

Energy Efficiency

*"Many project teams are building green buildings with little or no added cost, and with budgets well within the cost range of non-green buildings with similar programs."*¹



LEED Gold - Rosa Parks Elementary School
Portland, OR

What are Green Buildings?

"Green" or "sustainable" buildings use key resources like energy, water, materials, and land more efficiently than buildings that are just built to code. With more natural light and better air quality, green buildings typically contribute to improved occupant health, comfort, and productivity. The United States Green Building Council (USGBC), a national non-profit membership organization, developed the Leadership in Energy and Environmental Design (LEED) System™ to provide a guideline and rating system for green buildings."⁴



2007 Solar Decathlon Winner
Technische Universität Darmstadt, Germany



LEED Platinum Home - Santa Monica, CA

Sustainability

Passive Solar

Environmental Benefits:

- Enhance and protect ecosystems and biodiversity
- Improve air and water quality
 - Reduce solid waste
- Conserve natural resources



Green Roof - Cook + Fox Architectural Offices - New York, NY

Renewable Energy

Water Efficiency

Daylighting

Occupant Comfort

Indoor Air Quality



What is LEED®?

- **LEED is green building rating system**, providing third-party verification that a building was designed and built using strategies aimed at improving:
- **Energy savings**
- **Water efficiency**
- **CO₂ emissions reduction**
- **Improved indoor environmental quality**
- **Protection of natural resources**
- **Sensitivity to a building's impact on the environment**

What LEED Measures

- LEED is certification program that can be applied to any building type and any building lifecycle phase. It promotes a whole-building approach to sustainability by recognizing performance in key areas:

- Sustainable Sites
- Water Efficiency
- Energy & Atmosphere
- Materials & Resources
- Indoor Environmental Quality



How to achieve certification

- **LEED points are awarded on a 100-point scale, and credits are weighted to reflect their potential environmental impacts.** Additionally, 10 bonus credits are available, four of which address regionally specific environmental issues. A project must satisfy all prerequisites and earn a minimum number of points to be certified.

LEED for New Construction	
Total Possible Points	110
Sustainable Sites	26
Water Efficiency	10
Energy & Atmosphere	35
Materials & Resources	14
Indoor Environmental Quality	15
Innovation in Design	6
Regional Priority	4



"The truth is that energy is not going to get any cheaper."³

"Many project teams are building green buildings with little or no added cost, and with budgets well within the cost range of non-green buildings with similar programs."¹

Energy Efficiency

"...there is no significant difference in average cost for green buildings as compared to non-green buildings."¹

Water Efficiency

Benefits of Green Building

Environmental Benefits:

- Enhance and protect ecosystems and biodiversity
- Improve air and water quality
- Reduce solid waste
- Conserve natural resources

Economic Benefits:

- Reduce operating costs
- Enhance asset value and profits
- Improve employee productivity and satisfaction
- Optimize life-cycle economic performance

Health and Community Benefits:

- Improve air, thermal, and acoustic environments
- Enhance occupant comfort and health
- Minimize strain on local infrastructure
- Contribute to overall quality of life

Renewable Energy

Sustainability



Think Green.

"The built environment has a profound impact on our natural environment, economy, health, and productivity."²

Green Building Facts

In the United States alone, buildings account for:

- 72% of electricity consumption
- 39% of energy use
- 38% of all carbon dioxide (CO₂) emissions
- 40% of raw materials use
- 30% of waste output
- 14% of potable water consumption

"...credit (SS 4-4: Alternative Transportation - Parking Capacity) can actually reduce construction and soft costs by reducing overall parking and vehicular circulation area."¹

Occupant Health + Comfort



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Costs of Green Building

Hard Costs:

- The costs for energy efficient measures such as HVAC systems, high performance glazing, additional insulation, and photovoltaic solar panels. Improve air and water quality.

Soft Costs:

- The costs of research, design, documentation, commissioning, and energy modeling associated with green building.

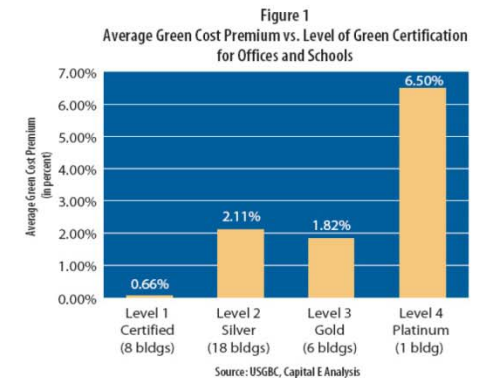


Figure 2
Reduced Energy Use in Green Buildings as Compared with Conventional Buildings

	Certified	Silver	Gold	Average
Energy Efficiency (above standard code)	18%	30%	37%	28%
On-Site Renewable Energy	0%	0%	4%	2%
Green Power	10%	0%	7%	6%
Total	28%	30%	48%	36%

Source: USGBC, Capital E Analysis

Passive Solar

Daylighting

Environmental Design

Indoor Air Quality

LEED Professional Credentials

- LEED professional credentials distinguish building professionals with the knowledge and skills to successfully steward the LEED certification process.
- LEED APs and LEED Green Associates have demonstrated a thorough understanding of green building practices and principles and the LEED rating systems.
- LEED Professional Credentials provides employers, policymakers, and other stakeholders with assurances of an individual's level of competence and is the mark of the most qualified, educated, and influential green building professionals in the marketplace.

