LEED for Homes

Update & Sneak Preview of National Roll-Out

February 20, 2007

A Challenge

- Is climate change a threat?
- Is man a contributing factor?
- Are homes a contributing factor?
- Are their other environmental imperatives?
- Do home designs need to be improved?
- When do these changes need to happen?

If not now, when?

If not you, who?

LEED for HOMES

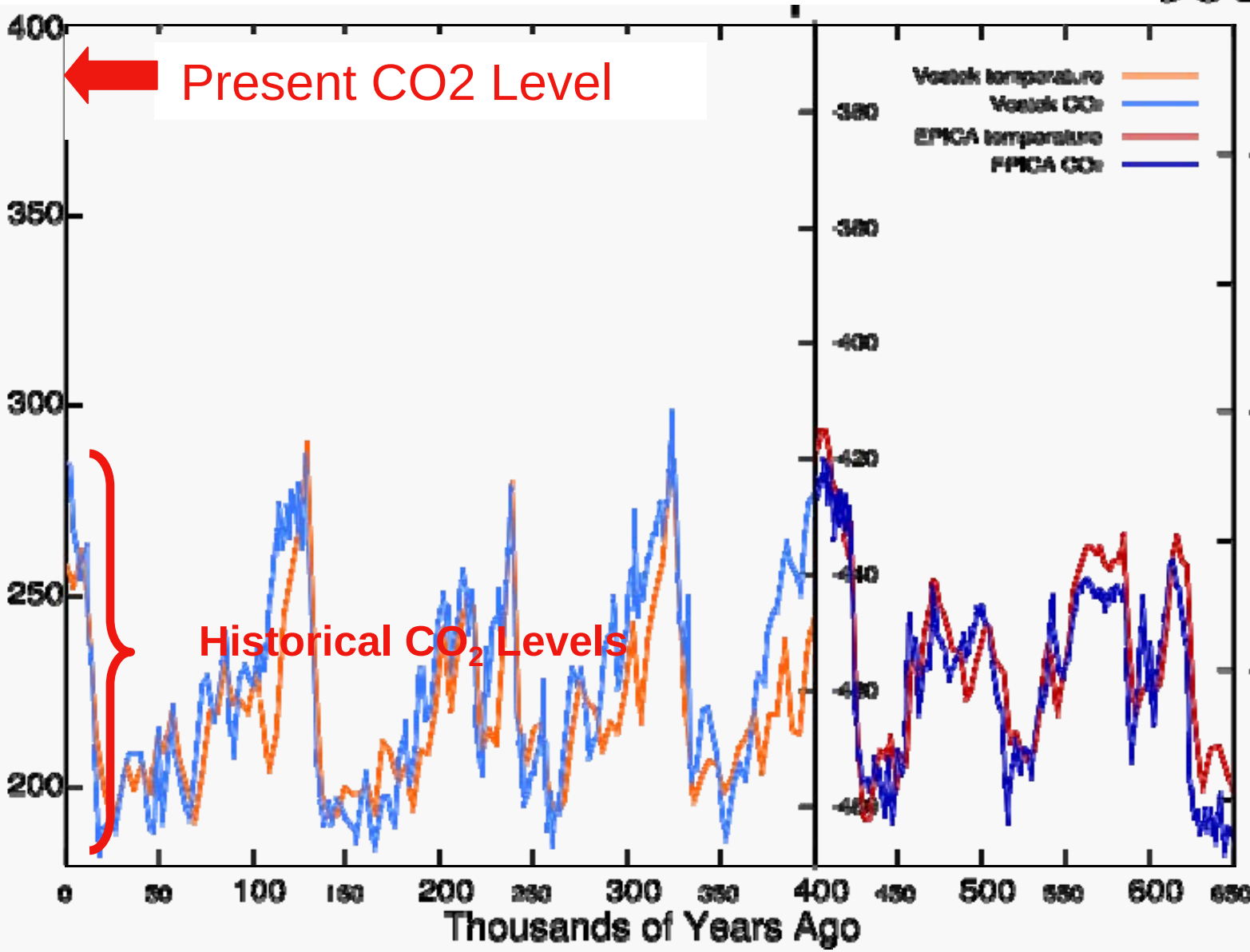
Overview

1. Pilot Status
2. Rating System
3. Delivery System

Rising Energy Prices

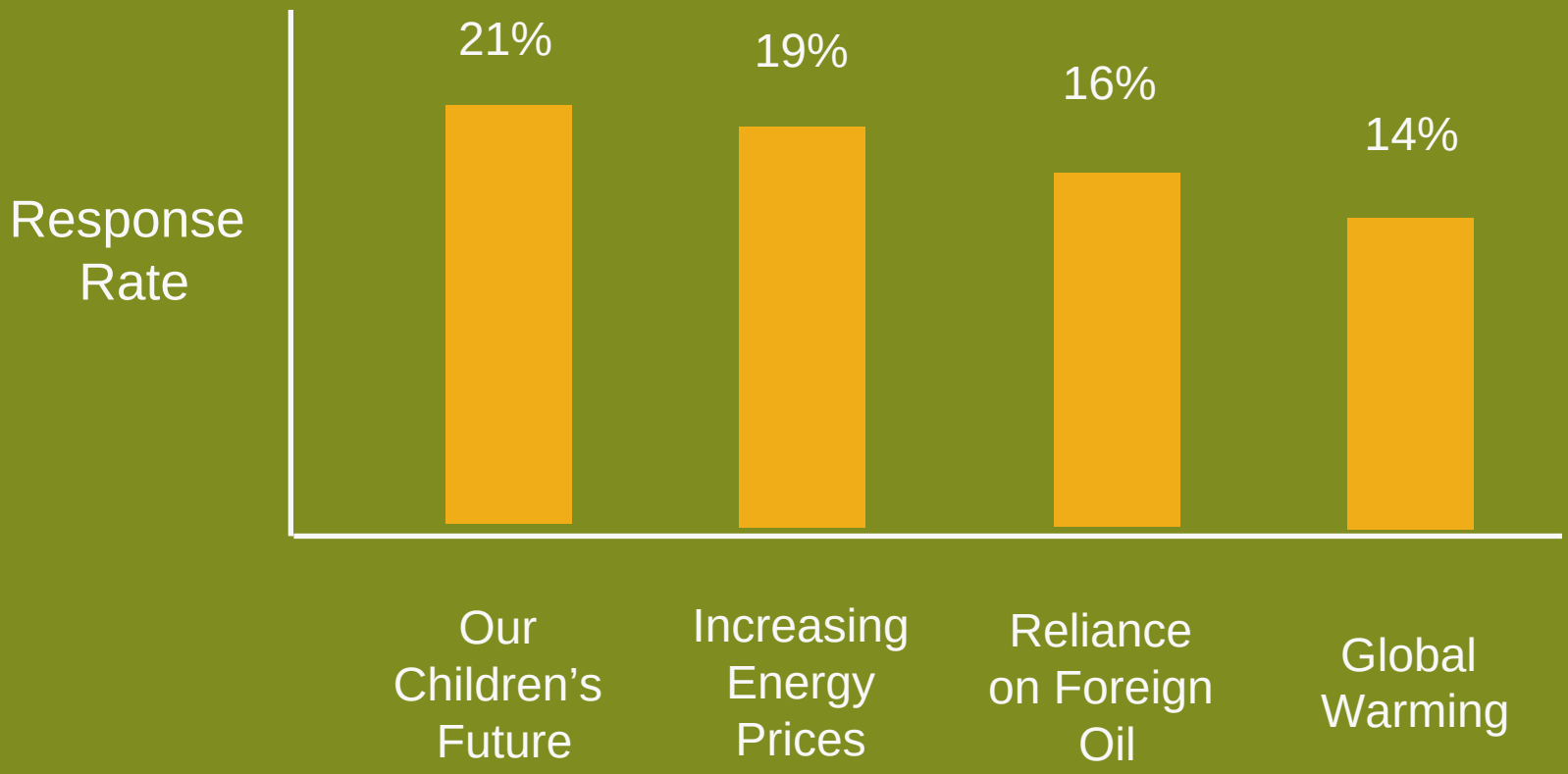
LEED for HOMES

The CO_2 Record



LEED for HOMES

Consumer Motivation

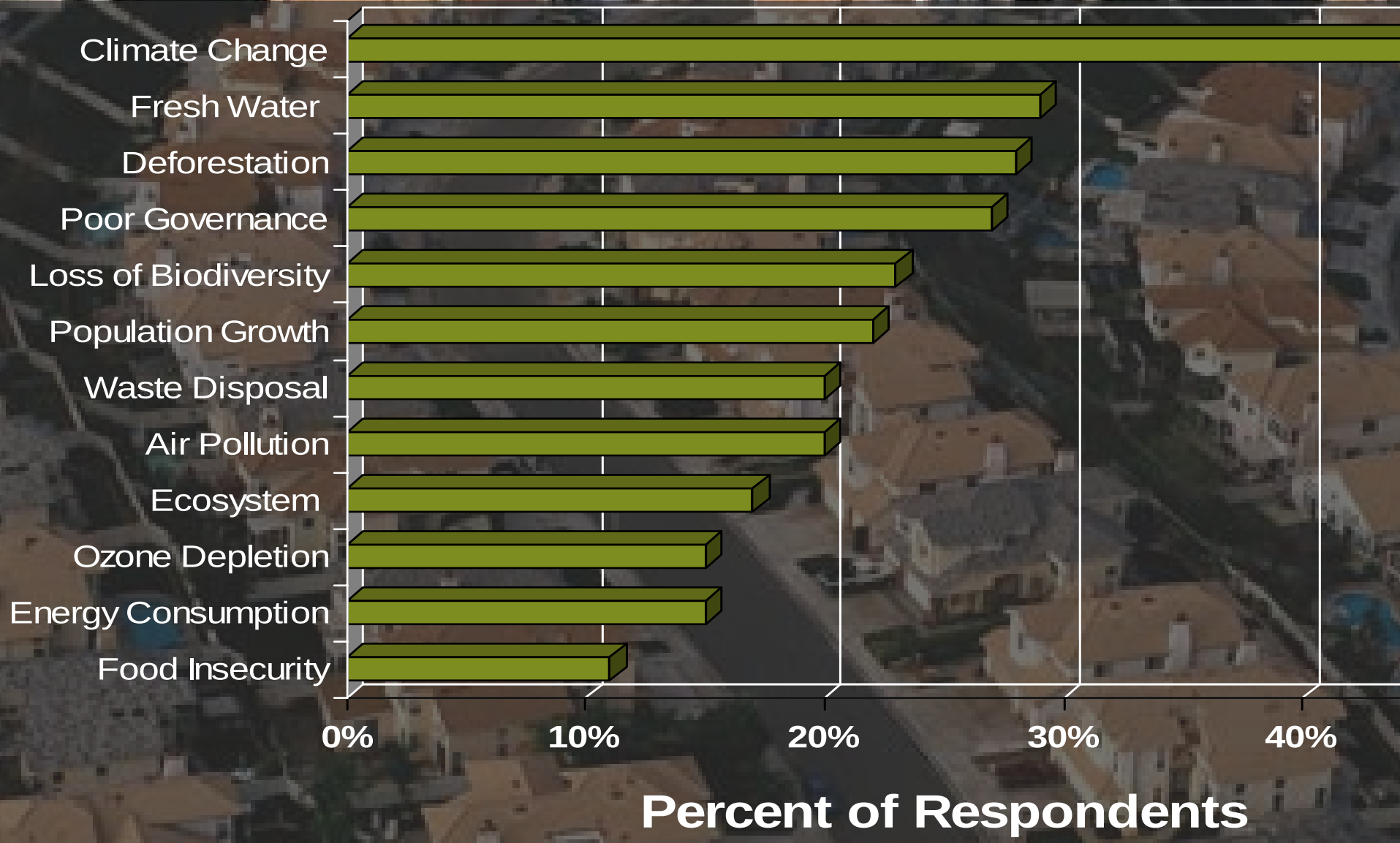


Source: Shelton Group / IBACOS

LEED for HOMES

Major Environmental Imperatives

Source: UNEP Survey of 200 Scientists in 50 Countries



The Home Building Industry's View

March 20, 2006

"**Green home building** is at a tipping point among the builder population"

As of 2006, **50% of builders** "are focusing their attention on green building issues"

"It's the right thing to do"

LEED for HOMES

What is the Media saying about LEED for Homes?

BusinessWeek

The Greenest House on the Planet

Reprinted from the September 11, 2006 issue of **BusinessWeek** magazine.

LEED for HOMES

More Positive Press

Date	Outlet	Headline
11/16/2006	AEC Café	U.S. Green Building Council Certifies First LEED(R) for Homes Project in Massachusetts
9/7/2006	Architectural Record	Prefab Homes Achieve LEED Platinum
9/7/2006	Architectural Record	Prefab Homes Achieve LEED Platinum
10/1/2006	Architectural Record	A model prefab house
9/29/2006	Associated Press (AP)	Green home dedicated in Freeport
9/30/2006	Associated Press (AP)	Latest Maine news, sports, business and entertainment
11/3/2006	Associated Press (AP)	Daybook Fri General
11/3/2006	Associated Press (AP)	Daybook Fri General
11/15/2006	Associated Press (AP)	CO Enterprise USGBC 11 15
11/15/2006	Associated Press (AP)	MA Green Blding LEED 11 15
11/20/2006	Atlanta Business Chronicle	Raising the 'green' bar Oregon home buyers quick to embrace 'green houses'
10/20/2006	Beaverton Valley Times	Realtors will offer green info for homes on regional market
9/29/2006	Boston Globe - Online	First LEED-certified home in Maine dedicated
9/29/2006	Boston Globe - Online	First LEED-certified home in Maine dedicated
9/30/2006	Boston Globe - South Bureau	First LEED-certified home in Maine dedicated
11/14/2006	Brown Alumni Magazine	Risking life and limb to ski the world?s toughest peaks
9/8/2006	Builder	List Service Notes Green Homes
10/17/2006	Building Design & Construction	New Idaho chapter of USGBC is growing
11/1/2006	Building Design & Construction	The Green Scene
11/16/2006	Building Design & Construction	First multi-unit project certified by USGBC


Emerging
Business Opportunity

Home Owner's Priorities

Top 10 Problems Encountered by Home Inspectors

1. Minor maintenance problems
2. Minor structural problems
3. Grading/drainage problems
4. Older/insufficient electrical system
5. Older/poorly installed plumbing
6. Older/leaking roof
7. Older heating/cooling system
8. Poor ventilation
9. Excessive air leakage
10. Environmental problems

LEED for HOMES

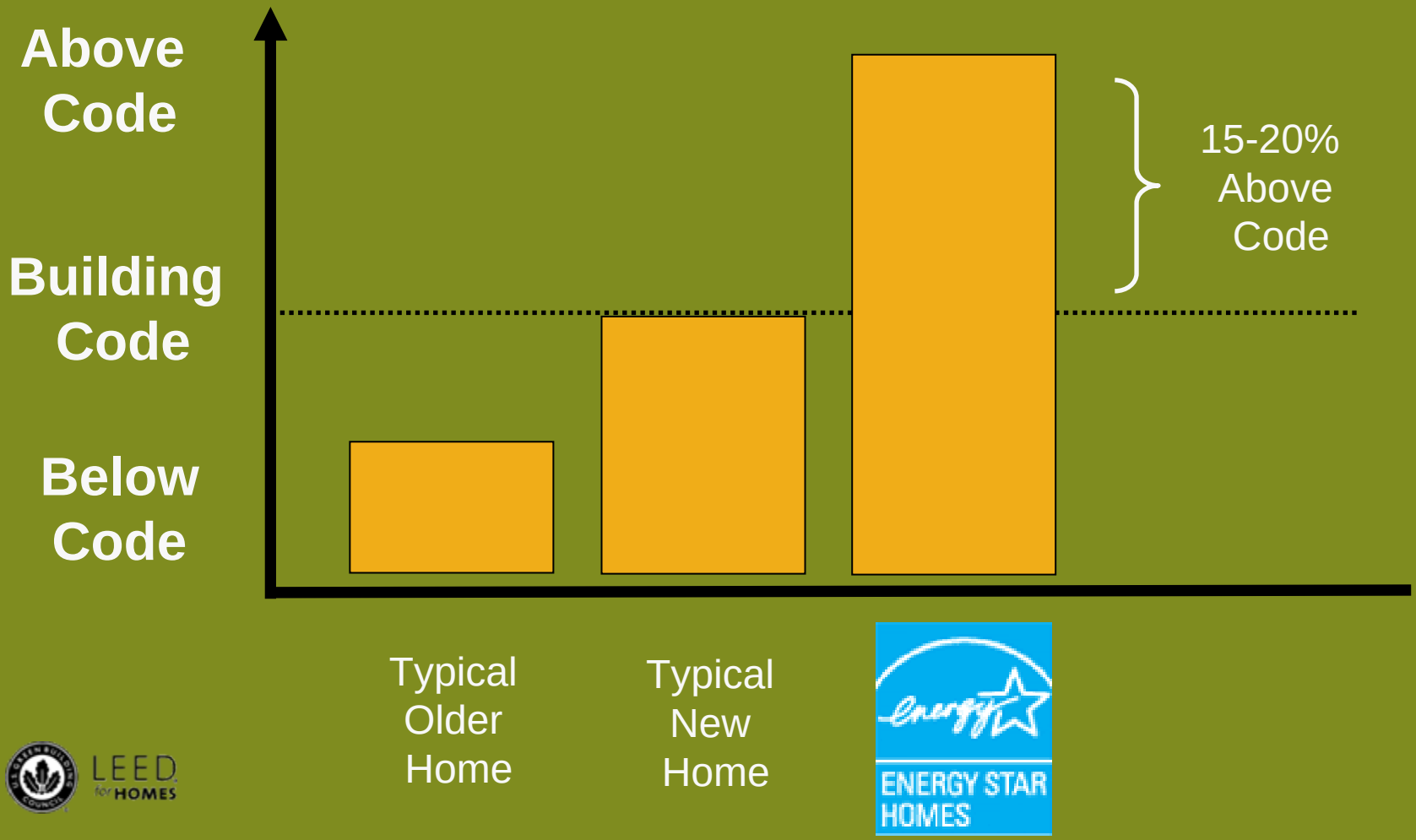
Why Build Green Homes?

Builders Want To Differentiate Their Homes in the Market, in Terms of:

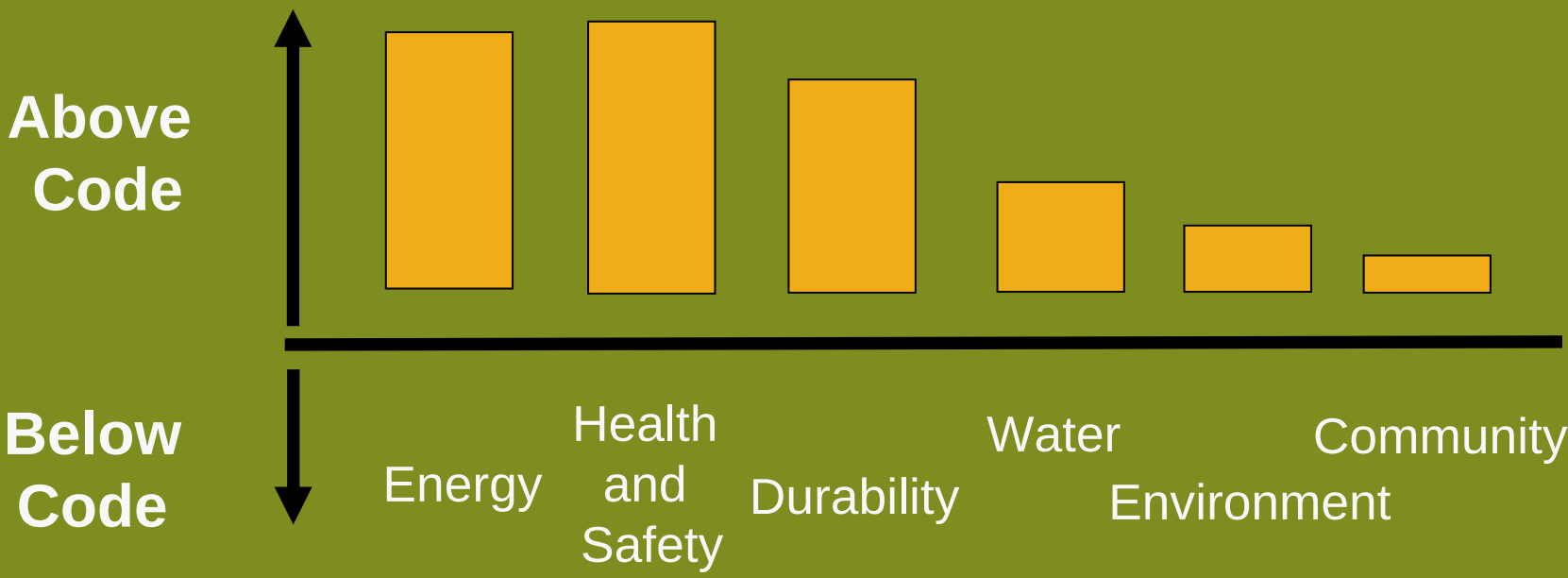
1. **High Performance**
2. **High Quality (?)**

LEED for HOMES

What is a Above Code Performance?



What is High Performance?



LEED for HOMES

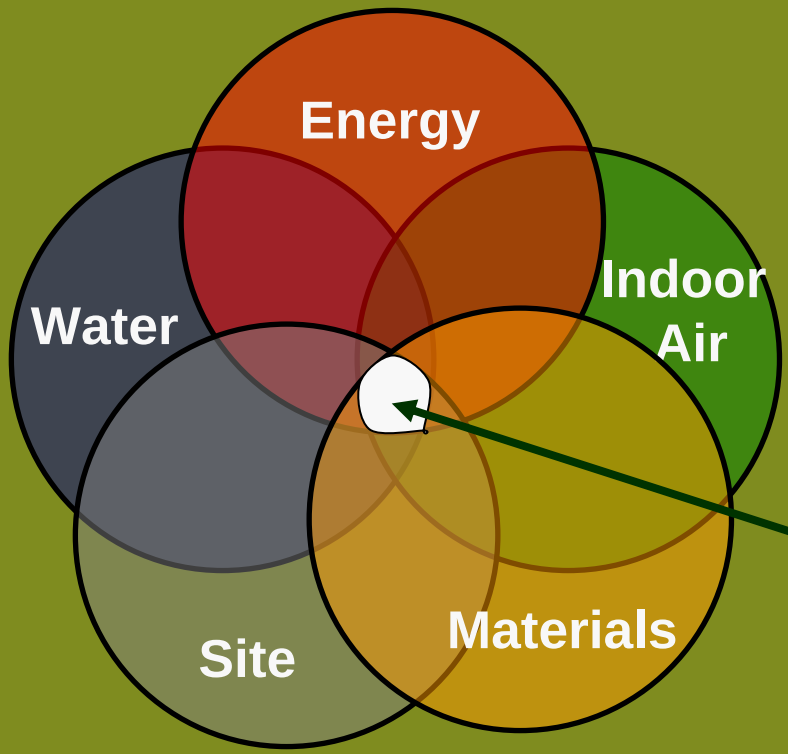
What are Green Homes?

Builder A

Builder B

Builder C

How Does LEED Define a Green Home?



Healthy
Comfortable
Durable
Energy Efficient
Environmentally Responsible

LEED for HOMES

Perception

Reality

Reality


Pilot Status

Applicable Building Types

Single Family

Market Rate
& Affordable

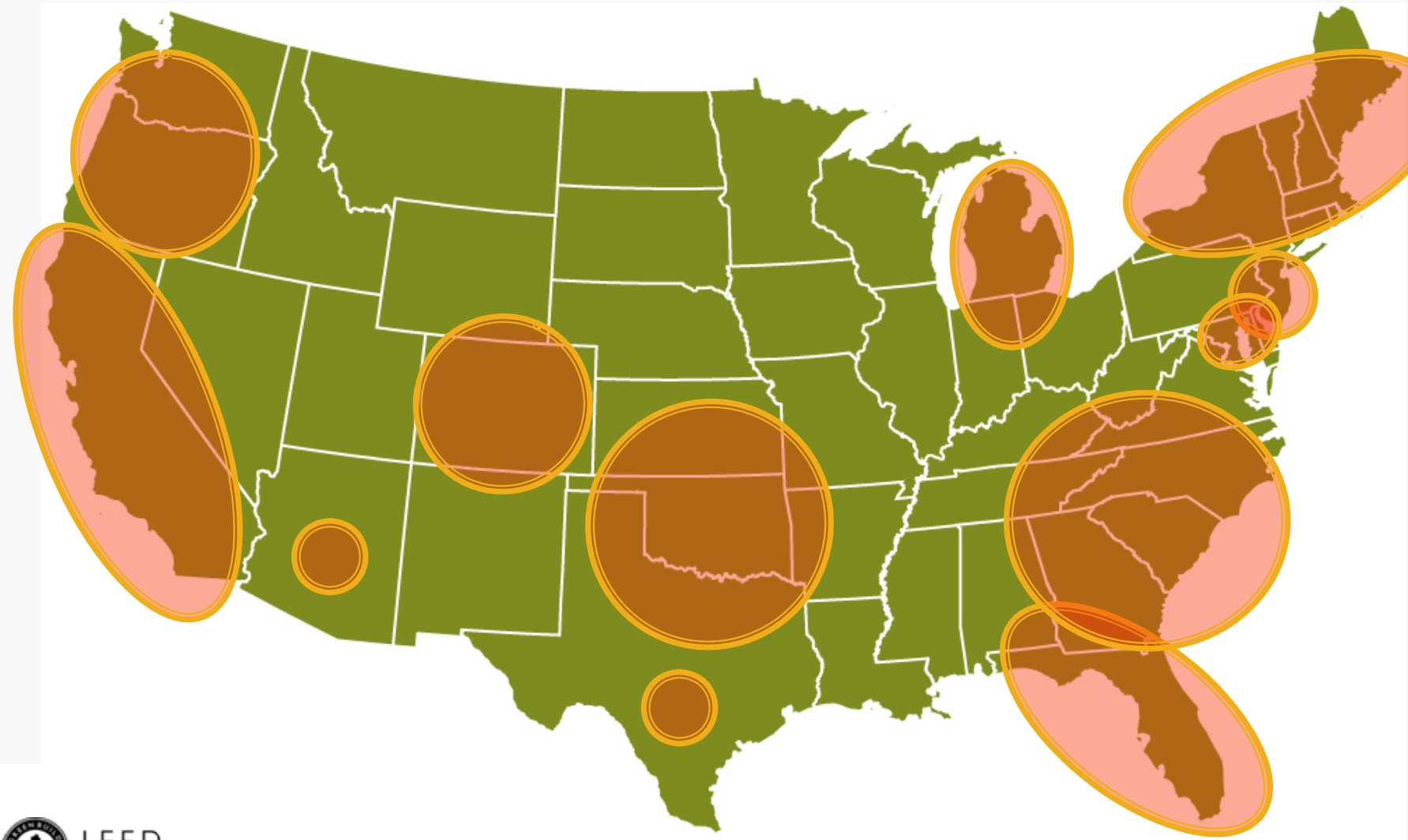
Multi-Family

Up to 3 Stories

Gut Rehab

Strip to Studs
on One Side

Pilot Markets



LEED for HOMES

Pilot Status

Type of Participant	Registered
# of Providers	12
# of Builders	300
# of Homes	4300

LEED for HOMES

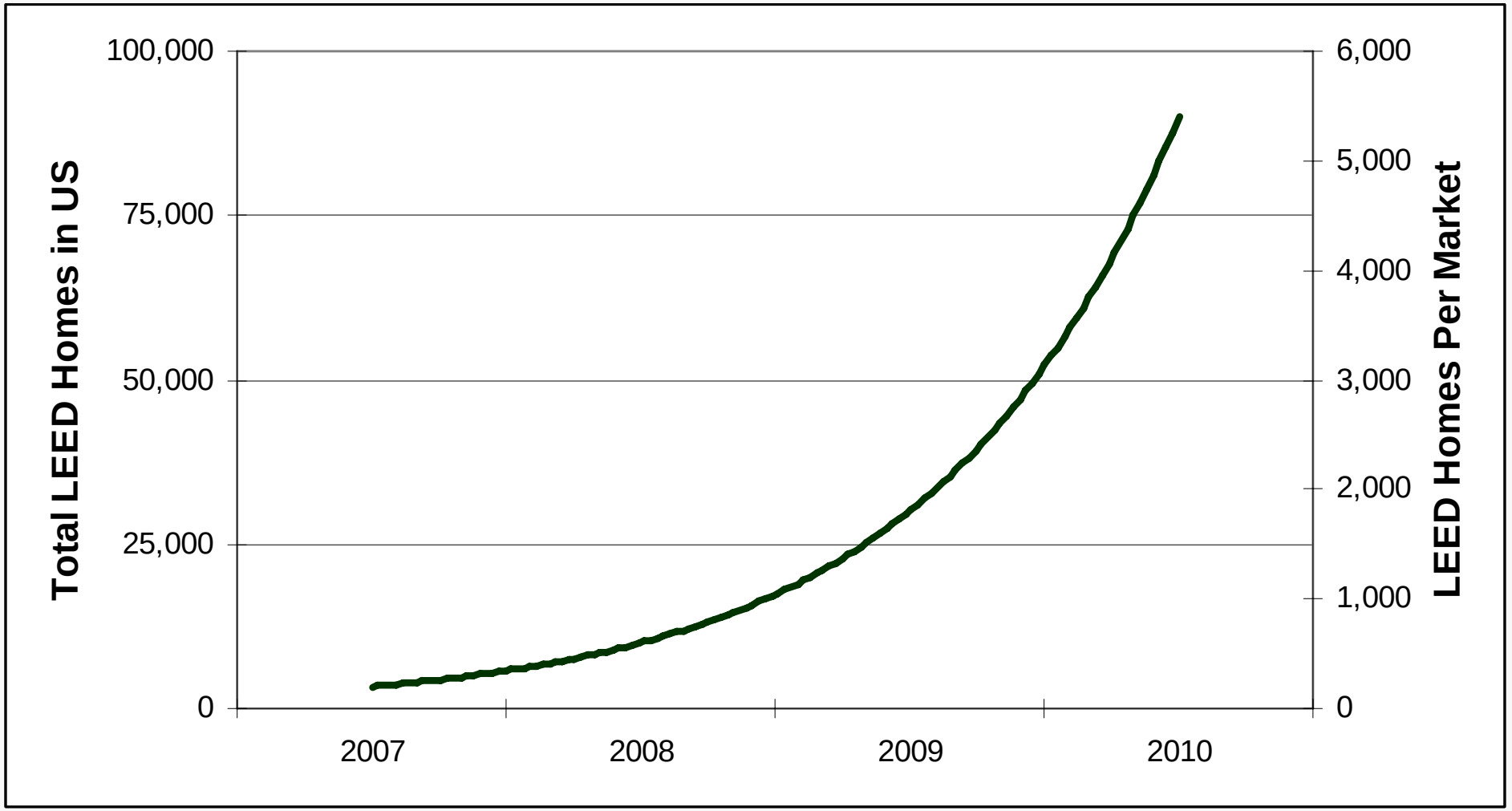
LEED for Homes Timeline

Key Tasks	Schedule			
	Q4 2006	Q1 2007	Q2 2007	Q3 2007
RFQ New Providers				
Tag Review				
1st Public Review				
2nd Public Review				
USGBC Ballot				
National Roll-Out				

LEED for HOMES

1,000,000 LEED Homes by 2010

Projected Growth: LEED for Homes




Strategy for
Collaboration w/ Other
Programs

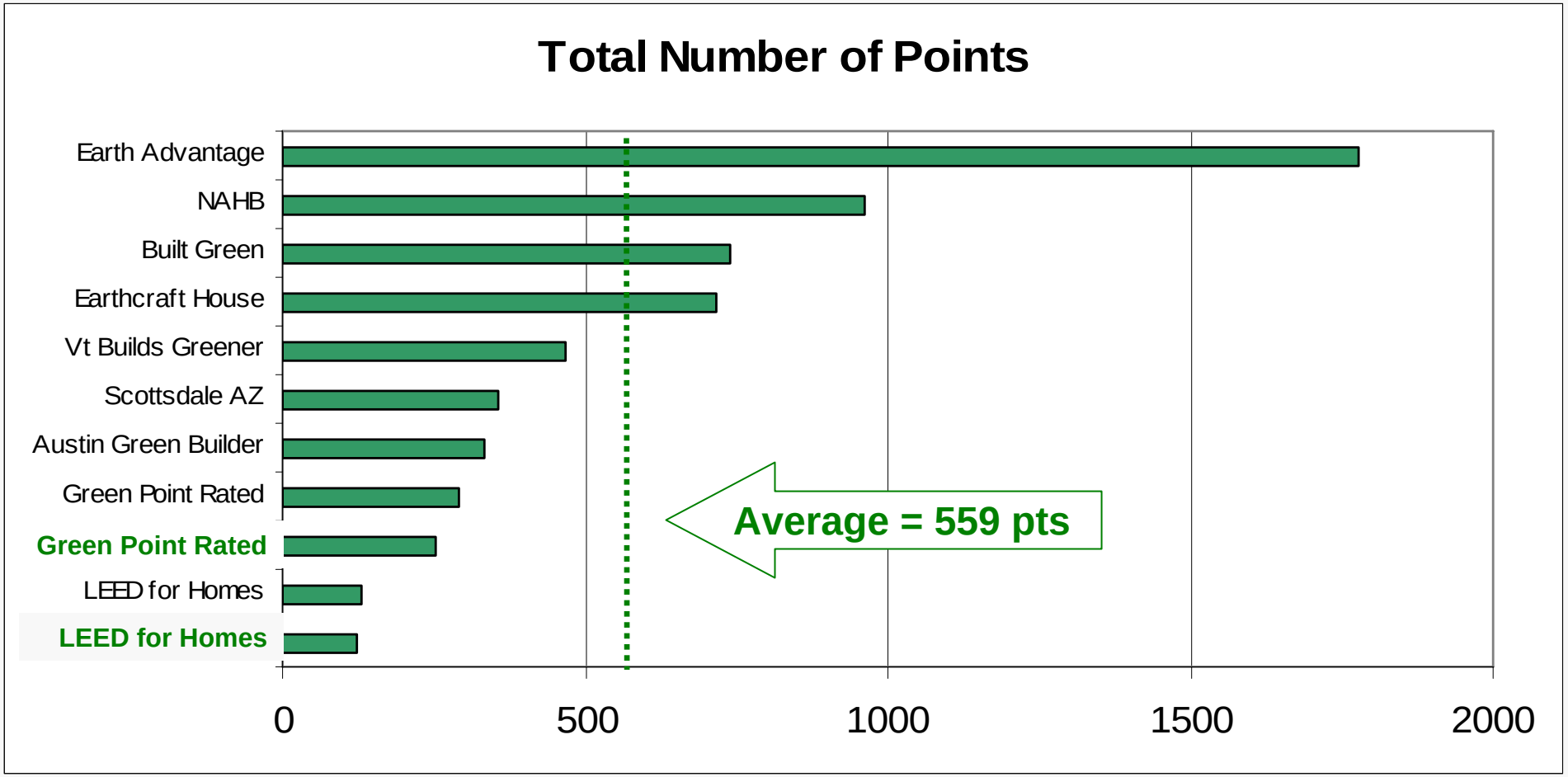
Green Home Building Programs

Alaska Craftsman Home Program, Inc. (ACHP)
APS Performance Built Homes™
Aspen Efficient Building Program
Aspen Energy & Green Building Program
Build Green Washington
Build It Green/GreenPoint Rated (2002)(2006)
Build San Antonio Green
Building America Program
Building Science Corporation
Built Green Colorado
Built Green NW
Built Green Santa Barbara
California ENERGY STAR® New Homes Program
California Green Building Program (CBG) (2001)
Chicago Center for Green Technology
Chula Vista GreenStar Building Efficiency Program (2000)
Consumer Products Program(VOC's)
Earth Advantage™ (1999-2005)
Earth Craft House™ (2003)
EcoBuild Program (2003)
Emerging Renewables Program Rebates
Engineered For Life™ (1998)
Environmentally Sustainable Affordable Design (ESAD) program
Environments for Living® (2001)/Diamond Class (2005)
E-Star Colorado
Florida Green Building Coalition, Inc.
Fore-Solutions
Forest City Development
Frisco Green Building Program (2001)
G/Rated (2001)
GHBA Green Building Program
Greater Cleveland Green Building Coalition (1999)/7-Chapters
Green Builder Program (1997) /Building America Partner Program (2001)
Green Building Alliance
Green Building Corps
Green Building Council
Green Building in Alameda County (2000)
Green Building Initiative of St. Louis
Green Built Program (2001)
Green Communities Initiative
Green Energy Ohio
Green Globes (2000)
Green Home Choice (2003)
Green Home Destination (2001)
Green Home Remodel (2004)
Green Homes NorthEast (GHNE)
Green Permit Program-Residential
Green Points Program (1997)
Green Points Remodeling Program (2001)
Green Roofs Program
GreenHOME(1999)
Greening Affordable Housing Initiative
Hawaii BuiltGreen (2001)
Health House® (1993) - St. Paul MN
Healthy Built Homes (2005)
Home Remodeling Green Building Guidelines(2001)
Innovative Building Review Program (1995)
Keystone Green Building Initiative
Laclede Gas/ Inspections & Testing
Maryland Environmental Design Program (1998)
NAHB Model Green Home Building Program
NC HealthyBuilt Homes Program (2004)
New Jersey Affordable Green Program (1998)
Northeast Ohio Green Building Initiative
NWEBG-Northwest EcoBuilding Guild (1993)
Park City Green Building Initiative
Remodelers Advantage (2005)
Sonoran LEED for Homes/City of Scottsdale Green Building Program
Southern Nevada Green Building Partnership
Sustainable Building Program (2000)
Sustainable Development Initiative
Tacoma-Pierce County Built Green™ (2003)
TEP Guarantee Home Program (1997)
The Built Green™ Program (2000)
Unity Homes/Gulfport, Miss
Vermont Builts Greener Program (2003)
Wisconsin Green Building Alliance (WGBA)

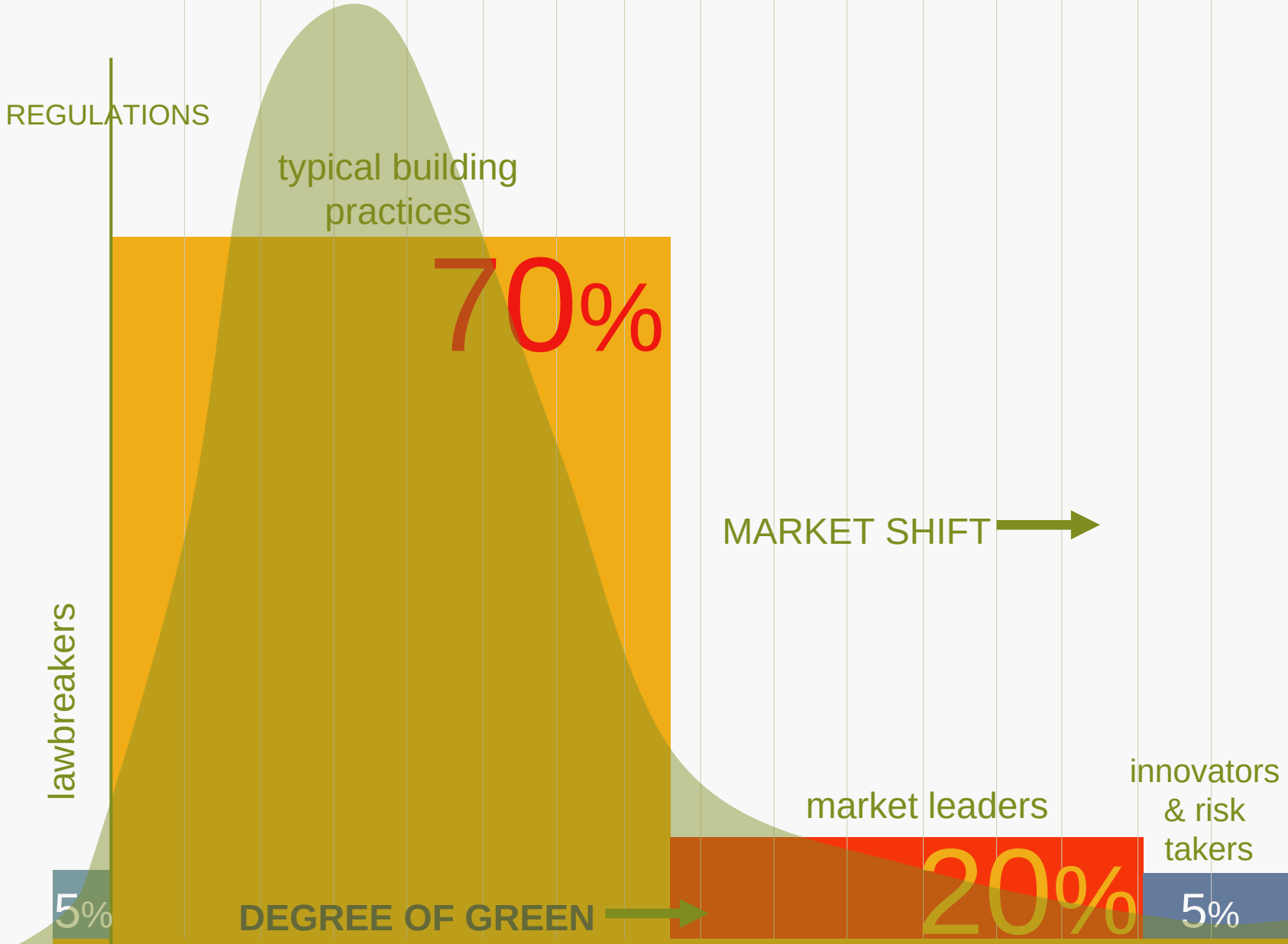
Features of Green Building Programs

- Rating System
  - Mandatory Measures
  - Optional Points
- Tiers
  - Stars, Tiers, Medals
- Credit Categories
- Certification Process
  - Builder, 3rd Party
  - Design, Inspections, Performance Testing
- Sampling / QA

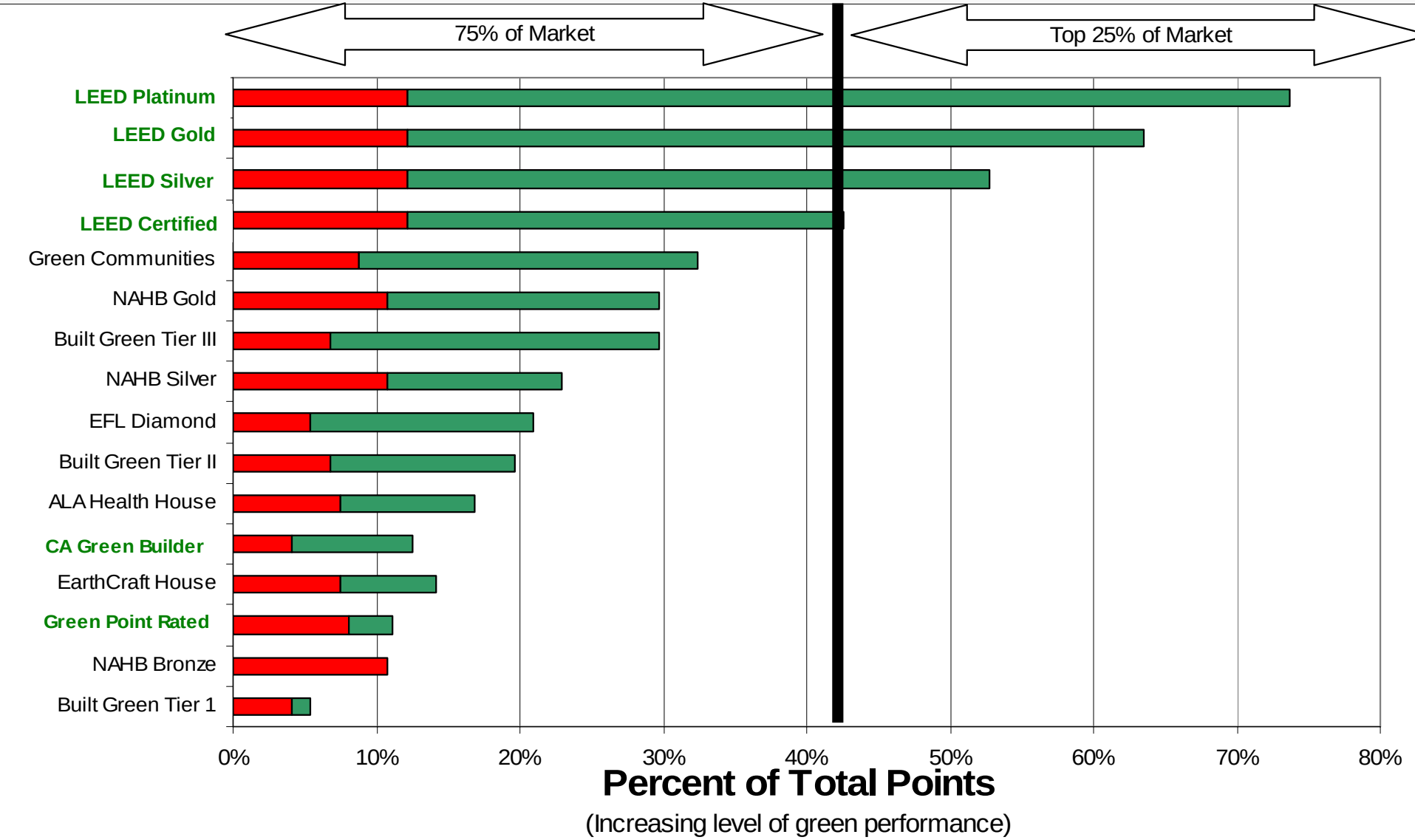
Comparison of Green Building Rating Systems



Varying Performance Levels



Comparison of Green Building Rating Systems



How to Choose a Program?

1. What level of performance is desired?
2. Is it cost effective?
3. Is it delivered consistently?
   (The Brand Promise)

LEED for HOMES

LEED for Homes Alliances

National Programs

Local and Regional Programs

ENERGY STAR HOMES

green communities

Building AMERICA U.S. Department of Energy

ENVIRONMENTS FOR Living

U.S. GREEN BUILDING COUNCIL

LEED for HOMES

SENSIBLY BUILT FOR THE ENVIRONMENT — EARTH CRAFT HOUSE

alliance for environmental sustainability

earth advantage Portland General Electric

fgbc

BUILT GREEN. It's Everybody's Home

SCOTTSDALE GREEN BUILDING PROGRAM

BUILD SAN ANTONIO GREEN

VERMONT vbg builds greener

Rating System

Technical Requirements

LEED RATING SYSTEMS

- **LEED-NC** new construction
- **LEED-EB** existing buildings
- **LEED-CI** commercial interiors
- **LEED-CS** core & shell

Commercial Buildings

- **LEED for HOMES**

Low-Rise Housing

- **LEED-ND** neighborhood development

Mixed-Use Developments

application guides

- Healthcare
- Laboratories
- Retail
- Multi-building Campuses
- Multi-family Residential

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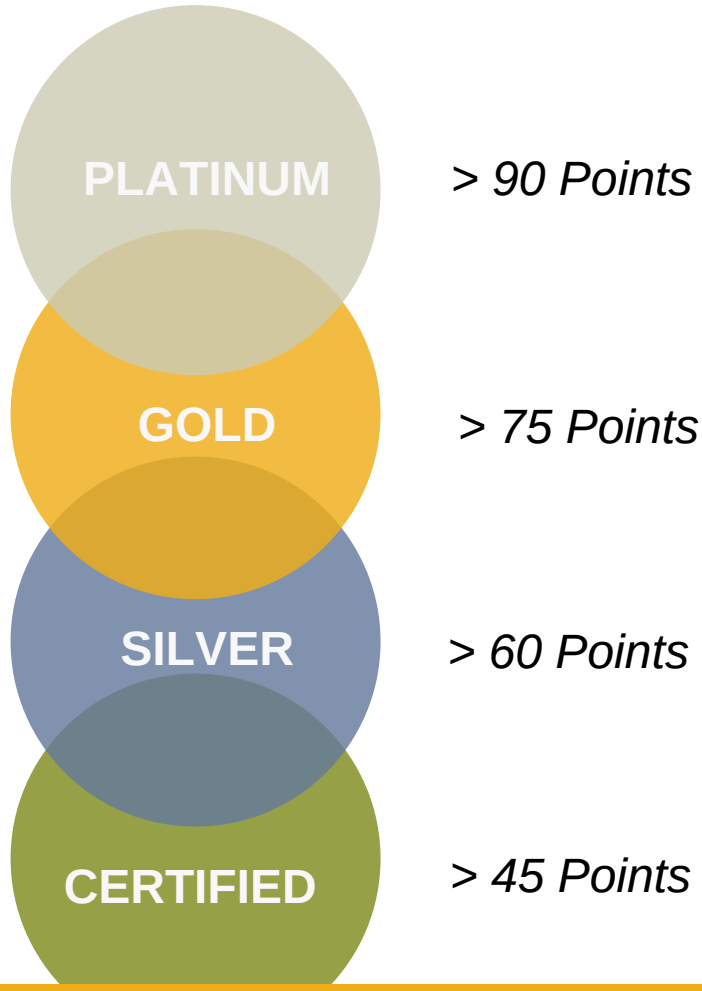
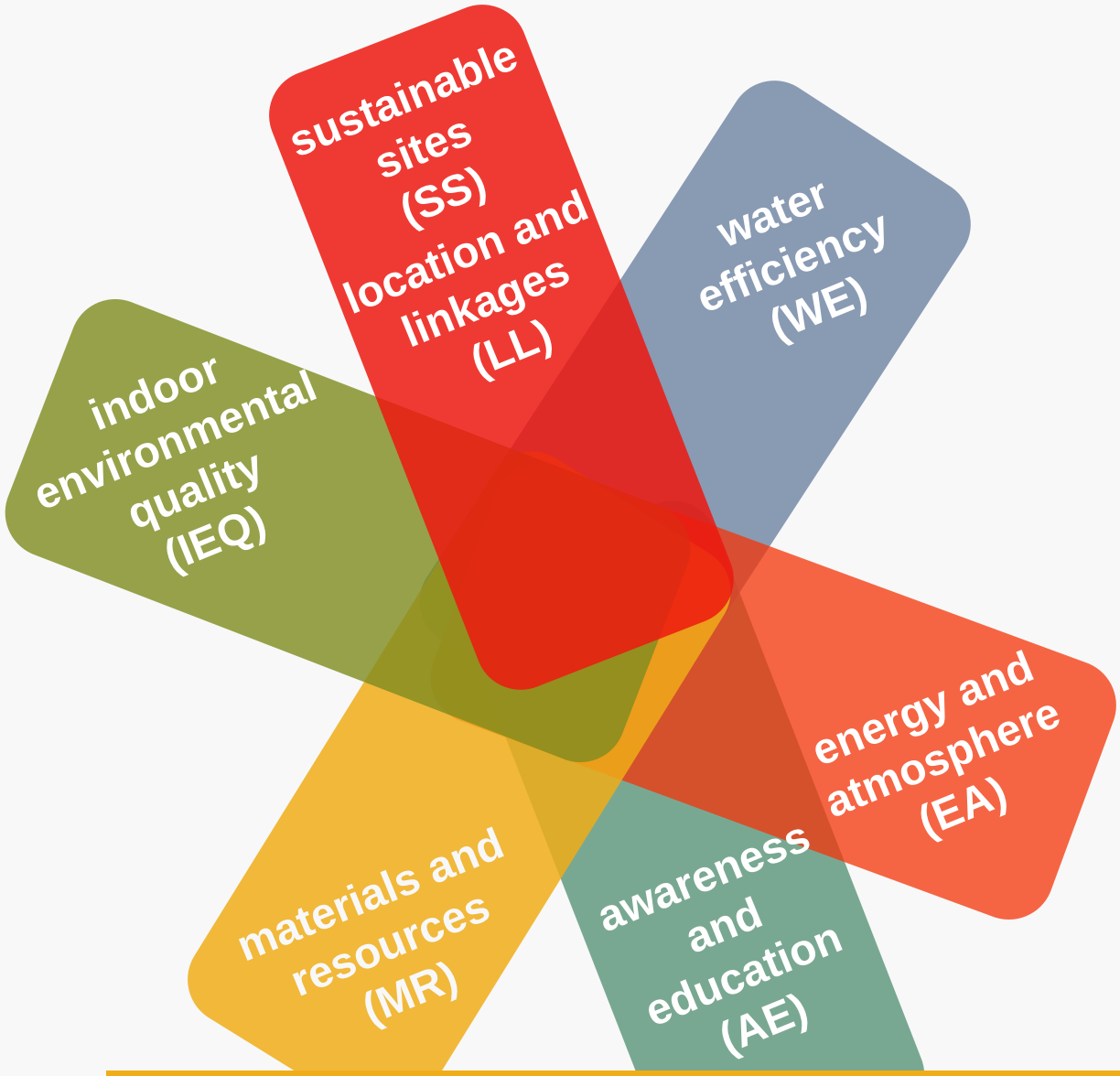
Consensus-Based Standards

USGBC has four levels of LEED:



LEED for HOMES

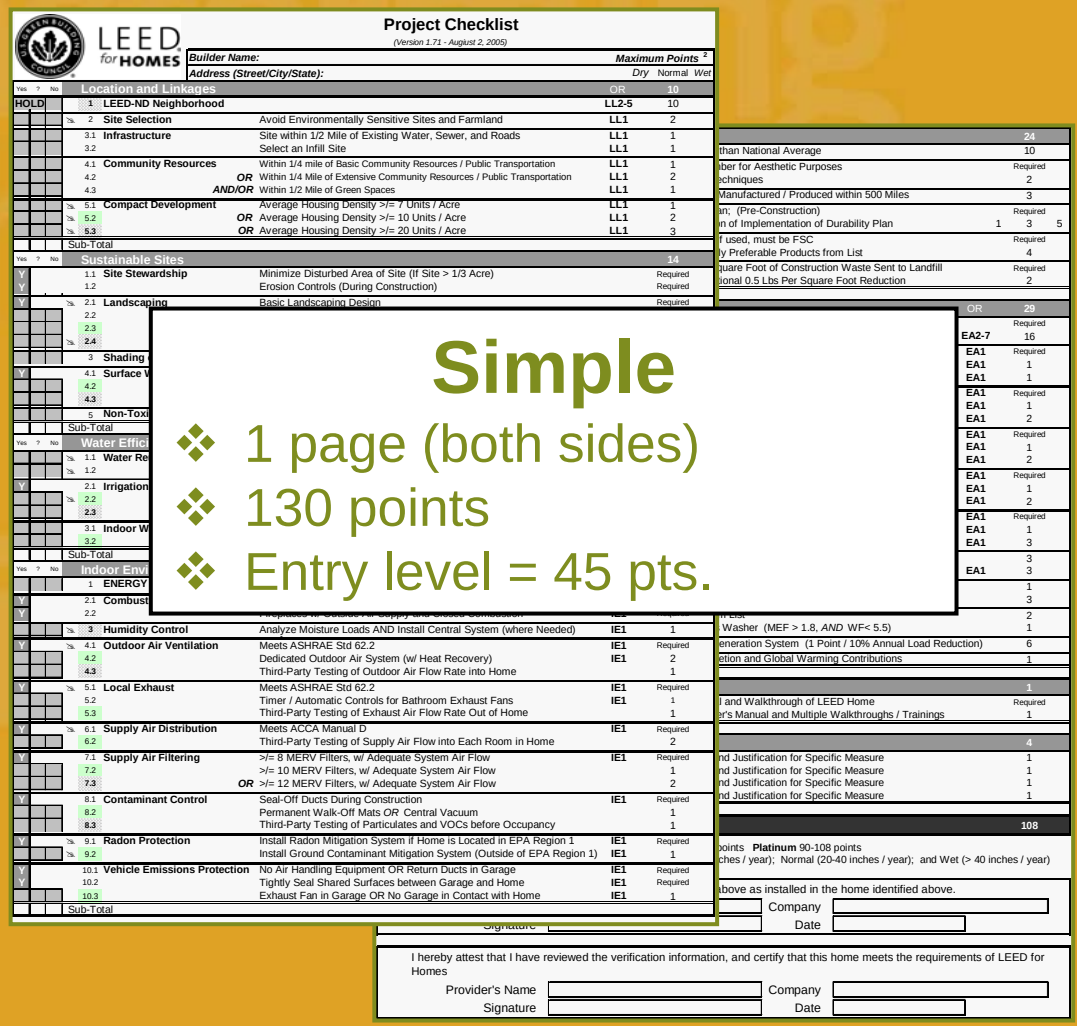
Resource Categories



Design and construction practices that meet specified standards reducing the negative impact of buildings on their occupants and on the environment.

Rating System

www.usgbc.org/leed/homes



LEED for HOMES

Mandatory Measures

ENERGY STAR Labeled Home

Health and Safety Measures

Combustion Venting

Controlled Ventilation

Durability Plan

Waste Management Plan

Site Protections

Owner's Manual

LEED for HOMES

What's New?

Regional Applicability

- **Climate Zones**
- **Precipitation Zones**

Durability

- **Plan**
- **Inspection**

Home Size

Location and Linkages

- **LEED-ND**

Landscaping and Irrigation

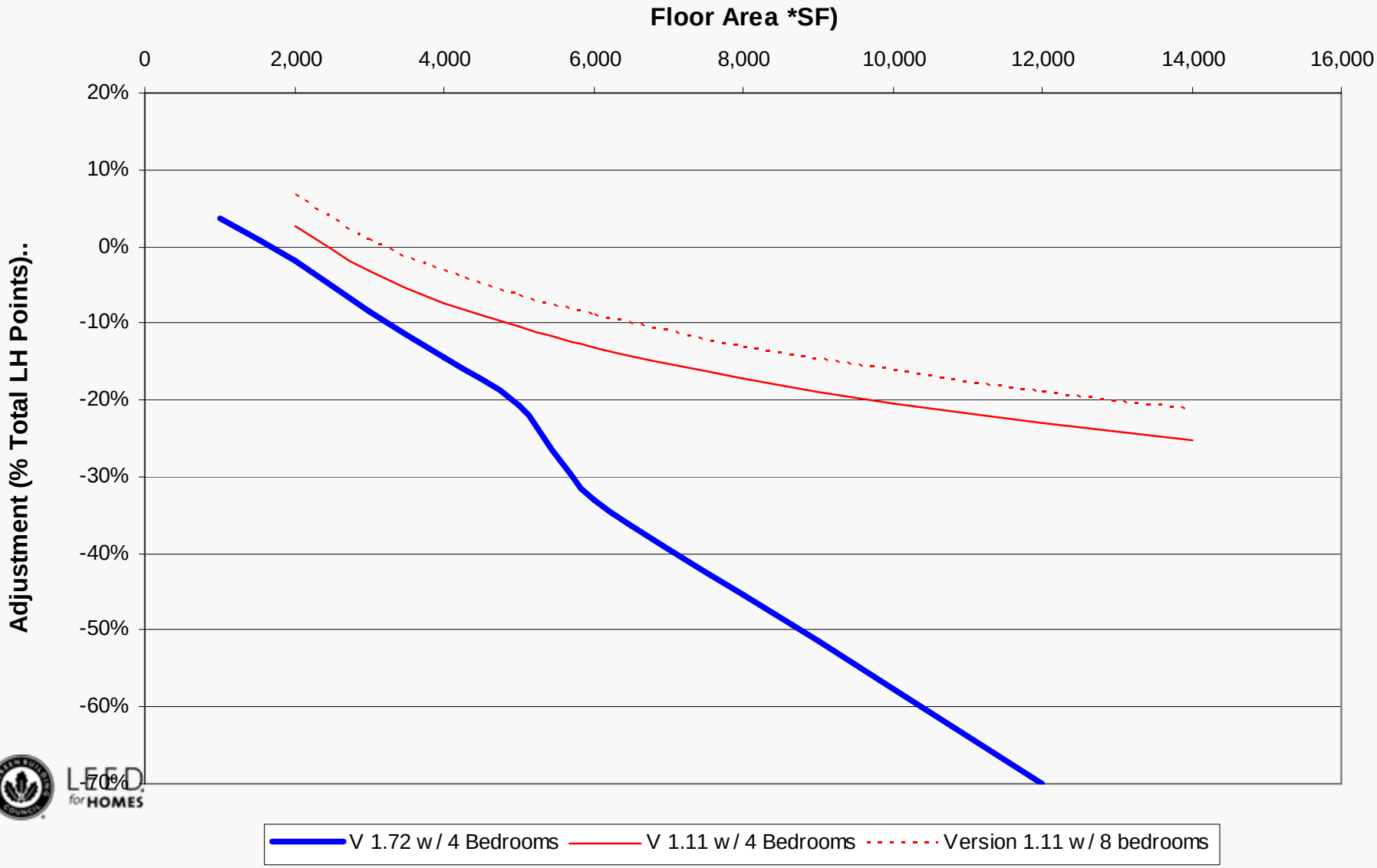
LEED for HOMES

Revised Credits (Version 1.11a)

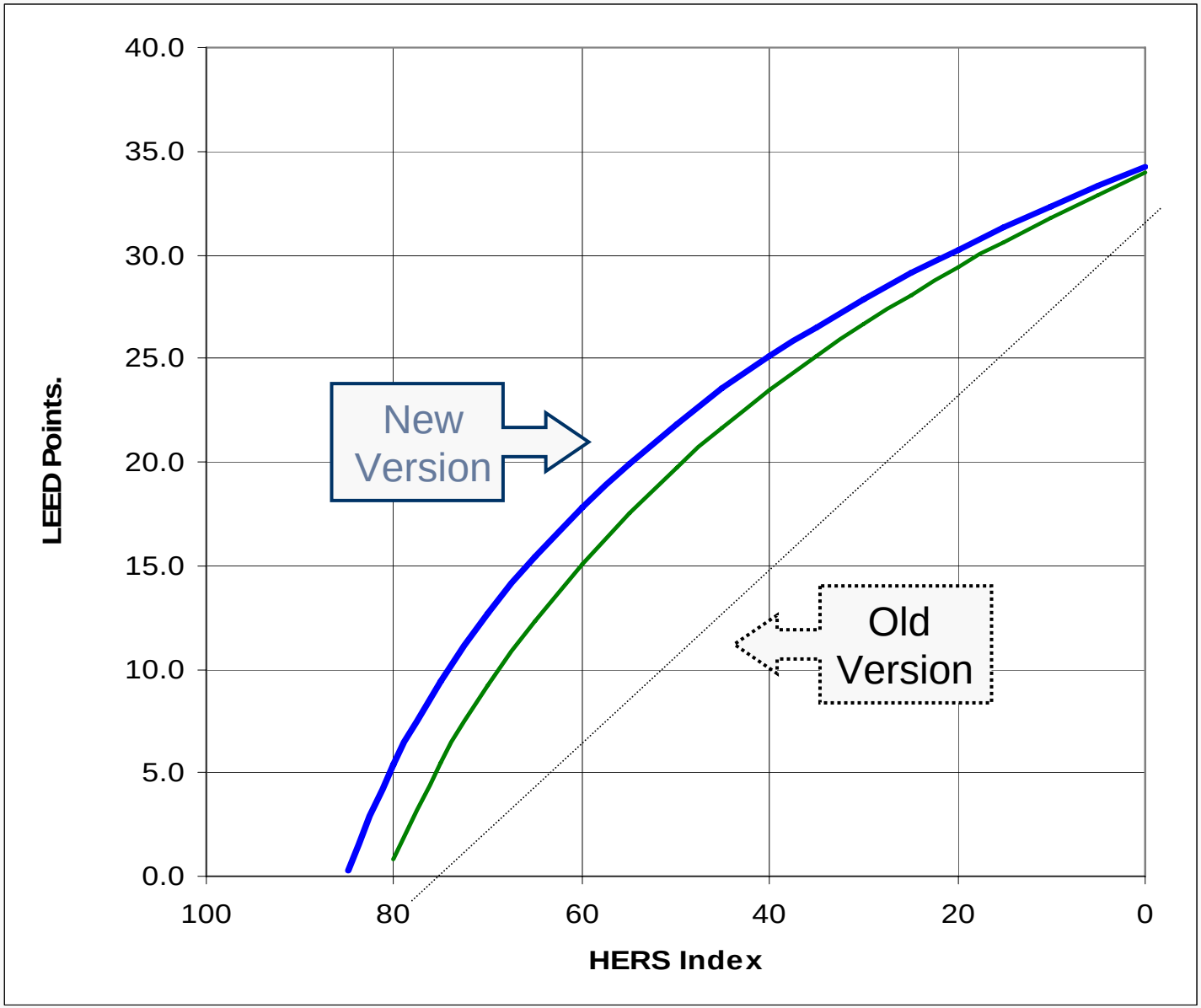
- Reduced Number of Mandatories
- Added Minimum Point Floors
- Home Size Adjuster
- Integrated Design Credit
- Durability moved to front
- Regional ID Credit
- EA 1

LEED for Homes "Adjustment for Home Size"

Comparsion of Version 1.72 (Original Pilot) and Version 1.11 (Proposed Update)



LEED for Homes Energy Credit



LEED for HOMES

Production Builders

- High Volume Approach
  - Community scale requirements
  - Sampling
  - In-house ownership of QA

LEED for HOMES

LEED for Homes
Initiative for Affordable Housing

Purpose: to recognize and reward the intrinsic resource efficiencies of affordable housing

- ❑ **Awareness and Education**
- ❑ **Tools**
- ❑ **Technical Support**

LEED for HOMES

Delivery System

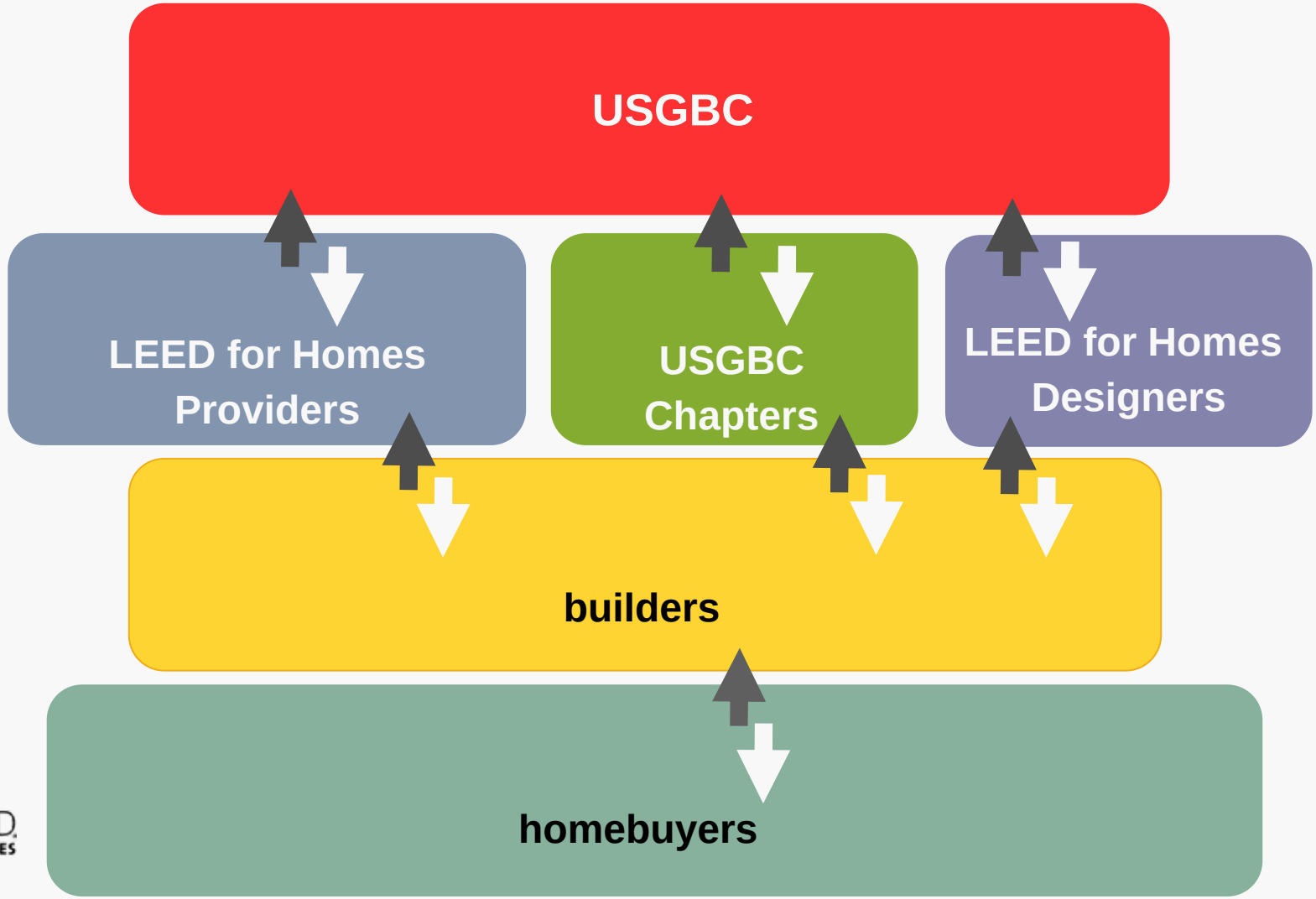
Certification Requirements

Types of 3rd Party Verification Tasks

- Design Reviews
- Inspections
- Performance Testing
- Documentation

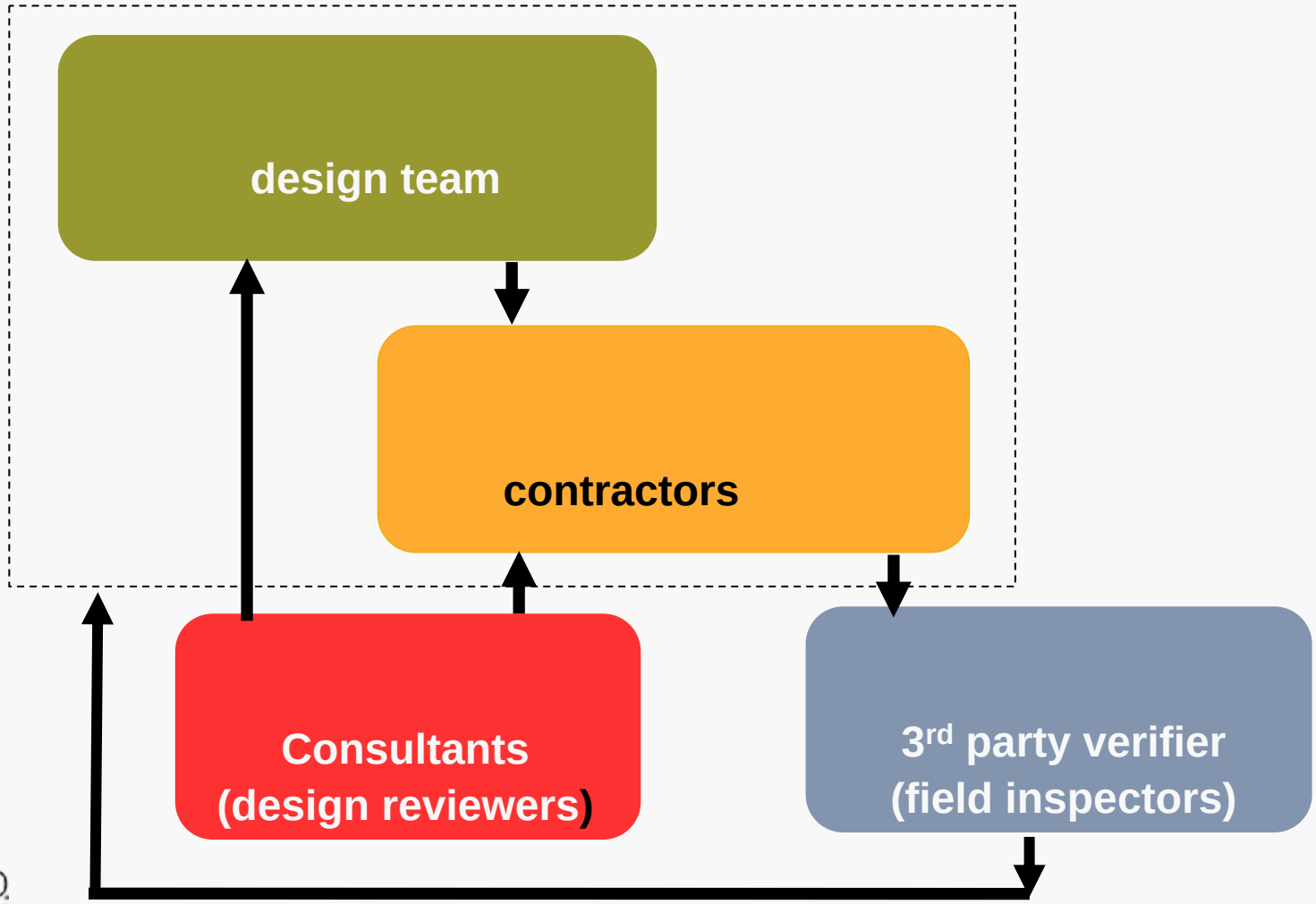
Roles of Key Stakeholders

(Decentralized and Localized)



LEED for HOMES

Integrated Team



LEED for HOMES

Roadmap

The Basic Steps *(Approx 5-8 Months)*	Builder's Responsibilities	Provider's Responsibilities	USGBC's Responsibilities
Step 1: Join LEED for Homes			
Step 2: Select Green Features			
Step 3: Build LEED Homes			
Step 4: Certify as LEED Homes			
Step 5: Sell LEED Homes			

Verification Process

Step 1: Plan Review (by green rater)

1.1 Detailed plan review of a builder's home design;

1.2 Performance testing of a typical example of builder's homes;

1.3 Identify additional measures that may be needed; and

1.4 Preliminary LEED for Homes score / rating.

LEED for HOMES

Verification Process (cont'd)

Step 2: Intermediate Inspections (by green rater)

2.1 Pre-drywall inspection

2.2 Durability inspections

2.3 Erosion Controls

LEED for HOMES

Verification Process (cont'd)

Step 3: Final Rating (by green rater)

3.1 Final inspection and performance testing;

3.2 Completion of project documentation file (including: checklist, performance test reports, and accountability form); and

3.3 Final LEED for Homes scoring / rating.

LEED for HOMES

Verification Process (cont'd)

Step 4: Certification (by LEED for Homes Provider)

4.1 Review of project documentation file that was prepared by the rater

4.2 Completion of LEED for Homes rating

4.3 Presentation of LEED for Homes certificate to builder / homeowner.

4.4 Send notification of rating to USGBC

LEED for HOMES

Accountability Form

Accountability Form

(Version 1.7, August 12, 2005)

All declarations and affirmations made in this accountability form are made to USGBC solely for the purpose of assisting USGBC in determining whether LEED Certification is merited. No such declaration or affirmation can be construed as a warranty or guarantee of the performance of the building.

Instructions

This form is to be completed by the person / organization responsible for the design and/or implementation of one or more of the LEED for Homes credits below. A separate form shall be completed by each design professional responsible for one or more credits.

Step 1. Review the requirements for the credits in the LEED for Home Rating system for which you are responsible.
Step 2. Complete the General Information section of this form.
Step 3. Skip the Overall Performance Data section of the form (to be completed by Provider/Rater).
Step 4. In the Areas of Accountability section, check boxes to indicate the LEED for Homes credits for which you have the primary design/implementation responsibility.
Step 5. Complete the Official Certification section at the bottom of the form.
Step 6. Maintain a project documentation file to assist in the event of an audit of your credit(s) or of this project by the USGBC.

General Information

Builder Name:	
Subdivision Name:	
House Address:	
Provider's Name:	
Rater's Name:	
Sampling Protocol Used:	(Y / N)

Overall Performance Data

LEED Score:	/ 100 Points
LEED Rating Achieved:	(Certified, Silver, Gold, Platinum)
HERS Score Achieved:	/ 100 Points

Areas of Accountability

Location & Linkages
- 2 Site Selection
- 5.1 Average Housing Density >/= 7 Units / Acre
- 5.2 Average Housing Density >/= 10 Units / Acre
- **5.3** Average Housing Density >/= 20 Units / Acre

Sustainable Sites
- 2.1 Basic Landscaping Design
- **2.4** Minimize Landscape Water Demand

Indoor Environmental Quality
- **3** Humidity Control System
- 4.1 Outside Air Ventilation; Meets ASHRAE/Std 62.2
- 5.1 Local Exhaust; Meets ASHRAE Std 62.2
- 6.1 Supply Air Distribution; ACCA Manual D
- 9.1 Radon Protection; Install System, EPA Zone 1
- 9.2 Radon Protection; Install System, Not EPA Zone 1

Homeowner Awareness
- 1.1 Basic Owner's Manual & Walkthrough
- **1.2** Comprehensive Manual & Multiple Walkthroughs

Water Efficiency
- 1.1 Water Reuse; Rainwater Harvesting
- 1.2 Water Reuse; Grey Water Reuse
- 2.2 Irrigation System; High Efficiency Measures

Materials and Resources
- 1 Smaller Home
- 4.1 Durability Plan; (Pre-Construction)

Energy and Atmosphere
- **2.3** Insulation; Above Code
- 6.1 HVAC Meets ENERGY STAR for HVAC
- **10** Renewable Electric Generation System
- 11 Residential Refrigerant Management

Innovation and Design Process
- 1.1 Provide Description and Justification
- 1.2 Provide Description and Justification
- 1.3 Provide Description and Justification
- 1.4 Provide Description and Justification

Official Certification (to be Completed After Final LEED for Homes Rating)

By affixing my signature below, the undersigned does hereby declare and affirm to the USGBC that the LEED for Homes requirements, as specified in the LEED for Homes Rating System, have been met for the indicated credits and will, if audited, provide the necessary supporting documents (drawings, calculations, etc.).

Responsible Party	
Date	
Printed Name	
Project Role / Title	
Organization / Company	
Signature	

Anticipated Effort for Verification

Type of Verification Activity	No. of Hours Required	
	ENERGY STAR	
Preliminary Rating	4	
Intermediate Inspections		
Final Review	6	
Travel Time	0.5	
Total Hours		
w/ Preliminary Rating	10.5	
w/o Preliminary Rating	**6.5**	

LEED for Homes Fees

USGBC

▪ Builder Registration	$150 for Pilot
▪ Certification Fee	$50 Per LEED Home

Provider

▪ LEED for Homes Ratings (Ask Your Local Provider)	
Preliminary Design Review	$ 300 - 600
Inspections and Certification	$ 600 - 1,200
▪ With Sampling (high volume)	$250 - 500

Other Support

▪ Design Assistance	$ Variable
▪ Training	$ Variable

LEED for HOMES

How Much Does a LEED Home Cost?

Comparison Criteria	Code Home	LEED Home	Difference ($.Month)	Difference ($/Day)
Sticker Price	$ 300,000	$ 308,500		

Benefits of a LEED Home

List of Features / Benefits	LEED Home	Other Home
Higher quality	☒	
30-50% more energy efficient	☒	
More comfortable living environment	☒	
30-50% more water efficient	☒	
More durable home design and materials	☒	
100 cfm of fresh air every hour	☒	
50% better air filtration	☒	
30-50% of building materials are environmentally preferable	☒	
Non-toxic pest management	☒	
Ozone safe refrigerant	☒	
50% less waste to landfill (during construction)	☒	
30% less stormwater run-off (less pollution into watersheds)	☒	
Higher resale	☒	


New
Developments

Lessons Learned

- Importance of Integrated Design Process
- Provide More Flexibility
- Clarify Documentation Procedures
- Clarify QA Procedures
- Clarify Approach for High Volume Builders

Future Plans

- Revise Rating System, as needed
- Expand Program to Include New Providers
- Improve support for Affordable / Multifamily Homes
- LEED for Homes Trainings
- Marketing Tools
- Reference Guide
- LEED On-Line
- National Release of LEED for Homes

Education Activities

USGBC is developing 4 courses for the LEED for Homes Rating System:

1. Introductory course - for public (on-line)
2. Intermediate course - for builders
3. Advanced course - for raters
4. Advanced Course - for designers

LEED for HOMES

NEW! Consumer Website

How to “green” your life

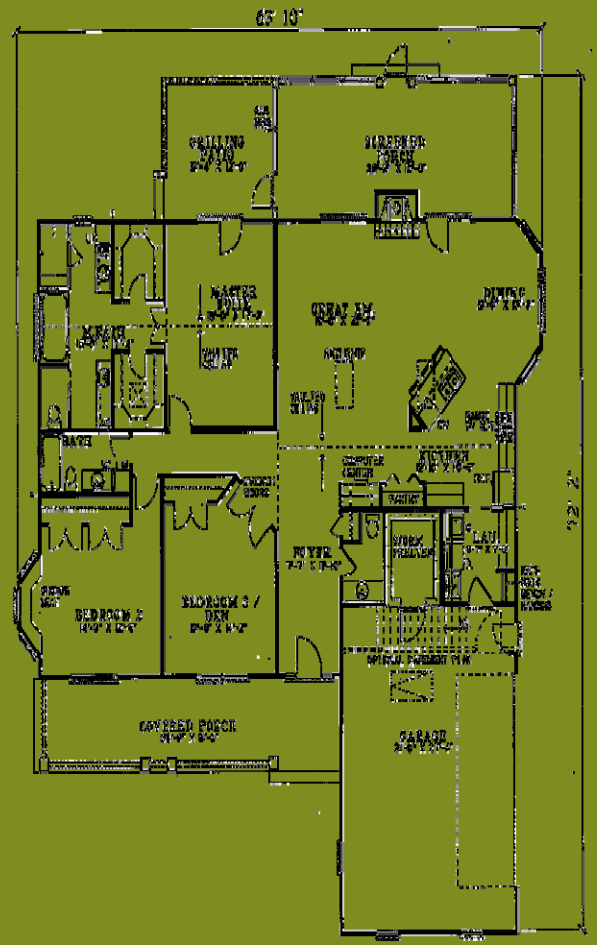
- Greening of your new home
- Greening of your existing home
- Greening of your vacation
- Greening of your investments

LEED for HOMES


How to Get Started

Five Things That You Can Do Today

1. Learn about green home building
2. Perform a design review
3. Find a LEED for Homes Provider
4. Develop a network of colleagues
5. Develop a project team



LEED for HOMES

What to Focus On

1. Health and Safety
2. Comfort
3. Durability
4. Energy Efficiency
5. Water Efficiency
6. Sustainable Use of Materials and Land

List of Providers

Arizona (Scottsdale and Metro Phoenix)
Anthony Floyd Green Building Program Manager
City of Scottsdale Green Building Program

California (Statewide)
Mark Berman
Principal Davis Energy Group, Inc.

Colorado (Statewide)
Kristin Shewfelt, Program Development Officer, E-Star Colorado

Florida (Statewide)
Eric Martin Senior Research Engineer Florida Solar Energy Center/ University of Central Florida

Georgia (Statewide, and AL, SC and VA)
Laura Uhde Southface Energy Institute

Michigan (Central and Western MI)
Jeannine Reynolds Executive Director The Alliance for Environmental Sustainability

New Jersey (Statewide, and Eastern PA)
Mike Brown, MaGrann Associates

Northeast Team (CT, MA, ME, NH, RI, and VT)
Richard Faesy Senior Project Manager Vermont Energy Investment Corporation

Oklahoma (Statewide and Northern TX)
Donney Dorton, Guaranteed Watt Saver Systems, Inc.

Oregon (Statewide and Southern WA)
Randy Hansell Green Building Specialist Earth Advantage

Pennsylvania (Eastern PA and DE)
Liz Robinson Executive Director Energy Coordinating Agency of Philadelphia

Texas (San Antonio)
Chip Henderson President Contects Consultants and Architects

LEED for HOMES

Summary

- LEED Homes are in demand
- LEED Homes are affordable
- LEED Homes is an opportunity to grow your business
- LEED Homes challenges you to do your part!

Thank You!

for Supporting LEED for Homes

Platinum
Living Homes
Santa Monica CA

USGBC Key Contacts

US Green Building Council Staff
Administrative and Technical / Verification Questions

Jay Hall, Acting LEED for Homes Program Manager,
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Q & A