

Matt Belcher

Remodeling and Retrofits

The “Green” Business Case



Midwest Energy Efficiency
Research Consortium



Hibbs • Homes



Housing

128,649,000

Housing Units in the USA

-U.S. Census Bureau

**At its peak: new Construction
added about 1.6% to this number
per year**

(Approximately 10 years)

-About 2.5% of all Homes

Housing

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Housing

- Residential sector consumes 21.9% of the Energy in the U.S.
- It also Produces 21% of green House Gas (GHG) Emissions
- **Homes built today are 100% More Energy efficient than homes built prior to 1991 (Amounts to 2.5% of *all* Homes)**

Homeowners Staying Put

- Mobility at 11.6%-Lowest since 1948
- First Time Home Buyers-9 years
- Repeat Buyers-15 years
- 52% planning on Home Improvement Over \$3,500



Green Remodeling Preferences

Energy Savings A Must

Energy Savings

Windows

Insulation

HVAC

Better Indoor Air Quality

Water Efficiency

Sustainable Materials

Motivations: #1 Save Money, #2 Improved Living



Building Codes

- International Code Council (ICC)
 - "Family of Codes"
- Reference Standards (e.g.; ANSI, ASTM, NFPA)
 - As many as 350 standards developed by 50 standards generating organizations.

Advances in Codes

Currently:

Approximately 25% of the cost of a housing unit is from regulatory considerations.

*Source: Survey and Housing Policy Research
National Association of Homebuilders*



2012 IECC / IRC Section 11

- Basics:

As voted and passed last fall at ICC Conference:

Will require 30% above 2006 IECC

More testing and verification.

Energy Labeling (MPG Sticker for Home)

Moving Housing forward

- Affordability (cost effective)
\$1000 increase in price of the median-priced new home would mean 217,000 U.S. Households from being able to qualify for a mortgage to purchase that home.

Source: U.S. Census



“Above and Beyond Code”

- National Green Building Standard
- Energy Star
- Building America’s Builder’s Challenge (Challenge Home)
- Active House
- LEED-H

Greenhouse vs. Green House

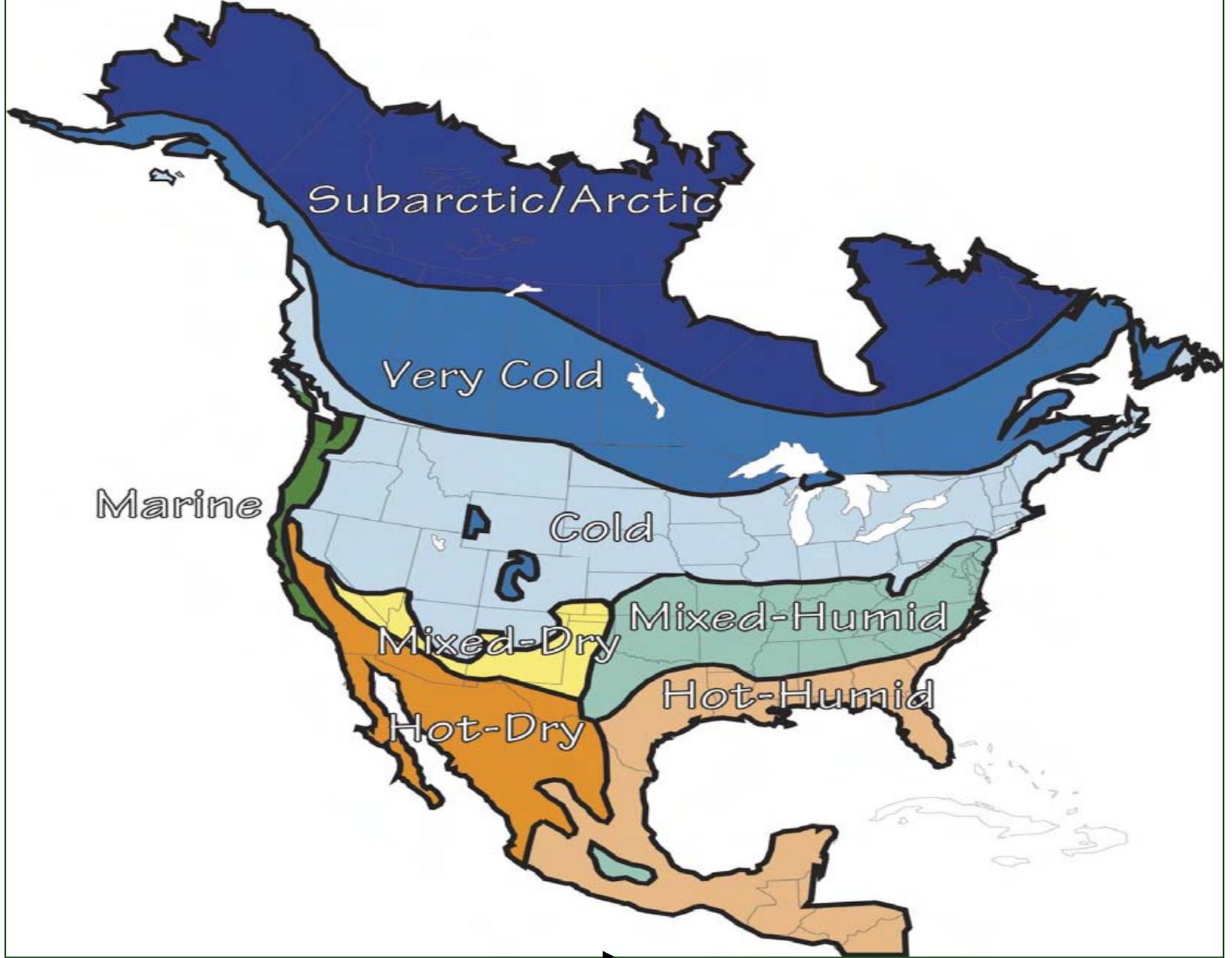
Green means different things to different people



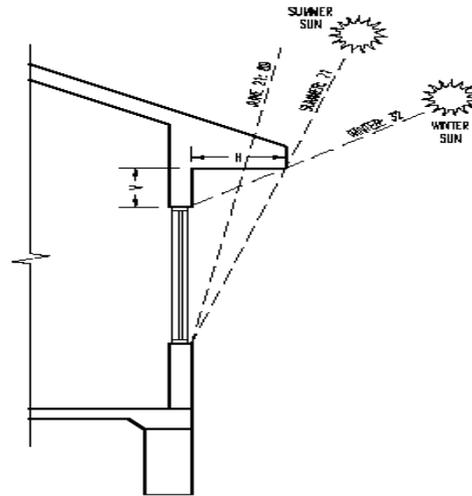


“Holistic” Basics in Building

- Site Planning and Design
- Resource Efficiency
- Energy Efficiency
- Water Efficiency
- Indoor Environmental Quality
- Homeowner Education



Passive Solar Heating/Cooling Design



VALUES BASED ON LATITUDE
SOLAR SHADE ANGLES
© Copyright AMBERG, INC.



- Proper solar orientation and extending overhangs can reduce cooling by at least 20%

Rehab vs. Demolition

- Re-use/re-cycling of materials (Recycle a Building!)
- Diversion of materials from landfills
- Due to cost to produce new materials, re-used materials are now considered commodities instead of consumables





“Green” Codes: LEED EB & H

- Currently going through the revision process (LEED v4)
- Building Certification, marketing and information through USGBC
- Professional Designation (LEED AP) information, marketing through USGBC
- Industry advancements in Knowledge & Experience



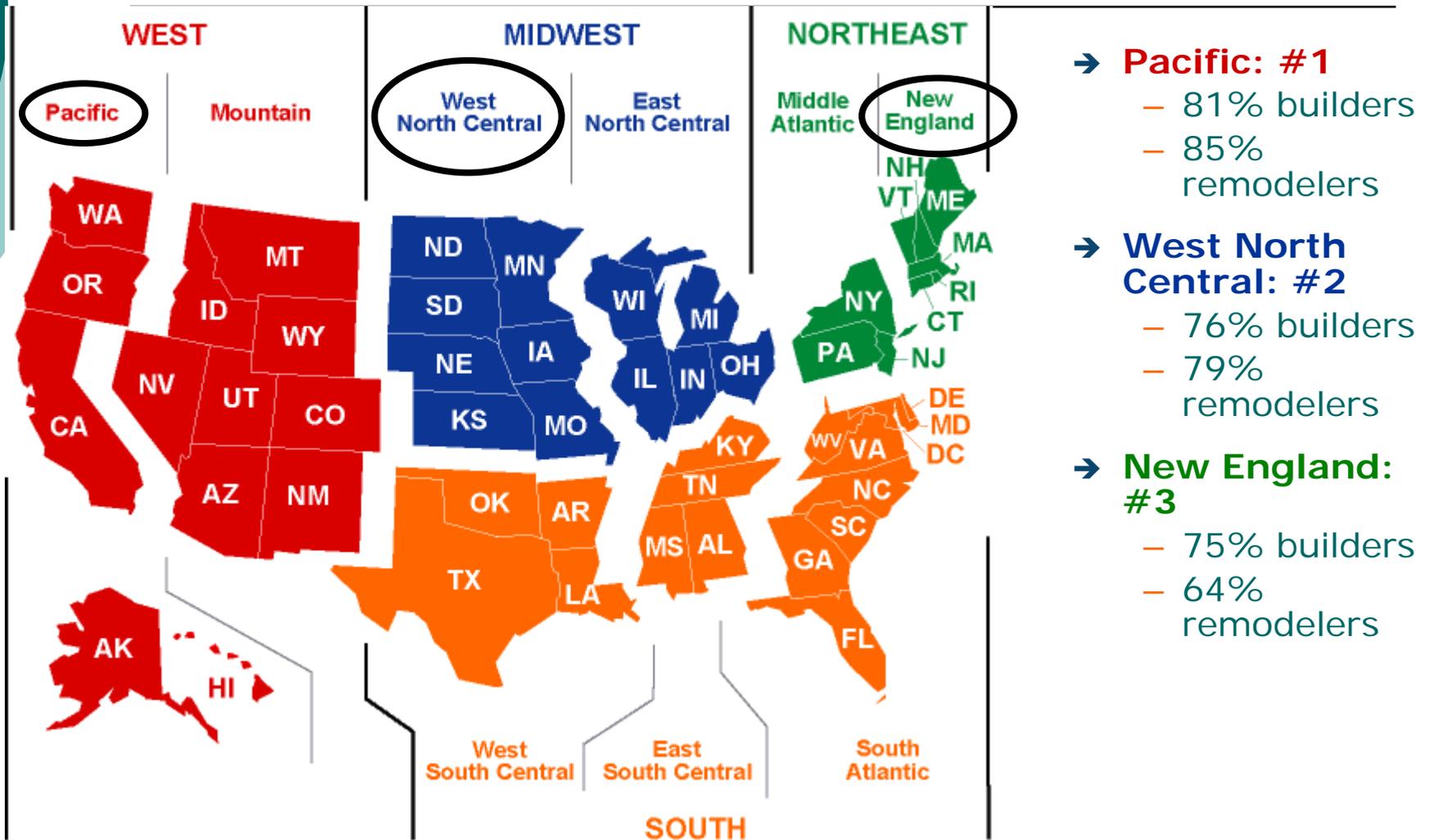
“Green” Codes: ANSI ICC-700 (NGBS)

- Currently going through the revision process (Issued early 2013)
- New Chapters for Remodel and “Rehab”
- Building Certification, marketing and information through NAHBRC
- Professional Designation (CGP, MCGP) information, marketing through NAHB Education
- Industry advancements in knowledge & Experience

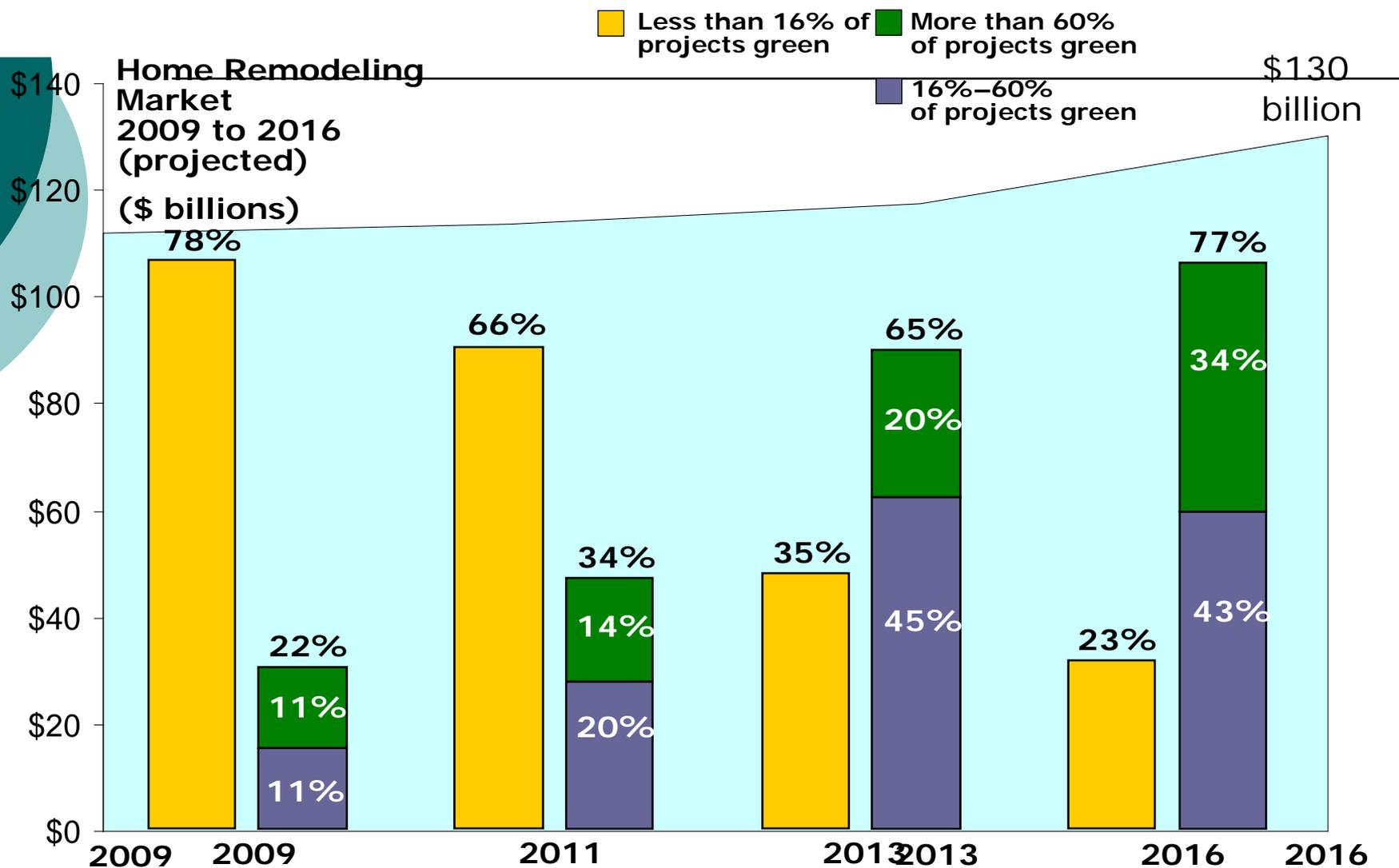
Occupant Behavior:

- Plug Load
- Habits
- Comfort
- Education

3 Regions with Greatest Green Opportunity by Builders and Remodelers

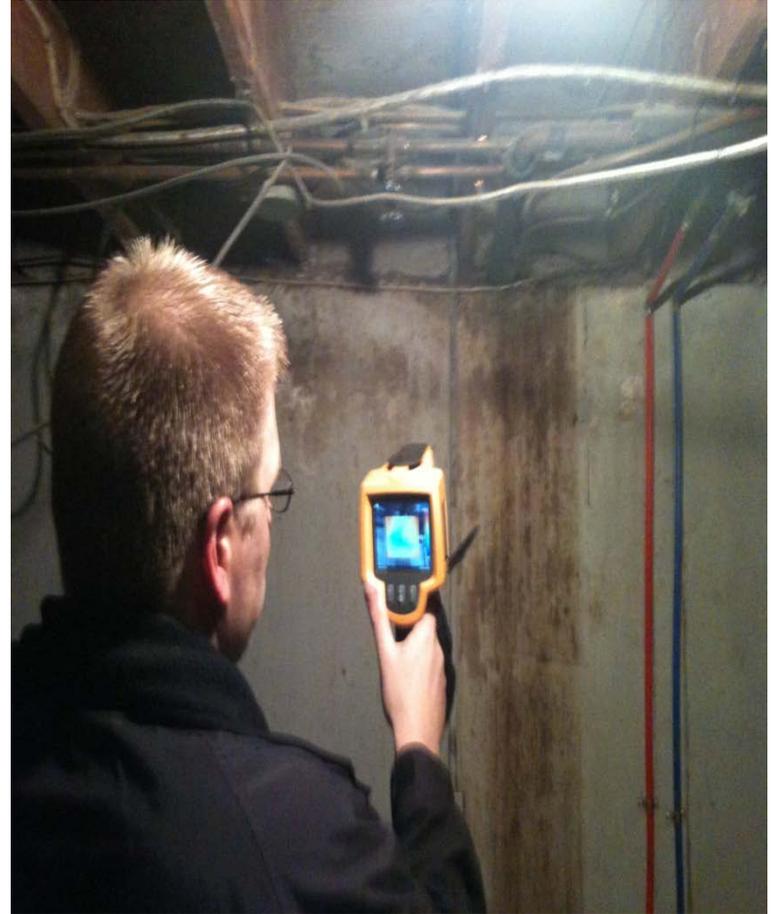


Remodeling Market and Share of Green on the Rise



Source: Remodeling Market (2009 & 2011, Harvard Joint Center on Housing Studies, Leading Indicator of Remodeling Activity (Q4 2011); 2013-2016 (estimate based on compounded annual growth rate of 3.5%)). Share of green: Green Home Building survey, McGraw-Hill Construction, December, 2011

“Baseline” Testing



Panelized, Systemic Re-construction



Foam is a good thing...



Non-Wood Clad SIPS



Combining Technologies



Energy from Daylighting

VELUX®



A Study of the Energy Impacts of Skylights in Different Climates

-November 15, 2011

Use of overhead daylight

- More Consistency
- Less glare
- Energy source

Quality Skylights provide more than twice the light as vertical windows:



Quality Management:

“You don’t get what you *expect*, You get what you *inspect!*”



Quality Management

- Moisture Control testing prior to cover up.

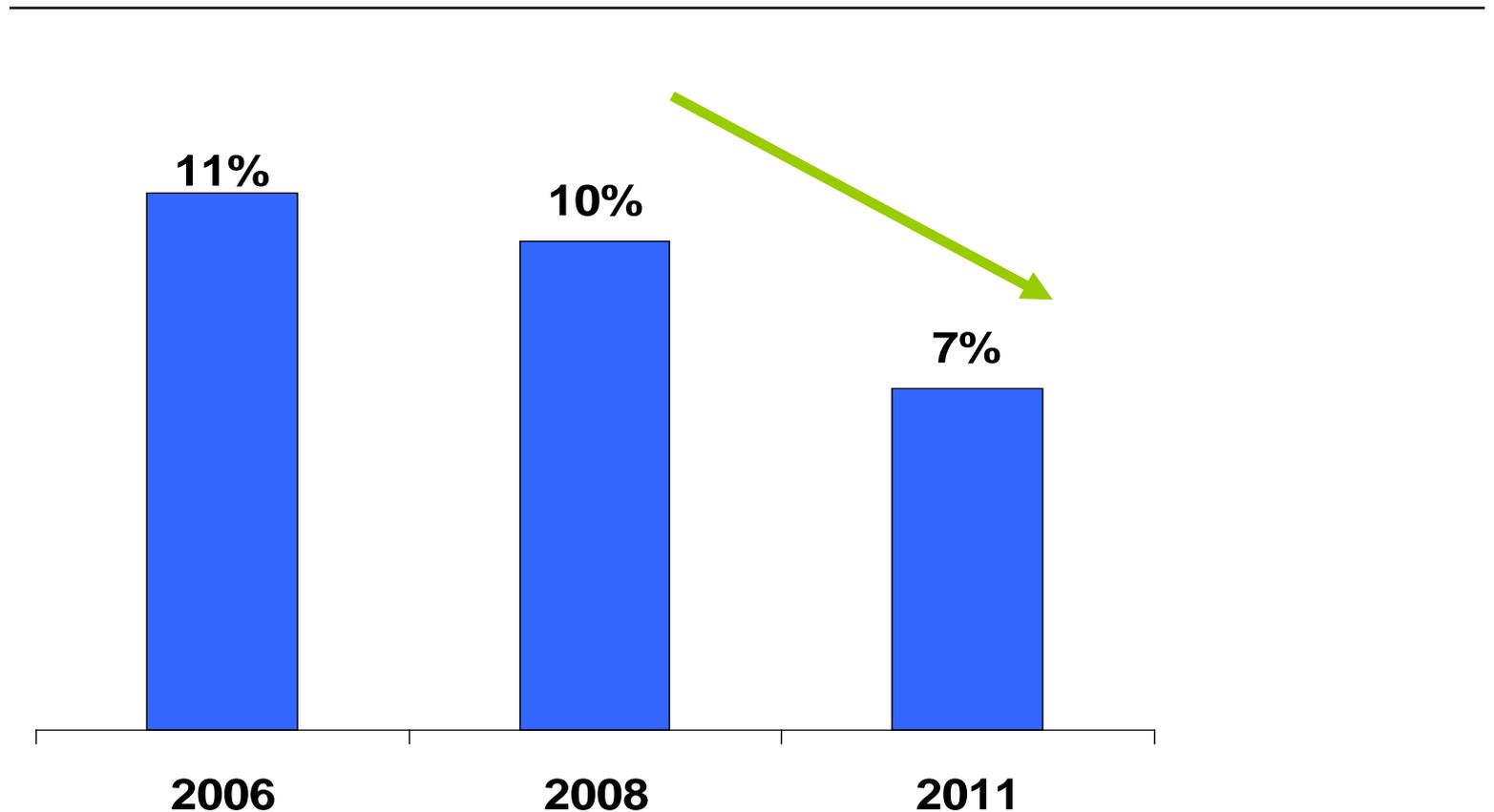


Quality Management

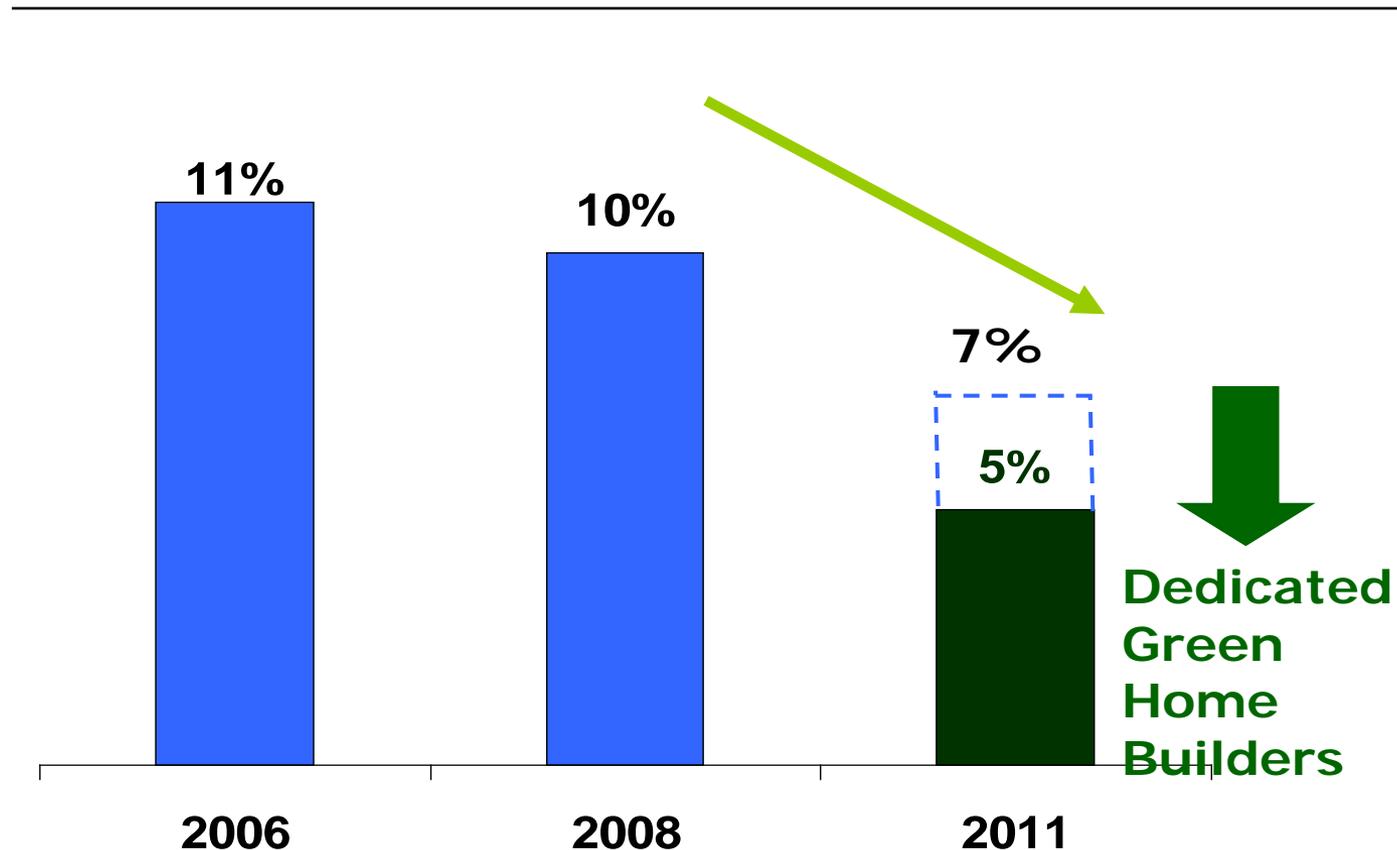
- Final Testing/
verification and
Commissioning



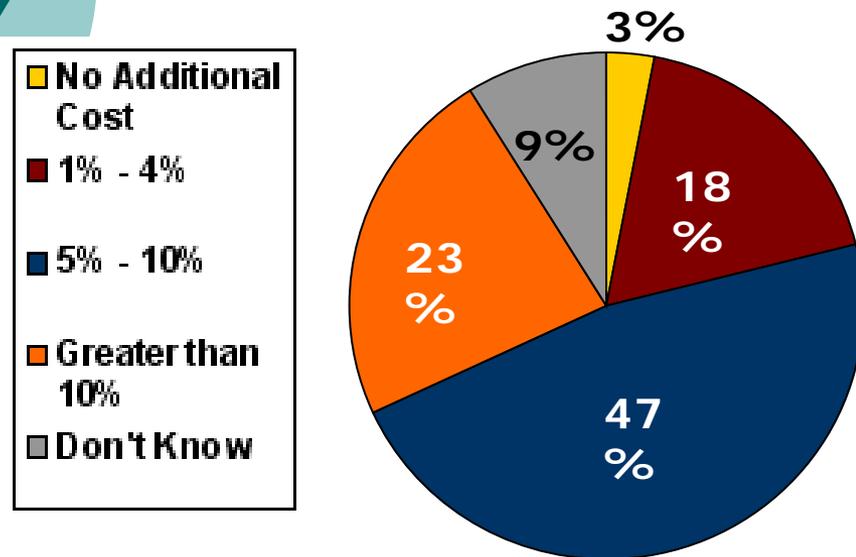
Incremental Cost of New Green Homes Has Decreased According to **Builders**



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Green Remodelers Find Low Additional Cost to Build Green (2011)



Average Additional Cost

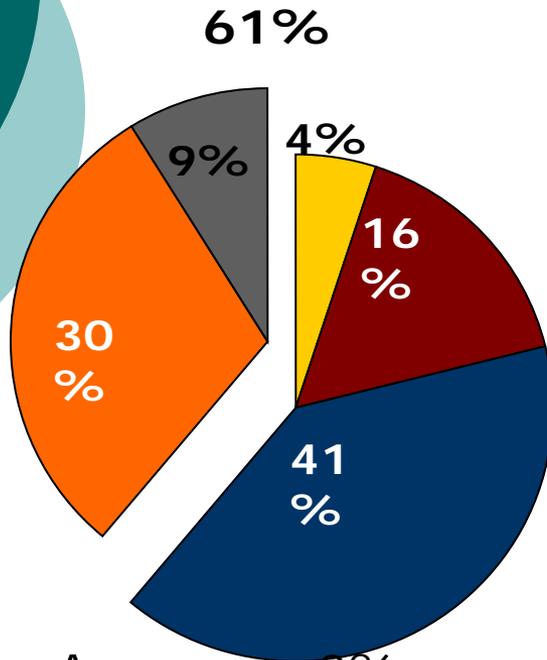
All Respondents – 8%

Dedicated Green – 5%



More than 60% Find Customers Are Willing to Pay More for Green

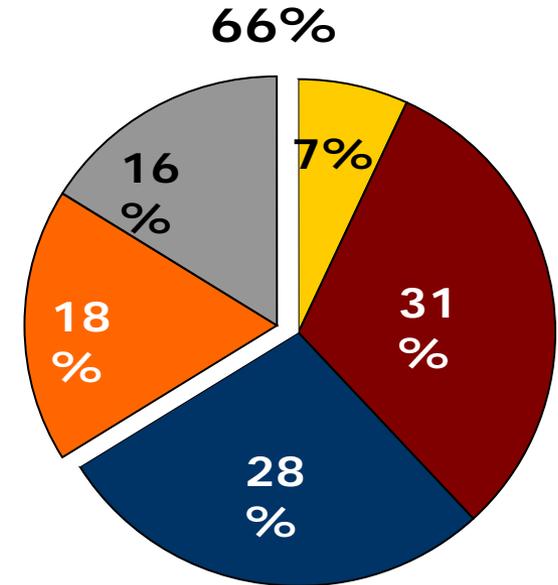
Builders



Average – 3%

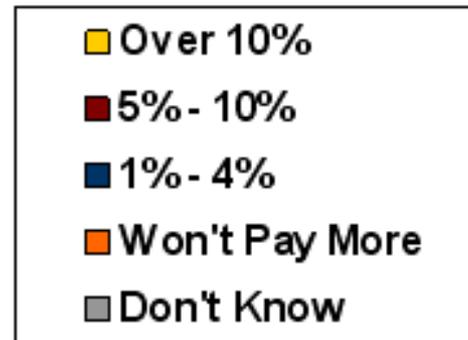
**Dedicated Green
Average – 6%**

Remodelers



Average – 5%

**Dedicated
Green Average
– 6%**





Bottom Line:

- Education

Builders

Industry Professionals

Bottom Line:

- Education
- ✓ Consumers



Bottom Line:

- Education
- ✓ Consumers
- ✓ Lenders



Bottom Line:

- Education
- ✓ Consumers
- ✓ Lenders
- ✓ Appraisers



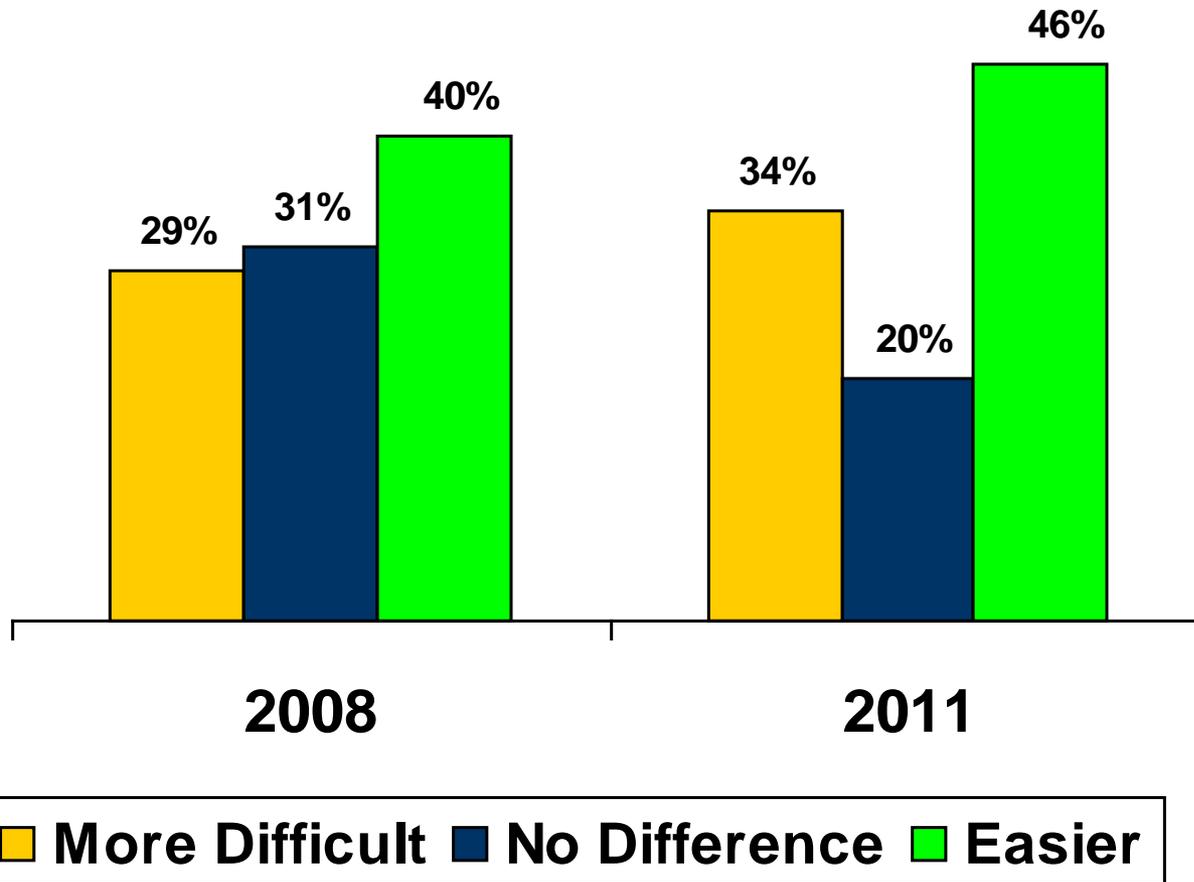
Bottom Line:

- Education
- ✓ Consumers
- ✓ Lenders
- ✓ Appraisers
- ✓ **Jobs**

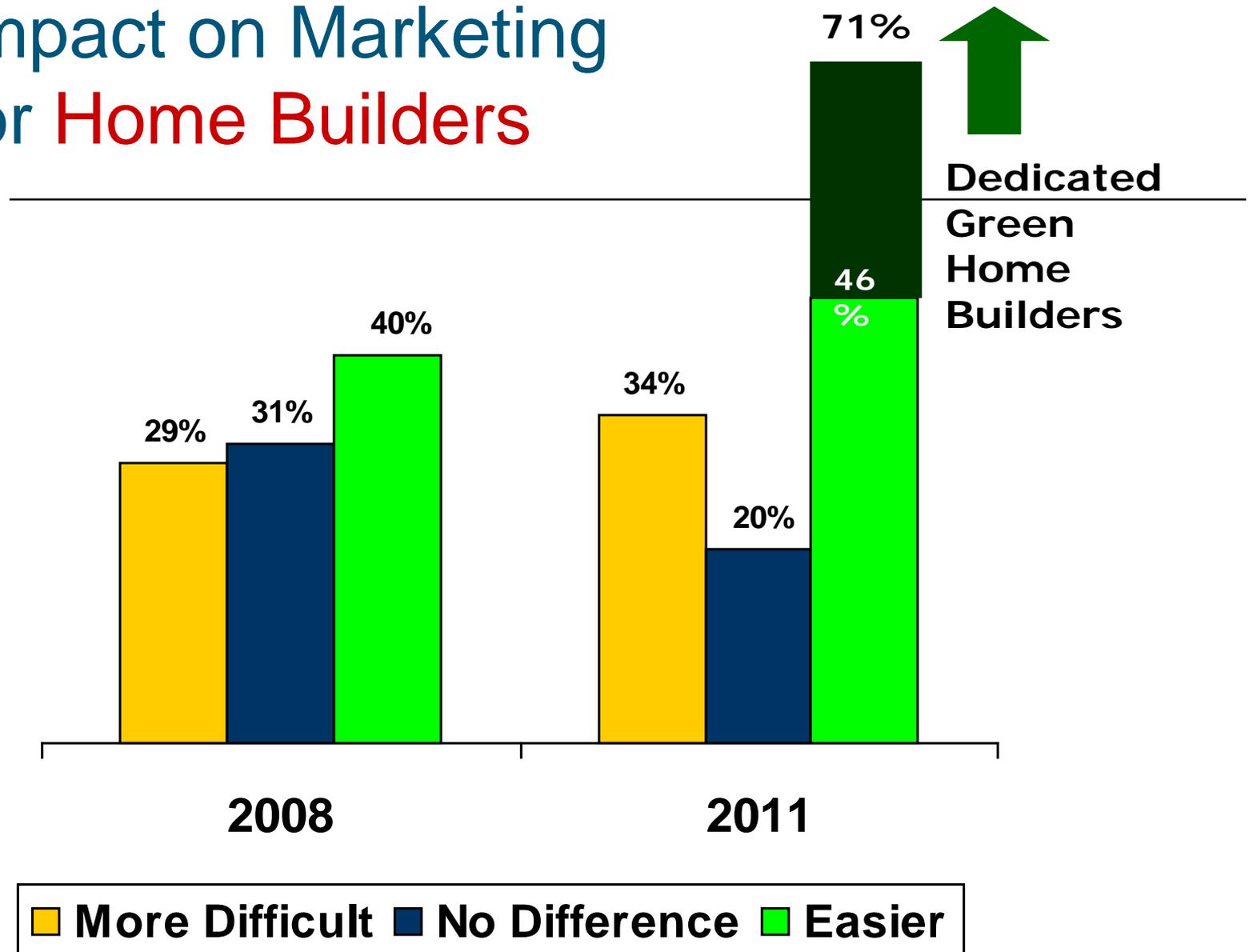
Lender Specification

“This Home is being built/renovated/updated to standards above prevailing code. It is designed and constructed with unique features and materials and with high efficient equipment and in accordance with high efficiency standards. The Lender shall choose an Appraiser educated and knowledgeable in this type of valuation of these specialized Homes. It is understood that unless said Appraiser can provide verification of education and knowledge, they will not be permitted to conduct the appraisal for this project.”

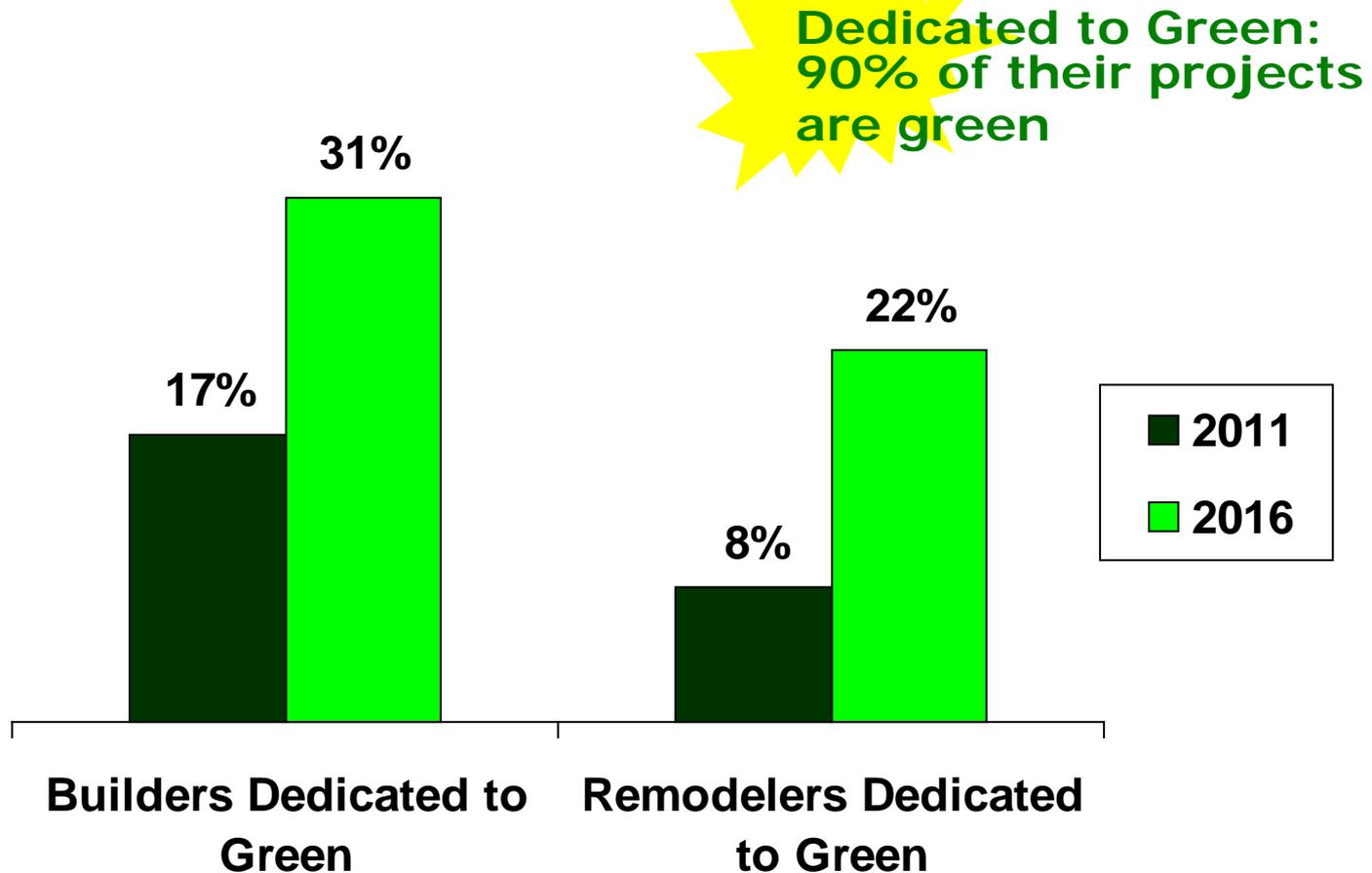
Impact on Marketing for Home Builders



Impact on Marketing for Home Builders



Firms Dedicated to Green Will Increase Dramatically by 2016





Key Takeaways

- New green homes have grown through the protracted downturn and are expected to continue to grow during the recovery
 - Total value expecting a five fold gain in five years.
- Builders are currently doing more green work than remodelers, but remodelers are catching up
 - The number of remodeling firms doing largely green work is going to triple in the next 6 years.
- Experience with green carries strong business benefits.
 - Dedicated green firms have stronger business results across the board.
 - Trend since 2008 for all builders: Green is more affordable and easier to implement.
- Association with quality drives green: most important trigger for builders and second for remodelers

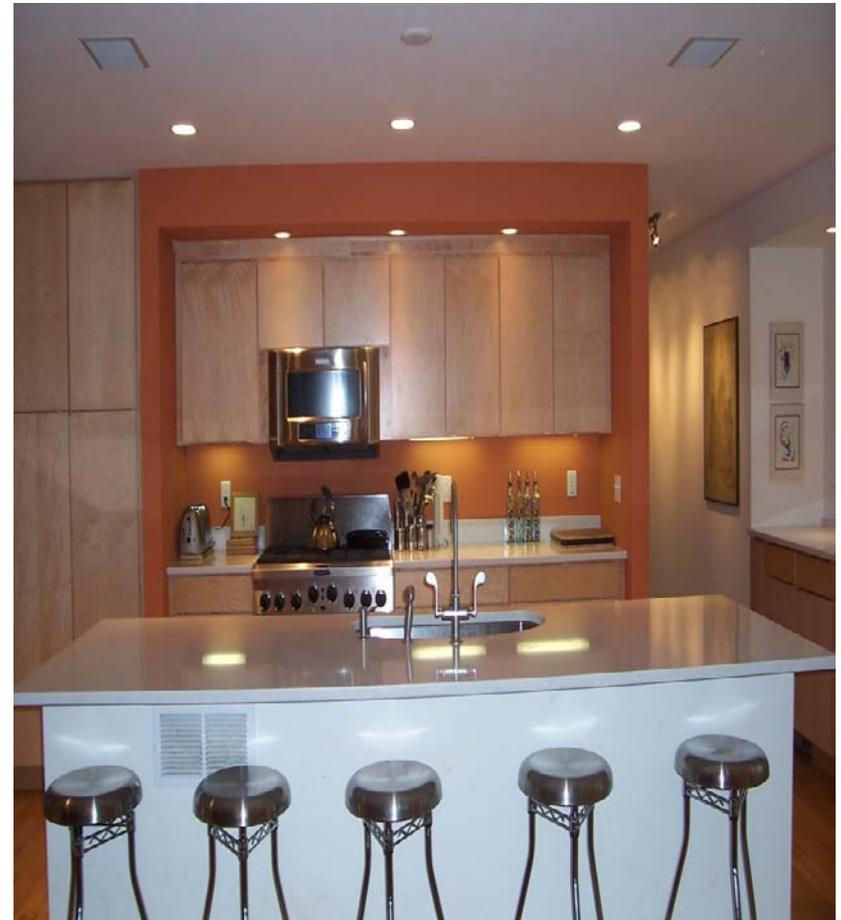
Energy

Energy “Equity”



Bottom Line = Bottom Line

- “Right Sized Home”
- Competitively Priced
- Energy Savings
- Reduced Maintenance
- = Equity



Conclusion:

***Not a linear process,
integrated systems***

(Affordability = Sustainability!)



Thank You!
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