LEED-H: Homes
- LEED-ND: Neighborhood development
- LEED Application Guides: Retail, Multiple Buildings/Campuses, Schools, Healthcare, Laboratories, Lodging

The developer and administrative authority to the LEED Green Building Rating System is the U.S. Green Building Council (USGBC). The USGBC is a national, non-profit organization that has a voluntary, diverse membership that operates on consensus principles.

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<sup>1</sup> <http://www.usgbc.org/DisplayPage.aspx?CategoryID=19>

Buildings fundamentally impact people's lives and the health of the planet. As a balanced consensus coalition representing the entire building industry, the USGBC promotes the design, construction, and operation of the buildings that are environmentally responsible, profitable, and healthy places to live and work. USGBC serves its members and the community through the development of industry standards, design practices and tools, policy advocacy, information exchange and education.

The Council is a national non-profit organization that was formed in 1993. It's membership includes representation from all aspects of the building industry including: product manufacturers, environmental groups, building owners, building and design professionals, utilities, city governments, the federal government, research institutions, professional societies and universities. The USGBC began to develop the LEED rating system in 1995 in response to the US market's demand for a definition of "green building." Other rating systems existed at the time and were reviewed before work on LEED began. The Council's purpose is to accelerate the implementation of green building policies, programs, technologies, standards and design practices, and it strives to become the first and last word on green

buildings for its members and the building community. The LEED standard was developed by USGBC members on a voluntary basis. The support tools were developed with funding from the U.S. Department of Energy.

## **WHAT IS GREEN DESIGN?**

Design and construction practices that significantly reduce or eliminate the negative impact of buildings on the environment and occupants that address:

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

Energy efficiency gained importance during the 1970s oil crisis; recycling efforts in the US from the 1970s onward became commonplace, which came to the attention of the building industry. In the 1980s the “sick building syndrome” emerged, and concern for worker health and productivity became an issue that needed to be addressed. Projects that were in water-scarce areas began to focus on water conservation. “Green design” although not effectively defined

began to emerge and focused primarily on one issue at a time, mainly energy efficiency or use of recycled materials. Green designers in the 1980s and 1990s began to realize that the integration of all the factors mentioned above would produce the best results and, in turn, a “high performance” building.

## **WHAT ARE THE BENEFITS OF GREEN DESIGN?**

### ENVIRONMENTAL BENEFITS:

- ***Reduce destruction of natural areas, habitats, and biodiversity.***

Construction destroys or seriously impacts forests, fields, wildlife corridors, wetlands, and agricultural areas. This can be avoided by choosing to build on a site that is already developed.

- ***Reduce air pollution, water pollution, and solid waste.***

Buildings are major contributors to global warming, about ¼ of the increase in carbon dioxide in the atmosphere is due to the building sector (carbon dioxide contributes to global warming). Energy efficiency can reduce this level of consumption by 50% or more without sacrificing comfort or services. “The EPA estimates that the

use of energy efficient lighting alone would be the equivalent of getting 15 million cars off the road in terms of carbon dioxide reduction.”<sup>2</sup>

Current construction practices create 2-2.5 pounds of solid waste per square foot; much of this could be recycled saving landfill capacity and fees that range from about \$15 to \$55 per ton.

- ***Reduce depletion of finite resources***

Buildings consume 40% of raw stone, gravel and sand and 25% of virgin wood.

Better indoor air quality can improve health and productivity and reduce liability risks. The EPA estimates that building related US illnesses account for \$60 billion of annual productivity lost nation-wide, and a wider study valued that loss as high as over \$400 billion.<sup>3</sup>

- ***Healthier and safer indoor environments***

According to the American College of Allergy, Asthma & Immunology, Americans spend an average of 80% to 90% of their time indoors.<sup>4</sup>

Therefore, the quality of the indoor environment is very important for health, productivity and quality of life.

Highly publicized problems such as Legionnaires Disease and sick building syndrome can be avoided with green design.

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<sup>2</sup> USGBC LEED-NC 2.1 Reference Guide

<sup>3</sup> USGBC LEED-NC 2.1 Reference Guide

<sup>4</sup> <http://www.acaai.org/public/indoor/indoor.htm>

Productivity can be increased, absenteeism reduced, and morale improved. People like working, learning and doing other indoor activities in spaces that use green building strategies. Enhanced creature comfort, flexibility of space (operable windows, control over lights and temperature), and a sense of well-being are byproducts of green buildings.

- ***Healthier outdoor environments***

Community and municipal benefits include: lessened demand for large-scale infrastructure such as landfills, water supply, stormwater sewers, and their related development and operational costs; and decreased transportation development and maintenance burden (roads) and increased economic performance of mass transit systems.<sup>5</sup>

- ***Personal satisfaction***

Occupants of green buildings tend to find these buildings very pleasant and this is reflected in reduction in absenteeism and greater productivity. In addition, building owners, architects, and contractors who have incorporated green design report a feeling of personal satisfaction in doing the “right thing.”

#### ECONOMIC BENEFITS:

- ***Reduce operating costs***

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<sup>5</sup> USGBC LEED-NC 2.1 Reference Guide

Energy and water efficient buildings have been able to reduce their operating costs significantly. Operating energy and water requirements can be cut to less than half of a traditional building employing aggressive and well-integrated green design concepts.

- ***Reduced project costs***

Green building projects that are well-integrated and comprehensive in scope can result in lower or neutral incremental project development costs. Rehabilitating an existing building can lower infrastructure and materials costs. Integrated design can use the payback from some strategies to pay for others. Energy efficient building envelopes can reduce their equipment needs – downsizing some equipment, such as chillers, or eliminating equipment, such as perimeter heating. Using pervious paving and other runoff prevention strategies can reduce the size and cost of storm water management structures.<sup>6</sup>

- ***Municipal economic advantages***

Lower landfill, water supply and treatment infrastructure, and operational and development costs. Reduced environmental protection program costs. Lower transportation development burden (roads) and increase mass transit system economic performance.

- ***Enhance asset value & profits***

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<sup>6</sup> <http://www.gbapgh.org/EventFlyers/Summit2004/3B.pdf> (Green Building Alliance, Pittsburgh Division)

A high performance environment can yield valuable gains in labor productivity, retail sales, and manufacturing quality and output. These improvements, combined with lower operating costs, create a key competitive advantage and improve real estate value. Green, high performance buildings typically sell or lease faster and retain/attract tenants better because they combine superior amenity and comfort with lower occupancy costs and more competitive terms. Energy efficiency buffers operating budgets from potential short- or long-term increases in energy prices.

- ***Improve productivity***

Estimated \$29-168 billion in national productivity losses per year.<sup>7</sup>

Healthy indoor environments can increase employee productivity according to an increasing number of case studies. Since workers are by far the largest expense for most companies (for offices, salaries are 72 times higher than energy costs, and they account for 92% of the life-cycle cost of a building), this has a tremendous effect on over-all costs.<sup>8</sup>

Employees in buildings with healthy interiors have less absenteeism and tend to stay in their jobs. The Internationale Nederlanden (ING) Bank headquarters in Amsterdam uses only 10% of the energy of its

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<sup>7</sup> Fisk and Rosenfeld, 1998, "Improved Indoor Environment Could Save Billions of Dollars"

<sup>8</sup> <http://www.facilitiesnet.com/bom/Nov02/Nov02environment.shtml>

predecessor and has cut worker absenteeism by 15%. The combined savings equal \$3.4 million per year.<sup>9</sup>

More than 17 million Americans suffer from asthma, and 4.8 million of them are children. Children miss ten million school days each year because of asthma, which is exacerbated by poor indoor air quality (IAQ).<sup>10</sup>

- ***Reduce liability***

A healthy indoor environment can reduce the likelihood of lawsuits and insurance claims. In *Bloomquist vs. Wapello* (500 N.W.2d 1, Iowa, 1993), plaintiffs successfully sued employers and builders for creating an unsafe work environment due to inadequate ventilation and pesticide applications.

Insurance companies are using climate change protection activities as a means to manage risk and maintain profitability.

## **HOW DO YOU GET YOUR BUILDING LEED CERTIFIED?**

Foremost, the project must be registered to seek LEED certification. This must happen as soon as possible in the project timeline, preferably by schematic design. After the online registration form is completed, the project team will receive access to instructions and tools, including the Letter templates which will aid the team in the

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<sup>9</sup> Lenssen and Roodman, 1995, "Worldwatch paper 124: A Building Revolution"

<sup>10</sup> USGBC LEED-NC 2.1 Reference Guide

certification process.

Resources available to the project team are the LEED Reference Guide, the USGBC website, online databases of case studies & profiles, letter templates, and credit interpretation requests. The certification application must be submitted in a three-ring binder and on a CD with the following included: Application form, project scorecard, project narrative, illustrative drawings and photographs, and letter templates tabbed per credit. In order to meet the targeted application review time frame, documentation must be organized using the LEED Letter Templates and must be completed upon submission.<sup>11</sup> Bulk project documentation cannot be accepted as an application. The review of the project will begin when application and documentation are complete.

There are four levels of certification; certification will be granted if a minimum of all pre-requisites and at least 26 of the available 69 points are met; this is less than 40%. It is important to remember that not every project can qualify for every point.

The point structure is as follows:

LEED Certified: 26-32 points

Silver Level: 33-38 points

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<sup>11</sup> USGBC LEED-NC 2.1 Reference Guide

Gold Level: 39-51 points

Platinum Level: 52+ points

Points are earned in the following categories: Sustainable site planning, safeguarding water and water efficiency, energy efficiency, conservation of materials and resources, indoor environmental quality.

### **WHAT ARE THE BENEFITS OF CERTIFICATION?**

Aside from the environmental, economic, health and general wellbeing benefits, the building and team will receive recognition of the quality building and environmental stewardship. This will be granted through third-party validation, qualification for state and local government incentives, a LEED certification plaque for the building, official certificate, and marketing exposure through the USGBC website, case studies & media coverage.

## REFERENCES

Lenssen and Roodman, 1995, "Worldwatch paper 124: A Building Revolution"

USGBC LEED-NC 2.1 Reference Guide

Fisk and Rosenfeld, 1998, "Improved Indoor Environment Could Save Billions of Dollars"

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