ENERGY STAR For Homes:
UPDATE
1. Background
2. Proposed 2006 Threshold
3. Indoor Air Package
4. Advanced Lighting Package
5. Working with Green Programs
What is Energy Star for Homes?

- **Voluntary**
- **Truly Energy Efficient**
  
  30% > MEC, and 15% > State Code

- **Credible**

  Government-Backed Label

  Third-Party Verified
ENERGY STAR FOR HOMES BACKGROUND

GROWTH

<table>
<thead>
<tr>
<th>Year</th>
<th>Goal</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>1996</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1998</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2000</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2002</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2004</td>
<td>0</td>
<td>0</td>
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</tbody>
</table>

Homes Labeled
1 dot = 50 Energy Star labeled homes
• 350,000+ Labeled Homes Cum.
• ~20–60% Market Penetration
• ~50% Top 100 Builders
• Develop strong distribution/sales chain

• Ensure compelling value propositions

• Continually improve
<table>
<thead>
<tr>
<th>Production</th>
<th>EPA ENERGY STAR for Homes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distribution</td>
<td>Utilities</td>
</tr>
<tr>
<td></td>
<td>HERS Providers</td>
</tr>
<tr>
<td></td>
<td>State Administrators</td>
</tr>
<tr>
<td>Sales Force</td>
<td>HERS Raters</td>
</tr>
<tr>
<td>Core Customer</td>
<td>Builders</td>
</tr>
<tr>
<td>End Customer</td>
<td>Home Buyers</td>
</tr>
</tbody>
</table>
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**Problem:**

With recent technical developments, a single HERS score no longer aligns with current HERS 86 threshold.
Opportunity:
Raise the bar...

- More consistently deliver proven measures
- Integrate ENERGY STAR products
- Increase performance/quality
ENERGY STAR FOR HOMES PROPOSED 2006 THRESHOLD
COMPLIANCE OPTIONS

- PRESCRIPTIVE PATH
  based on specified measures
  or
- PERFORMANCE PATH
  Based on HERS Score

Same Field Verification!
**HVAC:**
- North: ES Heating (AFUE 90; 8.5 HSPF)
- South: ES Cooling (14 SEER, 11.5 EER)
- Right-Sized
- ENERGY STAR Thermostat

**Envelope:**
- Air Infil.: ≤ .35 ACHnat or ≤ 5 ACH50
- Thermal Bypass Checklist

**Ducts:**
- Leakage Outdoors: ≤ 4 cfm /100 sf
- Total Leakage: ≤ 9 cfm /100 sf

**Water Heater:**
- 40 gal.: gas 0.61 E.F.; elec. 0.93 E.F.
- 60 gal.: gas 0.57 E.F.; elec. 0.91 E.F.
- 80 gal.: gas 0.53 E.F.; elec. 0.88 E.F.
- Oil integrated with boiler

**Windows:**

**Lighting/Appliances/Fans:**
- Any comb. 5 ENERGY STAR qualified:
  - Lighting Fixtures; or
  - Ceiling Fans; or
  - Appliances
• **Expanded HERS Score by IECC Climate Zones**

• **Mandatory Reqs.**
  - IECC Insulation
  - Air Leakage
  - Duct Leakage (outdoors/total)
  - Right-Sizing
  - Thermal Bypass Checklist
  - One ENERGY STAR component
ENERGY STAR FOR HOMES PROPOSED 2006 THRESHOLD
NEW BASELINE

HERS Score or equivalent package...

IECC or Better Insulation
Properly Installed

ENERGY STAR Qualified Windows

Continuous Air Barrier w/ Thermal Bypass Checklist

Tight Ducts, Tested
Efficient Water Heater

Build it Tight with Blower Door Test and Thermal Bypass Checklist

ENERGY STAR Qualified Lighting, Fans, or Appliances
Right-Sized ENERGY STAR HVAC Equip.
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- **Add Quality** to ENERGY STAR Homes
- **Continually Improve** Value Proposition
- **Inform Consumers** About IAQ
ENERGY STAR Qualified Lighting, Fans, or Appliances

IECC Insulation Properly Installed

Continuous Air Barrier

ES Qualified Windows

Eff. Water Htr.

Build it Tight,

Tight Ducts

CO Alarms

Garage Isolation

Direct/Power Vent.

Mat. Prep/Install.

Safe Materials

Pest Control

Radon Control

HVAC Systems

Combustion Venting

Materials

Moisture control

Energy STAR Qualified Home

Ventilation

Air Filtration

Screen/Shield

Radon Resist. Con.

Ductwork

Attic/Clg. Interface

Water Man. Roofs

Water Man. Walls

CO Alarms

Water Man. Fndn.

Htg./Cooling Equip.

Right-Sized

ES Equip.

Ventilation

Energy STAR Qualified Home

Hydronic/Electrical

Build it Tight,
MOISTURE CONTROL:
FOUNDATION VAPOR BARRIER
MOISTURE/RADON CONTROL:

FOUNDATION VAPOR/RADON BARRIER
MOISTURE CONTROL:
DRAINAGE PLANE
A. Gas Permeable Layer
   (4" clean gravel)

B. Plastic Sheeting
   (under slab or over crawl space floor)

C. Sealing and Caulking
   (all openings in concrete floor)

D. Vent Pipe
   (3 or 4 inch PVC pipe)

E. Junction Box
   (installed in case venting fan is needed later)
PEST CONTROL:
TERMITE SHIELD

Courtesy of Building Science Corp.
HVAC SYSTEMS:
PRESSURE BALANCING HOMES

Diagram of an HVAC system with supply and return vents in different rooms.

Image of an HVAC system in an attic.
HVAC SYSTEMS:
MECHANICAL VENTILATION
BUILDING MATERIALS: PROPER SELECTION
ENERGY STAR FOR HOMES BEYOND 86:
OUTLINE

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## ENERGY STAR ADVANCED LIGHTING PACKAGE (ALP)

### TECHNICAL SPECIFICATION

<table>
<thead>
<tr>
<th>Category</th>
<th>% ENERGY STAR Fixtures</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>High-Use Rooms</strong></td>
<td>50%</td>
</tr>
<tr>
<td>Kitchen, Dining Room, Living Room, Family Room, Bathrooms, Halls, Stairways</td>
<td></td>
</tr>
<tr>
<td><strong>Medium-Use Rooms</strong></td>
<td>25%</td>
</tr>
<tr>
<td>Bedrooms, Den, Office, Basement, Laundry Room, Garage, Closets, and all other rooms</td>
<td></td>
</tr>
<tr>
<td><strong>Outdoor Lighting</strong></td>
<td>50%</td>
</tr>
<tr>
<td>Affixed to Home, Free-standing Poles excluding landscape and solar lighting</td>
<td></td>
</tr>
<tr>
<td><strong>Ceiling Fans</strong></td>
<td>100%</td>
</tr>
<tr>
<td>[Where Provided]</td>
<td></td>
</tr>
</tbody>
</table>
Builders asking for 'More'

Lowest Hanging 'Energy' Fruit

Technology is Ready:
We can do a lot better than 100-year old technology:

- **Cost**
- **Durability**
- **Comfort**
- **Environment**
1. Background

2. Growth

3. Proposed 2006 Threshold

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The national, US government-backed symbol for energy efficiency while assuring same or better performance

Not Green!
Green Home Staircase

**Energy Efficiency**
- Envelope
- Distribution
- Equipment
- Lighting
- Appliances

**Indoor Environment**
- Bulk Moisture
- Radon
- Pest Control
- HVAC
- Combust. Safety
- Materials
- Commissioning

**Resource Efficiency**
- Site Planning
- Water
- Materials
- Waste Man.
- Renewables

**ENERGY STAR for Homes**
Think of ENERGY STAR as “Intel Inside”...

An *ingredient brand* that adds extra value to a green home label
On the Web at:
http://www.energystar.gov/homes