

GREEN BUILDING 101

**How Green is Green?
Measuring Standards & Practices**



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Overview

- What is Green Building?
- How to Measure Green
- Popular Standards
- What is Best?



What is Green Building?

- What's the Issue?
- Definitions
- Common Themes
- Benefits of Green Building



What's the Issue?

- According to US EPA, in the United States, buildings account for:
 - **39% of total energy use**
 - **12% of total water consumption**
 - **68% of total electricity consumption**
 - **38% of carbon dioxide emissions**



Green Building Definitions



- **EPA Definition – “Green, or sustainable, building is the practice of creating and using healthier and more resource-efficient models of construction, renovation, operation, maintenance and demolition.”**
www.epa.gov/greenbuilding
- **PA Definition: “A green building is one whose construction and lifetime of operation assure the healthiest possible environment while representing the most efficient and least disruptive use of land, water, energy and resources.”**
www.gggc.state.pa.us

Common Themes



- Efficient use of energy, water, and other natural resources
- Environmentally-preferable building materials selection
- Smart growth/sustainable development
- Reduced waste, pollution, environmental degradation (increased recycling, reuse)
- Improved indoor environmental quality

Benefits of Green Building



- Costs less to operate and maintain
- Conserves energy, water, other natural resources and reduces waste
- Reduces greenhouse gas emissions
- Improved occupant comfort, health
- Improved worker productivity
- Increased marketability & economic incentives
- Liability and risk management benefits

How to Measure Green



- Importance of having a common definition or standard
- Compared to an average building, is it:
 - “not as bad”
 - “a little better”
 - “considerably better”
- What are you really getting? What can you use as a basis of comparison?
- To objectively evaluate environmental and energy design and performance
- To avoid “greenwashing”

Popular Standards

- LEED
- Green Globes
- Model Green Home Building Guidelines
- National Green Building Standard
- Keystone Green Building Initiative



LEED



- Leadership in Energy and Environmental Design - Green Building Rating Systems
- Measurement system for rating new and existing commercial, institutional, and residential buildings
- Developed by USGBC
- Voluntary rating system for high-performance buildings

LEED

- Performance standards for key areas:
 - Sustainable sites
 - Water efficiency
 - Energy and atmosphere
 - Materials and resources
 - Indoor environmental quality
 - Innovation & Design



LEED

- **Points-based system**
 - **Project Team Selects Credits to Pursue**
 - **Some Prerequisites (Mandatory Components)**
- **4 Tiers of Certification Tiers (LEED NC)**
 - **Certified (26 to 32)**
 - **Silver (33 to 38)**
 - **Gold (39 to 51)**
 - **Platinum (52 to 69)**
- **Third-party certification**
- **Appeals available**



LEED



- New Construction & Major Renovation
 - Pilot (1998); Released (2000); Updates
- Expanded portfolio of rating systems
 - Core & Shell
 - Commercial Interiors
 - Schools
 - Homes
 - Existing Buildings: O&M

LEED

- Continuing Evolution
 - Healthcare
 - Retail (NC & CI)
 - Neighborhood Development
 - Revisions to Existing Standards
- Professional Accreditation Program
 - LEED AP (Changing tiers in 2009)
 - Administered by the Green Building Certification Institute



Green Globes



- Adapted from Canadian version by Green Building Initiative (GBI)
- Introduced to US Market in 2005
- 4-tiered voluntary rating system
- Web-based self-assessment tool
 - Enter data in response to on-line questionnaire
 - System automatically generates report and recommendations for design improvements
- Certification option, if assessment is verified by third-party verifier

Comparison



- LEED

- Higher costs
- More complex
- Prerequisites apply
- More rigid
- Originally paper-intensive, now LEED On-line
- Certification-based system

- Green Globes

- Lower costs
- Less complex
- No prerequisites
- More flexible
- Web-based self-assessment system
- Allows use for internal self-assessment or for certification

NAHB Guidelines



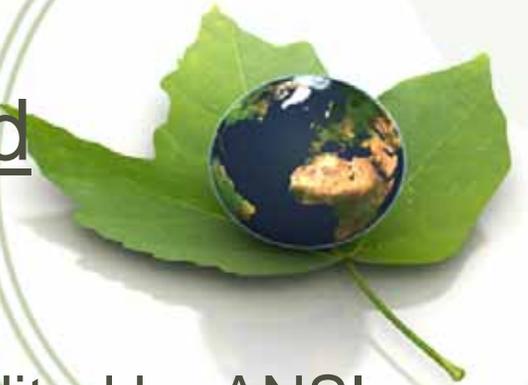
- National Association of Homebuilders
- Model Green Home Building Guidelines (2005)
 - Developed as lower cost, more accessible, more mainstream alternative to LEED certification
 - Also a baseline for use by NAHB members to develop local green building programs
 - Addresses: Lot Design; Resource Efficiency; Energy Efficiency; Water Efficiency, Indoor Environmental Quality; Homeowner Education; and Global Impact
 - 3-Tiered System: Bronze, Silver, Gold

NAHB Guidelines



- National Green Building Certification
 - Uses NAHB Green Scoring Tool
 - Based on Model Green Home Building Guidelines
- Certified Green Professional Designation
- Partnering with GBI on a National Standard

National Green Building Standard



- Green Building Initiative (GBI)
 - First green building organization accredited by ANSI as a standards developer
 - Owns license to promote and develop Green Globes in US
- GBI entered into partnership with NAHB to develop National Green Building Standard based on the NAHB Guidelines
- Draft standard is being developed according to the ANSI consensus process, by a committee of industry stakeholders led by NAHB and the International Code Council (ICC)

National Green Building Standard



- Expected to encompass all residential structures (single-family, multi-family, high-rise, mixed use)
- Expected to address new construction and remodeling
- Expected to be a tiered system (bronze, silver, gold, platinum)
- Expected to be the first ANSI certified green building standard in US

Local Standard

- Home Builders Association of Bucks/Montgomery Counties
 - Partnered with GBI to develop the Keystone Green Building Initiative
 - Based on the NAHB Model Green Home Building Guidelines and adapted to the local construction market
 - 4-Tiered System: Bronze, Silver, Gold, Platinum



What is Best?

- It depends
- Factors to Consider:
 - Reasons for Building Green
 - Cost of Certification
 - Complexity of Certification
 - Timing for Certification
 - Marketability of Certification
 - Available Incentive Programs
 - Likelihood of Achieving Certification



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