LEED for Homes:

What it Means to the Building Performance Industry

San Antonio, TX

February 28, 2006

LEED for HOMES

Overview

- What is HERS Business Model?
- What is LEED for Homes?
- Verification Services Needed
- Pilot Schedule
- A Provider's POV
- What's Next

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PERCEPTION

REALITY

What is the Typical Business Model for the Building Performance Industry?

To Help Builders To Differentiate their Homes in the Market, in Terms of:

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

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What Services are Offered by HERS Professionals?

A Suite of "Performance Assurance" Related Services

Design Reviews | Product Sales | Installation Services | Inspections | Performance Testing | **HERS Ratings**

Project Timeline

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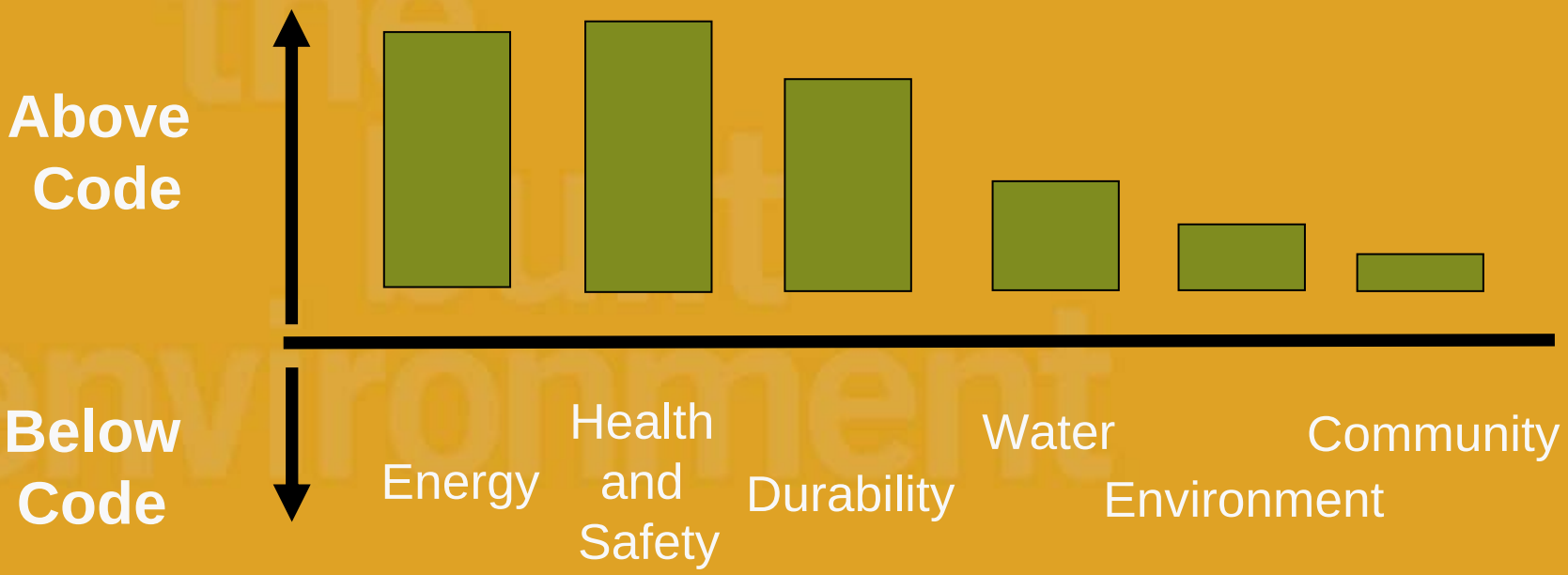
What is High Performance?



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Energy

>/= 35% Reduction

Annual Use:

~ 110 MBtu / Yr

~ 800 Gallons Fuel Oil (equiv.)

~ $2,500

Annual Pollution:

~ 12 Tons CO_2 (equiv. to 2 cars)

Other Considerations

~ 100 Watts / SF Available Solar (70% Effic. Thermal Solar; 10% Effic. PV)

Summary of Benefits	*Assumptions*	**$/Month**	**$/Day**
Cost of Measures	*$3,000*	$20	$0.50

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Water

>/= 40% Reduction (Indoors and Outdoors)

Annual Use:

~ 100 Gal / Person / Day

~ 100,000 Gal. / Yr

~ $ 400

Annual Waste:

Sewer
~ 50,000 gal.
Irrigation
~ 50,000 gal.

Other Considerations

~ Rainfall (30 in/yr = 200,000 gal/yr)

Summary of Benefits	*Assumptions*	**$/Month**	**$/Day**
Cost of Measures	*$1,000*	$5	$0.20
Water Savings (40%)	*-$150 / Yr*	-$15	-$0.50
Net Cost of Measures		-$10	-$0.30

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IEQ

>/= ? % Reduction (Pollutants)

Fresh Air:

~ 0.15 ACH
(50 cfm)
natural leakage

~ 0.15 ACH
(50 cfm)
mechanical
ventilation

Exhausted "Pollutants":

CO
VOCs
Dust
Pollen
Moisture
Radon

Other Considerations

~ Value of Health & Safety?
~ Value of Improved Comfort?

Summary of Benefits	*Assumptions*	**$/Month**	**$/Day**
Cost of Measures	*$2,500*	$15	$1.00
Savings	*$? / Yr*	$0	$0.00
Net Cost of Measures		$15	$1.00

Materials

>/= 50% Reduction (Waste)

Materials:

~ 200,000 Lbs
~ 100 Tons
~ $70,000

Waste:

~ 8,000 Lbs
~ 4 Tons
~ $3,500
(& pay $2,000 to haul away)

Environmentally Preferable:

Recycled Materials
Sustainably Harvested Materials
Low Emission Products
Advanced Framing
Local Sources

Other Considerations

~ Durability: Value of Increased Lifetime (25 yrs vs 100 yrs)?

Summary of Benefits	*Assumptions*	**$/Month**	**$/Day**
Cost of Measures (+3%)	*$2,500*	$15	$0.50
Savings (50%)	*-$2,500*	-$15	-$0.50
Net Cost of Measures		$0	$0.00

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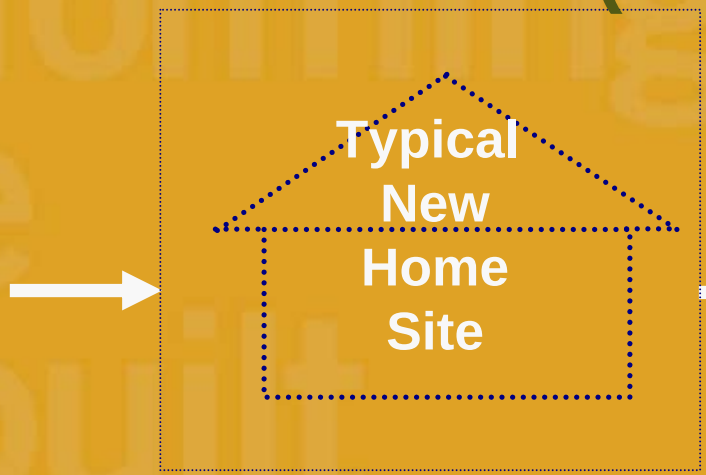
Building Site

>/= ? % Reduction (Pollution)

Surface Water

~ Rain: 15 inch / yr
(100,000 Gal / Yr

~ Irrigation: 1" / hr
(50,000 Gal / Yr)



Erosion / Run-Off
Damage to
Rivers
Lakes
Wildlife

Chemicals

Fertilizers
Pesticides

Other Considerations

~ Landscaping / Permeability of Site
~ Community Benefits of Rain Pond

Summary of Benefits	*Assumptions*	**$/Month**	**$/Day**
Cost of Measures	*$2,500*	$15	$0.50
Savings			
Net Cost of Measures		$15	$0.50

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Location

>/= 50% Reduction (Gas $)

Long Distance Commute

~ 30 miles / day
~ 15,000 miles / yr
~ 15 mpg
~ 1,000 gal /yr
~ $2,500 / yr

Short Commute

~ 5 miles / day
~ 2,500 miles / yr
~ 30 mpg
~ 100 gal /yr
~ $250 / yr

Other Considerations

~ Numerous Local Car Trips
~ Local Community Resources (retail, schools, etc.)
~ Average Housing Density in Community

Summary of Benefits	*Assumptions*	**$/Month**	**$/Day**
Cost of Measures	*0*	$0	$0.00
Savings	*$2,000 / yr*	-$150	-$5.00
Net Cost of Measures		-$150	-$5.00

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Summary of Benefits

Type of Resource	Monthly Cost ($/Month)	Monthly Savings ($/Month)	Net Cost of Measures ($/Month)	($/Day)
Energy	$20	-$70	-$50	-$1.70

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Intro to USGBC and LEED for Homes Pilot

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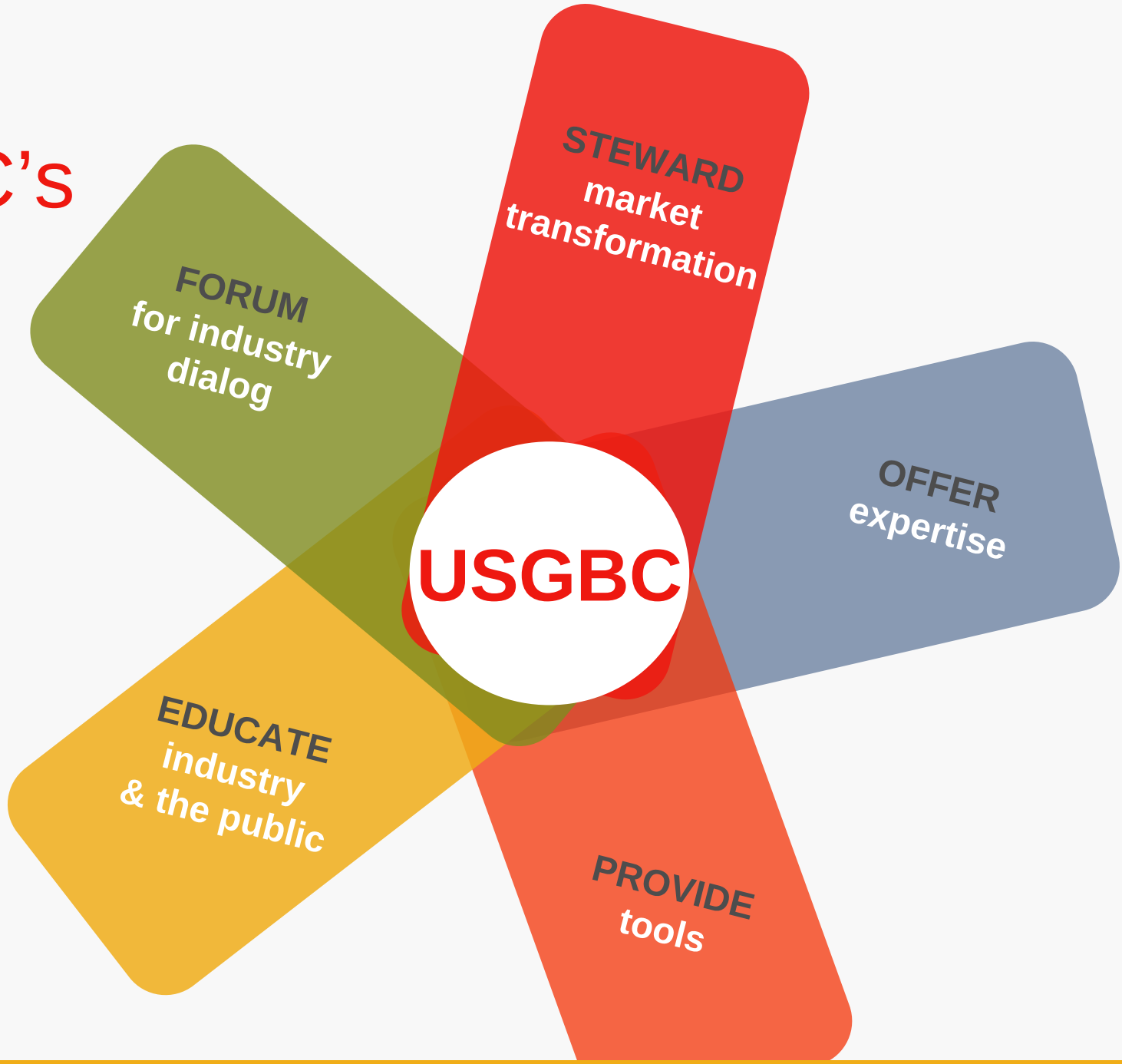
What is USGBC's Role?



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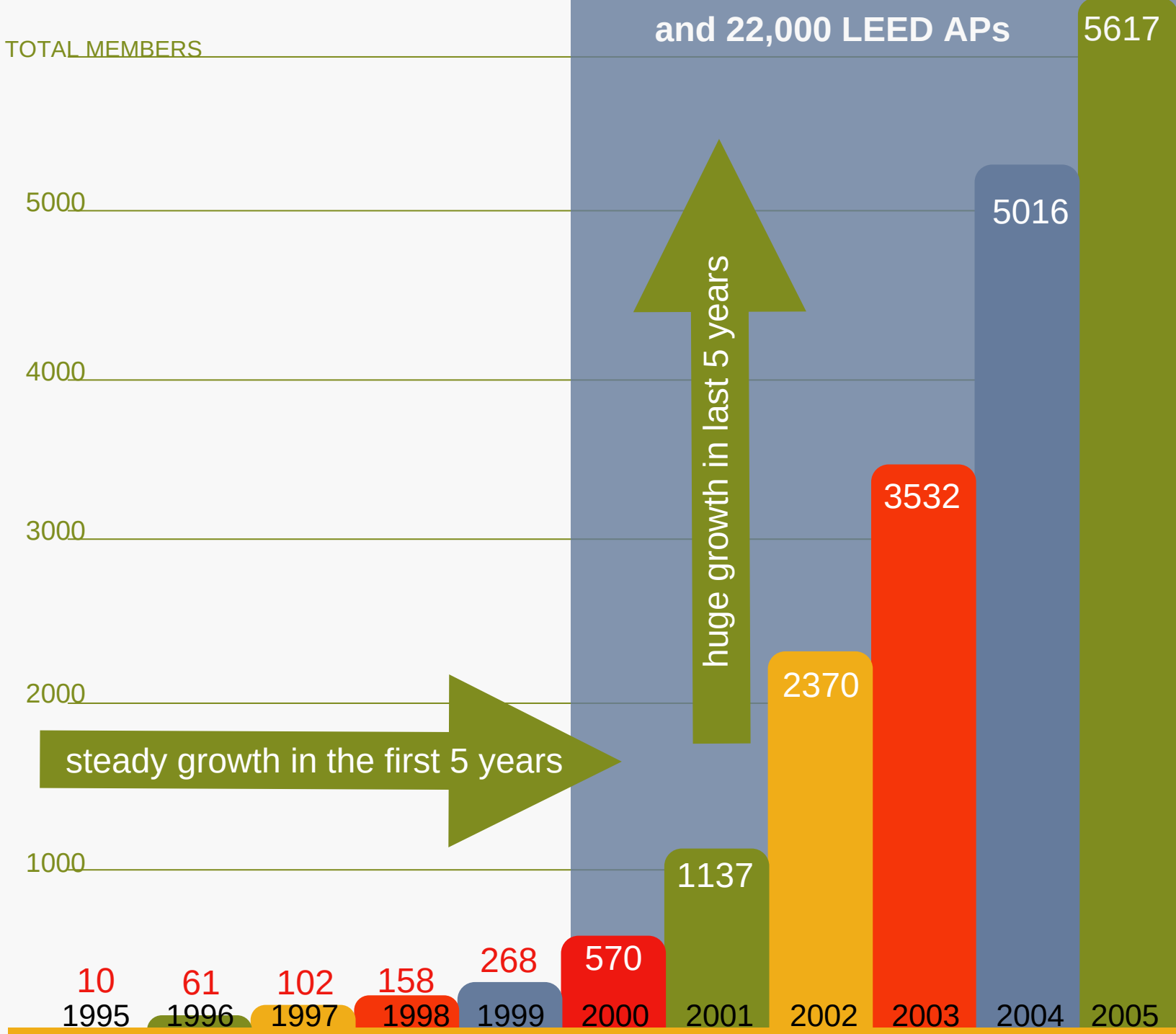
USGBC Membership



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What is the LEED System?

Leadership in **Energy** and **Environmental Design**

A leading-edge system for certifying the greenest performing buildings in the world

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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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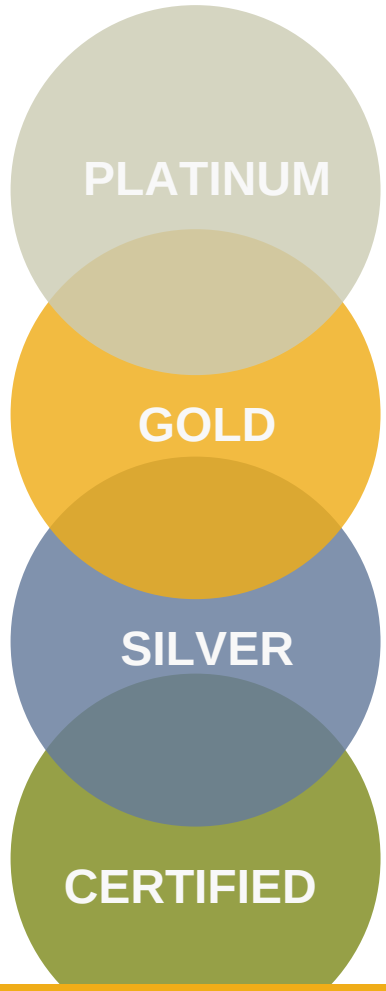
Consensus-Based Standards

USGBC has four levels of LEED:



> 90 Points

> 70 Points

> 50 Points

> 30 Points

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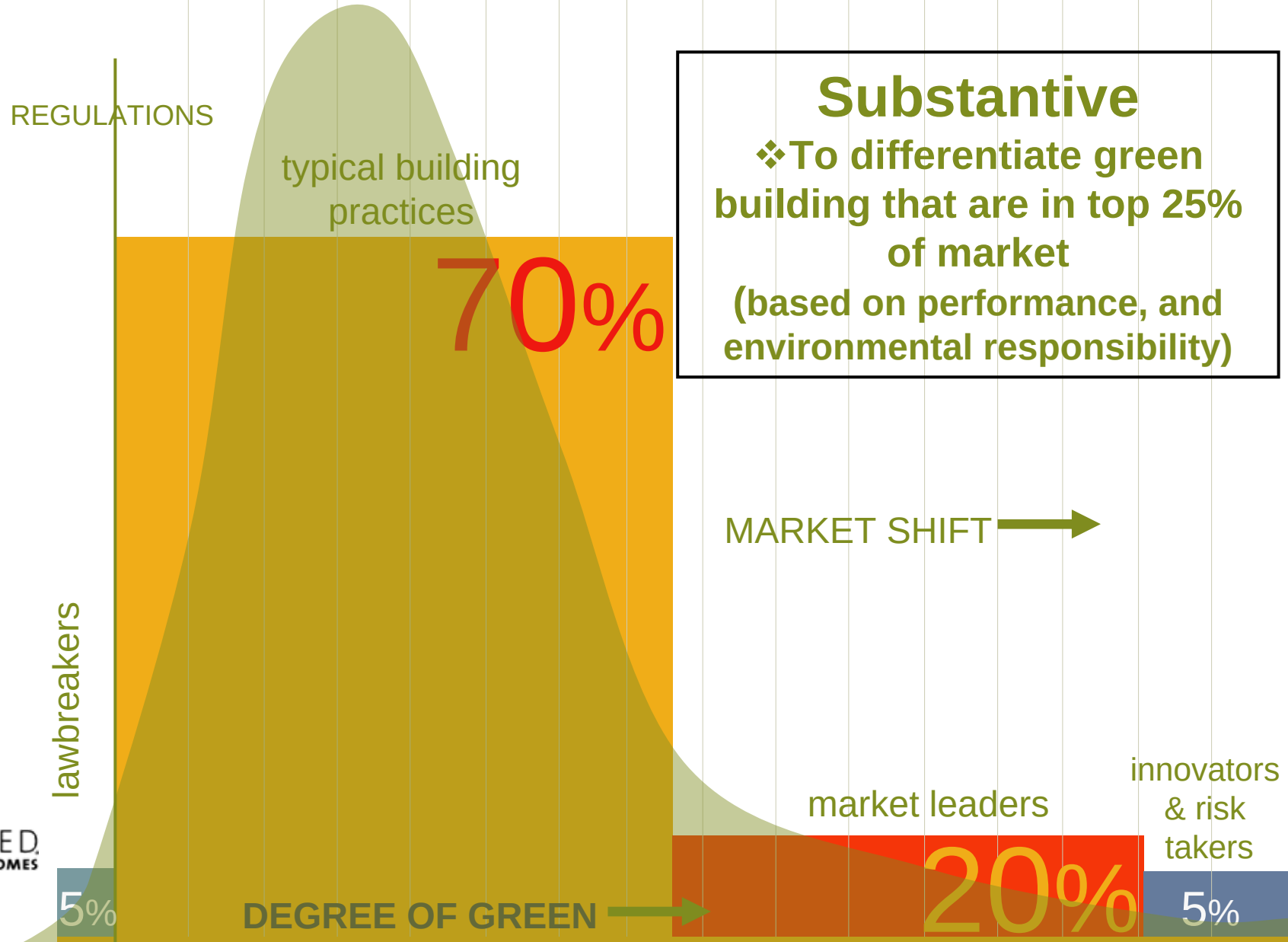
TARGET MARKET



Substantive

❖**To differentiate green building that are in top 25% of market**

(based on performance, and environmental responsibility)

MARKET SHIFT →

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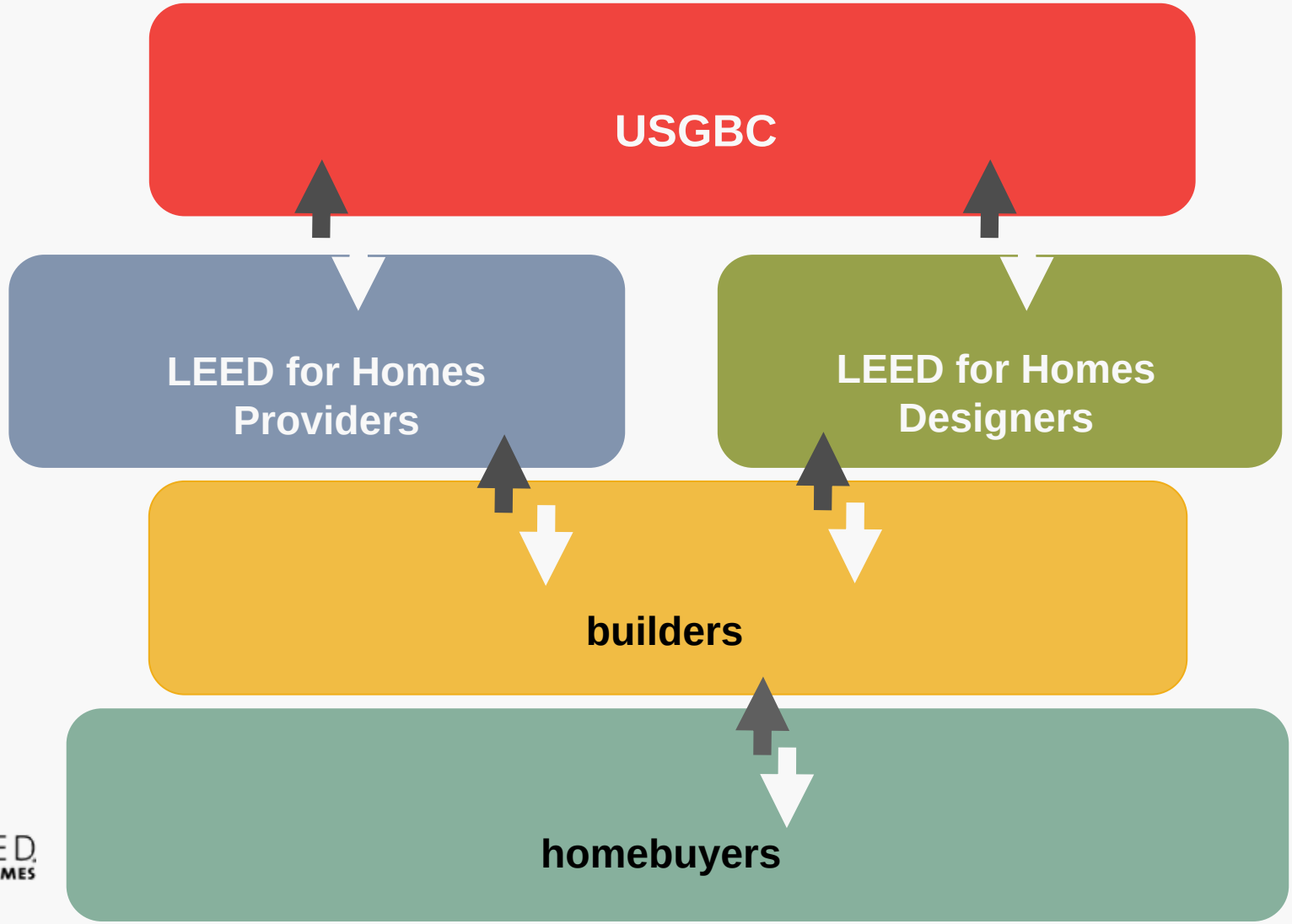
Roles of Key Stakeholders

(Decentralized and Localized)



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The Growth of Green Building

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CURRENT SITUATION

More than 50 Existing Green Building Programs

	Average	Max / Min
Checklist length (pages)	7	10 / 5

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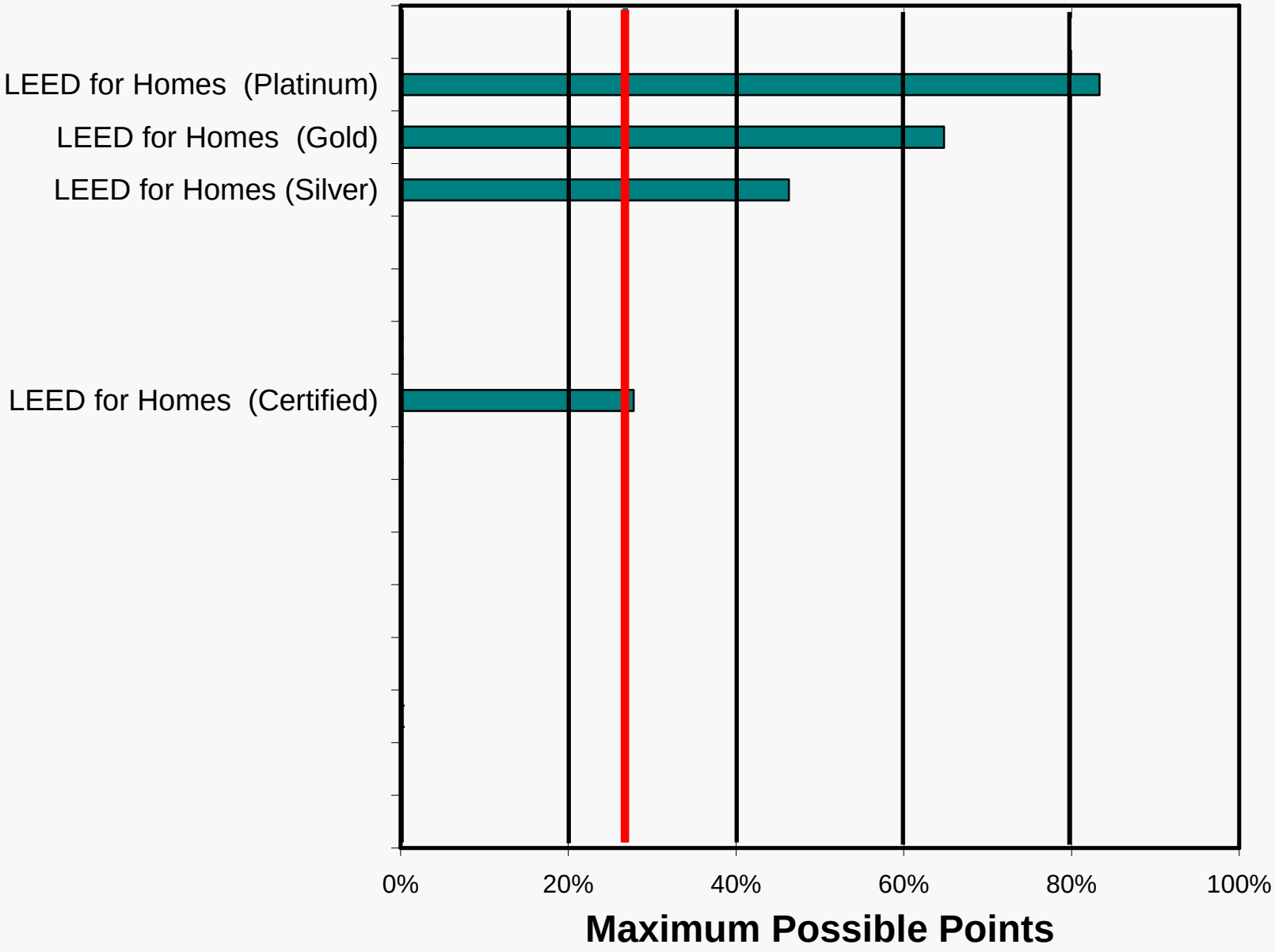
Relative Performance of GHB Programs



Pilot Version of LEED for Homes Rating System

market rate

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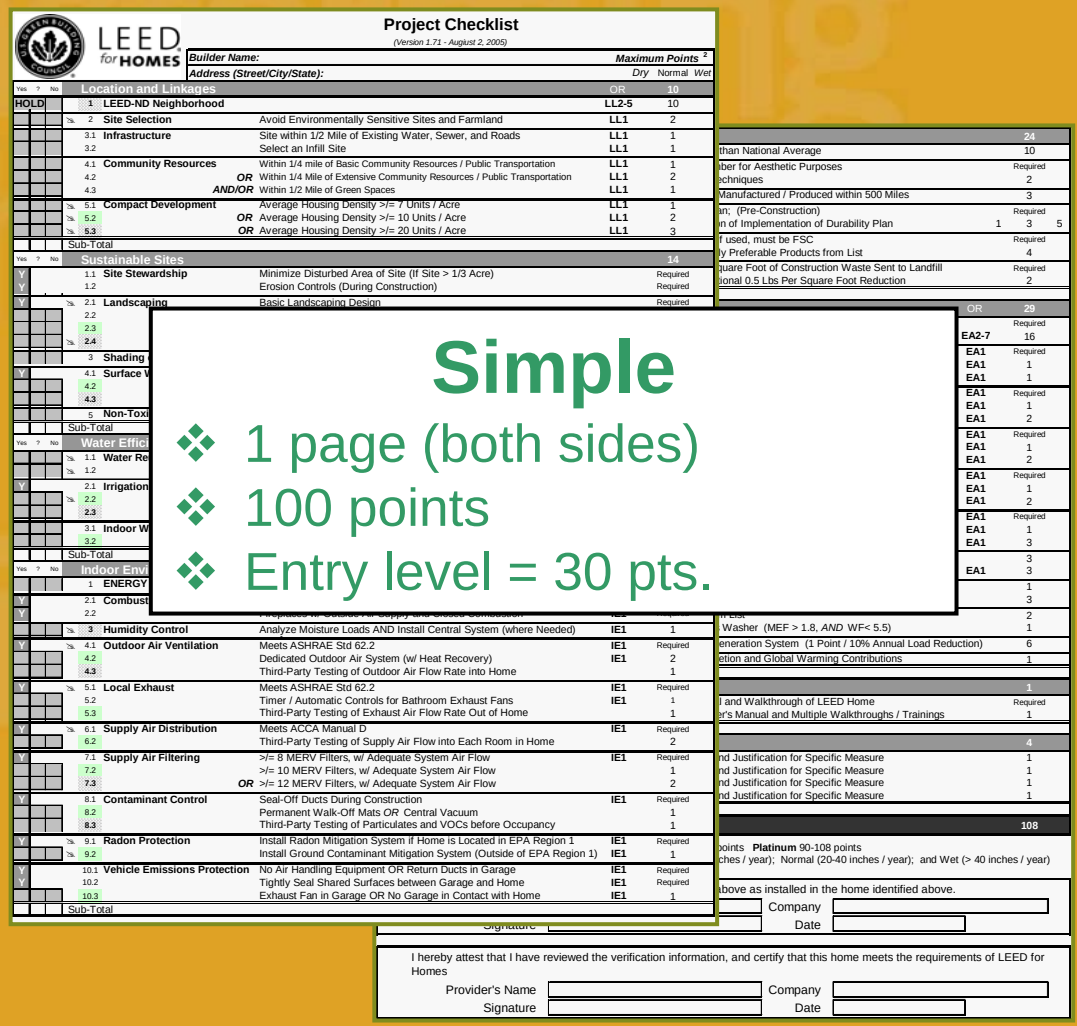
Checklist



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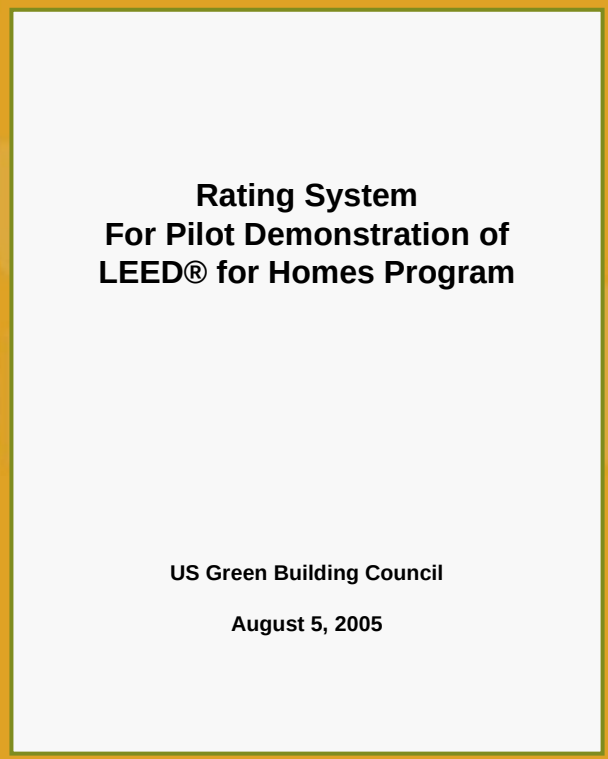
Rating System

www.usgbc.org/leed/homes



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Purpose of Pilot

USGBC (To Listen, Learn, and Support)

1. Ease of Use of Rating System
2. Ease of Delivery
3. Stakeholder Acceptance

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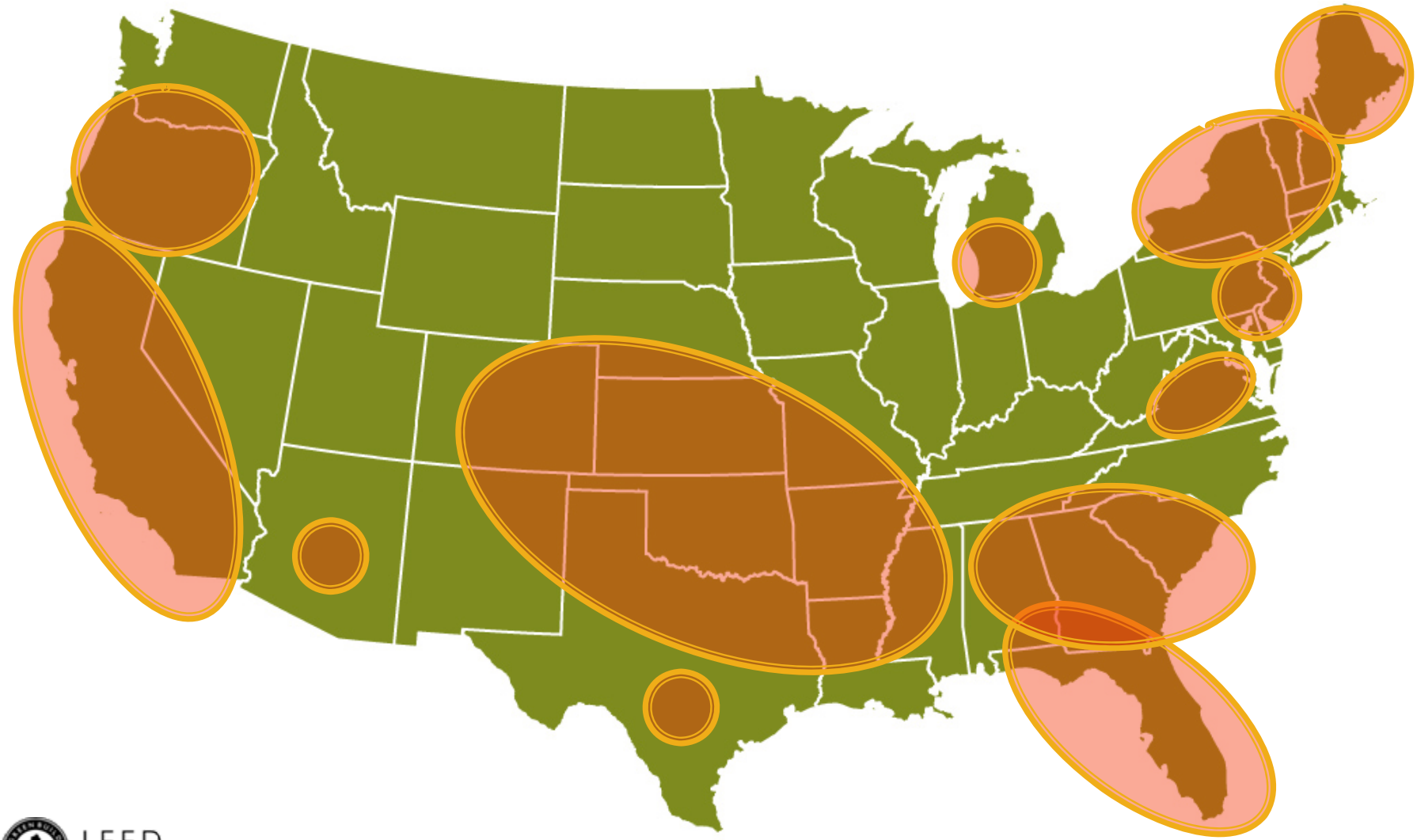
PILOT MARKETS



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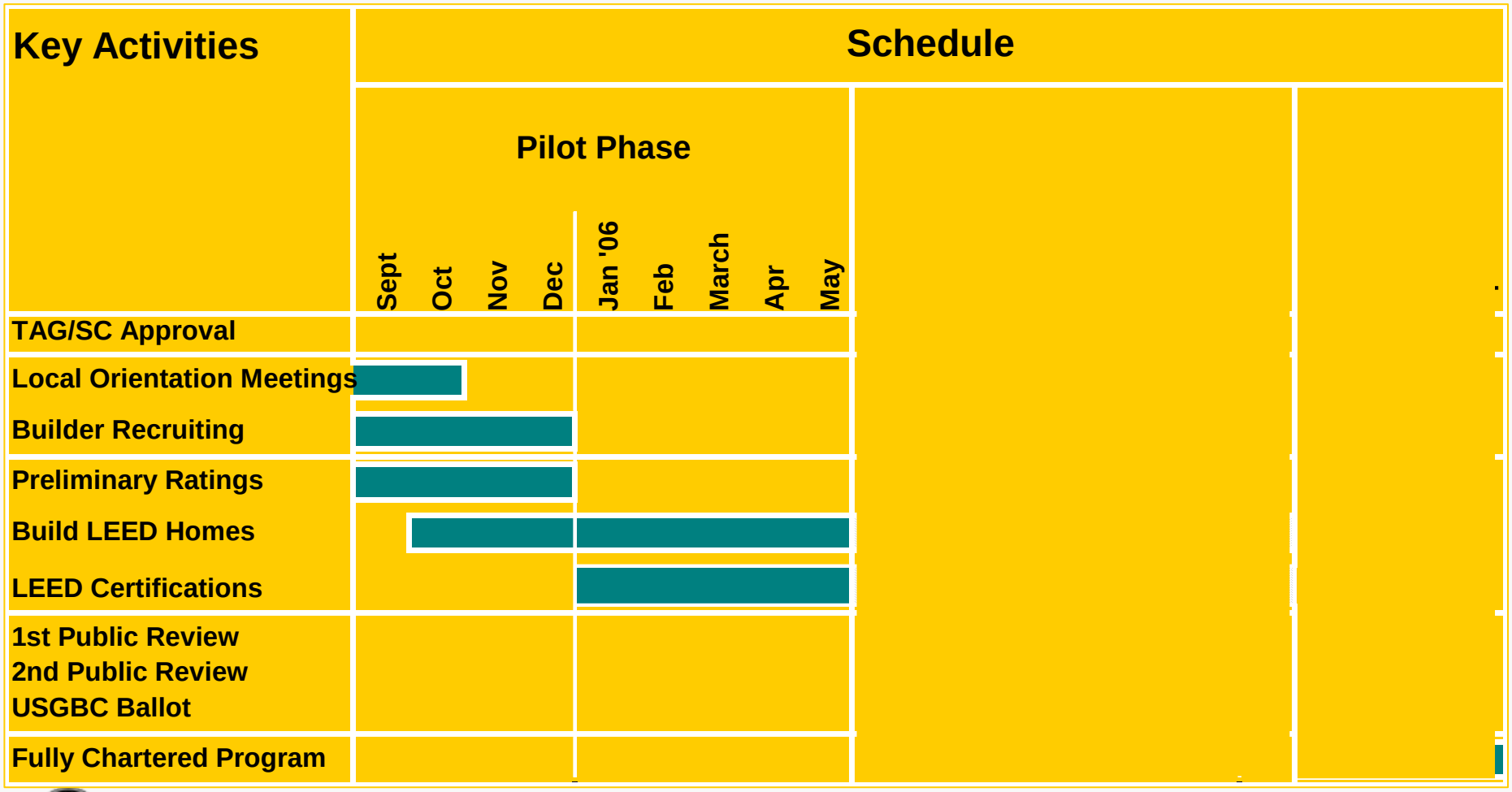
Pilot Schedule



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Pilot Status

Type of Participant	Registered
# of Providers	11
# of Builders	80
# of Homes	
Single Family	100
Multi-Family	200

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Challenges and Opportunities

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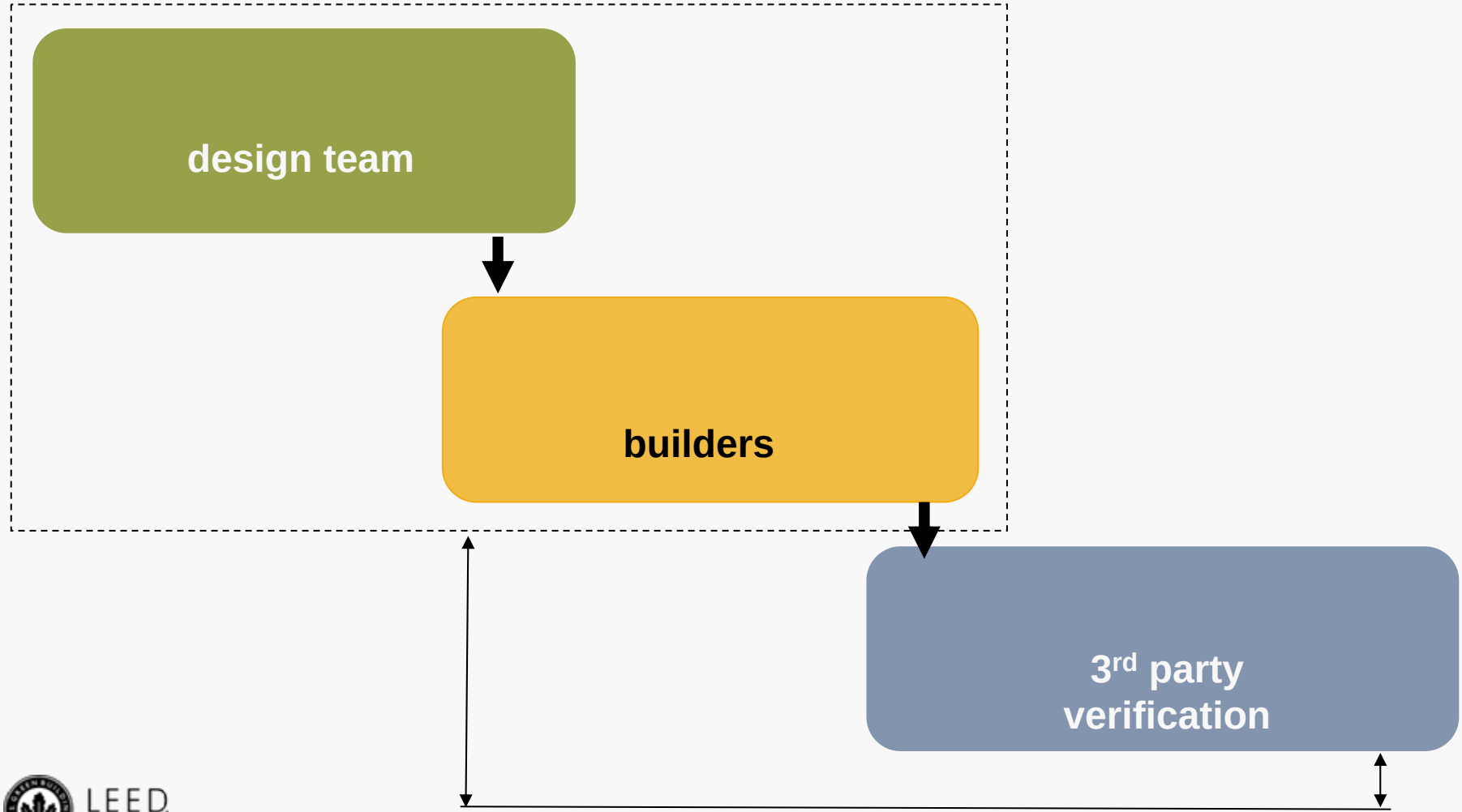
Roles of Key Stakeholders



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Mandatory Measures

ENERGY STAR Labeled Home

Health and Safety Measures

Combustion Venting

Controlled Ventilation

Durability Plan

Waste Management Plan

Site Protections

Owner's Manual

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What's New?

Regional Applicability

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

Durability

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

Home Size

Location and Linkages

- **LEED-ND**

Landscaping and Irrigation

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Verification Process
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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			

Performance Tests

List of Special Measures		Resp.	Performance Level	
Category	Credit		Mandatory	Optional
Energy	1. ENERGY STAR Home	Rater	☒	
	3. Envelope Air Leakage	Rater	☒	
	5. Duct Leakage	Rater	☒	
	6. Refrigerant Charge	HVAC	☒	

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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**	

Provider's POV

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Next Steps

In 2006

- Current Providers will Expand their Reach
- Affordable and Multifamily Homes
- Pilot LEED for Homes Trainings
- Pilot Marketing Tools
- Revisions, as needed
- Public Comment Period

In Early 2007

- Expand Program to Include New Providers

Why LEED for Homes?

- **Simple** - to understand and implement
- **Substantive** - to differentiate top 25% of homes
- **Compelling** - nationally recognized LEED brand
- **Affordable** - net cost of less than $1 / day
- **Credible** - based on consensus of GHB experts
- **Market Based** - build on success of existing GHB Programs, ENERGY STAR, and HERS

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Key Contacts

US Green Building Council Staff

Administrative and Technical Questions

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Affordable Homes Questions

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build green, everyone profits.

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