



LEED

Leadership in Energy and
Environmental Design



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What is Leed?

- LEED (Leadership in Energy and Environmental Design) is the most widely used green building rating system in the world. Available for virtually all building types, LEED provides a framework for healthy, highly efficient, and cost-saving green buildings. LEED certification is a globally recognized symbol of sustainability achievement and leadership.
- A way to define and measure “green buildings”:
- Categorized into building/project types
- New Construction.
- Existing Buildings.
- Commercial Interiors.
- Core and Shell.
- LEED for Homes.
- Neighborhood Development

LEED Rating System

- Seven Categories with slightly different requirements.
- Point allocation based on project type/ rating system:
- Sustainable Sites.
- Indoor Environmental Quality.
- Energy and Atmosphere.
- Materials and Resources.
- Innovation and Design.
- Water Efficiency.

Sustainable Sites

- The **Sustainable Sites** (SS) category is about making decisions based on having less impact to the environment

Sustainable Site Planning Topics to Cover

- Site Selection
- Site/Building Layout
- Impervious Surfaces
- Grading Considerations
- Stormwater Management
- Landscape Design

Points to be Avoided :-

- Prime farmland
- Previously undeveloped land with an elevation lower than 5 feet above the elevation of the 100-year flood as defined by the Emergency Management Agency;
- Land identified as habitat for any species or state threatened or endangered list
- land within 100 feet of any wetlands
- Previously undeveloped land within 50 feet of a body of water which supports or could support fish, recreation
- Land which was public parkland.

Indoor Environmental Quality (IEQ)

- Indoor environmental quality (**IEQ**) refers to the quality of a building's environment in relation to the health and wellbeing of those who occupy space within it. **IEQ** is determined by many factors, including lighting, air quality, and damp conditions.
- IEQ is determined by many factors, including lighting, air quality, and other condition

Critical Components

- Indoor air quality — odors, indoor air pollution, fresh air supply,...
- Thermal comfort or indoor climate —Temperature, moisture, air velocity
- Visual or lighting quality —View, illuminance, luminance ratios, reflection,...
- Acoustical quality —Outside and indoor noise and vibrations

Energy and Atmosphere

- Improving energy efficiency is one of the easiest ways to save money and improve the sustainability of a building. Therefore almost a third of the points available in LEED are found in this category. Projects can earn these points by making the building more efficient than a code baseline building of similar size and shape, commissioning the building systems, and adding renewable power sources to the project.

Materials & Resources

- Did You Know? The most sustainable thing we can do is not build since a typical 1,700 square foot wood framed home requires the equivalent of clear cutting one acre of forest "Reuse of existing buildings is one of the most effective strategies for minimizing environmental impacts" since it adds less garbage to landfills. Construction and demolition waste streams constitute 40% of total waste in U.S. Use of local reused material reduces transportation waste

Materials & Resources

- A LEED Materials and Resources Points earned for:
 1. Storage & Collection of Recyclables.
 2. Construction Waste Management, Divert 50% from Disposal.
 3. Choosing Materials with a minimum 10% Recycled Content.
 4. Choosing FSC Certified Wood.

Innovation and design

- Instead of creating a new product and then "selling" it the public, innovative design is a process of identifying, pinpointing, and understanding the needs of the user or audience.
- Design Innovation, as you can infer, is a process used to create innovation. It focuses on addressing people's needs with what is technologically feasible and devising a viable business strategy to derive value from this market opportunity.

Water Efficiency

Did You Know?

Everyday 4 of nations total supply of water is used with 65% discharged treated or untreated in rivers, streams and lakes.

" U.S. extracts 3,700 billion gallons from the aquifer more than they return.

a LEED Water Efficiency Points earned for:

- Water efficient Landscaping
- Minimizing or utilizing Wastewater
- Other water efficient features
- Low-flow shower heads

Water Efficiency

WE Credit 3.1: Water Use Reduction: 20% Reduction

Maximize water efficiency within buildings to reduce the burden on municipal water supply and wastewater systems.

Requirements

Employ strategies that in aggregate use 20% less water than the water use baseline calculated for the building (not including irrigation) after meeting the Energy Policy Act of 1992 fixture performance requirements. Calculations are based on estimated occupant usage and shall include only the following fixtures (as applicable to the building): water closets, urinals, lavatory faucets, showers and kitchen sinks.

LEED Basics

- Must commit to sharing whole-building energy and water usage data
 - for a period of at least 5 years
 - in a free, accessible, and secure online tool or, if necessary, taking any action to authorize the collection of information directly from service or utility must carry forward if the building or space changes ownership or lesser providers

LEED Basics

2009 Minimum Program Requirements

1. Must comply with environmental laws
2. Must be a complete, permanent building or space
3. Must use a reasonable site boundary
4. Must comply with minimum floor area requirements
5. Must comply with minimum occupancy rates
6. Must commit to sharing whole-building energy and water usage data
7. Must comply with a minimum building area to site area ratio

What is a “Green Building”

- A 'green' building is a building that, in its design, construction or operation, reduces or eliminates negative impacts, and can create positive impacts, on our climate and natural environment. Green buildings preserve precious natural resources and improve our quality of life.

Why go “Green”?

- Improves Your Health.
- Improves Air Quality.
- Slow down Climate Change.
- Reduces Carbon Emissions by Green Travel.

Why go “Green”?

- Reduces Carbon Footprint.
- Prevent Water Pollution.
- Increases Productivity.
- Sets an Example For Others.

GREEN GLOBES

- The Green Globe certification is a structured assessment of the sustainability performance of travel and tourism businesses and their supply chain partners. Businesses can monitor improvements and document achievements leading to certification of their enterprises' sustainable operation and management.

GREEN GLOBES

- Two Categories:
 - New Construction.
 - Continual Improvement of Existing Buildings.

GREEN GLOBES

- New Construction – 2 Stages
 - Stage I -- review of construction documents, working drawings, landscape designs, energy analysis, LCA documentation, commissioning reports, etc.
 - Stage II -- onsite walk through, review of additional documentation, and interview of key team members.

GREEN GLOBES

- Continual Improvement of Existing Buildings:
 - extensive documentation review and an on-site visit with a walk through and interview of facility manager and chief engineer.

Why Green in Interior Design?

- In all categories there are Prerequisites that must be met.
- LEED Leadership in energy and environmental design .
- Buildings consume 37% of total energy and 68% of the electricity consumed in the U.S..
- Each day 5 billion gallons of potable water is used to flush toilets
- Typical construction project generates 2.5 pounds of waste per square foot of floor space.
- Quality of Life improvements for building inhabitant so
- Client requests

Typical Client Motivation

- Attitudes: Care about the environment.
- Goals:- Reduce operating costs· Save on Energy, water, wasteEnhance Building Marketability
- Other Goals:- Increase worker productivity (Production gains up to 16%)Reduce absenteeism because of "Sick building syndrome"•
- Reduce liability / Increase loyalty LEED Leadership in energy and environmental

“Defining Success Together”

- Because of various standards and outcomes, it is important to work with client to understand just what client wants to achieve in undertaking a “green building” project.
- Green Building legal issues revolve around:
 - Identifying parties’ “values” and negotiating agreements that result in “wins”.
 - Allocating risks, benefits, burdens and responsibilities.
 - Anticipating and avoiding unnecessary trouble.

Is Green – Real or Just Marketing

- Because of various standards and outcomes, it is important to work with client to understand just what client wants to achieve in undertaking a “green building” project.

Is Green – Real or Just Marketing

- LEED not necessarily valued in marketplace
 - 2009 RICS Study: LEED rating did not statistically improve rents while Energy Star rating associated with rents higher by 3.3%