



LEED Rating System For Green Buildings

An Online Continuing Education Course for Engineers

Course Number: BD-7002

Credit: 7 Hours / 7 PDH / 7 CPD

LEED™ RATING SYSTEM FOR GREEN BUILDINGS

Building sector is witnessing a significant shift toward greening and sustainability. To reduce resource dependency and carbon footprint many organizations today are interested in designing their buildings to be LEED (Leadership in Energy and Environmental Design) certified; a designation developed by the U.S. Green Building Council (USGBC).

Why Design Green?

1. Buildings in the U.S. consume more than 30% of total energy and 60% of electricity annually.
2. Buildings consume 5 billion gallons of potable water per day to flush toilets.
3. A typical North American commercial construction project generates 2.5 pounds of solid waste per square foot of floor space.
4. Studies of workers in green buildings reported productivity gains of up to 16%.
5. About ¼ of the increase in carbon dioxide is due to the building sector, Energy efficiency may reduce this by 50%.
6. Buildings consume 40% of raw stone, gravel and sand, and 25% of virgin wood.
7. Building related sickness may cost between \$60 and 400 billion per year.
8. People spend as much as 90% of their time indoors.

The Leadership in Energy and Environmental Design (LEED) Green Building Rating System encourages and accelerates global adoption of sustainable green building and development practices through the creation and implementation of universally understood and accepted tools and performance criteria. LEED-based green design not only makes a positive impact on public health and the environment, it also reduces operating costs, enhances building and organizational marketability, potentially increases occupant productivity, and helps create a sustainable community. The LEED Rating System typically recognizes performance in six key areas of human and environmental health:

1. Sustainable Sites
2. Water Efficiency
3. Energy & Atmosphere
4. Materials and Resources
5. Indoor Environmental Quality
6. Innovation & Design Process

Factoids by LEED Category

Sustainable Sites

- Vehicles are responsible for approximately 20% of U.S. greenhouse gases annually.

Water Efficiency

- 340 billion gallons of fresh water are withdrawn per day from rivers, streams, and reservoirs to support residential, commercial, industrial, agricultural, and recreational activities.
- Almost 65% of water taken is discharged back to bodies of water after use.

- Annual water deficiency for the US is 3,700 billion gallons.
- US industries today use 36% less water than in 1950 due to reuse and Energy Policy Act of 1992 mandating water conserving plumbing.
- Water consumption rose 6 fold in the last century – double the rate of population.

Energy & Atmosphere

- Coal-fired electric utilities produce almost 1/3 the total emission of nitrogen oxide by US citizens.
- Fundamental commissioning can increase building energy efficiency from 5-10%.
- Buildings with measurement and verification programs save 10 to 20% the electricity of buildings without.
- “Lost Productivity” is equated with 20% of occupants complaining 30 minutes per month.
- Occupancy sensors may save up to 60% of light energy costs in a building.

Materials & Resources

- 4% of US old growth forest remains.
- 20% of the world’s large ancient forests remain intact.
- 90% of residential construction is wood.
- 40% of the waste stream is due to construction and demolition.
- Recycling an aluminum can uses 5% of the energy needed to create a new can out of virgin mined aluminum.

Indoor Environmental Quality

- A well-designed day-lit building is estimated to reduce energy use by 50% to 80%.

LEED certification

LEED certification is obtained after submitting an application documenting compliance with the requirements of the rating system as well as paying registration and certification fees. Certification is granted solely by the Green Building Council responsible for issuing the LEED system used on the project. Fortunately, LEED is a very user-friendly system. In fact, a major contributor to the success of LEED is the simplicity of its credit/point-based the rating system. For each credit, the LEED standard identifies the detailed intent, requirements, and technologies or strategies to achieve the credit. One or more points are available within each credit, and points are achieved by meeting specified requirements.

Different LEED versions have varied scoring systems based on a set of required "prerequisites" and a variety of "credits" in the six major categories listed above. In LEED version 2.2 (v2.2) for new construction and major renovations for commercial buildings there are 69 possible points and buildings can qualify for four levels of certification:

1. **Certified** – 26 to 32 points
2. **Silver** – 33 to 38 points
3. **Gold** – 39 to 51 points
4. **Platinum** – 52 to 69 points

Clearly, higher levels of distinction are achieved based on the points accrued.

Green building professionals can also become LEED accredited professional (LEED AP) through the LEED Accredited Professional Exam. LEED AP certification draws people from all walks of life and there is no prerequisite qualification required to challenge the exam. However don't make the mistake of assuming the LEED AP is a casual credential; it requires an in-depth of understanding of the prescribed material. Underestimating the level of knowledge required is the number one reason the test has such a high failure rate (20% - 35% first time pass rate).

This course provides knowledge of LEED Rating System in easy Q & A format. The course includes seven sections covering a basic overview and the description of six LEED categories. This document is a constant work in progress and if you see something that should be in this list, please let us know.

SECTION – 1
OVERVIEW

LEED is a national standard developed by the United States Green Building Council (USGBC) to certify sustainable buildings. Since its inception in 1998, LEED has grown to encompass over 14,000 projects in 50 US States and 30 countries covering 1.062 billion square feet (99 km²) of development area. The hallmark of LEED is that it is an open and transparent process where the technical criteria proposed by the LEED committees are publicly reviewed for approval by the more than 10,000 membership organizations that currently constitute the USGBC.

No.	Questions	Answers
1	What does LEED stand for?	Leadership in Energy and Environmental Design.
2	What is LEED certification?	LEED certification is a credit-based rating system, with different levels of certification awarded for various tiers of credits earned. Each credit is intended to address a specific environmental impact of a building. Certification is granted solely by the Green Building Council responsible for issuing the LEED system used on the project.
3	Why LEED certification?	<p>LEED rating demonstrates a commitment to sustainability by meeting the highest performance standards. LEED certified buildings have following benefits:</p> <ul style="list-style-type: none"> • Use key resources more efficiently. • Contribute to healthier work environment, higher productivity and comfort. • Enhances asset value over time. • Encourage innovation of new technologies, products, materials and equipment. • Establish national leadership in the building industry and marketplace. • Validate achievement through third party review process. • Qualify for growing array of state and local government incentives. • Contribute to growing green building knowledge base.
4	What are the various LEED programs?	<p><u>LEED Rating Programs</u></p> <p>The USGBC operates 10 LEED Green Building Rating Programs for specific project types:</p> <ul style="list-style-type: none"> • LEED for New Construction (LEED-NC) • LEED for Existing Buildings (LEED-EB) • LEED for Commercial Interiors (LEED-CI) • LEED for Core & Shell (LEED-CS) • LEED for Schools • LEED for Retail-New Construction

		<ul style="list-style-type: none"> • LEED for Retail and Commercial Interiors • LEED for Healthcare • LEED for Homes • LEED for Neighborhood Development <p>LEED-NC (for New Construction) v2.2 is the most widely used standard.</p>																				
5	What are the various categories to which LEED credits are assigned?	<p>LEED rating system awards points in six (6) categories.</p> <table border="1"> <thead> <tr> <th><u>LEED Categories</u></th> <th><u>Contribution</u></th> </tr> </thead> <tbody> <tr> <td></td> <td>10%</td> </tr> <tr> <td></td> <td>5%</td> </tr> <tr> <td></td> <td>20%</td> </tr> <tr> <td></td> <td>10%</td> </tr> <tr> <td></td> <td>10%</td> </tr> <tr> <td></td> <td>6%</td> </tr> </tbody> </table>	<u>LEED Categories</u>	<u>Contribution</u>		10%		5%		20%		10%		10%		6%						
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6	What categories...	<p>Each rating system awards a certain number of <u>NO</u> points. To receive the LEED certification, you must complete the assigned LEED rating system. The following order of importance is listed:</p> <p>LEED Credits</p> <table border="1"> <tbody> <tr> <td>Resources</td> <td>M</td> <td>1</td> <td>13</td> <td>7</td> </tr> <tr> <td>Sustainable Sites</td> <td>S</td> <td>1</td> <td>14</td> <td>8</td> </tr> <tr> <td>Indoor Environmental Quality</td> <td>EQ</td> <td>2</td> <td>15</td> <td>8</td> </tr> <tr> <td>Energy and Atmosphere</td> <td>EA</td> <td>3</td> <td>17</td> <td>6</td> </tr> </tbody> </table>	Resources	M	1	13	7	Sustainable Sites	S	1	14	8	Indoor Environmental Quality	EQ	2	15	8	Energy and Atmosphere	EA	3	17	6
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To view the remainder of the course material and to take the quiz for PDH credit, you must purchase the course.

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