Basics of Sustainability and LEED Design

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Basics of Sustainability & LEED Design

Introduction – What We Will Learn Today

- What is Sustainability?
- The Basics of Sustainability
- How Using the LEED Green Building Rating System Can Demonstrate a Project’s Sustainability
- How the Connecticut High Performance Buildings Requirements Furthers a Project’s Sustainability Goals
- Resources You Can Use

What is Sustainability?

Original Definition

"Development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

What is Sustainability?

"A sustainable future is one in which a healthy environment, economic prosperity and social justice are pursued simultaneously to ensure the well-being and quality of life of present and future generations."

Learning for a Sustainable Future - Teacher Centre

What is Sustainability?

"Living in such a way so as to meet the needs of the present without compromising the ability of future generations to meet the needs of the future."

- Sustainability Is a Social, Environmental, and Economic Concept
- Concept Goes Beyond a Single Building
What is Sustainability?
“Living in such a way so as to meet the needs of the present without compromising the ability of future generations to meet the needs of the future.”
- Sustainability is a Social, Environmental, and Economic Concept
- Concept goes beyond a single building
- Sometimes used interchangeably with “green” or “environmentally friendly”

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What is Sustainability?
- Sustainably designed building sometimes referred to as “high performance building”
- High performance building usually performs substantially better than a standard one:
  - Energy
  - Economically
  - Environmentally

Basics of Sustainability

Design a building that:
  - Conserves energy
  - Conserves water
  - Provides healthy indoor environment for occupants and visitors

Attributed to Ross Spiegel
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Basics of Sustainability

- On a Broader Scale It Means Buildings That:
  - Conserve Energy Through The Use Of:
    - Well-Designed, Energy-Saving Mechanical & Control Systems
    - Commissioning to Ensure Proper Functioning
    - Innovative, Renewable, and Low-Emission Technology

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Basics of Sustainability

- On a Broader Scale It Means Buildings That:
  - Utilize Green Power to Greatest Extent Possible:
    - Buying Renewable Energy Certificates (RECs)
    - Wind, Wave, Tidal, and Small Scale Hydropower
    - Biomass
    - Landfill Gas
    - Geothermal
    - Solar

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Basics of Sustainability

- On a Broader Scale It Means Buildings That:
  - Conserve Through Reduced Use of Water:
    - Landscaping and Irrigation
    - Sanitary Fixtures
    - Boiler & Hot Water Systems
    - Single-Pass Equipment Cooling
    - Cooling Tower Management
    - Commercial Kitchen Equipment
    - Steam Sterilizers, Reverse Osmosis, Etc.
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Basics of Sustainability
- On a Broader Scale It Means Buildings That:
  - Divert Waste To The Greatest Extent Possible:
    - Source Reduction
    - Recycling, Reuse, or Composting
    - Construction & Demolition Waste Management

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Basics of Sustainability
- On a Broader Scale It Means Buildings That:
  - Better Manage Stormwater Through Use of Best Practices Such As:
    - Bioretention Cells
    - Elimination of Curb & Gutters
    - Grassed Swales
    - Infiltration Trenches, Inlet Protection Devices
    - Permeable Pavement & Pavers
    - Rain Barrels & Cisterns

Basics of Sustainability & LEED Design

Using LEED to Demonstrate Sustainability
- LEED = Leadership in Energy & Environmental Design
  - Voluntary, Consensus-based, Market-driven
## Basics of Sustainability & LEED Design

### Using LEED to Demonstrate Sustainability

- **LEED** = Leadership in Energy & Environmental Design
  - Voluntary, Consensus-based, Market-driven
  - Based on Existing & Proven Technology

### Evaluates Environmental Performance From a Whole-building Perspective Over Building’s Life Cycle

- Definitive Standard for What Constitutes Sustainable Design, Construction, & Operation
### Basics of Sustainability & LEED Design

Using LEED to Demonstrate Sustainability

- **LEED = Leadership in Energy & Environmental Design**
  - Used for Rating New & Existing Commercial, Institutional, & Residential Buildings
  - Based on Accepted Energy & Environmental Principles
  - Strikes Balance Between Established Practices & Emerging Concepts
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Using LEED to Demonstrate Sustainability
- LEED = Leadership in Energy & Environmental Design Categories
  - Sustainable Sites
  - Water Efficiency
  - Energy and Atmosphere
  - Materials and Resources
  - Indoor Environmental Quality
  - Innovation in Design
  - Regional Bonus Points

Categories Contain Prerequisites & Credits
- Prerequisites are Mandatory Requirements
- Must Achieve ALL Prerequisites to Quality
- Credits Achieved Determines Level of Certification
- Levels of Certification:
  - 40-49 Points Certified
  - 50-59 Points Silver
  - 60-79 Points Gold
  - 80 Points & Higher Platinum

LEED for New Construction 2009 System Currently in Use
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Connecticut High Performance Buildings Requirements and Sustainability
- Applies to State-Funded Buildings
- Requires State-Funded Buildings to be Built Using a High Performance Building Standard
- Similar to LEED But Without Reporting Requirements and Registration
- Includes Mandatory Requirements and Optional Strategies

Compliance Manual Updated September 2011
- Detailed Descriptions of Requirements and Strategies
- Compliance Checklists for State Facilities and Schools
- High Performance Buildings Glossary
Resources You Can Use

  Spiegel & Meadows - John Wiley & Sons
- **Whole Building Design Guide Model Green Specs**
  www.wbdg.com
- **GreenSpec Directory** – Building Green
  www.greenspec.com
- **Environmental Building News** - Building Green
  www.BuildingGreen.com
Resources You Can Use

- LEEDUser Subscription Service
  http://www.leeduser.com/
- The Integrative Design Guide to Green Building
  7group and Bill Reed / John Wiley & Sons - 2009
- The HOK Guidebook to Sustainable Design – 2nd Ed.
  Mendler & Odell / John Wiley & Sons - 2005
- Sustainable Commercial Interiors
  Penny Bonda & Katie Sosnowchik / Wiley & Sons-2014
- Sustainable Design: Architecture, Planning, & Ecology
  Daniel Williams / John Wiley & Sons - 2007

Review And Summary

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Thank You For Attending Today and Keep Working Toward a Greener Future!
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For More Information:
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