ENERGY STAR Qualified Homes:

All The Rules Have Changed
ENERGY STAR FOR HOMES GROWTH
THE ROAD TO ONE MILLION HOMES

Cumulative

Annual

Year

Number Labeled Homes

Cumulative

Annual

Year
ENERGY STAR FOR HOMES GROWTH
ONE IN FIVE HOMES IN 2009

% Market Penetration

Year

2001 2002 2003 2004 2005 2006 2007 2008 2009
ENERGY STAR FOR HOMES GROWTH
NEW BUILDER PARTNERS PER MONTH

Before Soft Market

After Soft Market

~1,000% Growth!
Why Have to Be Better: We’re Not in Kansas Any More

• 75% Fewer Housing Starts
• Massive Inventory of Fire-Sale Homes
• Tighter Credit = Less Qualified Buyers
• Less Compelling Reasons to Buy
• Energy Codes on Hyper Drive
Status Quo: Homes That Fail

Affordable
Comfortable
Healthy
Durable

- Control Air Flow
- Control Thermal Flow
- Control Moisture Flow (Vapor, Bulk)
Better: Homes That Work

Affordable
Comfortable
Healthy
Durable

Control
Air Flow

Control
Thermal Flow

Control
Moisture Flow
(Vapor, Bulk)
ENERGY STAR Homes That Work

Affordable
Comfortable
Healthy
Durable

Control Air Flow
Control Thermal Flow
Control Moisture Flow Vapor Bulk
Efficient Equipment
3rd Party Verification
Affordable
Comfortable
Healthy
Durable

Control Air Flow
- Air Sealing
- Tight Ducts

Control Thermal Flow
- Air Sealing
- Tight Ducts

Control Moisture Flow
- Air Sealing
- Tight Ducts

Efficient Equipment
- Efficient HVAC

3rd Party Verification
- Inspect Features
- Test Infiltration
- Test Duct Leakage

ENERGY STAR Homes That Work
How we sold 2006 spec:

**First** we asked a question…

What technology will revolutionize the housing industry?

Hint: it has nothing to do with construction…
Answer...
Low Cost Infrared Cameras

Your Price: $4,995.00
BUILDING SCIENCE SOLUTIONS
DROPPED CEILING

Courtesy of Building Science Corp.
Better:
ENERGY STAR Complete Systems

- Thermal Enclosure
- HVAC Quality Installation
- Water Management
Thermal Enclosure System

- Effective Insulation Assemblies
  - Adequate R-Value (Code or Better)
  - Proper Insulation Installation
  - Complete Air Barriers
  - Minimized Thermal Bridging

- Air Tight
  - Tested
  - Visually Inspected

- High-Performance Windows
Thermal Enclosure System
Value Proposition

Visibly better **quality**
Superior **comfort**
Future **resale value**
HVAC System Typical Installation

Courtesy of Advanced Energy Corp.
HVAC System Quality Installation

Field Adjusted SEER vs. Rated SEER diagram with various performance levels:
- Proper Charge: 1.5
- Correct Blow: 0.5
- Airtight Ducts: 2.0
- Sized Right: 0.75

Typical Installation

Courtesy of Advanced Energy Corp.
HVAC System Quality Installation
Value Proposition

- **Engineered Comfort**
  - Thermal Control
  - Humidity Control
  - Noise Control

- **Assured Fresh Air**

- **Filtration that Works**
Water Management System

- **Water Managed Enclosure**
  - Roofs
  - Walls
  - Foundation

- **Materials**
  - Moisture Resistance
  - Protection
Water Management System
Value Proposition

Better protection for largest investment
Lower maintenance
Healthier home
ENERGY STAR Qualified Homes V.3
Your home has been constructed to U.S. EPA’s latest strict guidelines for energy efficiency including these building science features:

<table>
<thead>
<tr>
<th>Thermal Enclosure</th>
<th>HVAC System</th>
<th>Water Protection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Code or Better Insulation R-Value</td>
<td>Efficient Heating and Cooling Equipment</td>
<td>Heavy Membranes at Valleys and Eaves</td>
</tr>
<tr>
<td>RESNET Grade 1 Insulation Installation</td>
<td>Engineered Sizing of Equipment and Ducts</td>
<td>Complete Roof Flashing Details</td>
</tr>
<tr>
<td>Air-Tight Construction</td>
<td>Air-Tight Ducts</td>
<td>Complete Wall Drainage Plane</td>
</tr>
<tr>
<td>Comprehensive Air Barrier Assemblies</td>
<td>Verified Proper Duct Installation</td>
<td>Pan Flashing at all Doors and Windows</td>
</tr>
<tr>
<td>Reduced Thermal Bridging</td>
<td>Verified Proper Refrigerant Charge</td>
<td>Fabric Filter at Foundation Drain</td>
</tr>
<tr>
<td>High-Performance Windows</td>
<td>Whole-House Ventilation</td>
<td>Capillary Break Under Foundation</td>
</tr>
<tr>
<td></td>
<td>Spot Ventilation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MERV 6 Filter</td>
<td></td>
</tr>
</tbody>
</table>
Question...

Building better is hard,

is it better business?
Yes...

if making 90% of competition obsolete is good for business…

* Refer to notes why not in Kansas anymore
But…
Better is Not Good Enough
You have to back up
and sell compelling
value propositions.
Better is Not Good Enough…
You Have to **Back it Up**
Back it Up Yields Results

% Sales Changes 2008-2009

Source: Edmunds.com
Recognize This Builder?
…Toyota Homes

- $200,000 - $800,000 Modular Homes
- 45 Day Construction
- Brand Advantage
  [not withstanding recent efforts to destroy it]
- 60 Year Warranty
...Toyota Homes

- $200,000 - $800,000 Modular Homes
- 45 Day Construction
- **Brand Advantage**
  [not withstanding recent efforts to destroy it]
- **60 Year Warranty**
# ENERGY STAR Qualified Homes 30-Year Warranty

## Healthy Air Warranty
- Lead-Free*
- Asbestos-Free*
- Particulates Filtered to 3 Microns*
- Mold-Free*
- Combustion Gas-Free
- 150,000 CF per Day Fresh/Filtered Air*
- VOC-Free*
- Formaldehyde-Free*
- Pest-Free*
- Radon-Free*

## Affordable Comfort Warranty
- $60/Month Average Heating/Cooling Bill*
- Even Room-by-Room Temperatures*
- No Outdoor Drafts*
- Outside Noise Reduction*
- No Excessive Humidity*

## Durability Warranty
- No Moisture Damage to Structure*
- Dry Basements/Construction*
- No Thermal Defects*
- 90% UV Sunlight Blocked
- No Window Condensation*
- No Termite Damage to Structure*
Better is Not Good Enough…
You Have to Sell ENERGY STAR

• Label Every Home
• Train Sales Agents
• Hold Agents Accountable
• Create ‘Value’ Experiences

And Remember…

• Design and Location Trump
ENERGY STAR Qualified Homes
2011 Specification:
Where Go From Here?
Where to Go From Here?

**Affordable**

**Comfortable**

**Healthy**

**Durable**

**Control Air Flow**
- Air Sealing
- Tight Ducts
- Insulation R-Value
- Low-E Windows

**Control Thermal Flow**
- Air Sealing
- Tight Ducts
- Insulation Alignment

**Control Moisture Flow**
- Air Sealing
- Tight Ducts
- Ventilation
- Dehumid. in Hot/Humid

**Efficient Equipment**
- Efficient HVAC
- Efficient WH System
- Efficient Lgtg./Appl.
- HVAC Quality Inst.

**3rd Party Verification**
- Inspect Features
- Test Infiltration
- Test Duct Leakage
- Thermal Bypass Chk
- Thermal Enclos. Chk
- HVAC Sys. QI Chk
- Water Man. System Chk

**1996 V.1**
- Low-E Windows

**2006 V.2**
- Insulation Installation
- Min. Thermal Bridging
- Ventilation
- Water Man. Construction

**2011 V.3**
- Right-Sizing
- Min. Thermal Bridging
- Dehumid. in Hot/Humid
- HVAC Quality Inst.
PATH TO NO/LOW CARBON

ENERGY STAR for Homes 2011 Draft Specs

Advanced Technologies

Advanced Design

Occupant Behavior

Renewable Power (Purchase or On-site)

EPA Indoor airPlus
LOW/NO CARBON HOME BUSINESS CASE

Net-Zero Ready

~30% - 50% Less

- Square Feet with 100% Function
- Cooling/Heating Loads
- Framing
- Ducts
- Plumbing/Wiring
- HVAC Equipment
- Waste
- Construction Time

~70% Less Call-Backs
2011 SPEC/CONCEPT HOME TIMELINE

• April 2010
  - Release Final 2011 Spec
  - Launch Concept Home

• January 1, 2011
  - Transition Period for 2011 Spec
  - Ongoing Concept Home Fine Tuning

• January 1, 2012
  - Full Force Implementation of 2011 Spec
  - Ongoing Concept Home Fine Tuning
LAST THOUGHT…

“It is impossible for a man to learn what he thinks he already knows.”

- Epictetus
HOW TO GET MORE INFORMATION

On the Web at:

http://www.energystar.gov/homes