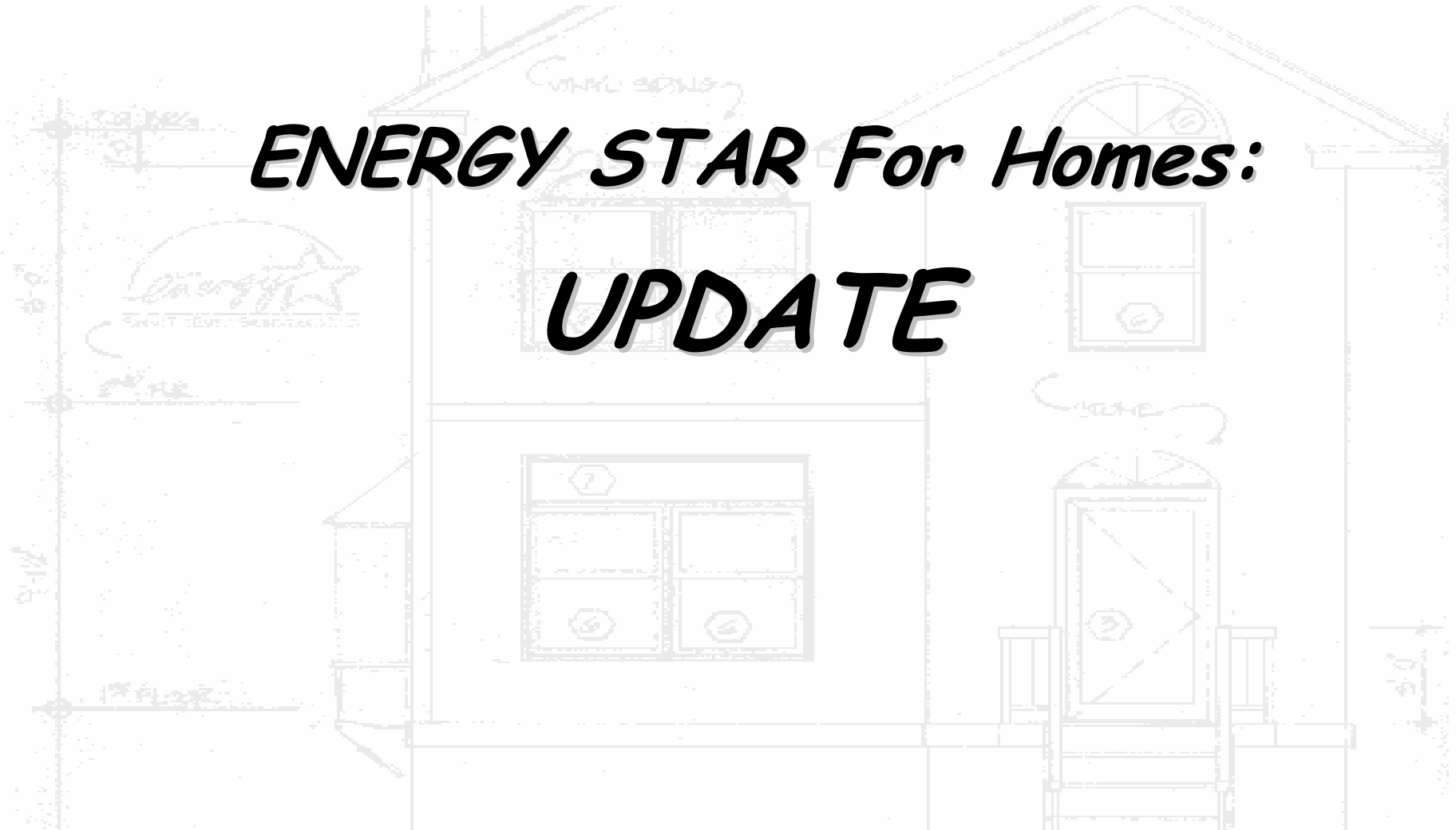


PARTNERS FOR HIGH-PERFORMANCE HOMES  
JUNE 23, 2005



# ***ENERGY STAR For Homes: UPDATE***



# ENERGY STAR FOR HOMES UPDATE: OUTLINE



*1. Background*

*2. Proposed 2006 Threshold*

*3. Indoor Air Package*

*4. Advanced Lighting Package*

*5. Working with Green Programs*

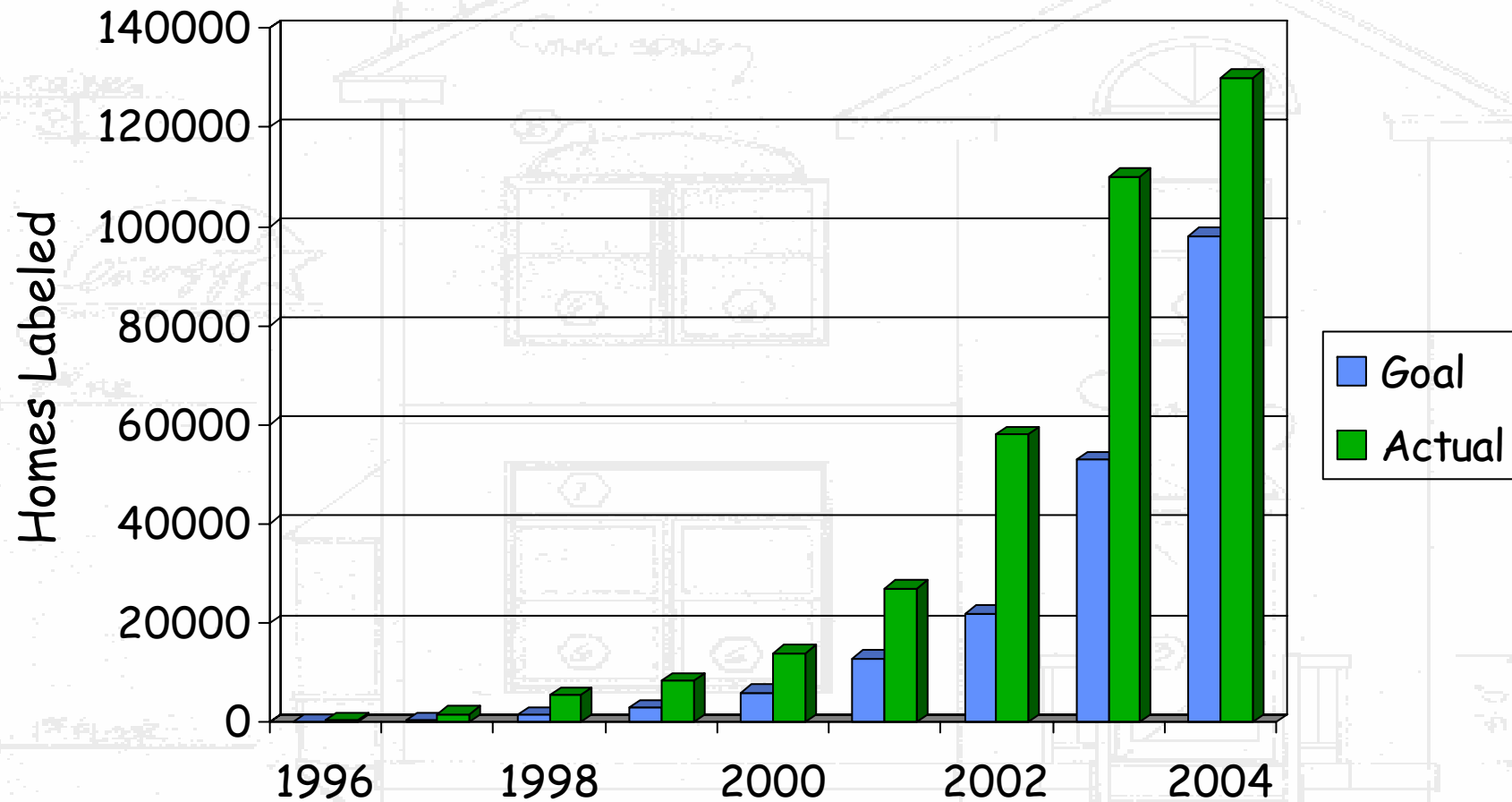
ENERGY STAR FOR HOMES BACKGROUND

## WHAT IS ENERGY STAR FOR HOMES?



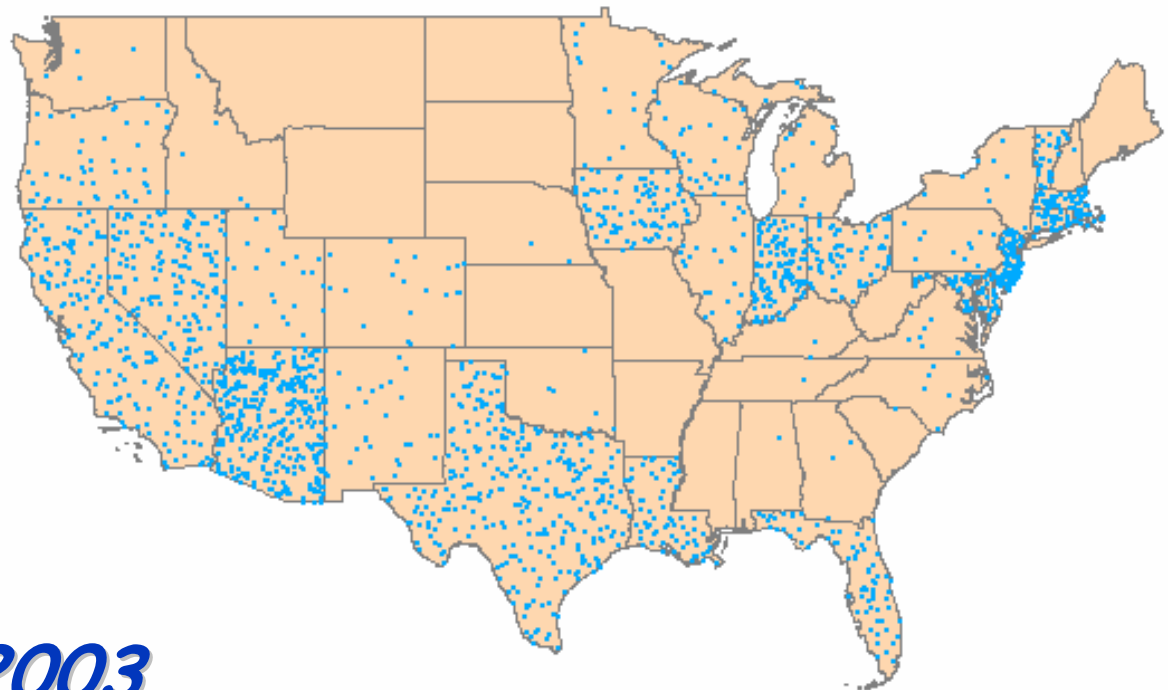
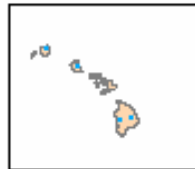
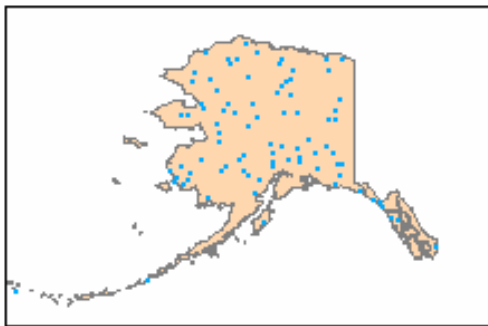
- ***Voluntary***
- ***Truly Energy Efficient***  
*30% > MEC, and 15% > State Code*
- ***Credible***  
*Government-Backed Label*  
*Third-Party Verified*

# ENERGY STAR FOR HOMES BACKGROUND GROWTH



# ENERGY STAR FOR HOMES BACKGROUND

## SPREADING THE VIRUS



**2003**

■ 1 dot = 50 Energy Star labeled homes

## ENERGY STAR FOR HOMES BACKGROUND 2004 METRICS



- ***350,000+ Labeled Homes Cum.***
- ***~20-60% Market Penetration***
- ***~50% Top 100 Builders***

## ENERGY STAR FOR HOMES BACKGROUND BUSINESS STRATEGY



- *Develop strong distribution/sales chain*
- *Ensure compelling value propositions*
- *Continually improve*

# ENERGY STAR FOR HOMES BACKGROUND BUSINESS MODEL



***Production***

***EPA  
ENERGY STAR for Homes***

***Distribution***

***Utilities***

***HERS  
Providers***

***State  
Administrators***

***Sales Force***

***HERS  
Raters***

***Core Customer***

***Builders***

***End Customer***

***Home  
Buyers***



# ENERGY STAR FOR HOMES BEYOND 86: OUTLINE



*1. Background*

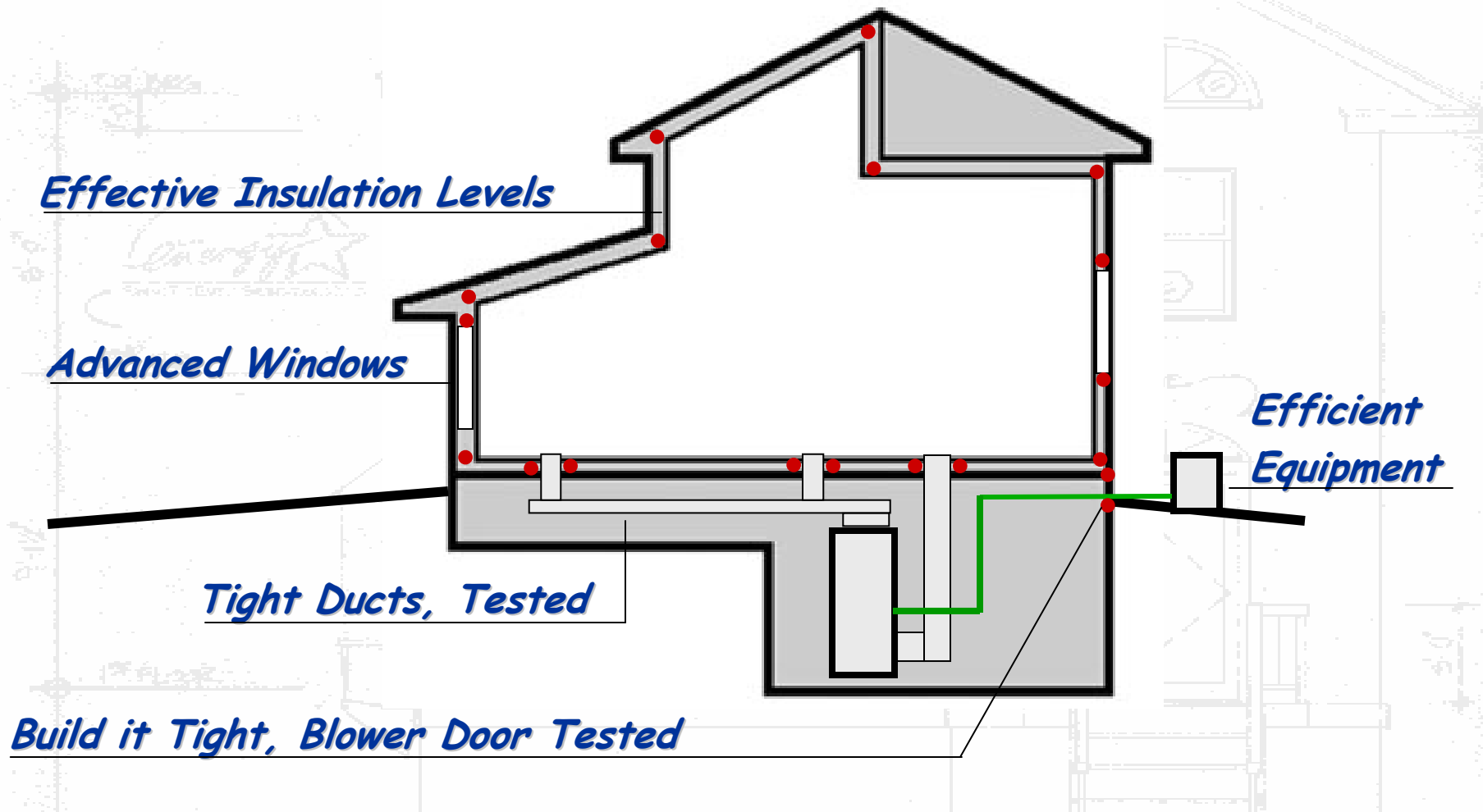
*2. Proposed 2006 Threshold*

*3. Indoor Air Package*

*4. Advanced Lighting Package*

*5. Working with Green Programs*

# ENERGY STAR FOR HOMES PROPOSED 2006 THRESHOLD BASELINE

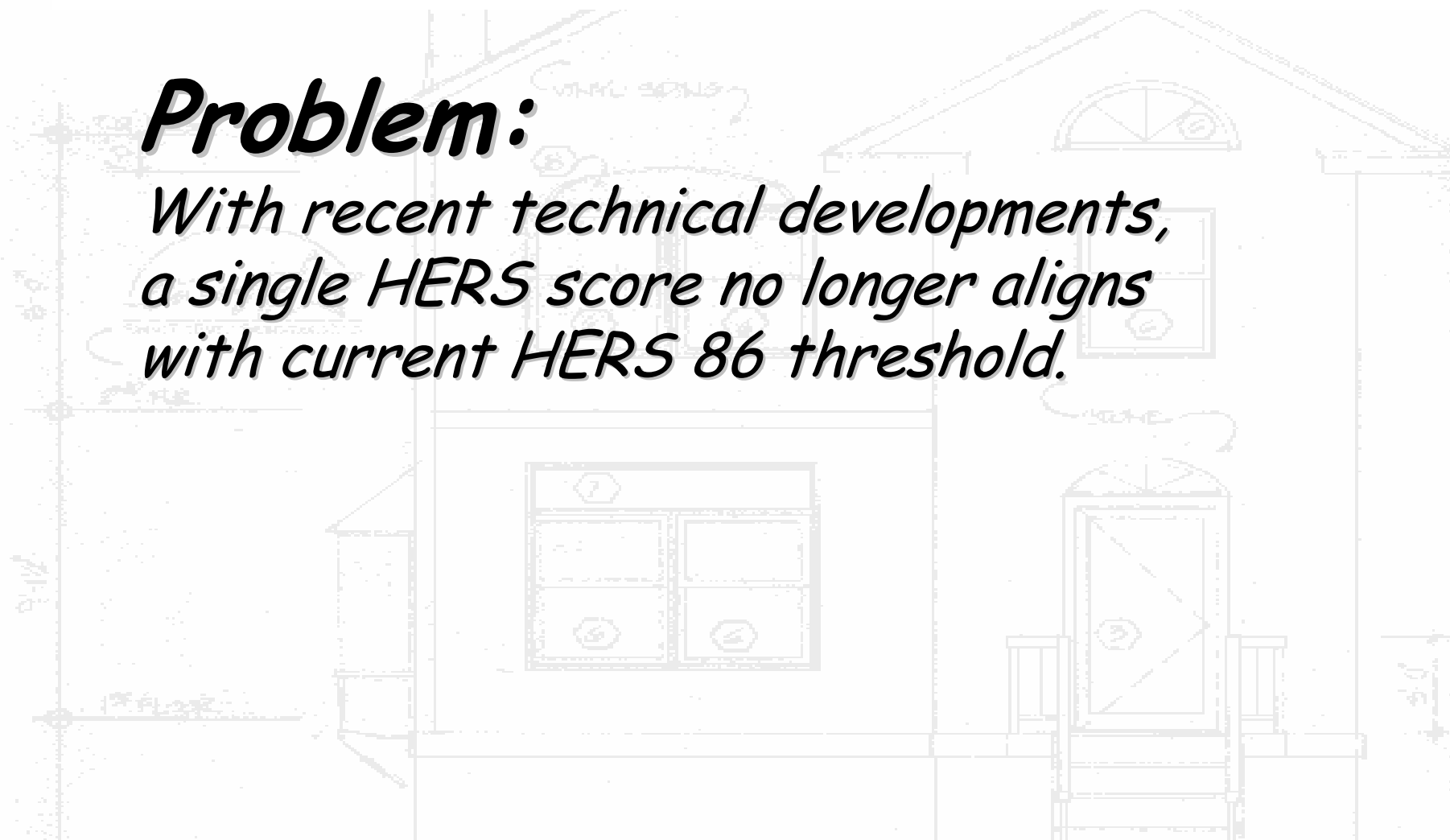


# ENERGY STAR FOR HOMES PROPOSED 2006 THRESHOLD WHY NEW THRESHOLD?



## ***Problem:***

*With recent technical developments,  
a single HERS score no longer aligns  
with current HERS 86 threshold.*



# ENERGY STAR FOR HOMES PROPOSED 2006 THRESHOLD WHY NEW 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!***

# ENERGY STAR FOR HOMES PROPOSED 2006 THRESHOLD PROPOSED PRESCRIPTIVE PATH



## Envelope:

- Air Infil.  $\leq .35$  ACH<sub>nat</sub> or  $\leq 5$  ACH<sub>50</sub>

- Thermal Bypass Checklist

## Ducts:

- Leakage Outdoors:  $\leq 4$  cfm /100 sf
- Total Leakage:  $\leq 9$  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

## HVAC:

- Right-Sized
- ENERGY STAR Thermostat



## Windows:

## Lighting/Appliances/Fans:

Any comb. 5 ENERGY STAR qualified:

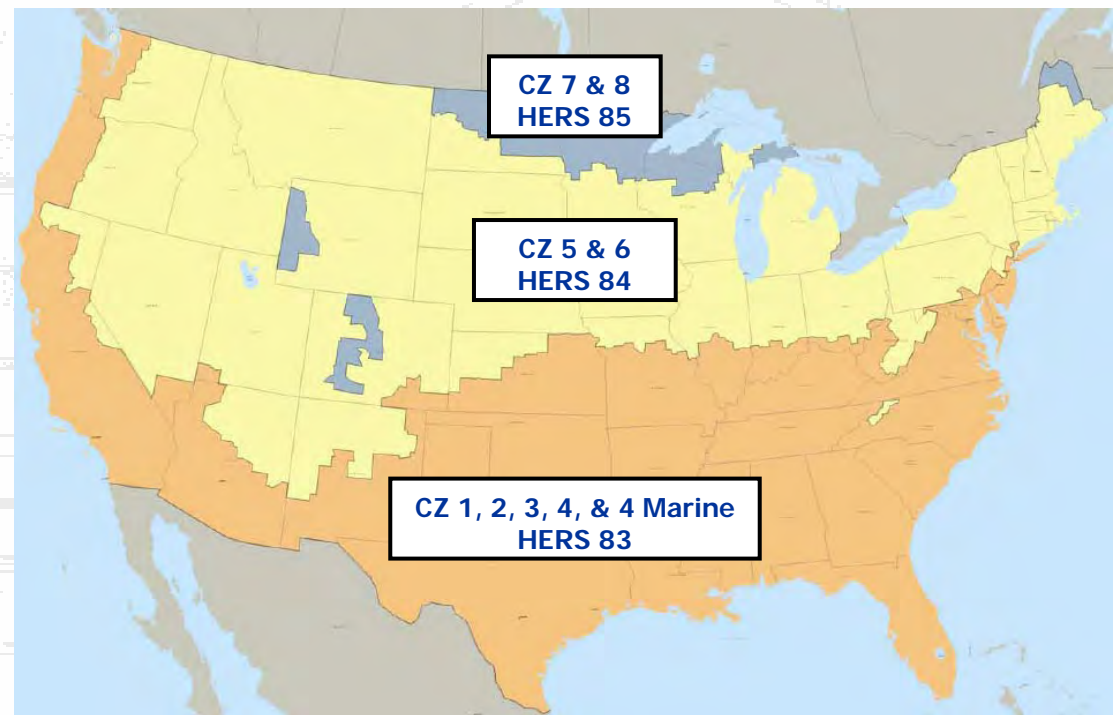
- Lighting Fixtures; or
- Ceiling Fans; or
- Appliances



# ENERGY STAR FOR HOMES PROPOSED 2006 THRESHOLD PROPOSED PERFORMANCE PATH



- *Expanded HERS Score by IECC Climate Zones*
- *Mandatory Reqts.*
  - *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*

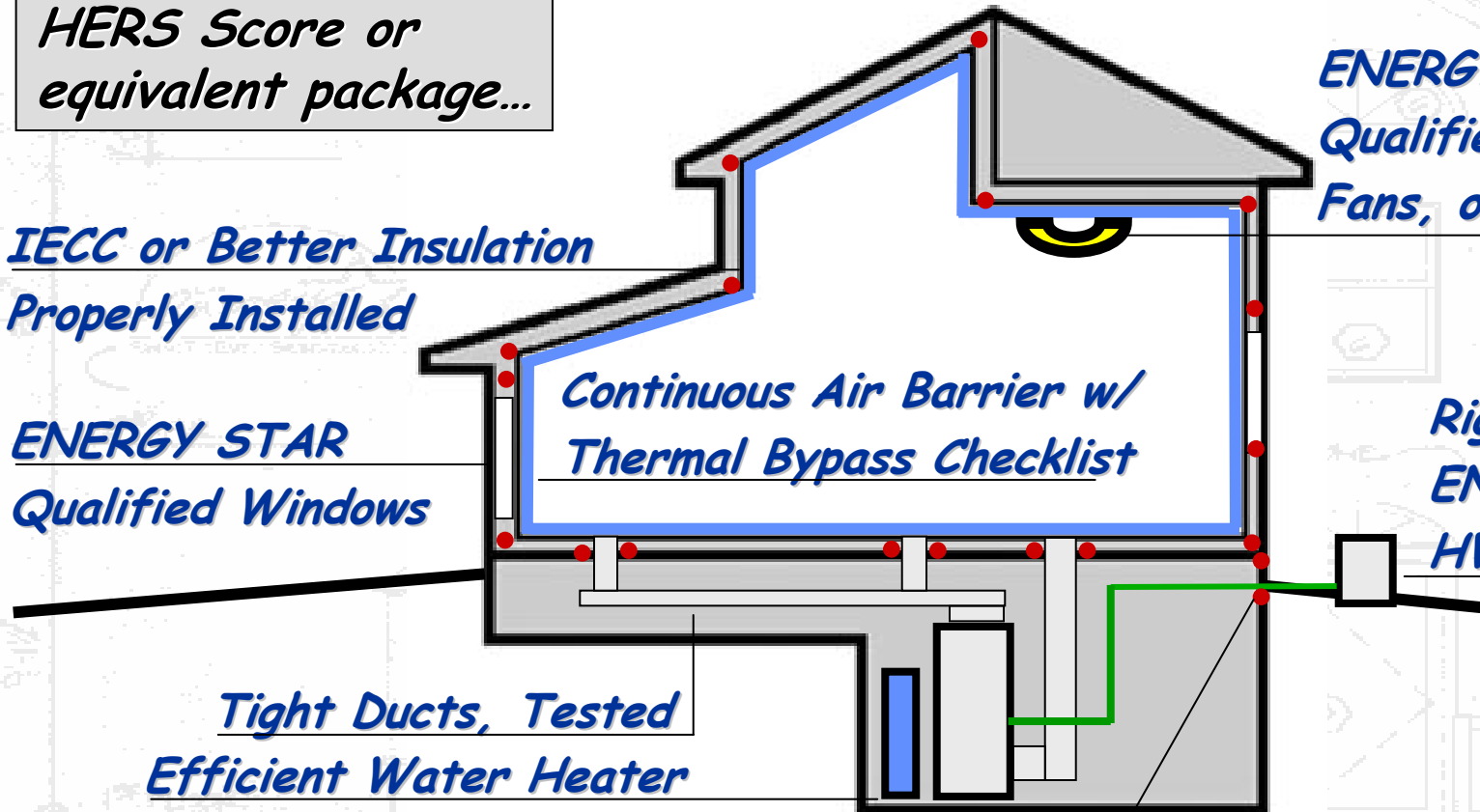
*Continuous Air Barrier w/  
Thermal Bypass Checklist*

*ENERGY STAR  
Qualified Lighting,  
Fans, or Appliances*

*Right-Sized  
ENERGY STAR  
HVAC Equip.*

*Tight Ducts, Tested  
Efficient Water Heater*

*Build it Tight with Blower Door Test  
and Thermal Bypass Checklist*





# ENERGY STAR FOR HOMES BEYOND 86: OUTLINE



*1. Background*

*2. Proposed 2006 Threshold*

*3. Indoor Air Package*

*4. Advanced Lighting Package*

*5. Working with Green Programs*

ENERGY STAR WITH INDOOR AIR PACKAGE  
WHY ENERGY STAR W/IAQ



- ***Add Quality*** *to ENERGY STAR Homes*
- ***Continually Improve*** *Value Proposition*
- ***Inform Consumers*** *About IAQ*

# ENERGY STAR WITH INDOOR AIR PACKAGE NEXT FRONTIER



• **ENERGYSTAR**  
Qualified Home

• Moisture control

• Radon Control

• Pest Control

• HVAC Systems

• Combustion Venting

• Materials

Safe Materials

Mat. Prep/Install.

Direct/Power Vent.

Garage Isolation

CO Alarms

ENERGY STAR Qualified  
Lighting, Fans, or  
Appliances

IECC Insulation  
Properly Installed

Continuous Air Barrier

ES Qualified Windows

Tight Ducts

Eff. Water Htr.

Build it Tight,

Water Man. Roofs

Attic/Clg. Interface

Water Man. Walls

Radon Resist. Con.

Ductwork

Screens/Shield

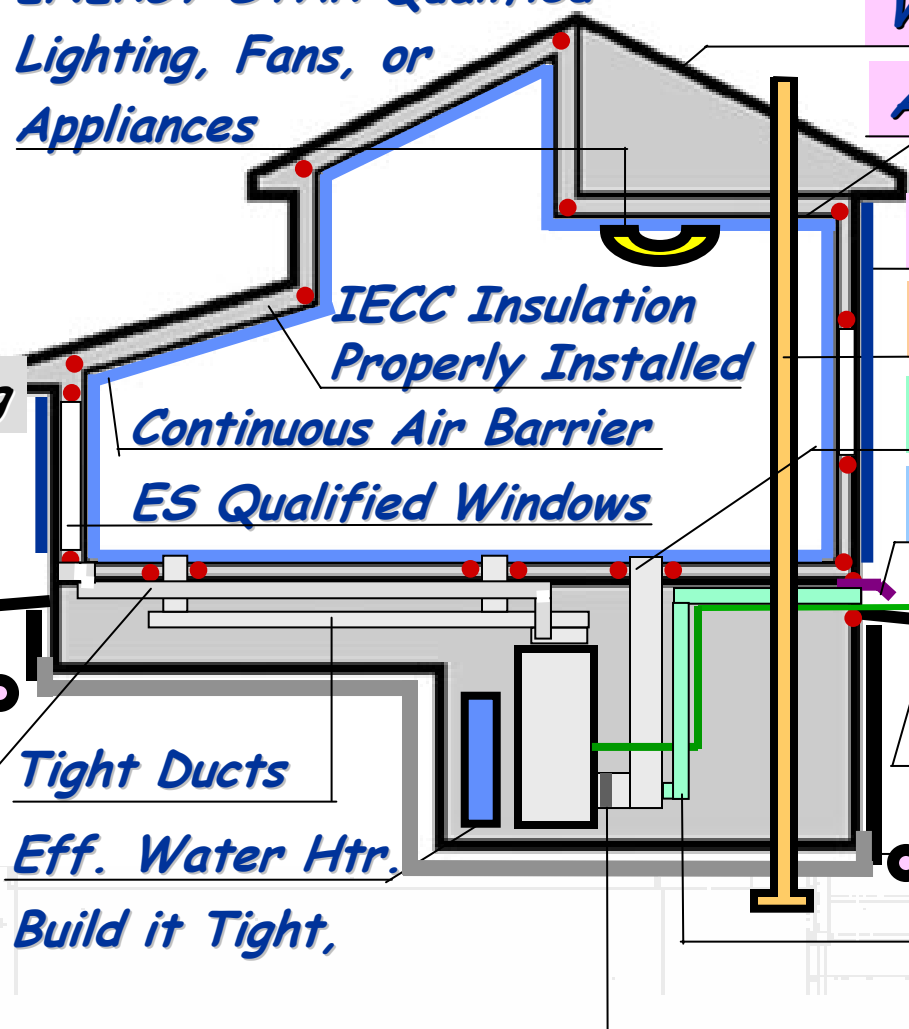
Right-Sized  
ES Equip.

Htg./Cooling Equip.

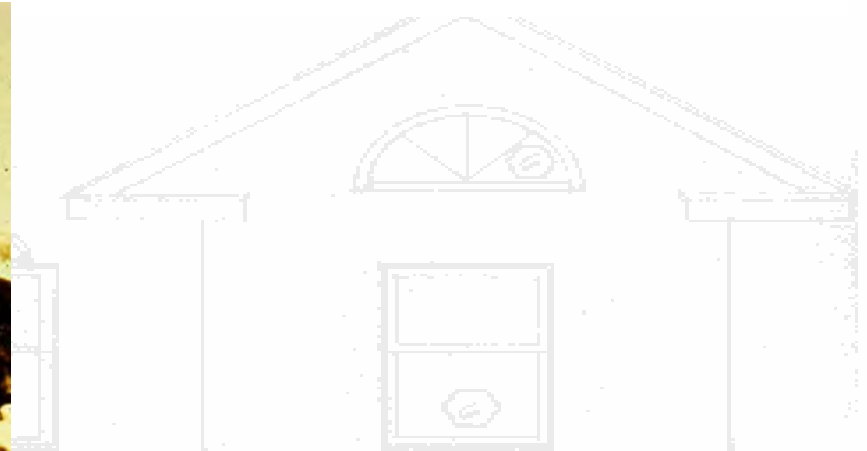
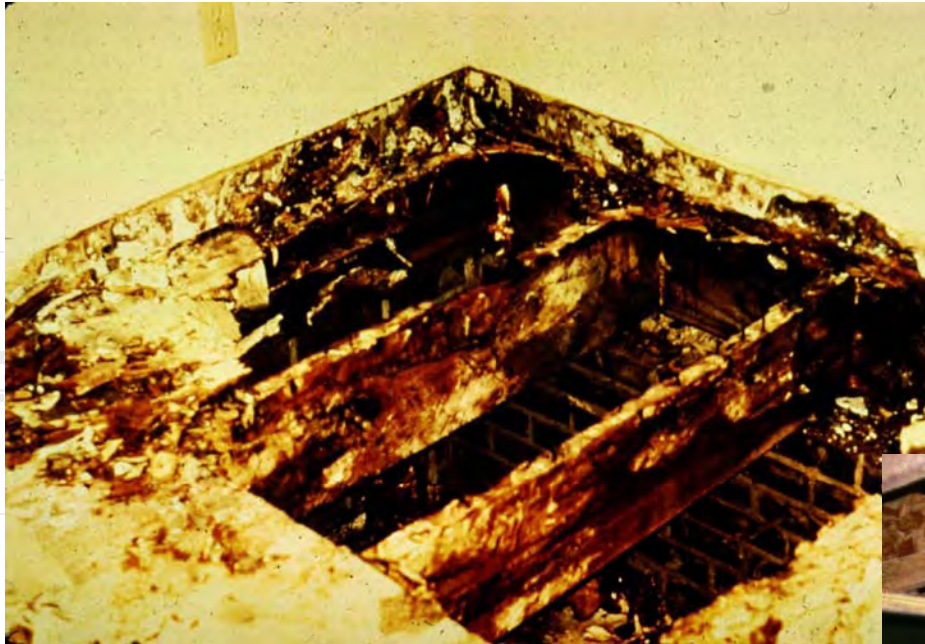
Water Man. Fndn.

Ventilation

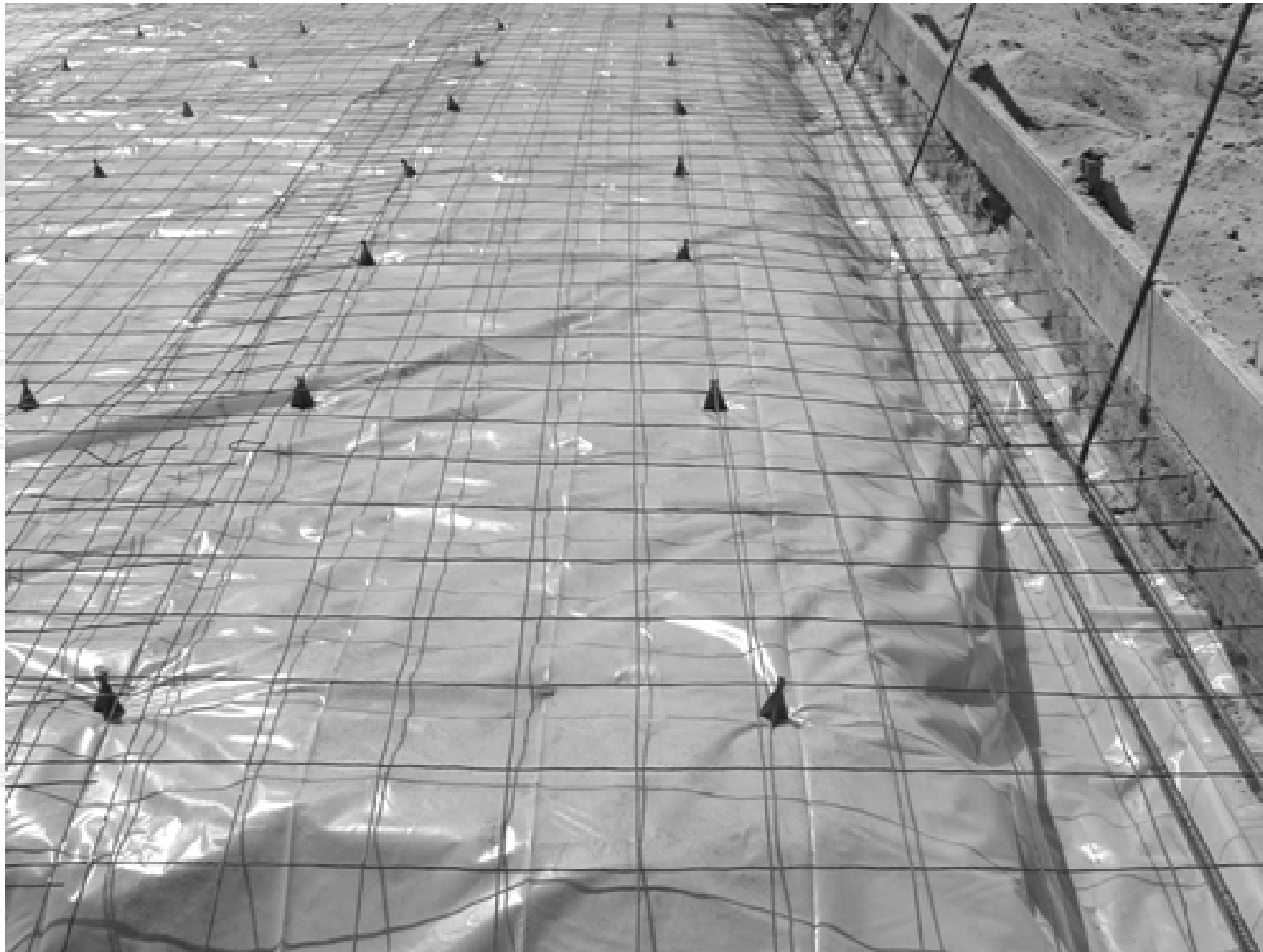
Air Filtration



# MOISTURE CONTROL: FOUNDATION VAPOR BARRIER

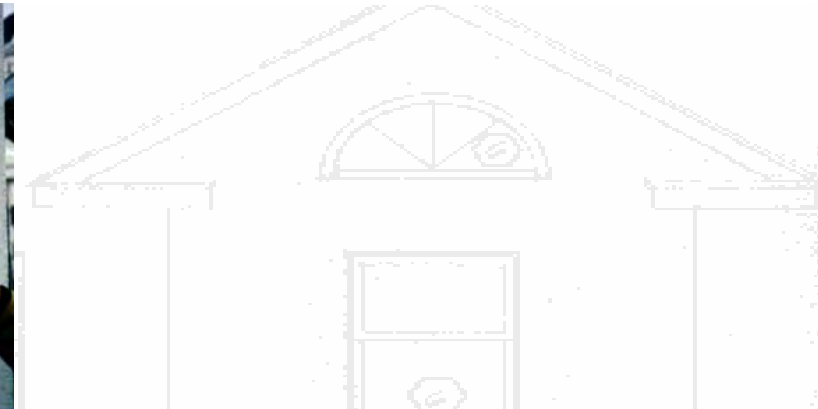


## MOISTURE/RADON CONTROL:

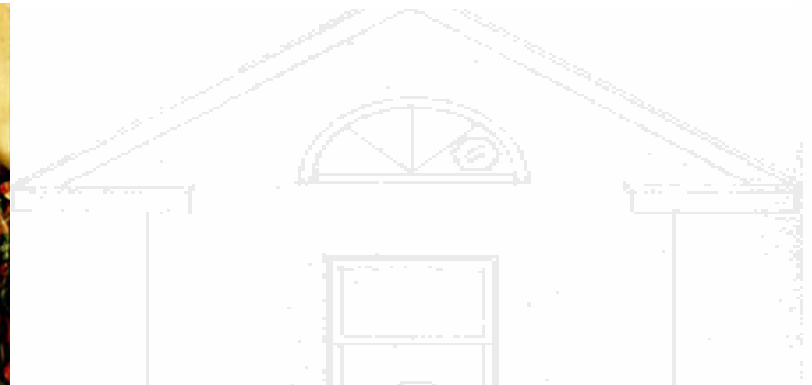




# MOISTURE CONTROL: DOOR/WINDOW PAN FLASHING



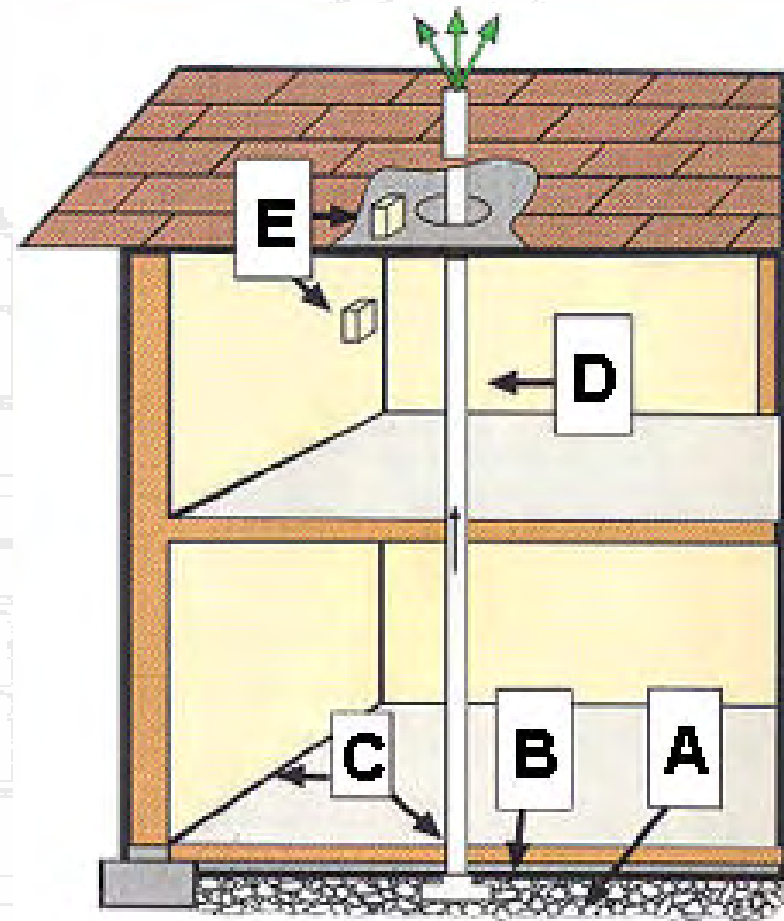
# MOISTURE CONTROL: DRAINAGE PLANE



# RADON CONTROL: RADON RESISTANT CONSTRUCTION



- A. Gas Permeable Layer**  
(4" clean gravel)
- B. Plastic Sheet**  
(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)





# HVAC SYSTEMS: COVER DUCTS DURING CONSTRUCTION



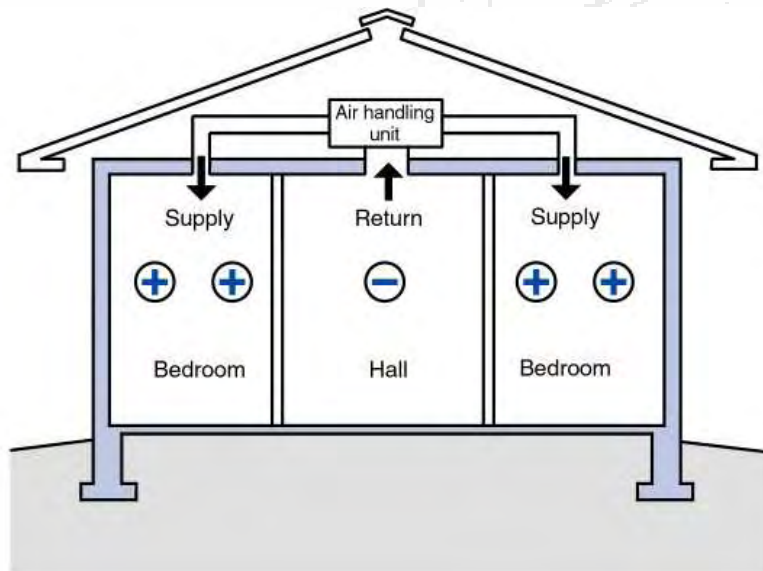
# PEST CONTROL: TERMITE SHIELD



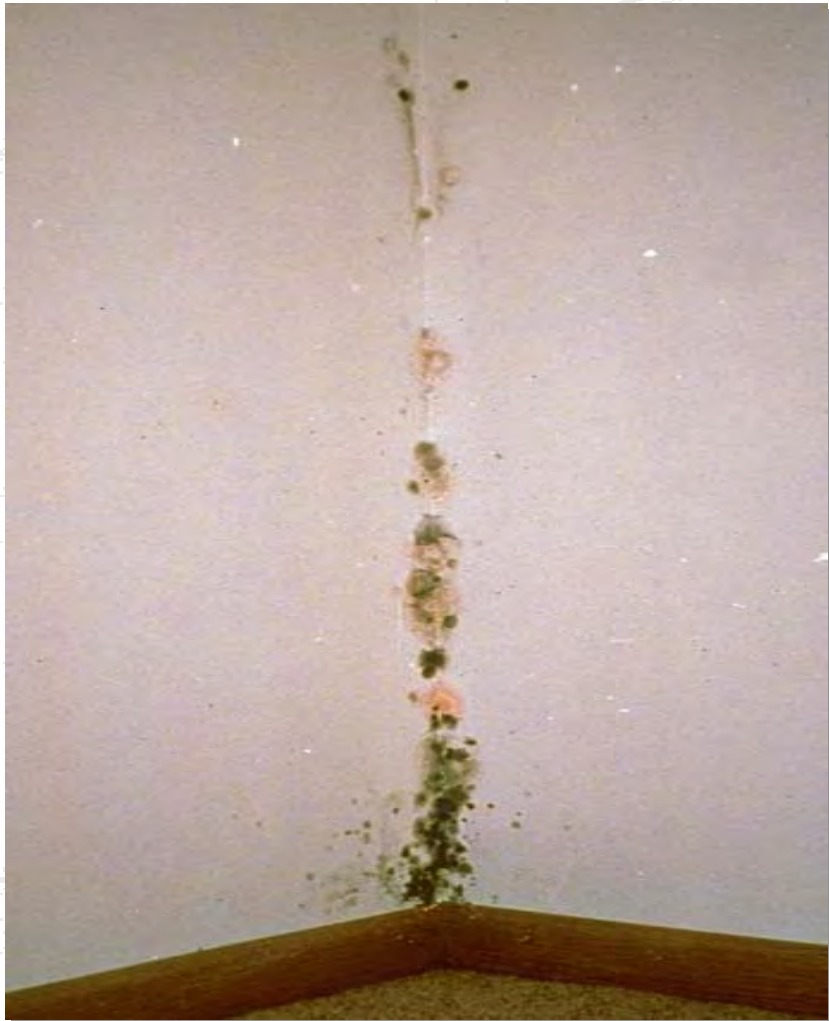
*Courtesy of Building Science Corp.*



# HVAC SYSTEMS: PRESSURE BALANCING HOMES



# HVAC SYSTEMS: MECHANICAL VENTILATION



# COMBUSTION VENTING SYSTEMS: COMBUSTION DIRECT VENTING





# BUILDING MATERIALS: PROTECTION



# BUILDING MATERIALS: PROPER SELECTION



ENERGY STAR WITH INDOOR AIR PACKAGE  
MAKING IAQ EASY:





# ENERGY STAR FOR HOMES BEYOND 86: OUTLINE



*1. Background*

*2. Proposed 2006 Threshold*

*3. Indoor Air Package*

*4. Advanced Lighting Package*

*5. Working with Green Programs*

# ENERGY STAR ADVANCED LIGHTING PACKAGE (ALP) TECHNICAL SPECIFICATION

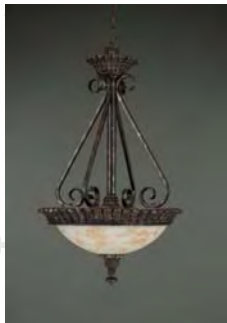


<i>Category</i>	<i>% ENERGY STAR Fixtures</i>
<b><u>High-Use Rooms</u></b> Kitchen, Dining Room, Living Room, Family Room, Bathrooms, Halls, Stairways	50%
<b><u>Medium-Use Rooms</u></b> Bedrooms, Den, Office, Basement, Laundry Room, Garage, Closets, and all other rooms	25%
<b><u>Outdoor Lighting</u></b> Affixed to Home, Free-standing Poles excluding landscape and solar lighting	50%
<b><u>Ceiling Fans</u></b> [Where Provided]	100%

# ENERGY STAR ADVANCED LIGHTING PACKAGE (ALP) WHY NOW?



- *Builders asking for 'More'*
- *Lowest Hanging 'Energy' Fruit*
- *Technology is Ready:*



ENERGY STAR ADVANCED LIGHTING PACKAGE (ALP)  
KEY MARKETING MESSAGE:



*We can do a lot better than  
100-year old technology:*

- *Cost*
- *Durability*
- *Comfort*
- *Environment*

# ENERGY STAR FOR HOMES BEYOND 86: OUTLINE



*1. Background*

*2. Proposed 2006 Threshold*

*3. Indoor Air Package*

*4. Advanced Lighting Package*

*5. Working with Green Programs*

# PRESENTATION TO COLORADO BUILD GREEN PROGRAM ENERGY STAR FOR HOMES OUTLINE



*1. Background*

*2. Growth*

*3. Proposed 2006 Threshold*

*4. Indoor Air Package*

*5. Working with Green Programs*

WORKING WITH GREEN PROGRAMS  
WHAT IS ENERGY STAR?



*The national, US government-backed  
**symbol for  
energy efficiency**  
while assuring same or better performance  
**Not Green!***



WORKING WITH GREEN PROGRAMS

# GREEN PROGRAMS & ENERGY STAR



## *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**

**Green Programs**



WORKING WITH GREEN PROGRAMS  
INTEGRATING ENERGY STAR



*Think of ENERGY STAR as  
"Intel Inside"...*

*An ingredient brand  
that adds extra value  
to a green home label*

## HOW TO GET MORE INFORMATION



*On the Web at:*  
*<http://www.energystar.gov/homes>*