At its peak: new Construction added about 1.6% to this number per year (Approximately 10 years)

-About 2.5% of all Homes
Housing

- Residential sector consumes 21.9% of the Energy in the U.S.
Housing

- Residential sector consumes 21.9% of the Energy in the U.S.
- **It also Produces 21% of green House Gas (GHG) Emissions**
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)**
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
Advances in Codes

- **Land entitlement (Lot)**
  - Time for process
  - Storm water issues/EPA Rule changes

Cost per developed lot has increased approximately 200% per front foot
Advances in Codes

- **Home**
  - Upgrades to structural design for seismic and wind.
  - New Energy Code/Upgrades to Energy efficiency
  - Fire Sprinklers
    ("Mandatory Option")
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
- Active House
- LEED-H
“Holistic” Basics in Building

- Site Planning and Design
- Resource Efficiency
- Energy Efficiency
- Water Efficiency
- Indoor Environmental Quality
- Homeowner Education
Passive Solar Heating/Cooling

- Proper solar orientation and extending overhangs can reduce cooling by at least 20%
De-construction vs. Demolition

- Re-use/re-cycling of materials
- Diversion of materials from landfills
- Due to cost to produce new materials, re-used materials are now considered commodities instead of consumables
McGraw-Hill Green Smart Market Report

Moving Forward
The National Green Building Standard
National Green Building Standard (ANSI ICC-700)

- Currently going through the revision process
- Building Certification, marketing and information through NAHBRC
- Professional Designation (CGP, MCGP) information, marketing through NAHB Education
- Industry advancements in knowledge & Experience
3 Regions with Greatest Green Opportunity by Builders and Remodelers

- **Pacific: #1**
  - 81% builders
  - 85% remodelers

- **West North Central: #2**
  - 76% builders
  - 79% remodelers

- **New England: #3**
  - 75% builders
  - 64% remodelers

Remodeling Market and Share of Green on the Rise

Home Remodeling Market 2009 to 2016 (projected) ($ billions)

- **$130 billion**
- **$140**
- **$120**
- **$100**
- **$80**
- **$60**
- **$40**
- **$20**
- **$0**

<table>
<thead>
<tr>
<th>Year</th>
<th>Less than 16% of projects green</th>
<th>16%-60% of projects green</th>
<th>More than 60% of projects green</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>22%</td>
<td>11%</td>
<td>11%</td>
</tr>
<tr>
<td>2011</td>
<td>34%</td>
<td>20%</td>
<td>14%</td>
</tr>
<tr>
<td>2013</td>
<td>35%</td>
<td>45%</td>
<td>20%</td>
</tr>
<tr>
<td>2016</td>
<td>23%</td>
<td>43%</td>
<td>34%</td>
</tr>
</tbody>
</table>

Moving Housing forward

- "Rules" outpace Practicality/Technology

- Total annual U.S. housing research funded by all governmental and industry sources combined is significantly less than other developed countries.
Occupant Behavior:

- Plug Load
- Habits
- Comfort
- Education
Panelized, Systemic construction
Combining Technologies
A Study of the Energy Impacts of Skylights in Different Climates
-November 15, 2011

Use of overhead daylight
- More Consistency
- Less glare
- Energy source
Incremental Cost of New Green Homes Has Decreased According to Builders

Incremental Cost of New Green Homes Has Decreased According to Builders

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
Impact on Marketing for Home Builders

Impact on Marketing for Home Builders

Firms Dedicated to Green Will Increase Dramatically by 2016

Dedicated to Green: 90% of their projects are green

- Builders Dedicated to Green: 17% in 2011, 31% in 2016
- Remodelers Dedicated to Green: 8% in 2011, 22% in 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

“Equity”

Here’s how we spend our energy:

A typical single family home has an annual energy bill of about $2,200. Here’s how the bill breaks down based on energy use:

- Heating & Cooling: 43%
- Water Heating: 12%
- Lighting: 11%
- Computers & Electronics: 9%
- Refrigeration: 8%
- Appliances: 9%
- Other: 8%

(The heating or cooling numbers will change based on how far north or south you are.)
The Smith’s

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

Not a linear process, integrated systems
(Affordability = Sustainability!)

Thank You!
Matt Belcher

www.VerdatekSolutions.com
matt@verdateksolutions.com