



ENERGY STAR-
qualified homes
use substantially
less energy.



ENERGY STAR for New Homes



aimgreen

ENERGY STAR Homeowner Benefits

Added Confidence

Build the home of your dreams and enjoy the peace of mind knowing that it also meets rigorous energy efficiency guidelines set by the EPA and verified by an independent Home Energy Rater.

Lower Ownership Costs

ENERGY STAR-qualified homes use substantially less energy for heating, cooling, and water-heating. They deliver \$200 to \$400 in annual savings compared with standard construction.

Better Performance

An ENERGY STAR-qualified home helps ensure consistent temperatures between rooms, improved indoor air quality, and greater durability.

Smarter Investment

By the end of the decade, more than two million homes are expected to earn the ENERGY STAR. The trend is clear. By choosing a home with ENERGY STAR, you can be confident that it will be an increasingly valued feature when the time comes to sell.

Environmental Protection

Because ENERGY STAR-qualified homes use less energy, they help prevent greenhouse gas emissions - an added benefit for today's environmentally conscious consumers looking for "green" choices.

Enjoy the benefits of other
OPPD products and services.
Visit oppd.com for information.

Energy Advisors - A valuable resource of energy efficiency information.

Energy Efficiency Video Library - Educational videos on weatherization, lighting, electronics, appliances and more.

Green Power - Become a Green Power partner today and support renewable energy.

Heat Pump and High-Efficiency Air Conditioner Rebates - With qualifying equipment, you can apply for rebates and a lower winter electric rate.

Home Energy Audit - Find out where your home is losing efficiency and what you can do to improve efficiency and save energy.

In-Home Electrical Protection Plan - Protect your electrical wiring and keep your home and family safe.

MyAccount - Save time, postage and trees. OPPD's online service helps you manage your account and protect the environment.

Residential Surge Protection - Protect your valuable electronics from damaging surges that enter through phone, cable and electrical lines.



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What Is ENERGY STAR?

ENERGY STAR is the government-backed symbol for energy efficiency. The mark identifies new homes, buildings, and more than 50 types of products that are energy-efficient and offer features, quality and performance that today's consumers expect.

What Makes A Home ENERGY STAR?

To meet ENERGY STAR qualifications, a home must be at least 15 percent more energy-

efficient than homes built to local code. ENERGY STAR homes may also have other energy-saving features that can make them as much as 20 to 30 percent more efficient than standard homes. ENERGY STAR homes have all the features you desire in your home, plus better performance and lower utility bills - all while helping prevent greenhouse gas emissions.

ENERGY STAR builders achieve high efficiency by selecting from a variety of features:

- Tight Construction and Ducts
- Effective Insulation
- Effective Heating and Cooling Equipment
- High Performance Windows
- Efficient Products
- Independent Testing

Over 100,000 new homes earned the ENERGY STAR in 2008. This is equivalent to:

- Eliminating the emissions from 49,000 vehicles
- Saving 296,400 lbs of coal
- Planting 81,000 acres of trees
- Saving home owners \$45 million on their utility bills

ENERGY STAR Partnerships

OPPD and approximately 40 local home builders are partners with ENERGY STAR. More than 1,600 new homes in the OPPD service territory have been certified ENERGY STAR homes in recent years and interest is rapidly increasing. OPPD works with various professionals in the home building industry and Energy Raters to aid in the successful completion of an ENERGY STAR home.



A Recognized Leader

OPPD has been recognized by the U.S. Environmental Protection Agency with the ENERGY STAR Leadership in Housing Award. The award recognizes OPPD's efforts to promote energy-efficient construction and environmental protection by sponsoring an ENERGY STAR for New Homes Program in its service area last year.

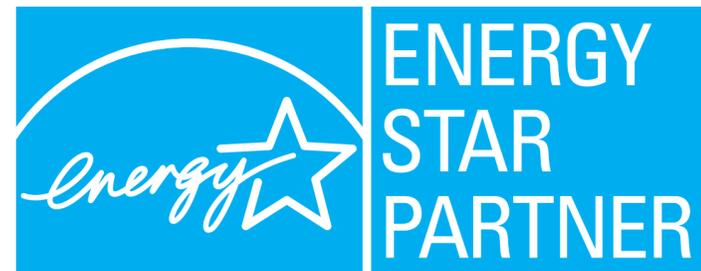
To find an ENERGY STAR builder or for more information visit oppd.com, click on the Aim Green tab then ENERGY STAR for New Homes.

ENERGY STAR for New Homes Call today: 402-636-3541

ENERGY STAR home

On average, 30% more efficient.

OPPD.com



7- 8 a.m.

Registration and Breakfast

8 a.m. - 12 Noon

Morning Session

Welcome

Tim Burke, OPPD Vice President

Angie Garfield, Supv. HVAC Energy/Education

Ray Herek, HVAC Technologies

Tony Walde, Surge Guard Protection

Sam Hardy, In-Home Electrical Protection Plan

Renee Jacobsen, ENERGY STAR for New Homes Program

Sam Rashkin

National Director ENERGY STAR for Homes

ENERGY STAR Approach to Home Building

ENERGY STAR Program Overview: EnergyLogic

What features qualify a home for ENERGY STAR?

12 Noon - 1 p.m.

Lunch (provided)

1- 4 p.m.

Afternoon Session

Duct design by NASCAR: Dave Swett

Performance-driven HVAC

ENERGY STAR Thermal Bypass Checklist: EnergyLogic

Checklist review and program requirements

Q & A

See reverse side for
registration information.



**Be A Leader
in Home Building
& Energy Efficiency**

**ENERGY STAR
for New Homes Seminar**

Thursday, April 29, 2010

*Champions Run
13800 Eagle Run Drive
Omaha, NE*

2010 ENERGY STAR
for New Homes Seminar



ENERGY STAR for New Homes Seminar



Sense label. Sam has prepared hundreds of articles, technical papers, reports, and seminars; and contributed to numerous books covering a wide variety of energy topics.

STEVE BYERS
Principal EnergyLogic

Steve Byers is one of the principals for EnergyLogic Inc. Steve got involved in the building science industry, working for Southface Energy Institute in Atlanta. Relocating to Colorado in 1997, he began working in the Home Energy Rating Industry. He is now a trainer and nationally recognized lecturer on building science.

SCOTT DOYLE
Director of Energy Professional Services

Scott Doyle is the Director of Energy Professional Services Division for EnergyLogic Inc. He has performed inspections on thousands of homes across the Front Range of Colorado. In 2007, he became a Residential Energy Services Network certified Quality Assurance Designee and Trainer. As EnergyLogic's primary trainer, he teaches a variety of subjects across the country including HERS Rater and Building Performance Institute Building Analyst courses.

DAVE SWETT
OPPD Market Support Specialist

Dave has more than 29 years experience with residential, commercial and industrial HVAC. He served on a national coalition responsible for creating the North American Technician Excellence (NATE) program, which is the leading certification program for technicians in the HVAC and refrigeration industries. Dave presently serves on the NATE national technical committee and is responsible for certification testing content and quality control. He's also a technical content committee member for publications produced by the Air Conditioning Contractors of America.

ENERGY STAR for New Homes Seminar,
Thursday, April 29 • 8 a.m. - 4 p.m. (check in at 7 a.m.)
Champions Run, 13800 Eagle Run Drive, Omaha, NE

OPPD is offering a chance to learn from the experts how and why you should build ENERGY STAR homes.

SAM RASHKIN
National Director ENERGY STAR for Homes - U.S. EPA

Since 1996, Sam Rashkin has managed ENERGY STAR for Homes, which has grown exponentially to more than 7,000 builder partners and over one million labeled homes. Mr. Rashkin received his Bachelor of Architecture from Syracuse University; completed Masters of Urban Planning studies at New York University; and is a registered architect in California and New York. During his 20-plus years as a licensed architect, he specialized in energy-efficient design and completed over 100 residential projects. He has served on the national Steering Committees for USGBC's LEED for Homes, NAHB's Green Builder Guidelines, and U.S. EPA's Water

Registration is \$50 per person. A 15% discount applies for groups of three or more per company.

Register online at oppd.com

Note: Please leave 'Invitation Code' field blank.

Credit cards (MasterCard, VISA or debit card) accepted via online registration.

For payment by check, please complete the information below and mail with your check to:

ENERGY STAR Seminar, Omaha Public Power District
444 South 16 Street, 2E/EP1
Omaha, NE 68102

Please make check payable to *Omaha Public Power District.*

Name _____

Company _____

Address _____

City _____ State _____ Zip _____

Phone _____

Email _____

Attendees: _____

Sub-total (# of attendees x \$50) \$ _____

15% Discount (if sending 3 or more) (_____)

Total (after discount, if applicable) \$ _____



For more information on Eco Options please visit
www.homedepot.com/ecoptions

\$3 OFF

SELECT EcoSmart CFLs



CFL discount brought to you by



Discount is \$3.00 off retail price. Discount reflected on price label.
Retail price is subject to change. Limit 8 packages per customer.



THE HOME DEPOT APPROVED



Up: 10/01/2010 Down: 10/31/2010

2010/43619 UR-15127



“OPPD’s lighting incentive helped get the project going. Now we have new lights, we’re saving energy and have a rebate to go with it. Thanks, OPPD.”

– John Rotella
Rotella’s Italian Bakery

“It was great to partner with OPPD in this program. Not only have we improved the quality of lighting, but we are seeing the benefits of ongoing savings.”

– Ken Kesler
Marianna Industries

For a list of contractors who have registered with OPPD as Commercial and Industrial Lighting Trade Allies, go to oppd.com/businesscustomers, then click on “Lighting Trade Allies.” Contractors provide no-cost, no-obligation lighting audits and proposals. They will also answer your questions about the OPPD Lighting Incentive Program.



Visit oppd.com/businesscustomers, then click on “Lighting Incentive Program.”

2010 Lighting Incentive Program

0510OPPD.5



Receive incentives and reduce operating costs with energy-efficient lighting.

aimgreen



2010 Lighting Incentive Program



- » With OPPD incentives, lighting retrofits/replacements have attractive, simple paybacks.
- » Lighting retrofits/replacements may qualify for a federal tax deduction of up to \$0.60 per square foot.
- » Most lighting upgrades qualify for a Nebraska Energy Office low-interest loan of 2.5 percent.

The Process

Visit oppd.com/businesscustomers, then click on "Lighting Incentive Program."

Request a lighting audit and retrofit/replacement proposal from an OPPD Lighting Trade Ally.

Submit paperwork to OPPD for preapproval:*

1. Incentive application form
2. Lighting equipment application

**Submitting paperwork for preapproval authorizes OPPD to move forward on the project upon OPPD approval.*

Receive approval from OPPD via email.

Proceed with the retrofit/replacement.

Submit Lighting Trade Ally itemized invoice to OPPD within 30 days of project completion and within 90 days of preapproval.

Receive your incentive check!

OPPD offers lighting incentives to commercial and industrial customers for replacing/retrofitting their current system(s) to new, energy-efficient ones.

- » Lighting accounts for 30% to 40% of most building's energy consumption.
- » Lighting and color-rendering impact employee performance and customer satisfaction.
- » A retrofit to energy-efficient lighting will save money and reduce your carbon footprint, while helping to improve your overall ENERGY STAR score.

Incentives:

Retrofit/Replace	Incentive Range
Fluorescents	
4-Foot, 4-Lamp T12	\$13 to \$24 per fixture
4-Foot, 3-Lamp T12	\$13 to \$19 per fixture
4-Foot, 2-Lamp T12	\$5 to \$9 per fixture
4-Foot, 1-Lamp T12	\$5 to \$7 per fixture

High-intensity discharge (HID) includes MH, MV and HPS

1,000-watt or greater HID	\$50 to \$75 per fixture
400- to 1,000-watt HID	\$15 to \$60 per fixture
250- to 400-watt HID	\$10 to \$45 per fixture
175- to 250-watt HID	\$21 to \$28 per fixture
2x2 U-Bend Upgrades	\$7 to \$8 per fixture
Exit Signs	\$5 per sign

Lamp Upgrade

F32 T8, 28-watt	\$0.50 per lamp
F32 T8, 25-watt	\$0.75 per lamp

Incandescents

60-watt	\$3 per lamp
75-watt	\$4 per lamp
100-watt	\$5 per lamp

LED Refrigeration

Case Lighting	\$19 per door
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For more information and to access the necessary application forms, go to oppd.com/businesscustomers, then click on "Lighting Incentive Program."

This program is subject to change without notice. For the most updated information, visit oppd.com.



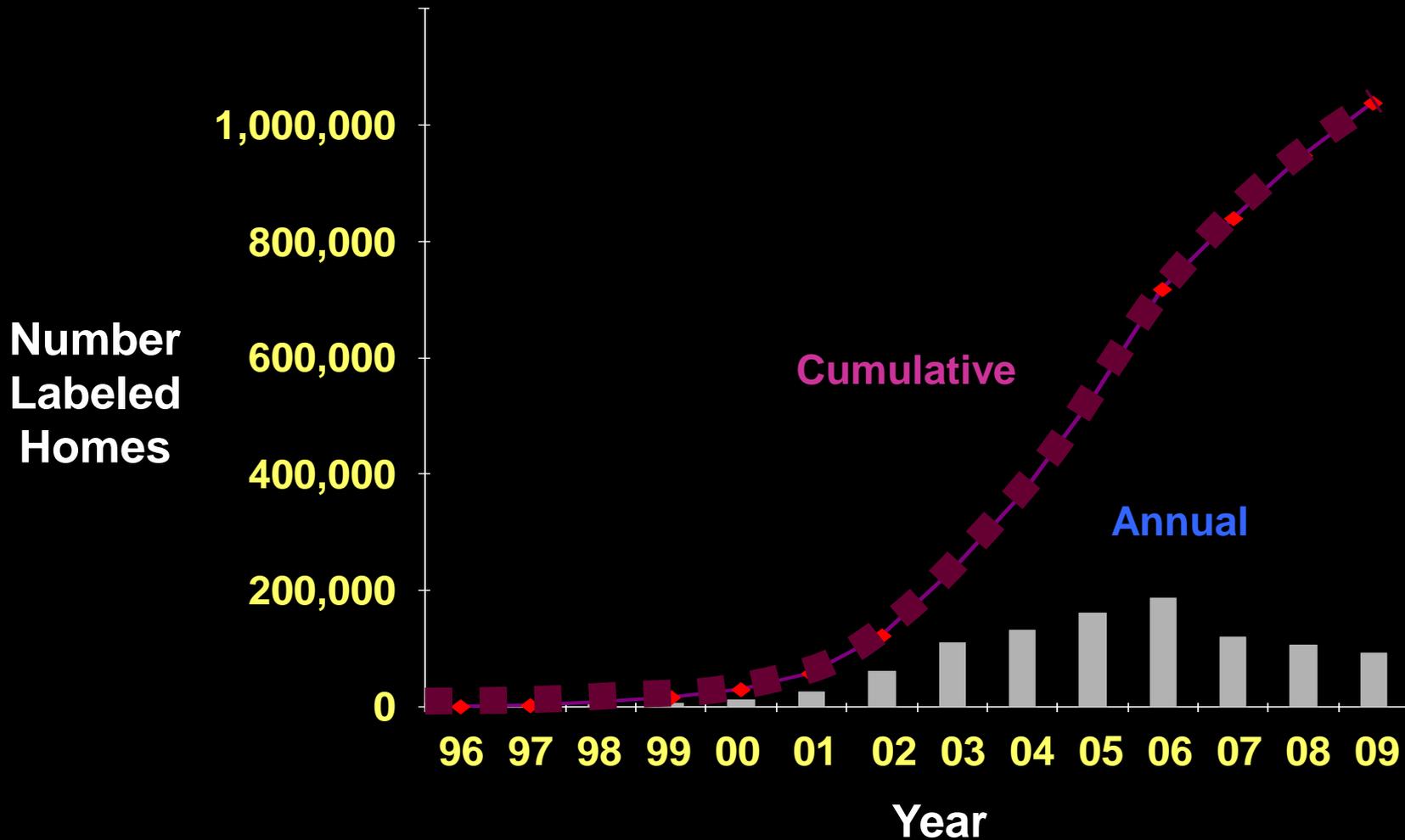
OMAHA PUBLIC POWER DISTRICT TRAINING
APRIL 29, 2010



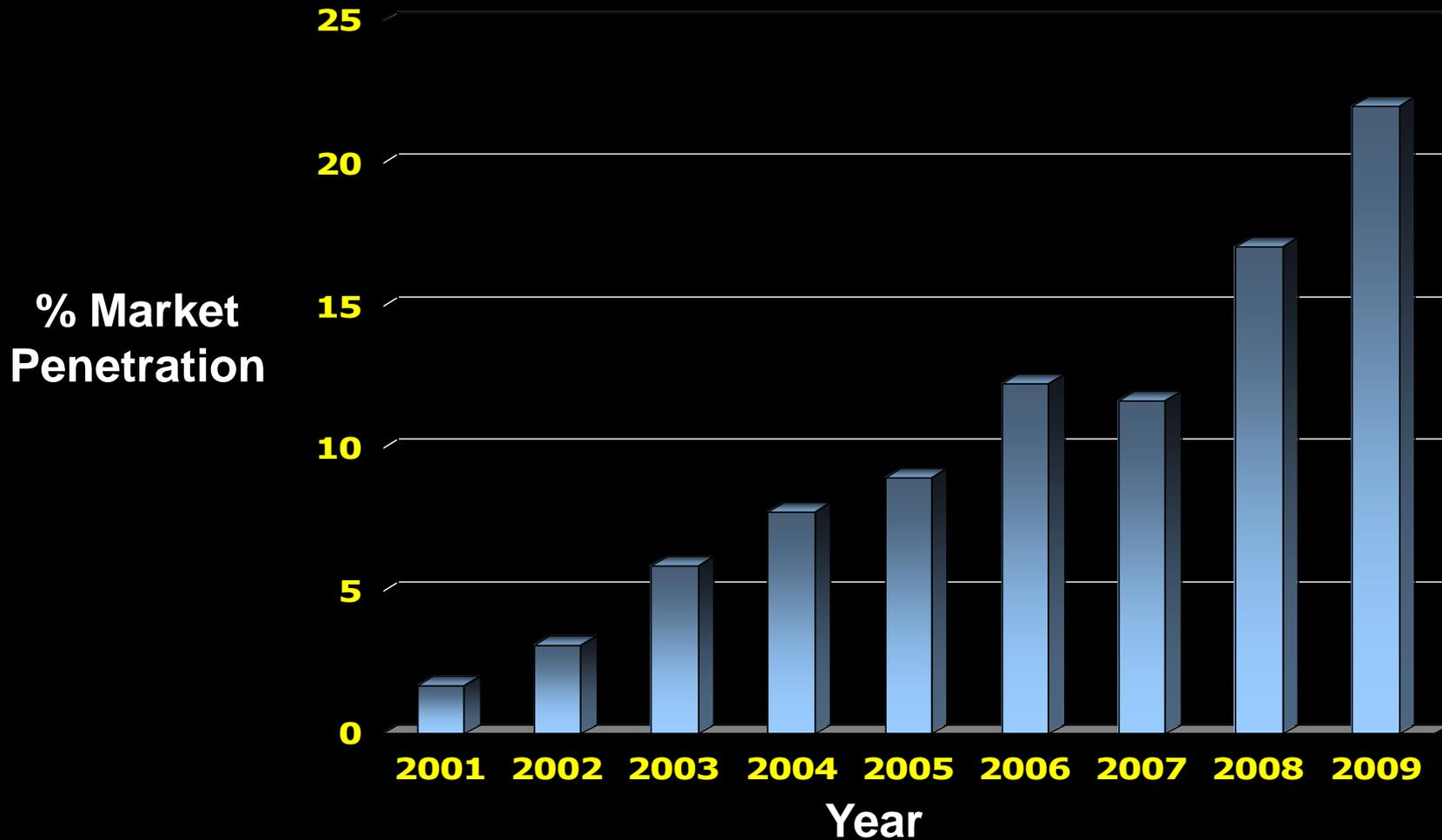
ENERGY STAR Qualified Homes

**All the Rules
Have Changed**

ENERGY STAR FOR HOMES GROWTH THE ROAD TO ONE MILLION HOMES



ENERGY STAR FOR HOMES GROWTH ONE IN FIVE HOMES IN 2009



ENERGY STAR FOR HOMES GROWTH NEW BUILDER PARTNERS PER MONTH



CONTEXT: ENERGY STAR vs. GREEN



**ENERGY STAR for
Homes**

**Green Programs
for Homes**

Voluntary

Recognizes Builders

Label

Web Site, Marketing, Awards



CONTEXT: ENERGY STAR vs. GREEN



**ENERGY STAR for
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Web Site, Marketing, Awards

Defines Efficient

Rigorous Specifications

Third-Party Verified

Offers Flexibility

Points

Multiple Tiers

'GREEN' BEGINS WITH 'BLUE'



Energy Efficiency

- Air Flow
- Thermal Flow
- Moisture Flow
- Equipment



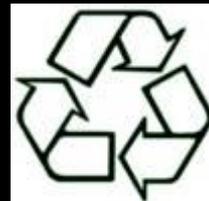
Indoor Environment

- Source Control
- Ventilation
- Filtration



Resource Efficiency

- Water
- Materials
- Waste
- Recycling
- Land
- Renewables



New Rules: We're Not in Kansas Any More

- **Smaller Universe of Buyers**
 - 75% Fewer Housing Starts
 - Tighter Credit = Less Qualified Buyers
 - Less Compelling Reasons to Buy
- **You Can't Compete on Price**
 - Massive Inventory of Fire-Sale Homes
 - Massive Inventory of Homes Under Water
- **High-Performance Train Has Left the Station**
 - Energy Codes on Hyper Drive
 - Net-Zero Home Programs
- **A New Technology Change Everything**
 - Hint, it Has Nothing to Do with Housing

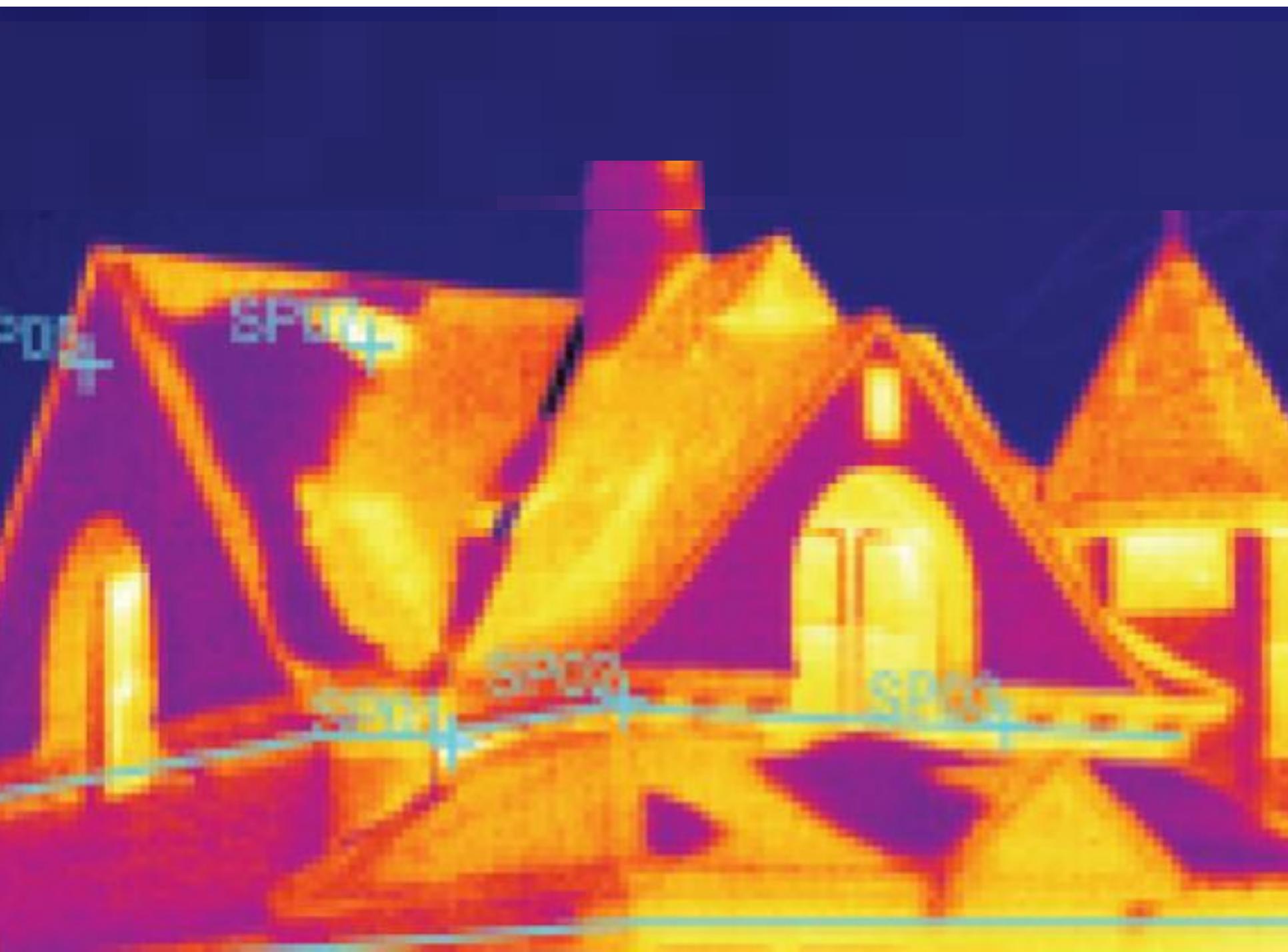
Low Cost Infrared Cameras



**FREE
Online
Training**

Your Price:
\$4,995.00





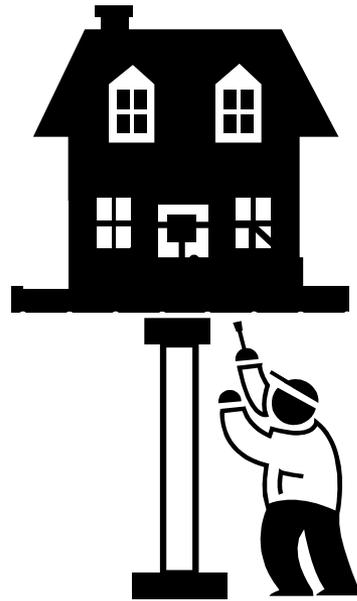
SP04

SP05

SP03

SP02

SP01



WHY ENERGY STAR FOR HOMES SPECIFICATIONS CRITICAL



A voluntary labeling program that:

Defines Energy Efficient

Rigorous Specifications

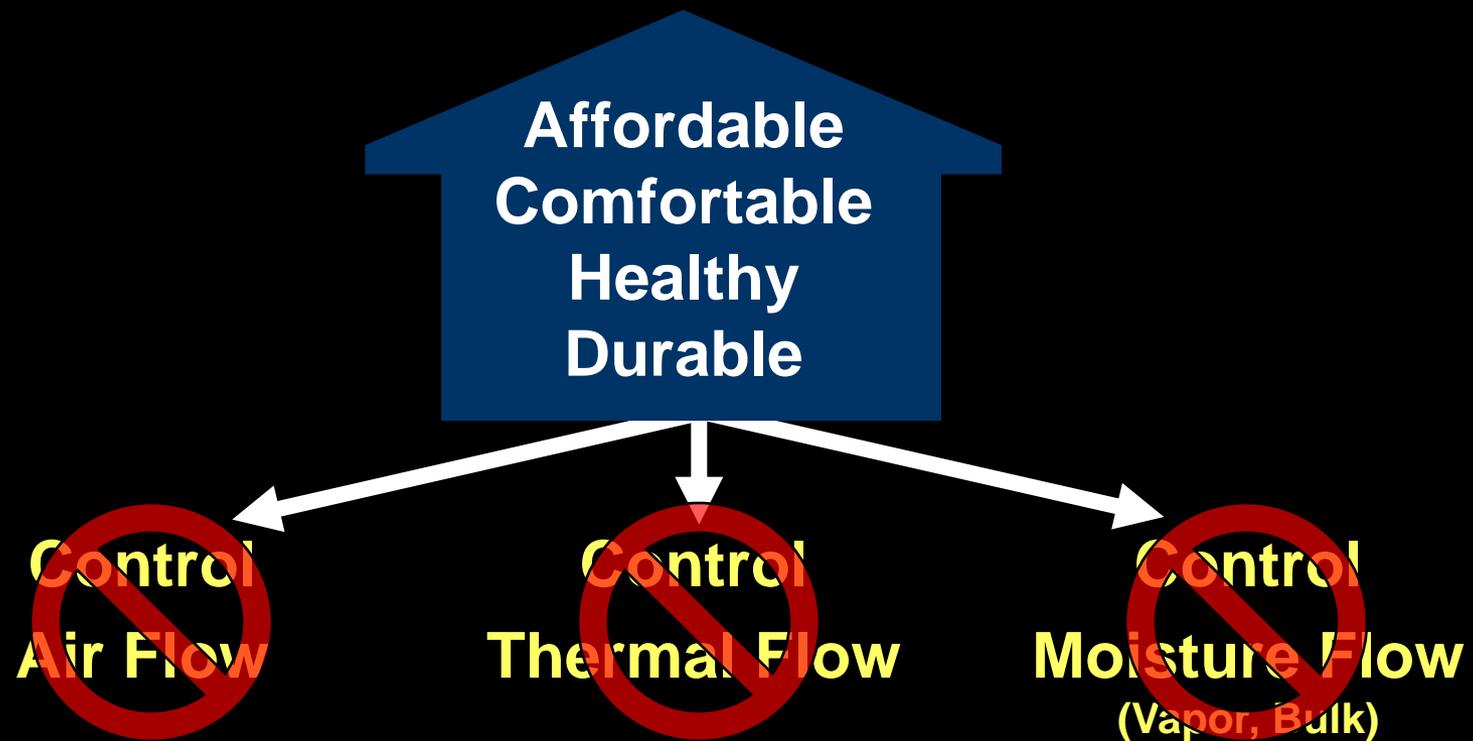
Third-Party Verified

Recognizes Builders

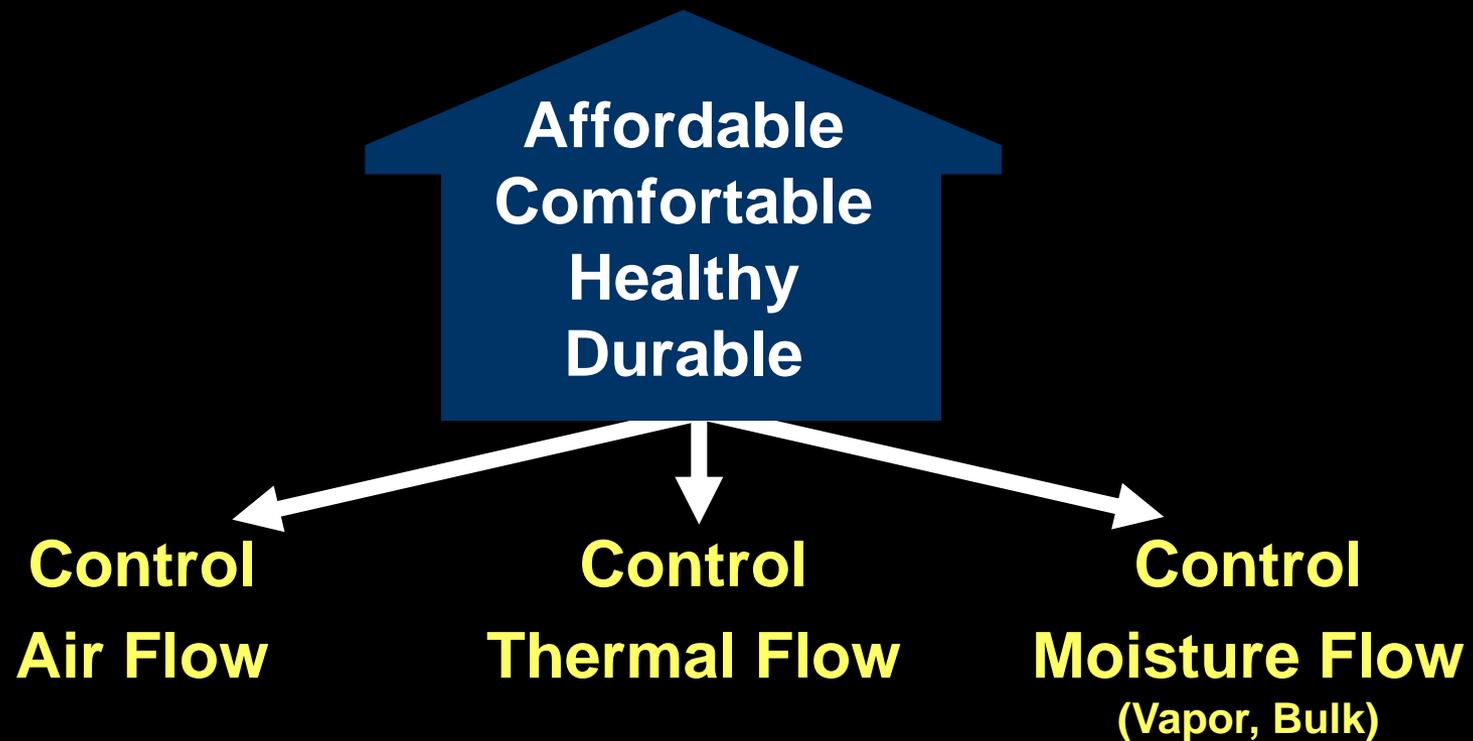
Government-Backed Label

Web Site, Marketing, Awards

Status Quo: Homes That Fail



ENERGY STAR 2011: Homes That Work



Defining Truly Energy Efficient



Affordable
Comfortable
Healthy
Durable

Control
Air Flow

Control
Thermal Flow

Control Moisture Flow
Vapor Bulk

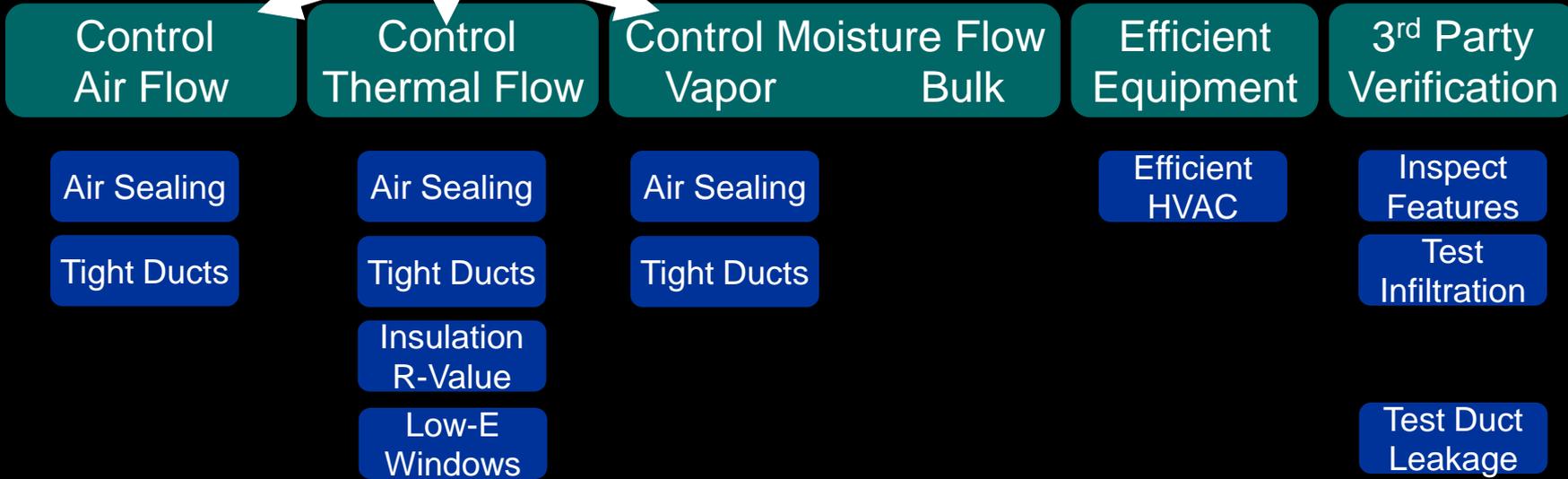
Efficient
Equipment

3rd Party
Verification

Defining Truly Energy Efficient



Affordable
Comfortable
Healthy
Durable

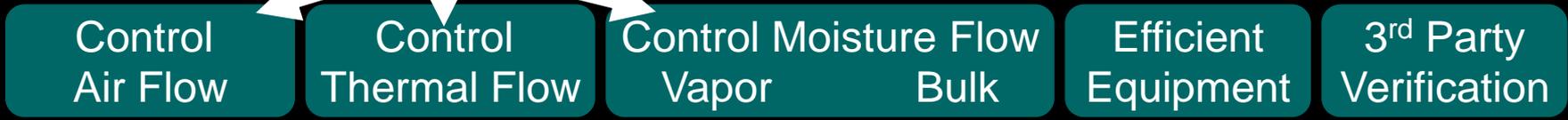


1996
V.1

Defining Truly Energy Efficient



Affordable
Comfortable
Healthy
Durable



- | Control Air Flow | Control Thermal Flow | Control Moisture Flow Vapor Bulk | Efficient Equipment | 3 rd Party Verification |
|------------------|----------------------|----------------------------------|---------------------|------------------------------------|
| Air Sealing | Air Sealing | Air Sealing | Efficient HVAC | Inspect Features |
| Tight Ducts | Tight Ducts | Tight Ducts | | Test Infiltration |
| | Insulation R-Value | | | |
| | Low-E Windows | | | Test Duct Leakage |

- | Control Air Flow | Control Thermal Flow | Control Moisture Flow Vapor Bulk | Efficient Equipment | 3 rd Party Verification |
|------------------|----------------------|----------------------------------|-----------------------|------------------------------------|
| Air Barriers | Air Barriers | Air Barriers | Efficient WH System | Thermal Bypass Chk |
| | Insulation Alignment | Right-Sizing | Efficient Lgtg./Appl. | |



1996
V.1



2006
V.2



How we sold 2006 spec:
We explained/sold the science...

- **Driving Forces Move More to Less:**
 - More Heat to Less Heat
 - More Pressure to Less Pressure
 - More Humidity to Less Humidity

- **Gravity Makes Things Fall**

BUILDING SCIENCE

FIBROUS INSULATION ≠ AIR BARRIER



Resists Heat Flow



Air Flow

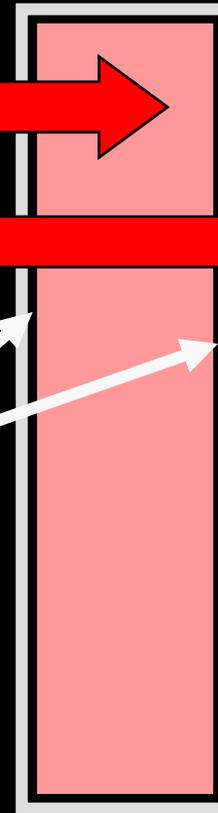


...need Air Barrier...

(any solid material that blocks air flow including sealing at edges and seams)

...on all six sides...

...in direct contact with insulation (alignment)



BUILDING SCIENCE

INSULATION IS NOT AN AIR BARRIER

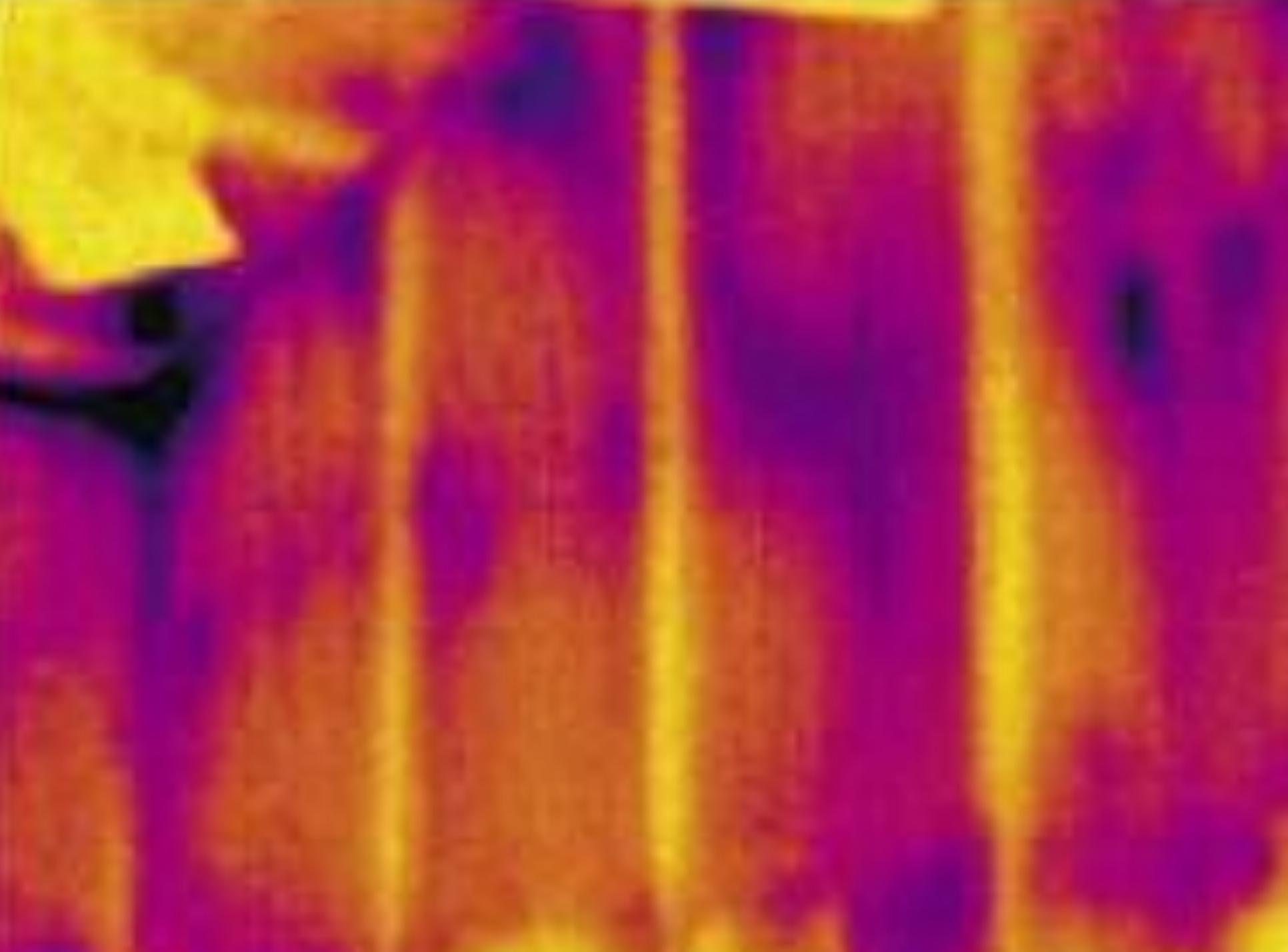


Courtesy of
Blue Grass
Energy

ATTIC KNEE WALLS



Hot Wall



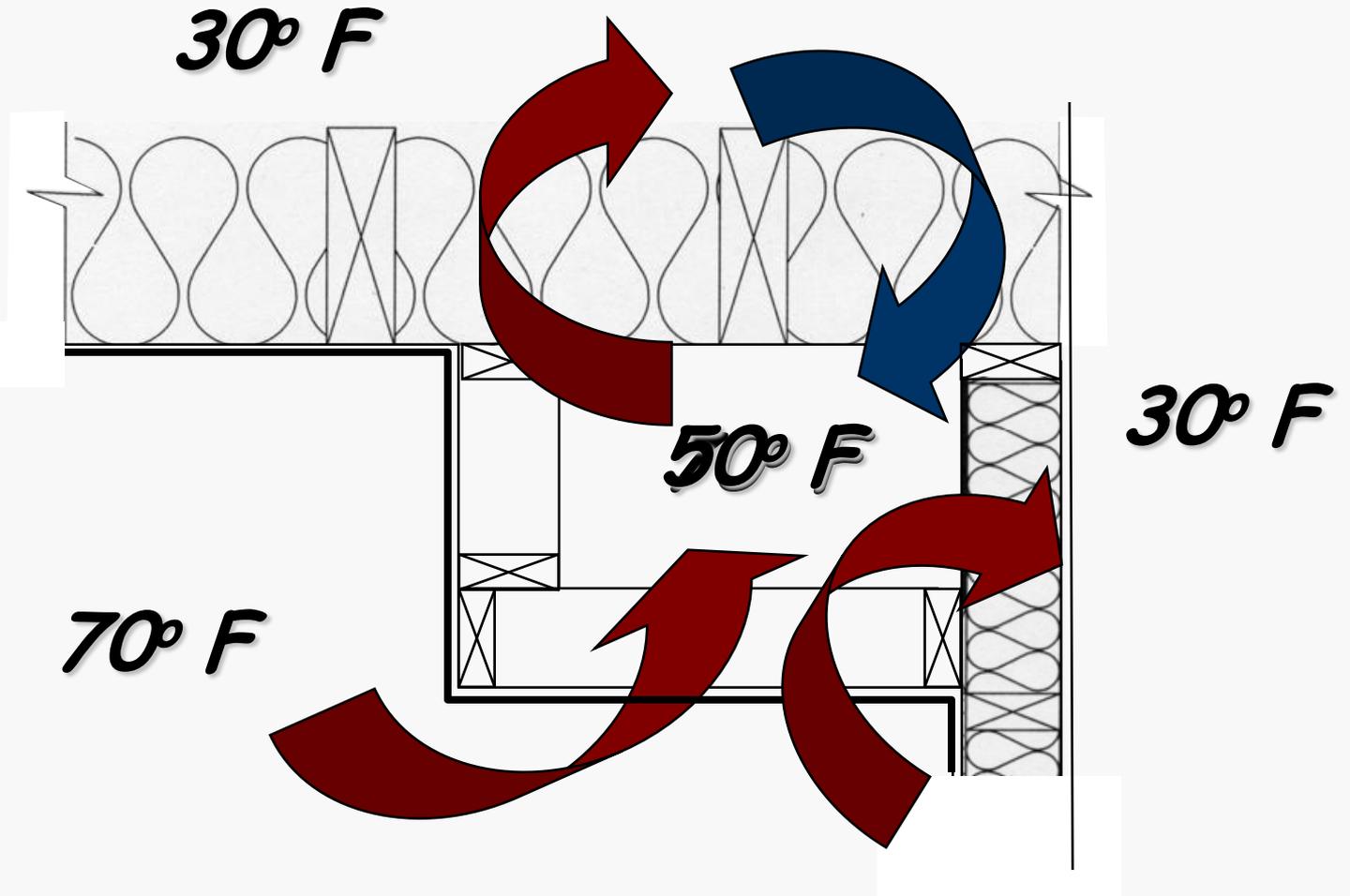
ATTIC KNEE WALLS



Hot Wall



BUILDING SCIENCE
WHY COMPLETE AIR BARRIER





AIR BARRIER/THERMAL BARRIER ALIGNMENT DROPPED CEILING



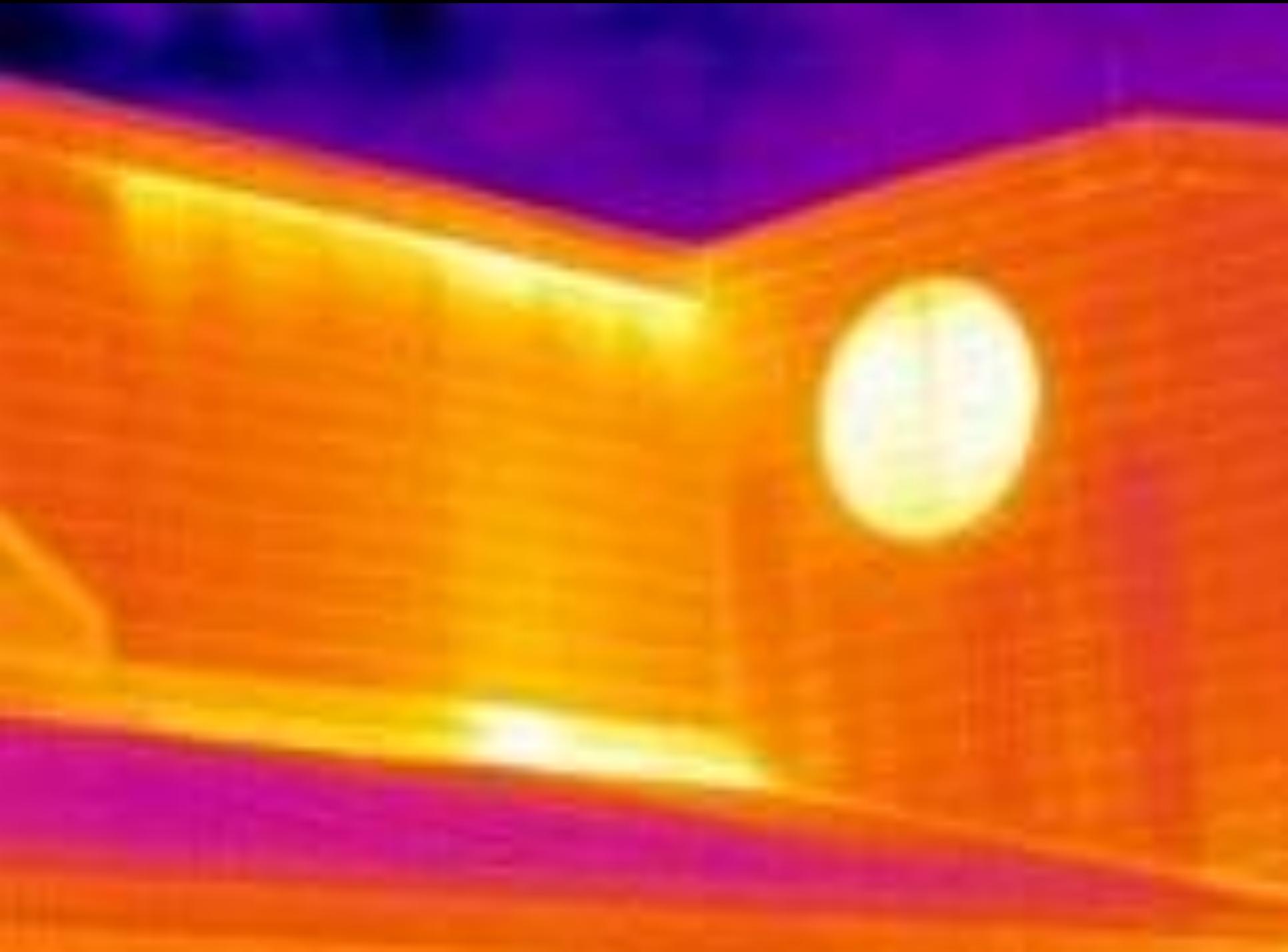
Courtesy of Building Science Corp.

INSET STAPLING = MISALIGNMENT



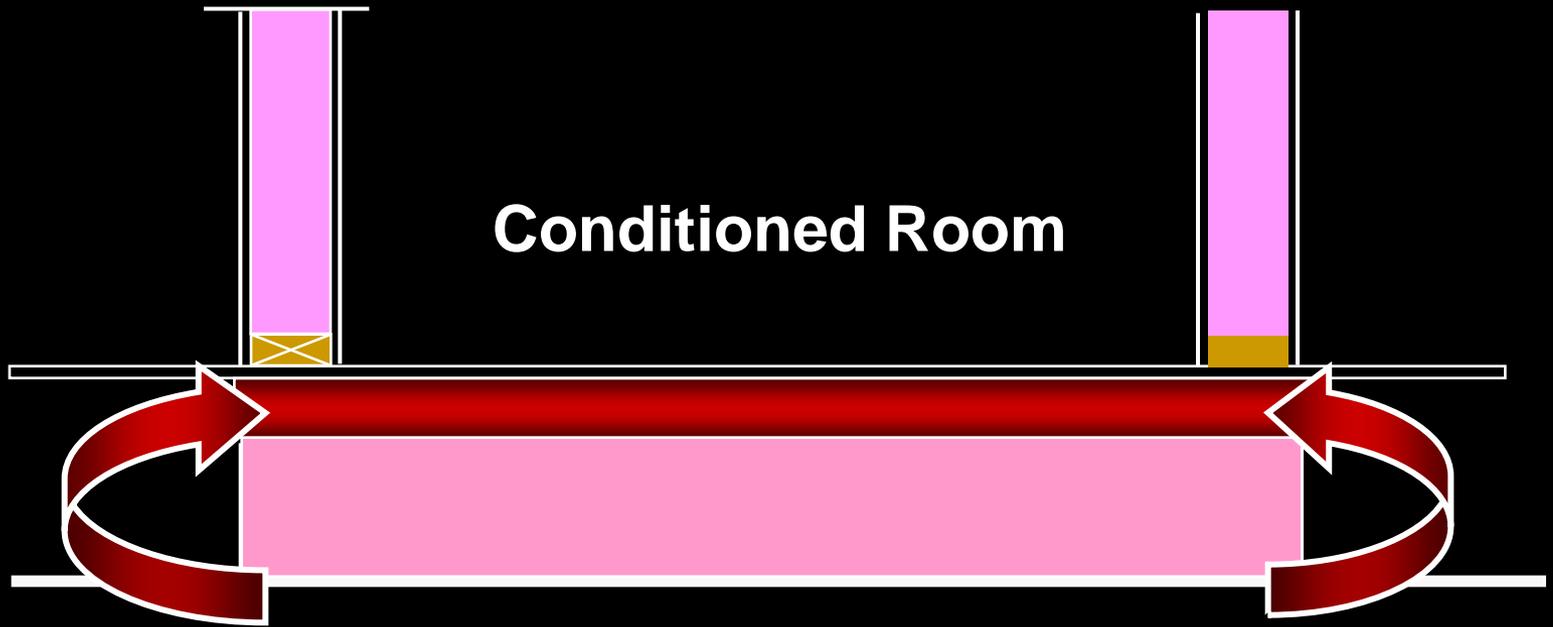
INSET STAPLING = MISALIGNMENT







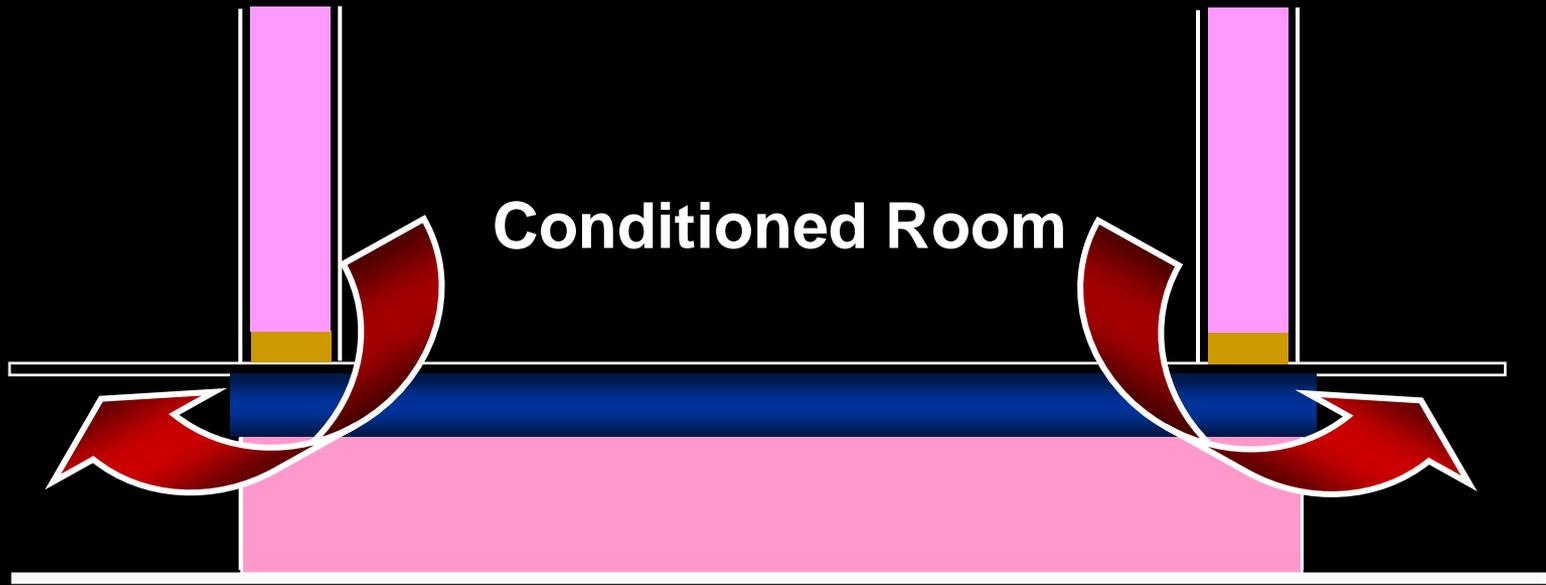
GARAGE/CANTILEVER FLOOR



Garage Ceiling

Summer

GARAGE/CANTILEVER FLOOR



Conditioned Room

Garage Ceiling

Winter

INSULATED FLOOR OVER GARAGE



Improper installation!
Insulation must be in
direct contact with the
surface it is intended to
insulate



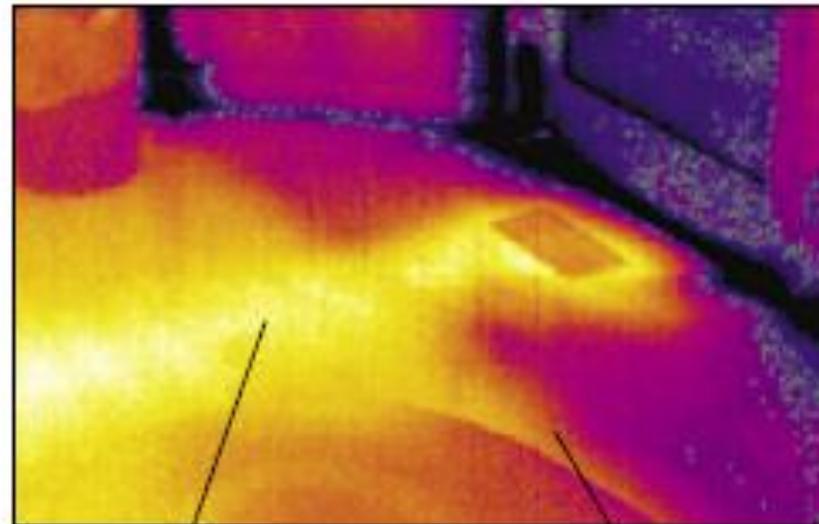


CANTILEVERED FLOOR PROBLEM



Exterior soffit appeared to be tightly fit

As the infrared photo (right) shows, this dining room cantilever was cold due to ineffective insulation and air leakage. (Infrared photo taken with blower door operating.)



Residual warmth from heat run

Cantilever boundary clearly visible

PROPER INSULATION/AIR BARRIERS



SPRAY FOAM GARAGE CEILING





Wind intrusion, what's that?

FLIR

62.9 °F

69

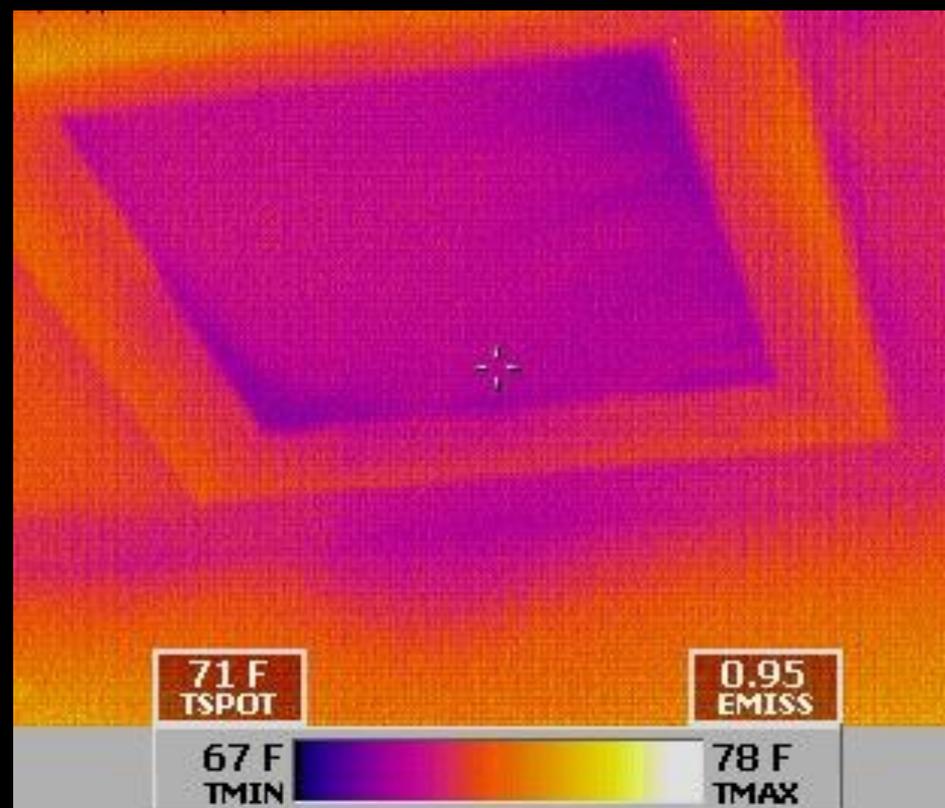
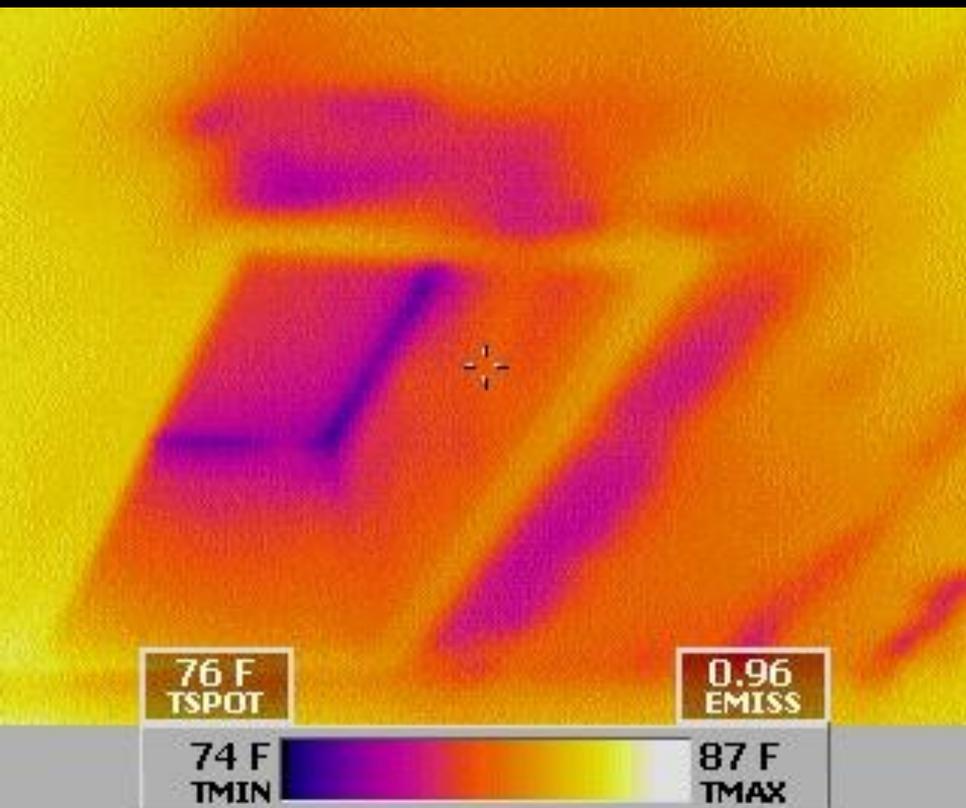
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06-12-08 8:12:50 p e=0.97

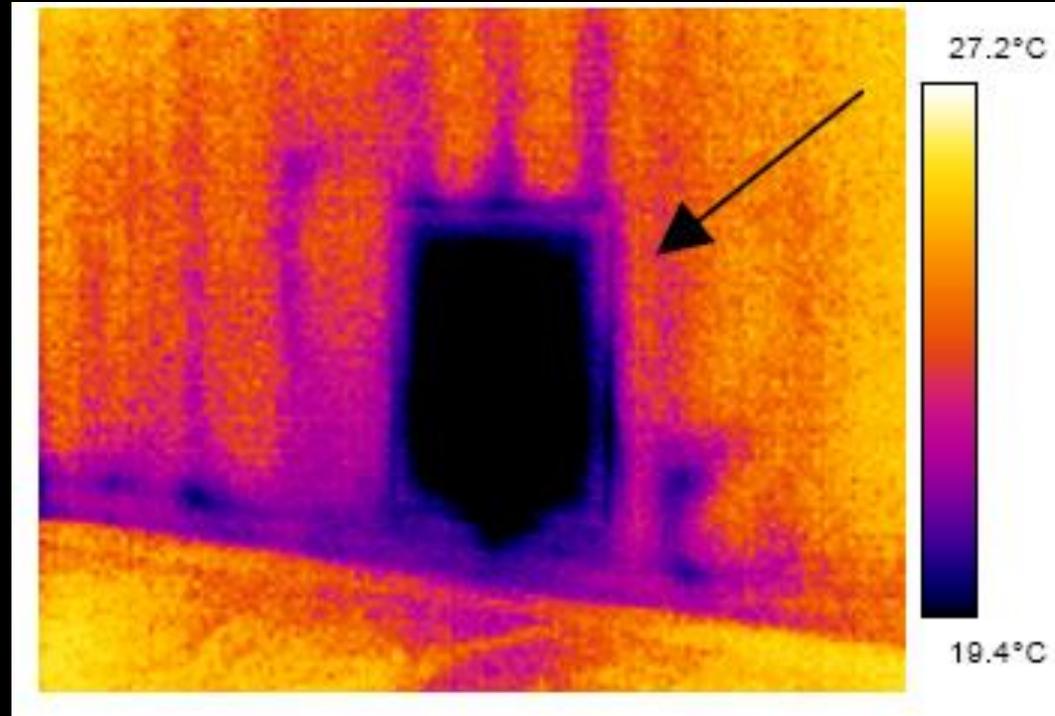
WIND BAFFLES AT EACH BAY

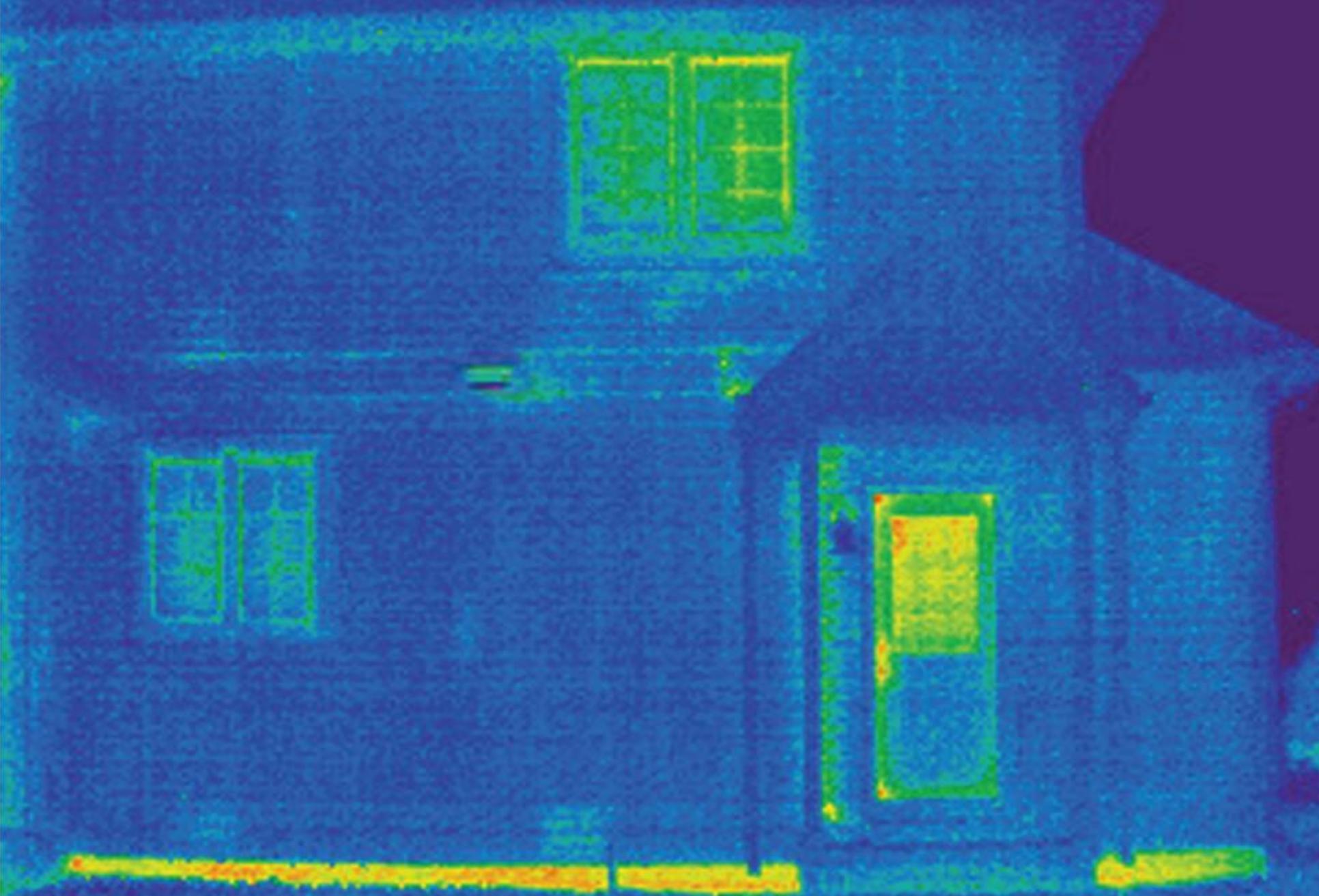


ATTIC ACCESS PANEL PROBLEM



ATTIC ACCESS DOOR





Courtesy: Tremco Barrier Solutions, Inc.

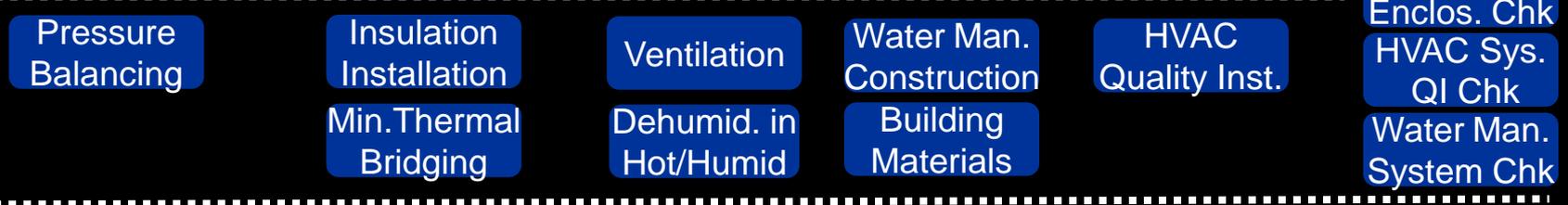
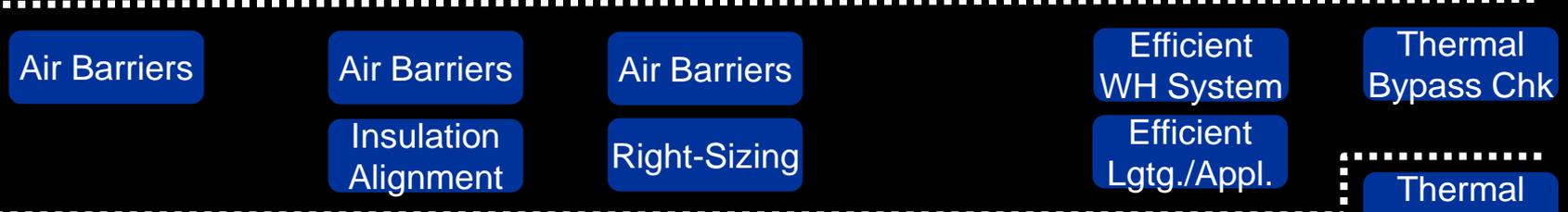
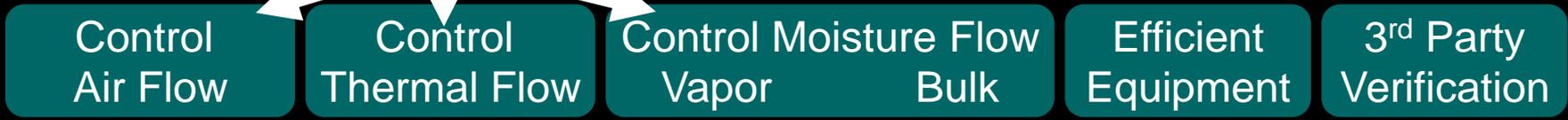
Now it's time for 2011 spec...



What value proposition will make
used and minimum code homes
even more obsolete?

Houses That Work!

Defining Truly Energy Efficient



1996
V.1



2006
V.2



2011
V.3

COMPLETING SYSTEMS: CHECKLISTS



Thermal Enclosure System:

- Air Leakage
- Insulation R-Value
- Insulation Installation
- Air Barriers
- Thermal Bridging
- High-Perf. Windows

HVAC System Quality Installation:

- Efficient Equipment
- Right-Sizing
- Air Distribution
- Refrigerant Charge
- Duct Installation
- Pressure Balancing
- Ventilation
- Filtration

Water Management System:

- Roof Membranes
- Flashing
- WRB's
- Fabric Filters
- Capillary Breaks
- Drainage Layer



TEST PLUS **INSPECT** BIG HOLES

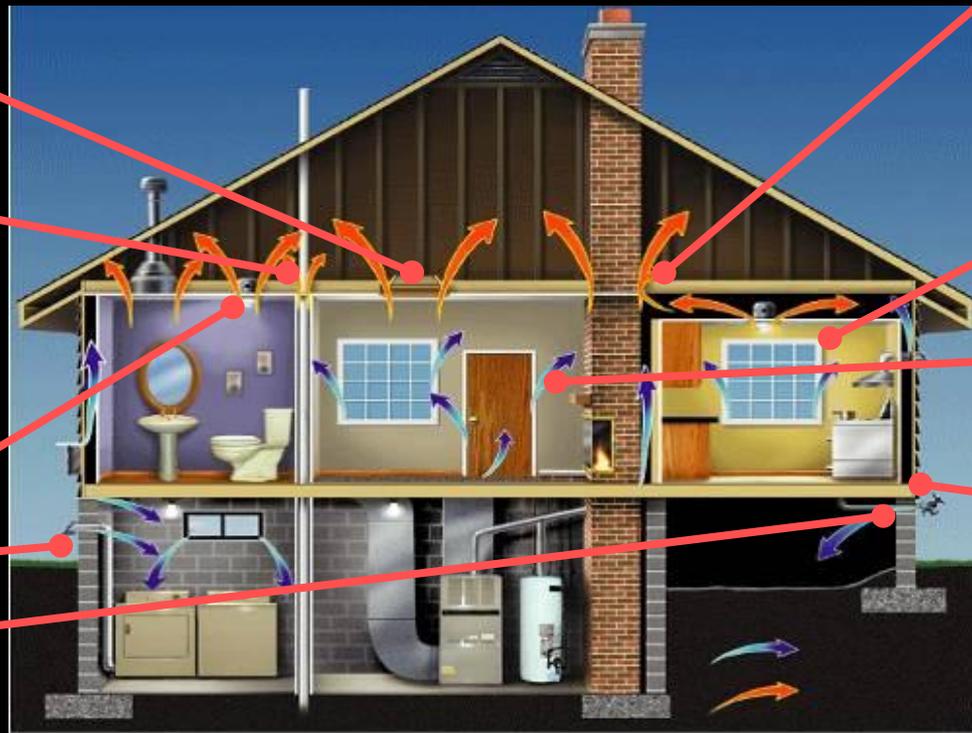


Access
Panels

Drywall at
Top Plate

Penetrations:

- Ceiling Fixtures
- Vents
- Plumbing



Chases

Cracks:

- Window Openings
- Door Openings
- Sill Plates

BYPASS AT WALL/ATTIC INTERFACE



WALL/ATTIC INTERFACE DETAIL

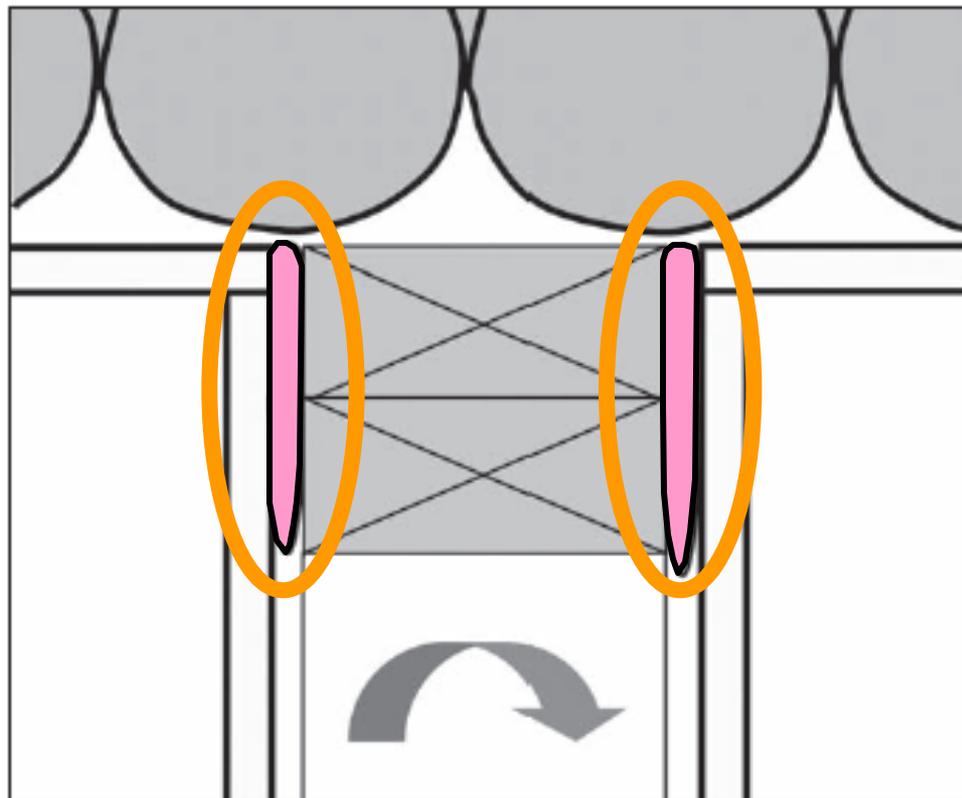


Figure 7. The spray foam is designed to be applied to the exposed edges of framing members, as at this double top plate at an interior partition, where it serves as an air-sealing gasket after the application of drywall.

← SEAL →

Gap

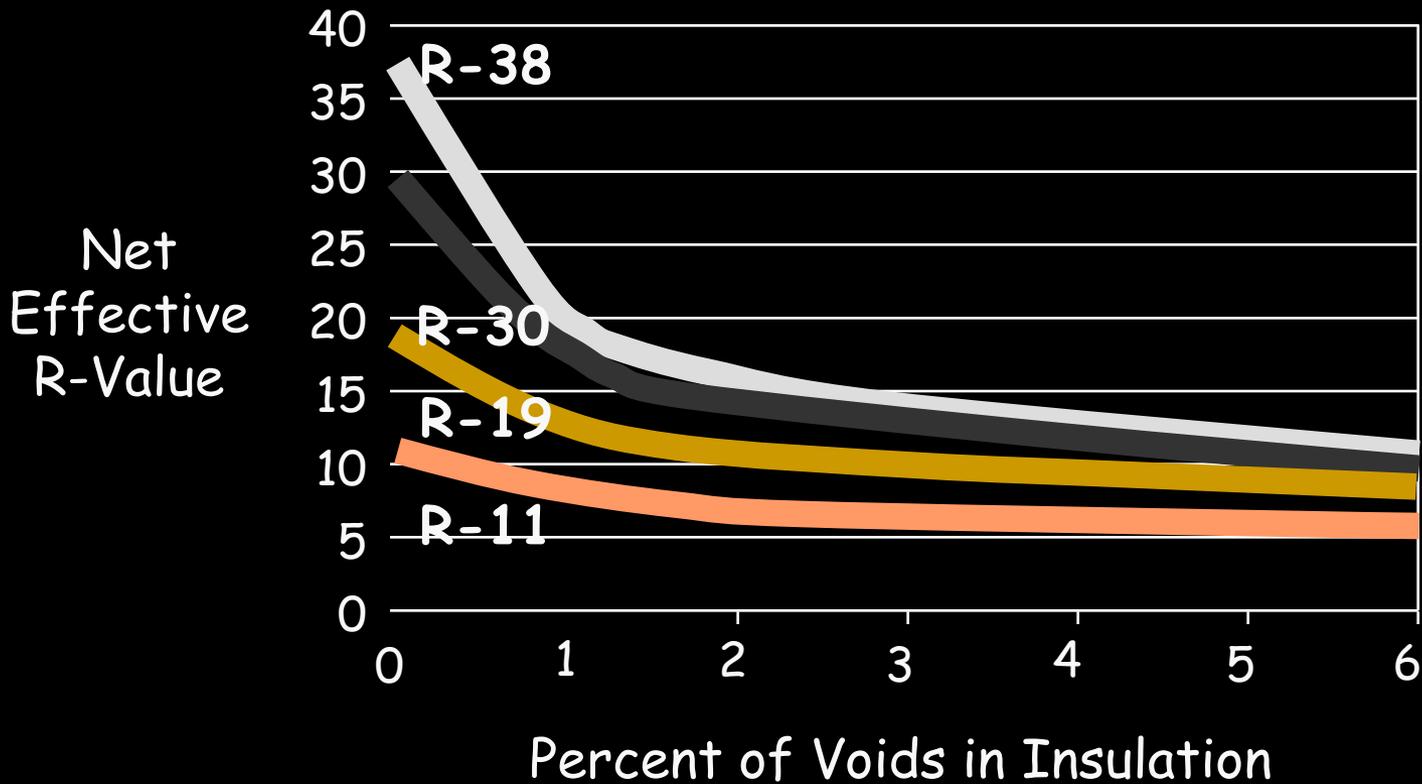
Void

Compression

Misalignment



EFFECT OF GAPS AND SPACES ON BATT INSULATION EFFECTIVENESS



Source: Insulate and Weatherize by Bruce Harley, 2002



**Will be there for the
life of the building!**

BAND JOIST INSULATION PROBLEM

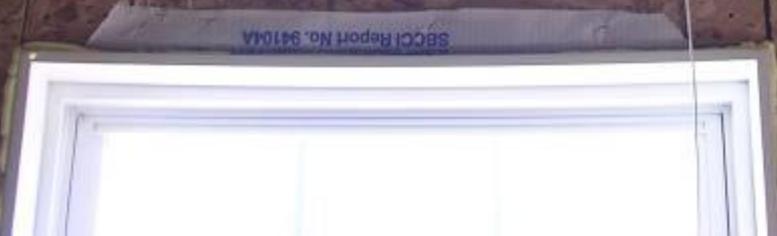


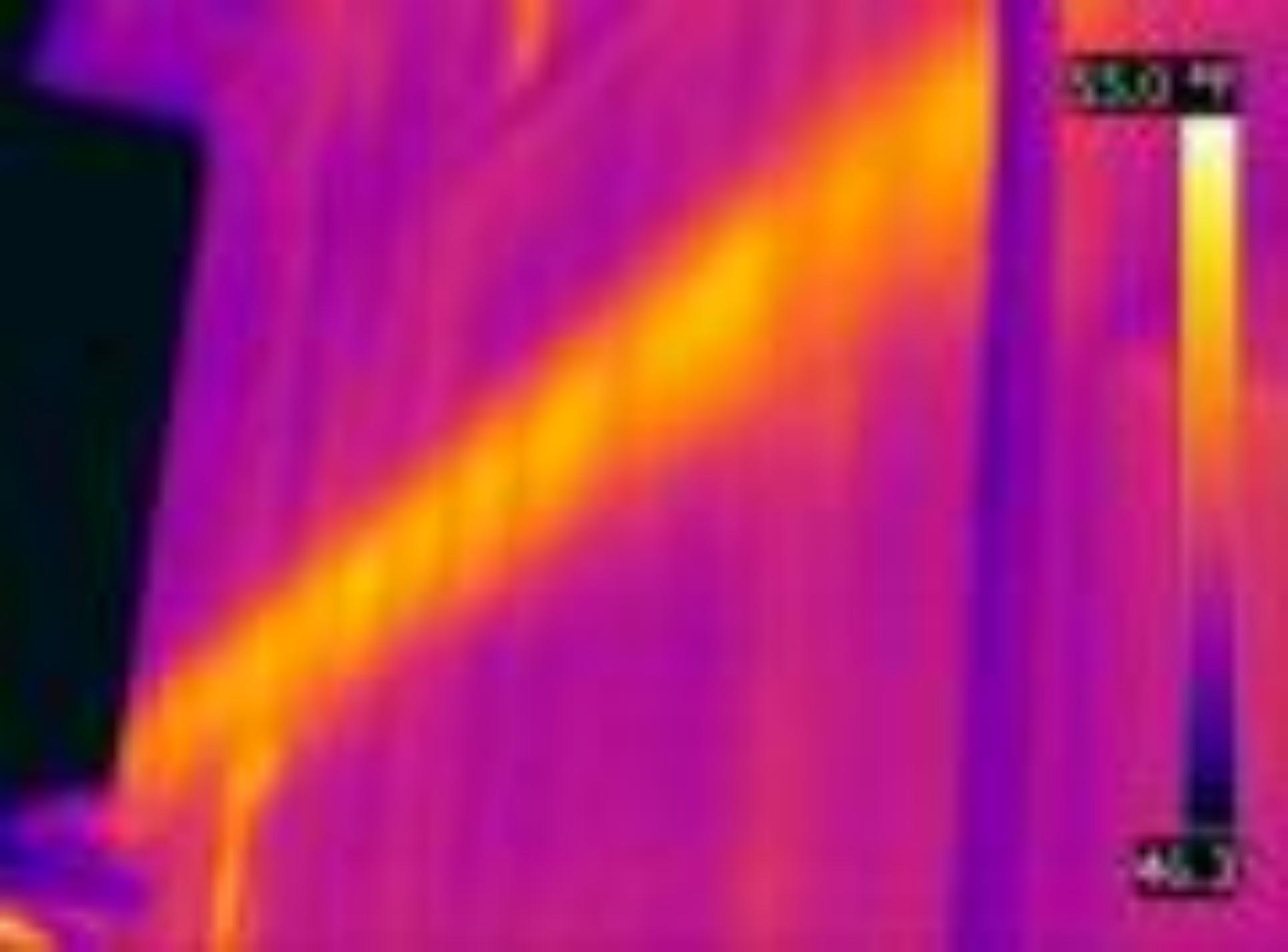
Misalignment

Gaps

Compression

Voids

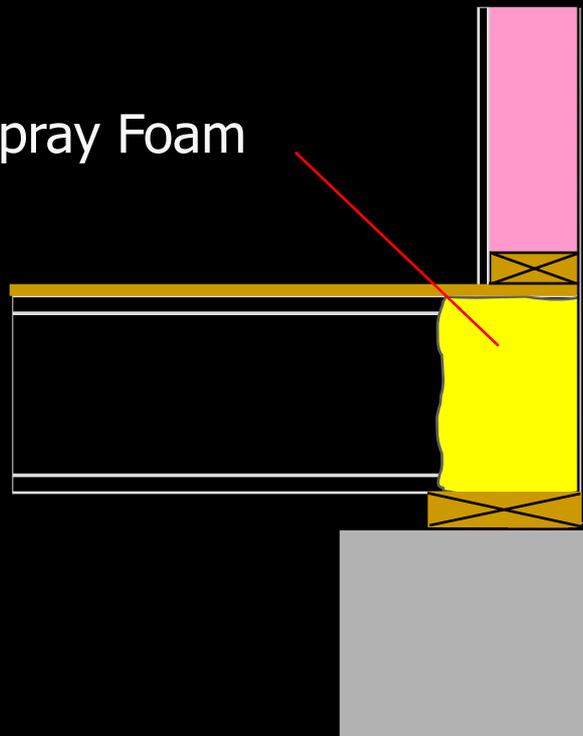




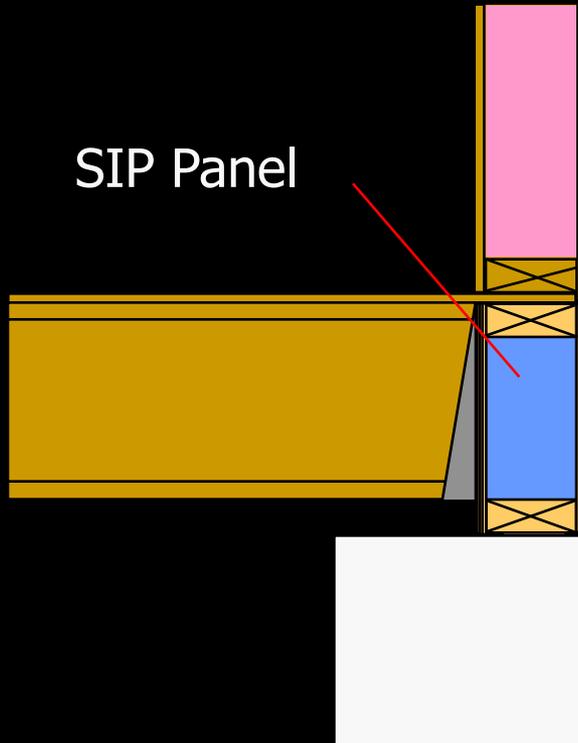


PROPER INSULATION: BAND JOISTS

Spray Foam



PROPER INSULATION: BAND JOISTS



SIP Panel

EMERCOR [Home](#) [Contact](#) [Professional Tools](#) [Estimate Request](#)

[ABOUT US](#) | [PRODUCTS](#) | [EMERCOR HOMES](#) | [WARRANTY & SERVICES](#) | [KNOWLEDGE CENTRE](#)

Floors

- ▶ **Insulated Rimboard**
 - Cantilever Soffit
 - Insulated Panels
- Exterior Walls**
- Foundation & Basement Walls**
- Cathedral Ceilings & Attics**
- Bonus Rooms**

Insulated Rimboard

The Quick & Easy Way To Insulate The Floor Perimeter

EMERCOR's Insulated Rimboard is an integral part in building a better home, delivering comfort, health and energy efficiency to homeowners. Accounting for up to 14 per cent of a homes total air infiltration, the Insulated Rimboard eliminates air leakage and enables proper workmanship during installation. Truly a time saving material, the Insulated Rimboard turns a three-step process into one easy and sure way to install insulation at the floor system.

[Advantages](#) [Brochure](#)
[Load Table](#) [Installation Guide](#)
[Specifications](#)

Advantages

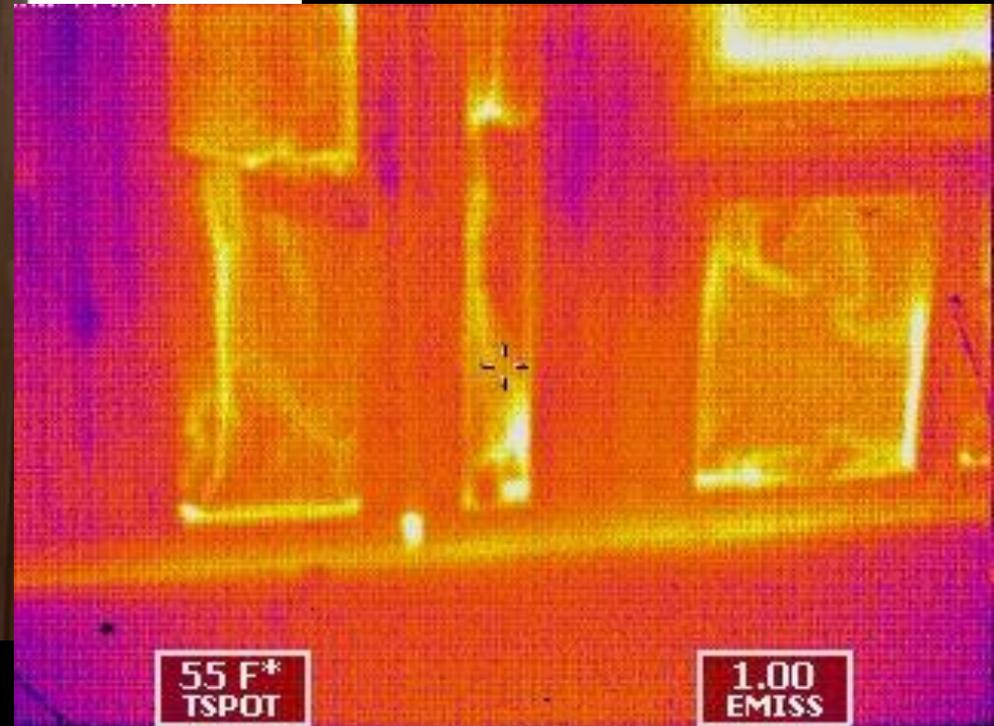
Energy Efficient - R 14:
Up to 14 per cent of total home air leakage occurs around the rim joist. EMERCOR's Insulated Rimboard decreases air leakage by ensuring that continuous R-14 insulation is placed around the floor perimeter.

Easy Installation - 20% Faster Install:
EMERCOR's Insulated Rimboard has a unique joining detail and installs up to 20 per cent faster than regular Rimboard. It also eliminates the nightmare of trying to insulate and seal around every floor joist.

Moisture Resistant - Type 1 Vapor Barrier:
EMERCOR's Insulated Rimboard has a vapor permeance of less than one, making it a Type 1 vapor barrier. This barrier prevents moisture condensation in the building envelope which leads to rot, mold and eventually structural damage.

Environmental - Reduce job site waste:
EMERCOR's Insulated Rimboard is engineered with a unique joining detail. This joining detail allows traditionally discarded pieces to be reused along the floor perimeter. EMERCOR's commitment to sustainability is driven through the [EMERGreen Program](#), with an internal focus on implementing lean in both their manufacturing and office facility.

THERMAL BRIDGING



55 F*
TSPOT

1.00
EMISS

53 F
TMIN

64 F
TMAX



ADVANCED FRAMING



Courtesy of Building Science Corp.

RIGID INSULATION SHEATHING



Courtesy of Building Science Corp.



STRUCTURAL INSULATION SHEATHING





ADVANCED WALL SYSTEMS



SIPs

ICF



**Double
Wall**

RAISED HEEL TRUSSES



Thermal Enclosure System Value Proposition



Visibly better **quality**
Superior **comfort**
Future **resale value**



COMPLETING SYSTEMS: CHECKLISTS



Thermal Enclosure System:

- Air Leakage
- Insulation R-Value
- Insulation Installation
- Air Barriers
- Thermal Bridging
- High-Perf. Windows

HVAC System Quality Installation:

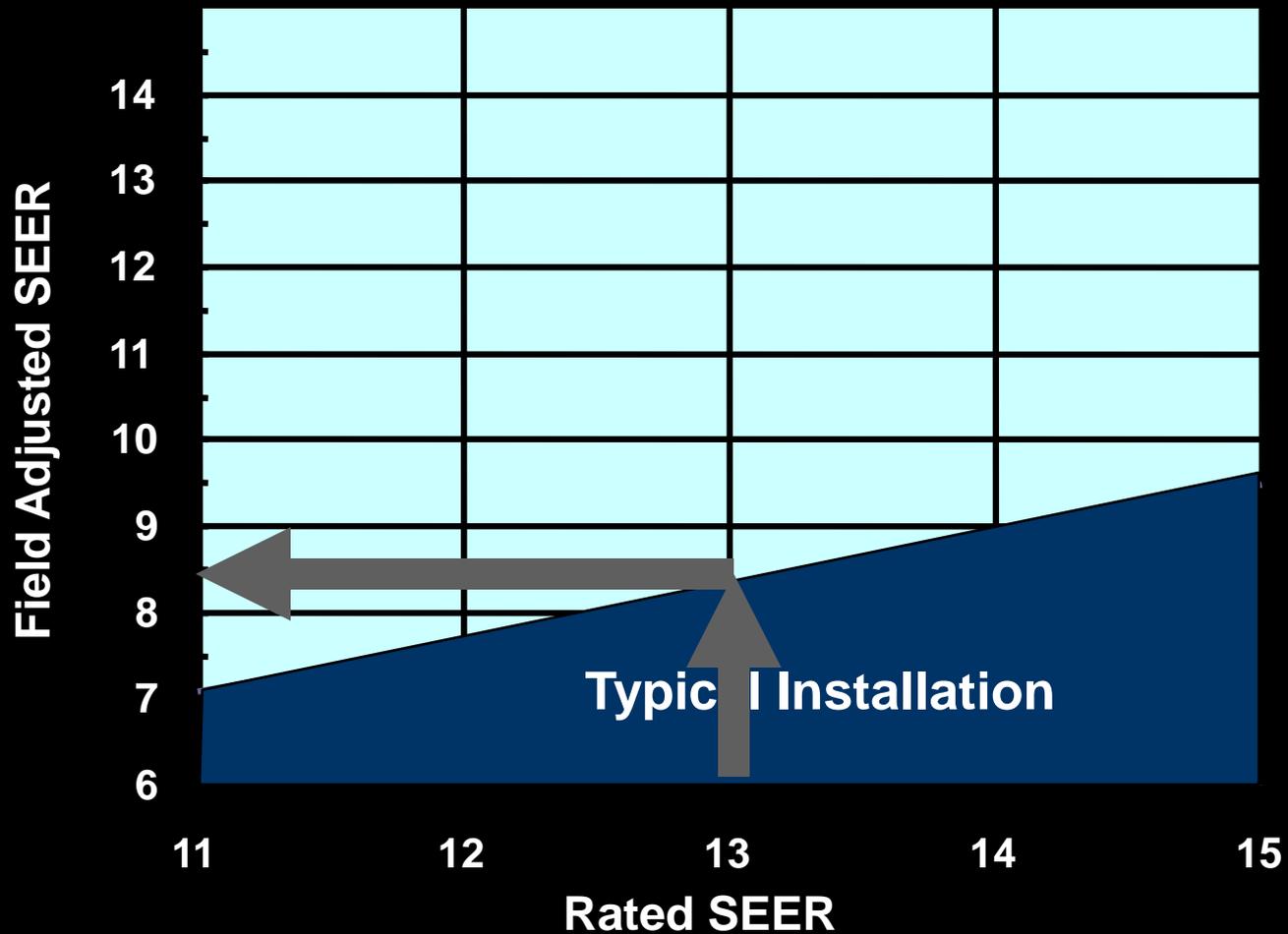
- Efficient Equipment
- Right-Sizing
- Air Distribution
- Refrigerant Charge
- Duct Installation
- Pressure Balancing
- Ventilation
- Filtration

Water Management System:

- Roof Membranes
- Flashing
- WRB's
- Fabric Filters
- Capillary Breaks
- Drainage Layer

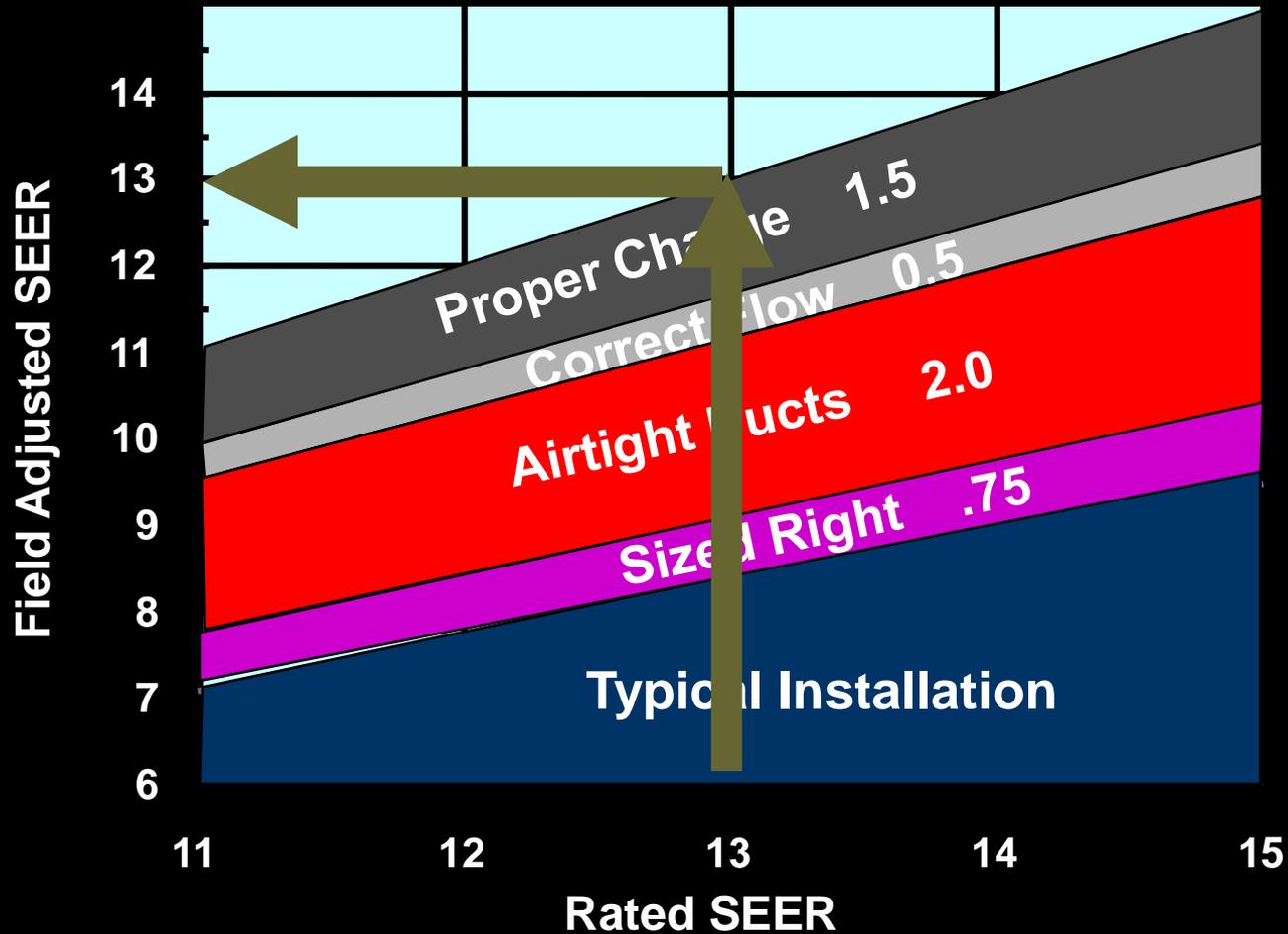


HVAC SYSTEM QUALITY INSTALLATION



Courtesy of Advanced Energy Corp.

HVAC SYSTEM QUALITY INSTALLATION



Courtesy of Advanced Energy Corp.

HVAC QUALITY INSTALLATION



HVAC Contractor	Right-Sizing	Equipment (ACCA Manual J/S) Ducts (ACCA Manual D)
	Equipment Selection	Matched Components Sensible Heat Ratio
	Air Distribution	Flow Across Coil Room-by-Room Air Flow Static Pressure
	Refrigerant Charge	Testing TXV Valve
Rater	Duct Installation	Duct Installation R-8 Ducts in Attic Leakage to Outdoors and Total Pressure Balancing



Exit grille is over here !





deflex

CLASS 1 AIR DUCT
SAME SPREAD
SMOKE DEVELOPED
LESS THAN
FEWER



Air Duct

deflex

CLASS 1 AIR DUCT
SAME SPREAD
SMOKE DEVELOPED
LESS THAN
FEWER

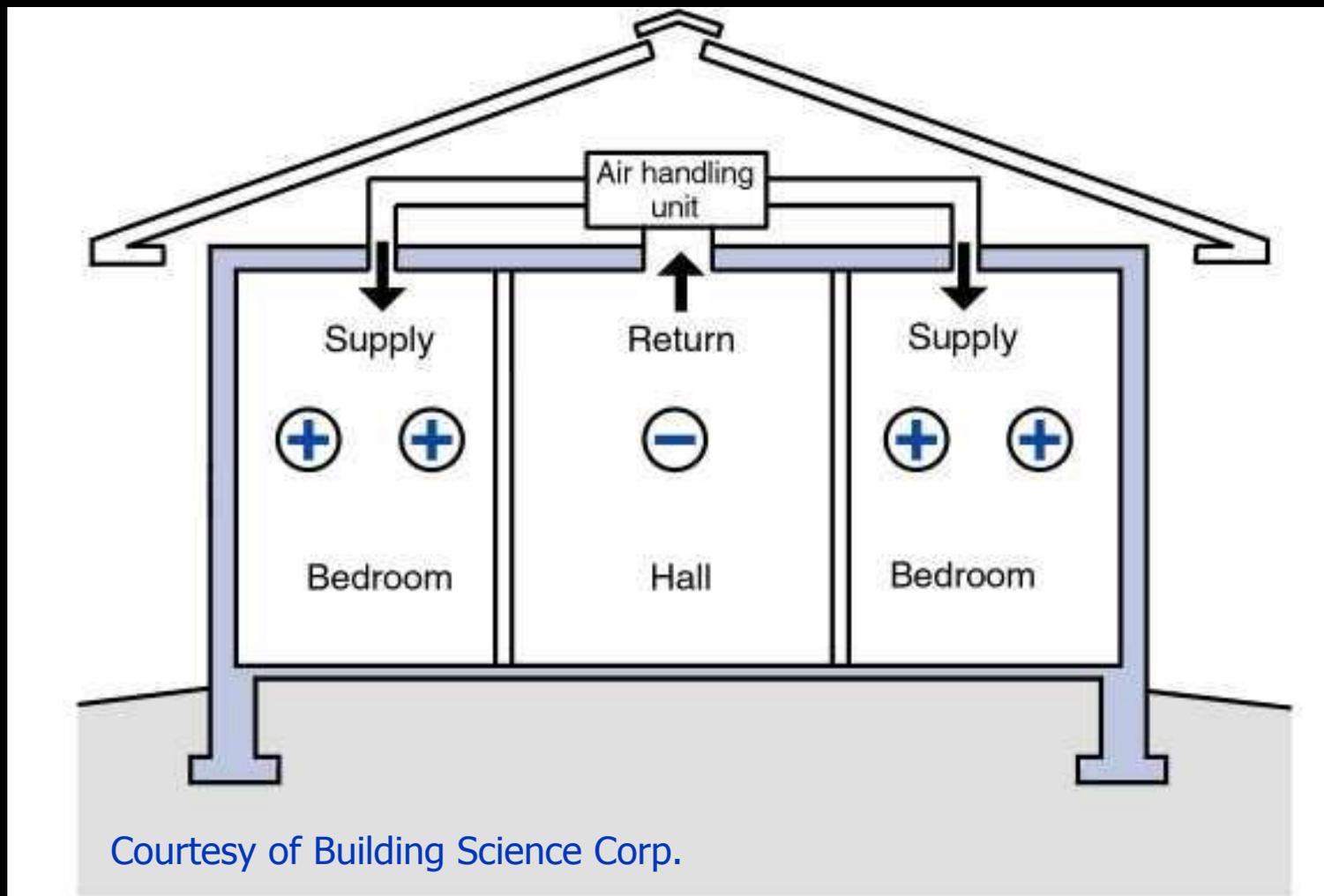
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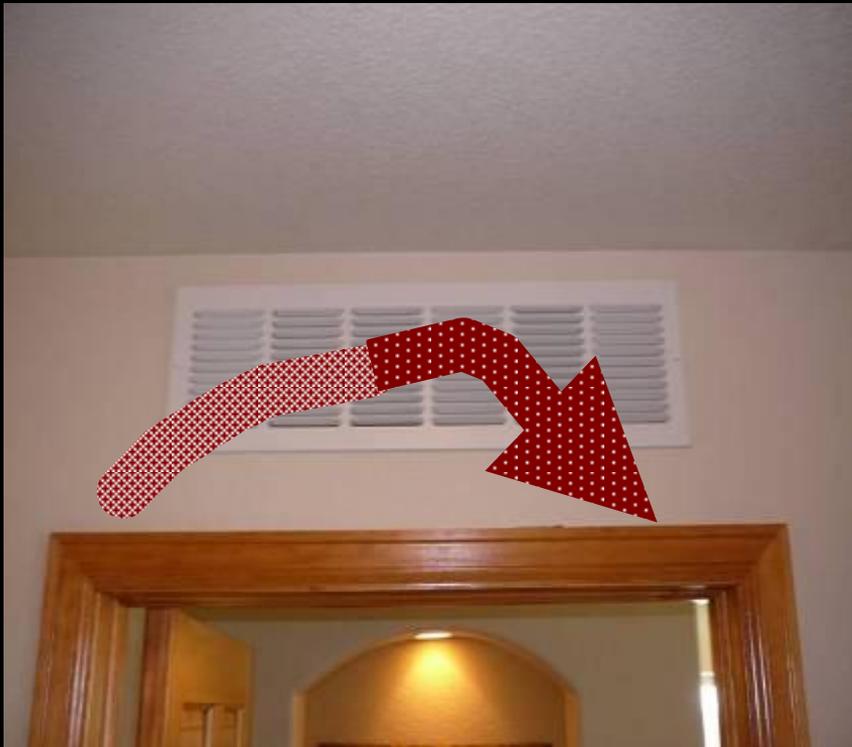
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PRESSURE BALANCING: PROBLEM



PRESSURE BALANCING: SOLUTIONS



TRANSFER GRILLE



JUMP DUCT



WHOLE-HOUSE VENTILATION



CONTINUOUS EXHAUST



FRESH AIR
DAMPER



DUCTED FRESH AIR SUPPLY

WHOLE-HOUSE VENTILATION



WHOLE-HOUSE VENTILATION



ERV AND HRV

SPOT VENTILATION



HVAC System Quality Installation Value Proposition



- **Engineered Comfort**
 - Thermal Control
 - Humidity Control
 - Noise Control
- **Assured Fresh Air**
- **Filtration that Works**

COMPLETING SYSTEMS: CHECKLISTS



Thermal Enclosure System:

- *Air Leakage*
- *Insulation R-Value*
- *Insulation Installation*
- *Air Barriers*
- *Thermal Bridging*
- *High-Perf. Windows*

HVAC System Quality Installation:

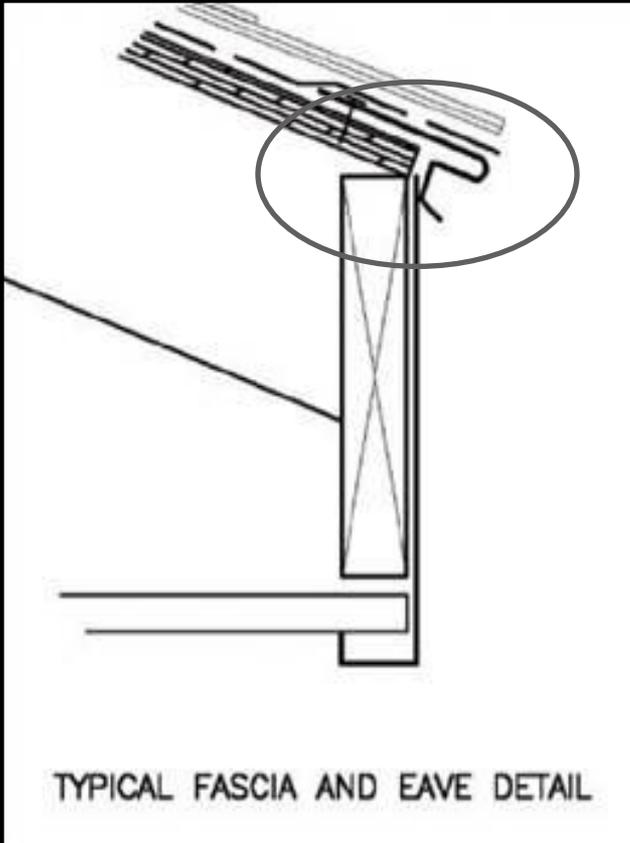
- *Efficient Equipment*
- *Right-Sizing*
- *Air Distribution*
- *Refrigerant Charge*
- *Duct Installation*
- *Pressure Balancing*
- *Ventilation*
- *Filtration*

Water Management System:

- **Roof Membranes**
- **Flashing**
- **WRB's**
- **Fabric Filters**
- **Capillary Breaks**
- **Drainage Layer**



WATER MANAGED ROOFS

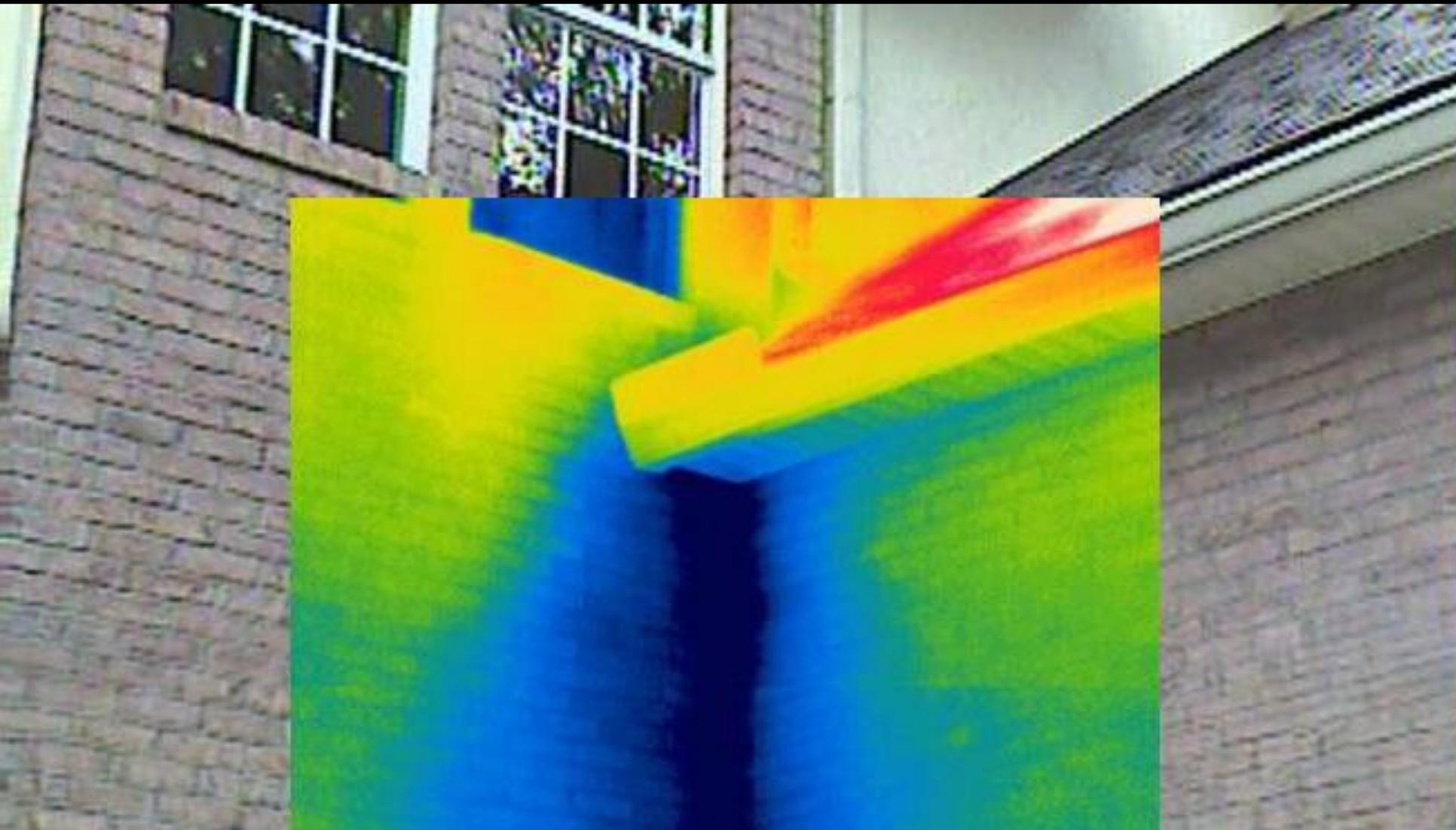


HEAVY BITUMINOUS MEMBRANE AT EAVES AND VALLEYS



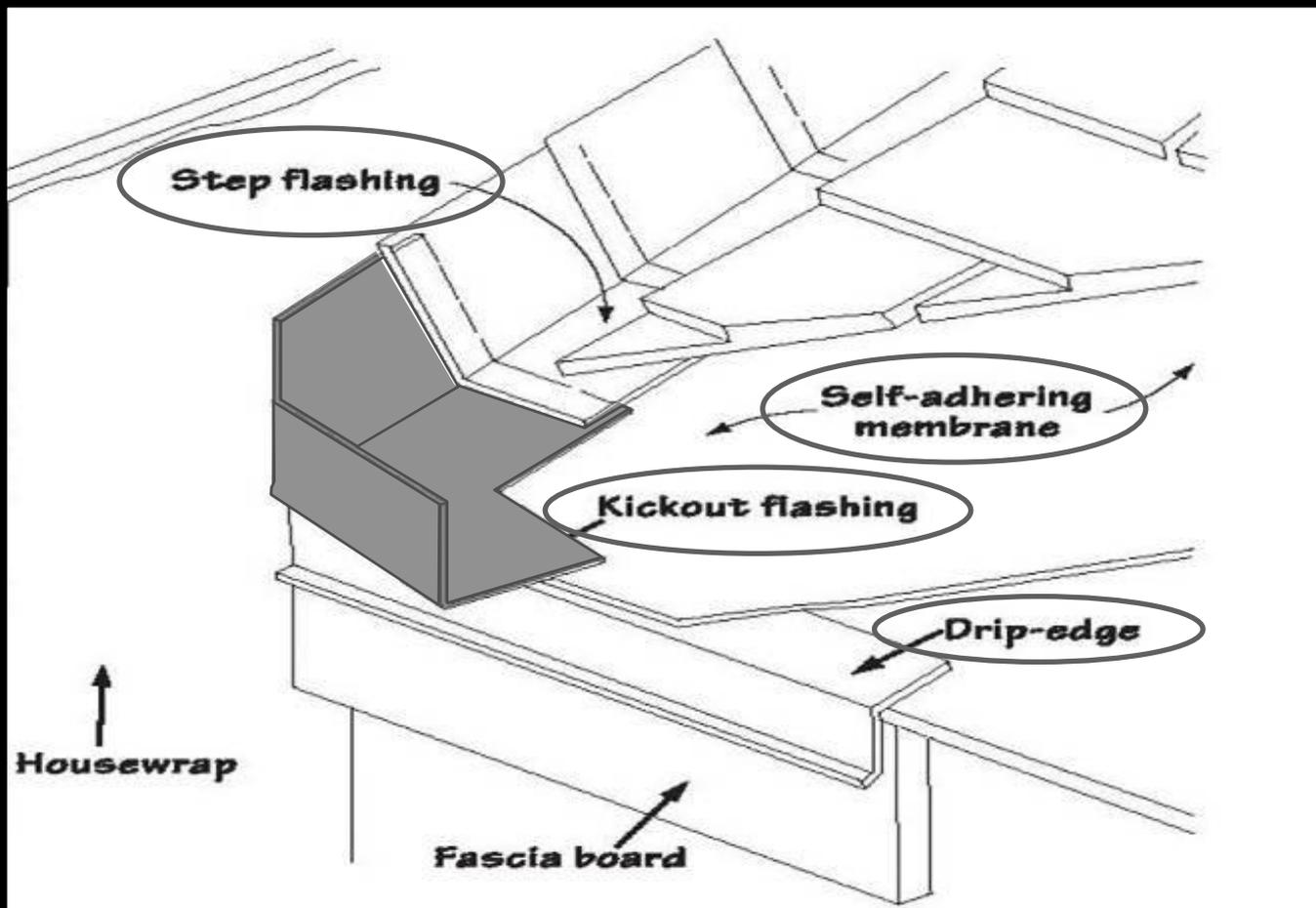


WATER MANAGED ROOFS



WATER MANAGED ROOFS

ROOF FLASHING DETAILS



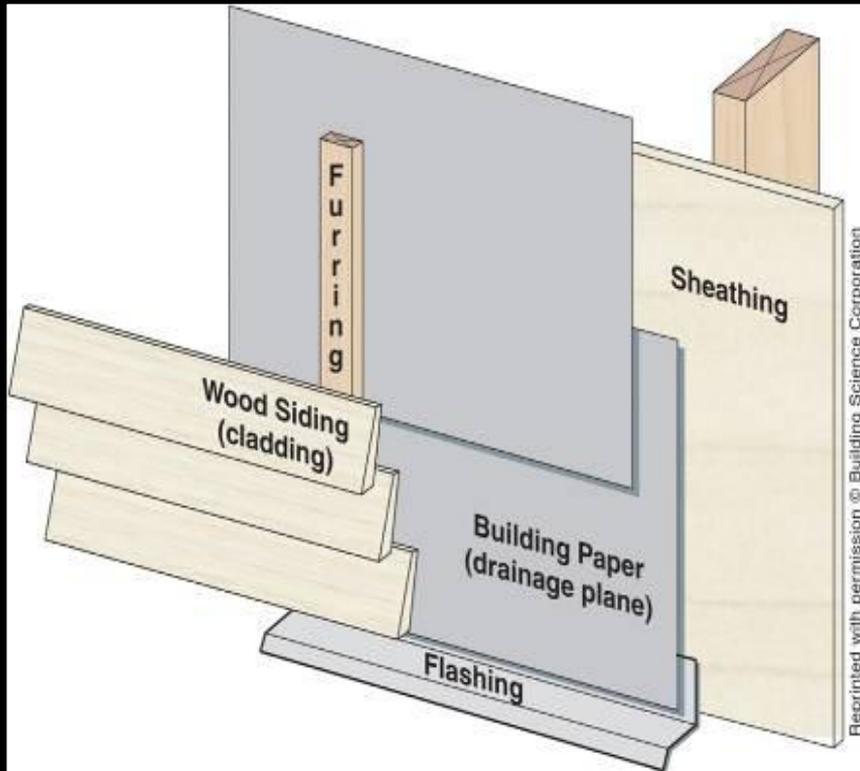
WATER MANAGED WALL PROBLEM



WATER MANAGED WALLS



WATER MANAGED WALLS

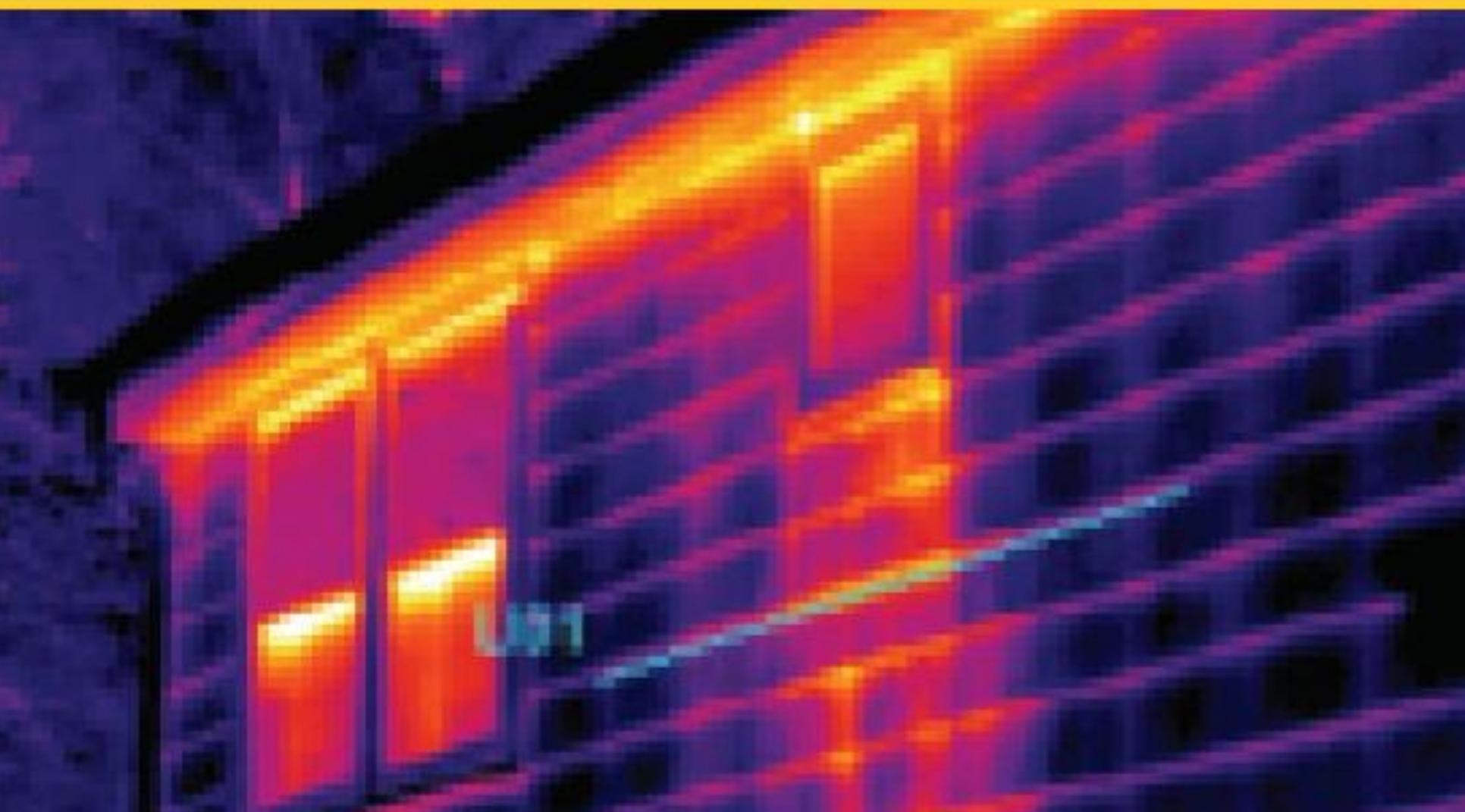


DRAINAGE PLANE DESIGN

WINDOW FLASHING PROBLEM



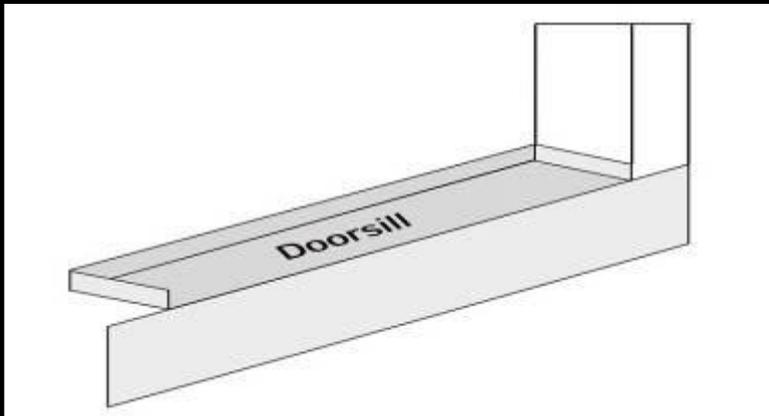
WINDOW FLASHING PROBLEM REVEALED



WATER MANAGED WALLS



WINDOW/DOOR PAN FLASHING



BEST PRACTICE

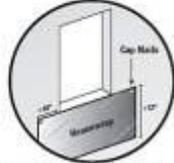


WINDOW FLASHING



Building Tips
Example of window flashing details for home with basement and plywood or OSB wall sheathing.

STEP 1 • 3" FILLER/SPACER (OR 1/2" GYPSUM BOARD) INSTALLED



- Apply at least a 1/2" lip, or space, of building paper or basement paper just below the windowsill.
- If the window sill is close to the sill plate, the space can extend all the way to the sill plate.
- The space should extend at least 18" past the sides of the window opening, or to the first stud in open wall construction.
- Attach only the spacer's top edge with cap nails.

STEP 1 • 3" FILLER/SPACER HAS BEEN INSTALLED



- Cut the basement paper covering the rough opening in the shape of a modified "T".
- Fold the side and bottom flaps into the window opening and attach.
- Above the window opening, cut a lead flap and flip up to expose sheathing, and locate tape in place over the way.

STEP 2 • SILL FLASHING



- Install self-adhesive flashing to the sill, ensuring that flashing extends up joints at least 6".
- Use manufacturer product contact with two non-adhesive strips over the adhesive. Remove the first strip to expose half the adhesive and apply this next to the sill. Begin peeling in the middle of the sill and work towards the sides. Remove the second strip to expose the adhesive that will be used to apply the flashing below the windows to the outside wall.
- Tape down the bottom corners of the flashing.

STEP 3 • JAMB CALLING



- Crank the outside edges of the head and side jamba.
- Do not crank across the sill.
- Insulate the window using weather-resistant walls and following manufacturer's specifications.

Building America Best Practices Series Volume 2 - Builders and Design Handbook for Improving the Home Efficiency, Comfort, and Durability in the Hot Dry and Mixed Dry Climate | Version 1.0/2005 • TR2-4



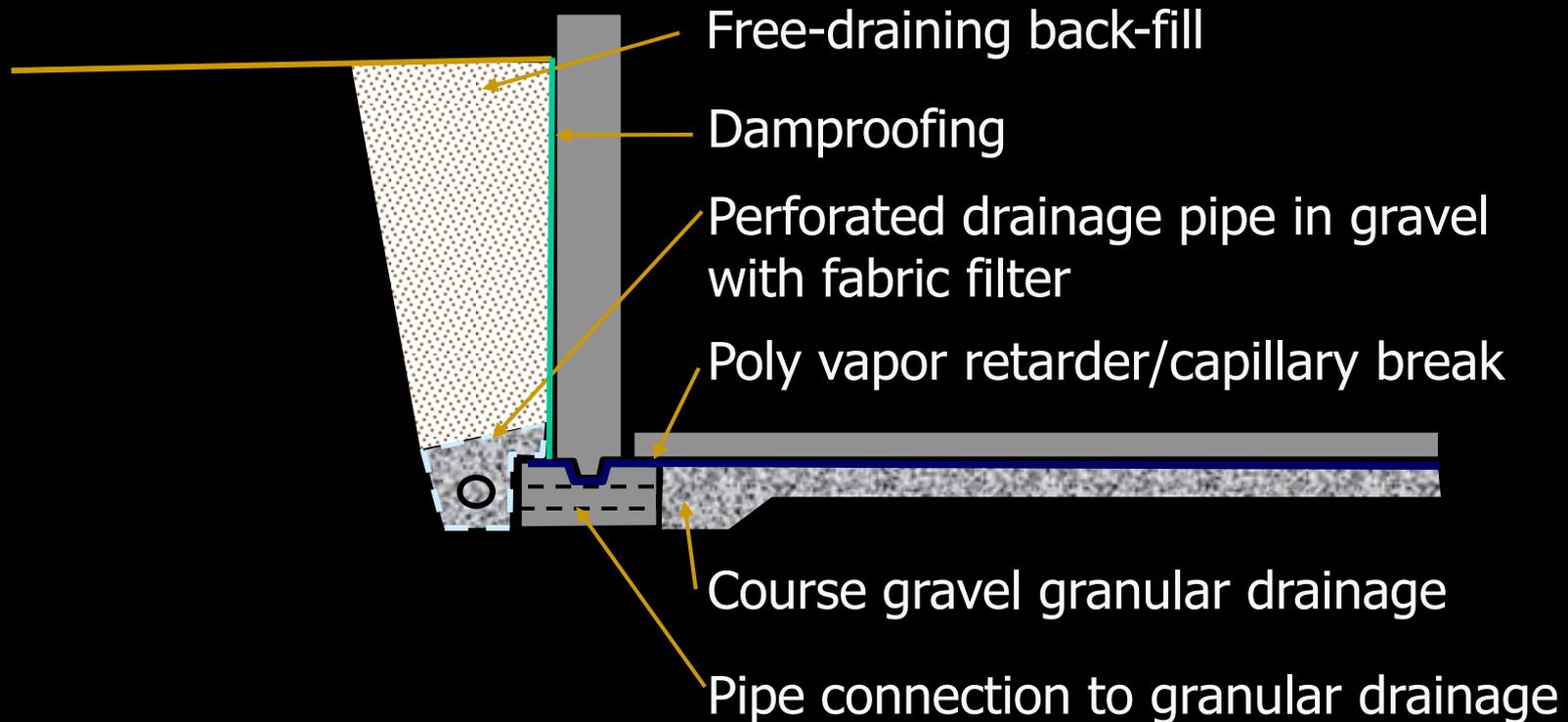
WATER MANAGED WALLS



WINDOW/DOOR PAN FLASHING



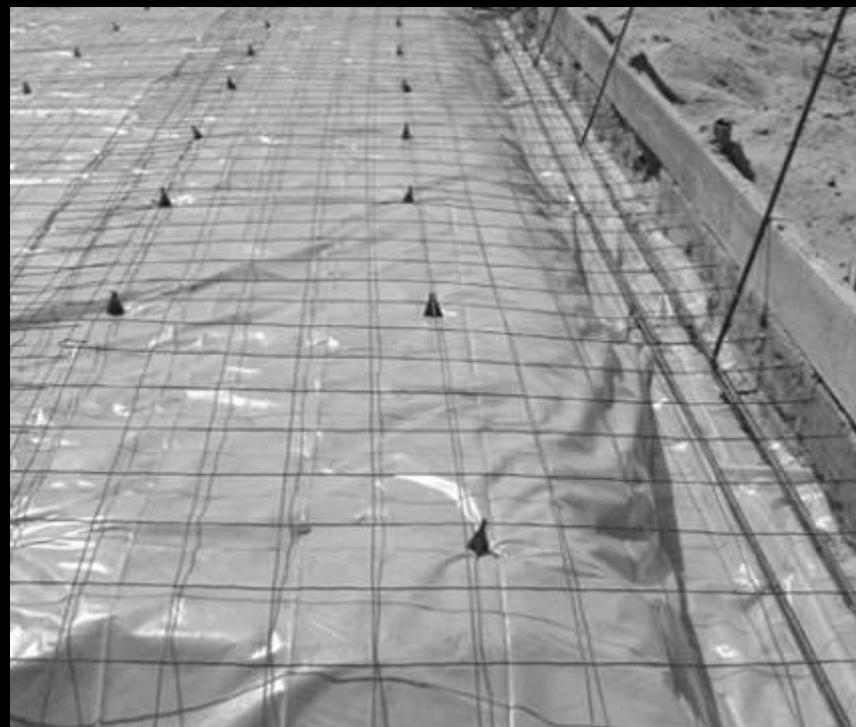
WATER MANAGED FOUNDATION





CAPILLARY BREAKS

UNVENTED CRAWLSPACE



POLY UNDER SLAB VAPOR AND RADON BARRIER

Water Management System Value Proposition



Better protection for largest investment

Lower maintenance

Healthier home



COMPLETE SYSTEMS: **ARE THEY BETTER FOR BUSINESS?**



Thermal Enclosure System:

- Air Leakage
- Insulation R-Value
- Insulation Installation
- Air Barriers
- Thermal Bridging
- High-Perf. Windows

HVAC System Quality Installation:

- Efficient Equipment
- Right-Sizing
- Air Distribution
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- Roof Membranes
- Flashing
- WRB's
- Fabric Filters
- Capillary Breaks
- Drainage Layer



Answer...



Yes...

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

But...better is not good enough!



You have to **back up**
and **sell** compelling
value propositions.

America's Best Warranty™



**Award-Winning Hyundai
Quality Backed By
America's Best Warranty™**

**10-Year/100,000-Mile
Powertrain Protection**

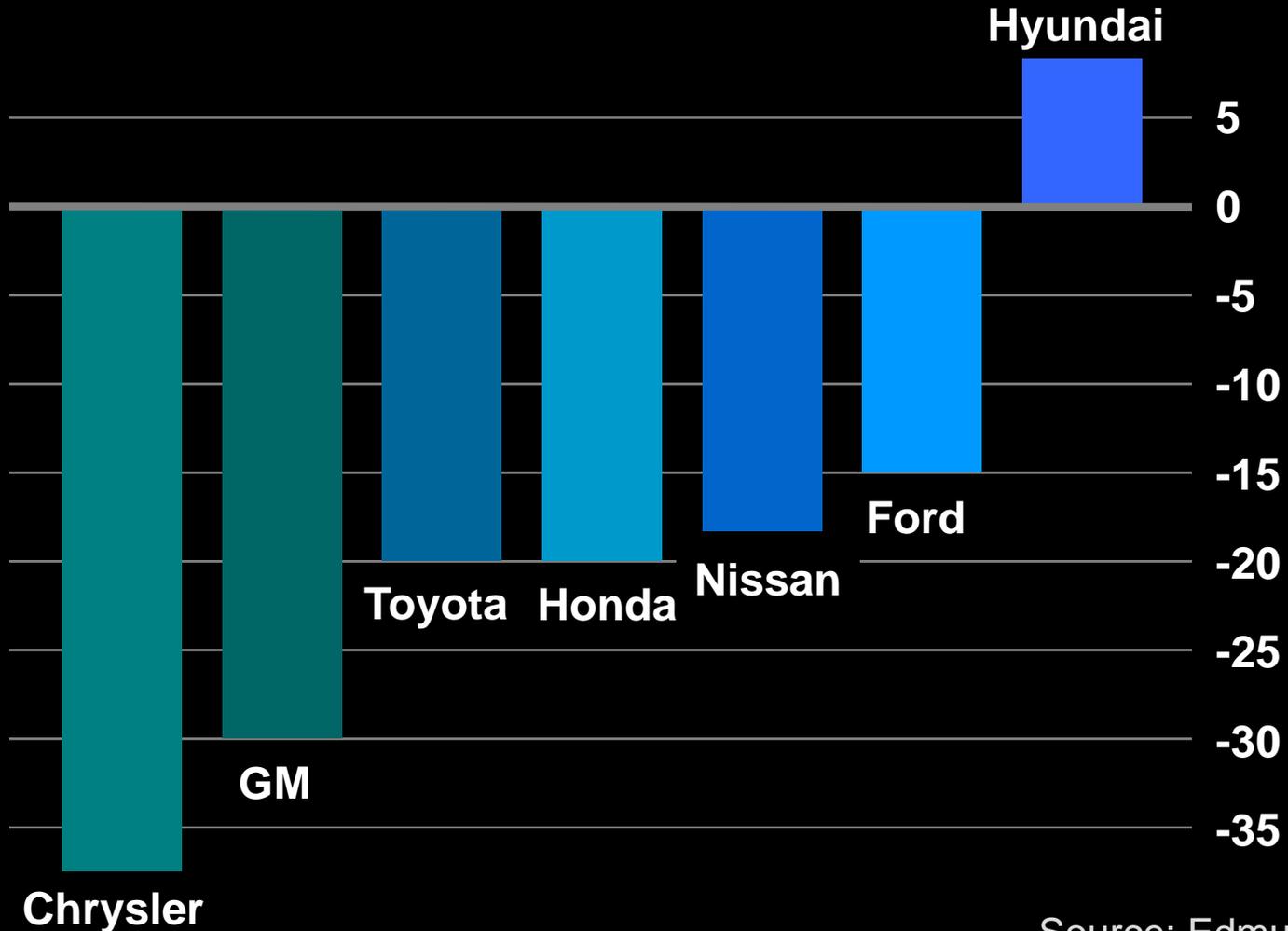
**5-Year/60,000-Mile
Bumper-to-Bumper Coverage**

**5-Year/Unlimited Miles
24-hr. Roadside Assistance**

*See dealer for LIMITED WARRANTY details.
America's Best Warranty™, the Hyundai Advantage®

Back it Up Yields Results

% Sales Changes 2008-2009



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**

A CRAZY IDEA?

ENERGY STAR V3 30-YR. 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*

Why * in Warranty...

- Specified operating conditions
- Specified weather assumptions
- Specified number of occupants
- Specified limitations
- **Requirements for warranty service!!!**

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:



Thermal Enclosure

- Code or Better Insulation R-Value
- RESNET Grade 1 Insulation Installation
- Air-Tight Construction
- Comprehensive Air Barrier Assemblies
- Reduced Thermal Bridging
- High-Performance Windows

HVAC System

- Efficient Heating and Cooling Equipment
- Engineered Sizing of Equipment and Ducts
- Air-Tight Ducts
- Verified Proper Duct Installation
- Verified Proper Refrigerant Charge
- Whole-House Ventilation
- Spot Ventilation
- MERV 6 Filter

Water Protection

- Heavy Membranes at Valleys and Eaves
- Complete Roof Flashing Details
- Complete Wall Drainage Plane
- Pan Flashing at all Doors and Windows
- Fabric Filter at Foundation Drain
- Capillary Break Under Foundation

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 & Location Trump**

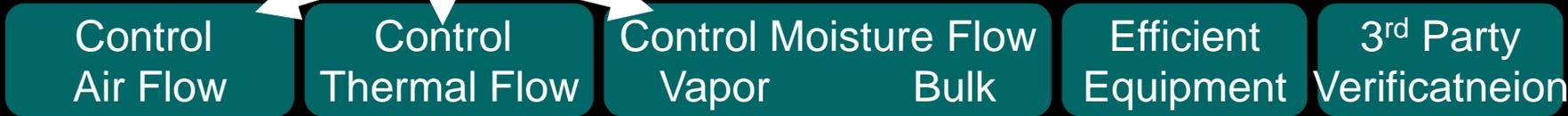




ENERGY STAR Qualified Homes 2011 Specification:

Where Go From Here?

Where to Go From Here?



Air Sealing

Air Sealing

Air Sealing

Efficient HVAC

Inspect Features

Tight Ducts

Tight Ducts

Tight Ducts

Test Infiltration

Insulation R-Value

Low-E Windows

Test Duct Leakage

Air Barriers

Air Barriers

Air Barriers

Efficient WH System

Thermal Bypass Chk

Insulation Alignment

Right-Sizing

Efficient Lgtg./Appl.

Thermal Enclos. Chk

Pressure Balancing

Insulation Installation

Ventilation

Water Man. Construction

HVAC Quality Inst.

HVAC Sys. QI Chk

Min. Thermal Bridging

Dehumid. in Hot/Humid

Water Man. System Chk



1996 V.1

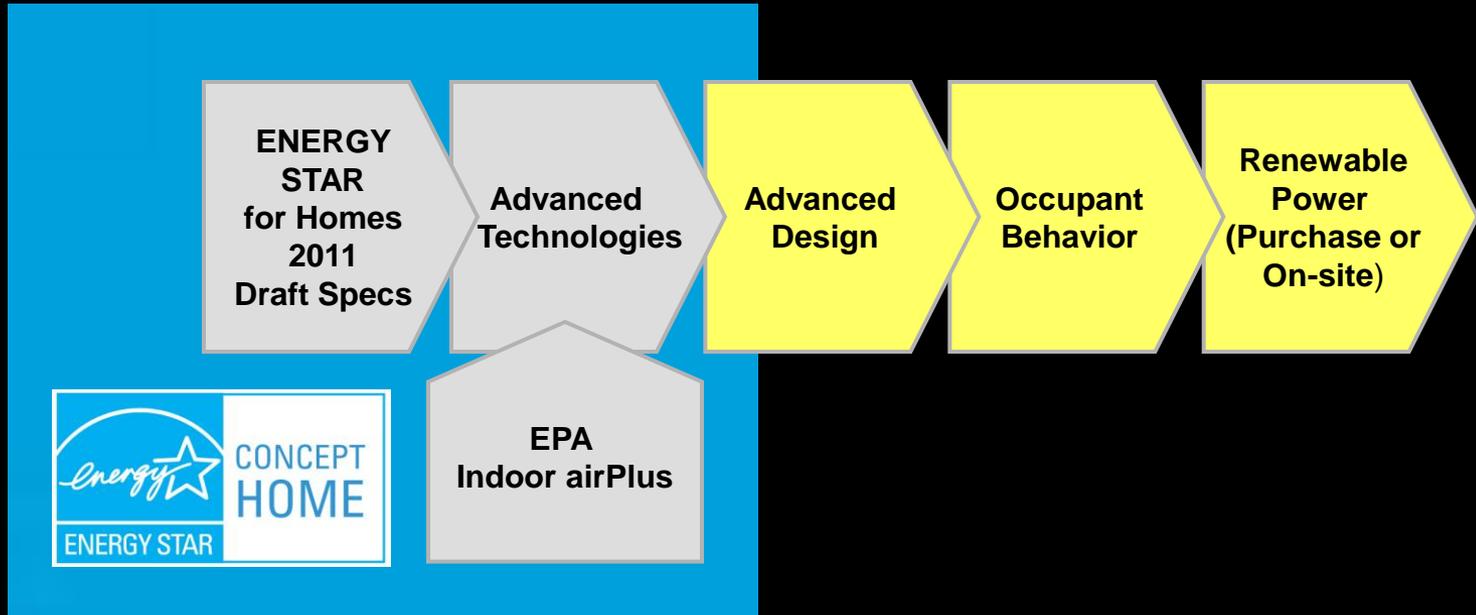


2006 V.2



2011 V.3

PATH TO NO/LOW CARBON



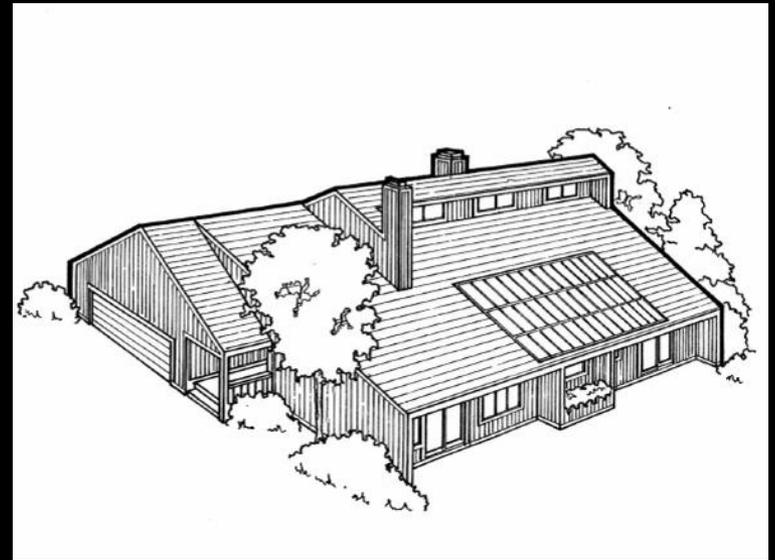
LOW/NO CARBON HOME BUSINESS CASE



Net-Zero Ready

~30% - 50% Less

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



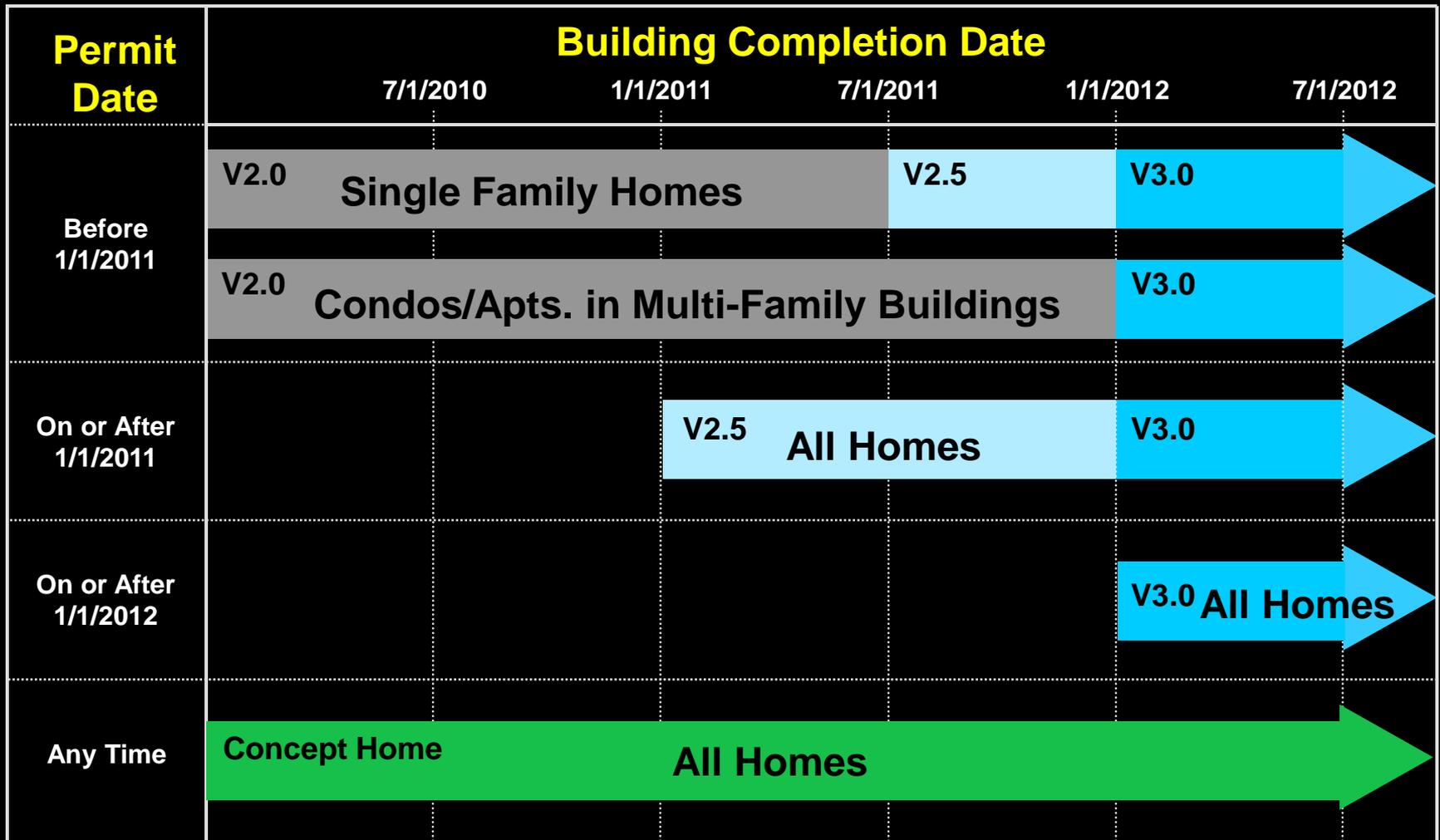
~70% Less Call-Backs

ENERGY STAR NEW SPEC TRANSITION



Version	Description
2.0	2006 Guidelines
2.5	Version 3 Reference Design with Air Barriers and Air Sealing Checklist Items
3.0	Version 3 Reference Design with All Checklists
4.0	ENERGY STAR Concept Home (Version 3 + EPA IAP + Adv. Techs.)

ENERGY STAR New Homes Implementation Schedule



Version 2.0
Version 2.5

Version 3.0
Concept Home

2011 SPEC Milestones



- Issue New Label
- Field Guides
- Nationwide Training
- New QA Requirements Builder and Rater
- Link with new RESNET QA Protocol
- Appraisal, Mortgage, Insurance Letter

ENERGY STAR QUALIFIED HOMES 2011 SPEC/CONCEPT HOME SUMMARY



- Takes Housing to Next Level
- Used/Min. Code Homes Can't Compete...
If Builders Back Up and Sell Value
- Please Joins Us Working with the
Nation's Home Builders

ENERGY STAR 2011 SPEC/CONCEPT HOME 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>