

# Energy Star Home Tour

## Air Sealing and Insulation That Works

Don't pay to heat and cool the outdoors! Air leakage and improperly installed insulation can waste 20 percent or more of the energy you pay to heat and cool your home. Typical homes have so many leaks, it's like having a window open all the time, winter and summer.



**Diagram of Leaky Home:** In typical homes, air leaks are often found at holes and penetrations for plumbing, wiring, lighting, and ductwork.



**Infrared Image of House Exterior:** In this infrared photo of a typical house, the yellow shows excessive heat loss in winter because the house was not built with the comprehensive air barriers and proper insulation details found in ENERGY STAR homes.



**MOLD:** When warm air leaks into construction assemblies, it can come in contact with cooler surfaces where condensation can occur. The buildup of moisture encourages mold growth, ruins insulation, and even compromises the structural elements of the home.

**Mold Behind Wall:** Dark = Mold

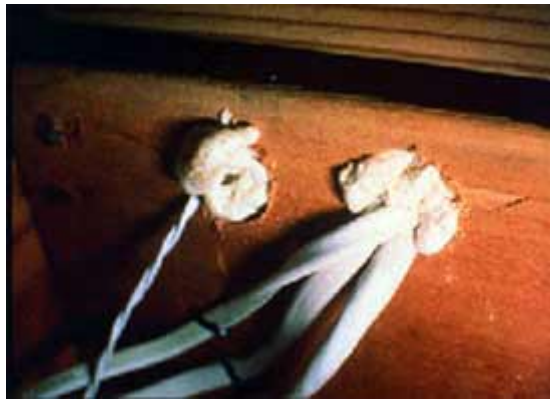
Photo courtesy of Terry Brennan.



**Mold Behind Wall:** Dark = Mold

### **Behind the walls of an ENERGY STAR qualified home...**

Well-sealed and properly insulated walls, ceiling, and floors help maintain even temperatures throughout the house and save you up to 20 percent on heating and cooling costs. A tighter home also reduces the amount of humidity, dust, pollen, pests, and noise that can come inside.



**Wires in Wall:** Holes for wiring are sealed with expanding foam.



**A Person Caulking:** Caulking is an air sealing solution.



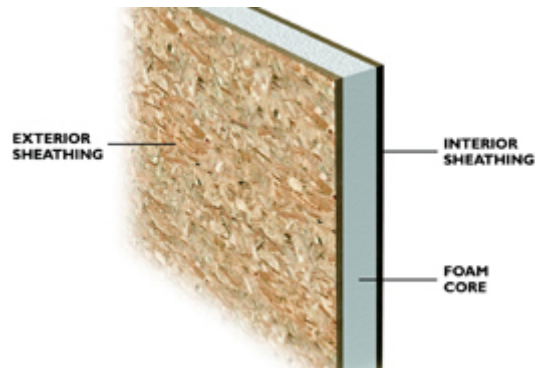
**An Insulated Wall:** All insulation works when it is installed properly and has no gaps, voids, or compressed areas.



**Installing Insulation:** A contractor is blowing in foam insulation.



**An Insulated Wall:** All insulation works when it is installed properly and has no gaps, voids, or compressed areas.

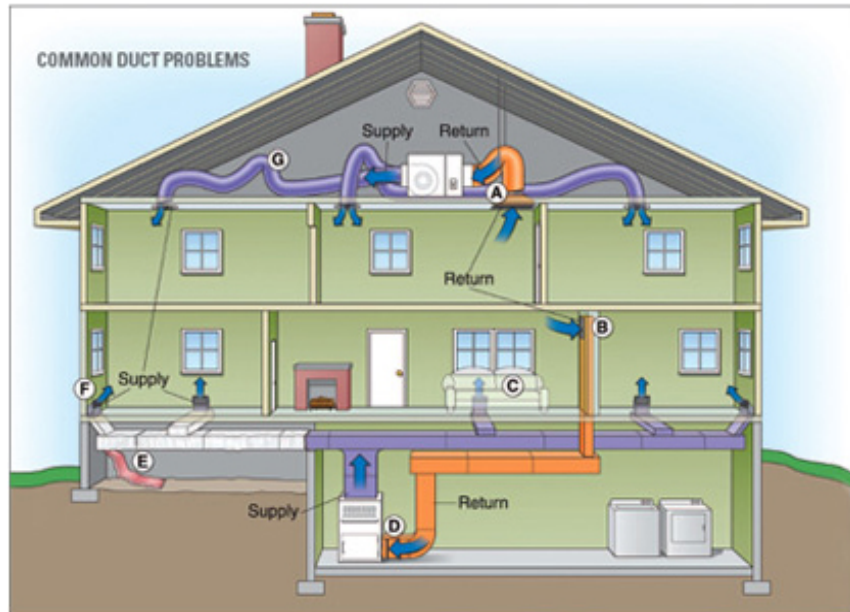


**A SIP Wall:** Structural Insulated Panels (SIPs) provide both insulation and an air barrier in one assembly.

With new and more rigorous EPA guidelines to earn the label, ENERGY STAR qualified homes are quieter and more comfortable than ever, have lower utility bills, and help protect the environment by reducing greenhouse gas emissions. Look for a home with the ENERGY STAR, the government-backed symbol for superior energy efficiency.

## Ducts That Don't Leak

Your home's ducts move heated and cooled air to the living areas to make you feel comfortable. But in a typical house, 20 percent of the air that moves through the duct system is lost due to leaks, holes, and poor connections. The illustration below shows many common duct problems, such as:



- A. Leaky duct connections
- B. Leaky return ducts
- C. Furniture blocking registers
- D. Leaks at furnace and air filter slot and duct tape failures
- E. Fallen duct insulation
- F. Leaky supply ducts
- G. Kinks in ductwork restricting airflow



**Photos of Poorly Sealed Ducts:** Air leaking from ducts reduces heating and cooling efficiency by up to 20 percent. Leaky ducts also let dust, moisture, pollen, pests, and noise into your home.



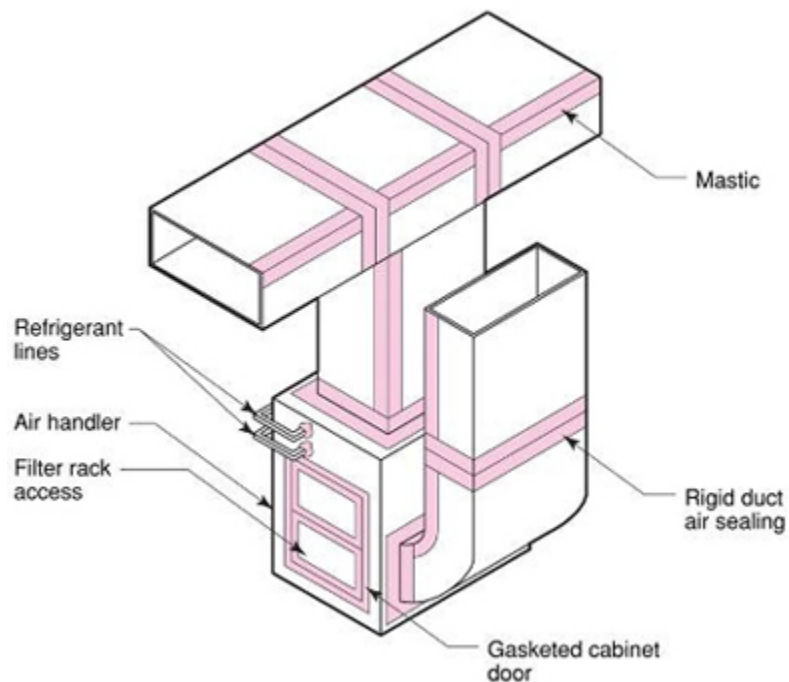
## Behind the walls of an ENERGY STAR qualified home...

Tightly-sealed and well-insulated ducts keep you more comfortable and increase the energy efficiency of your home. Sealing also helps improve indoor air quality by reducing the risk of dust, moisture, pollen, pests, and noise from entering the ducts and circulating throughout your home.

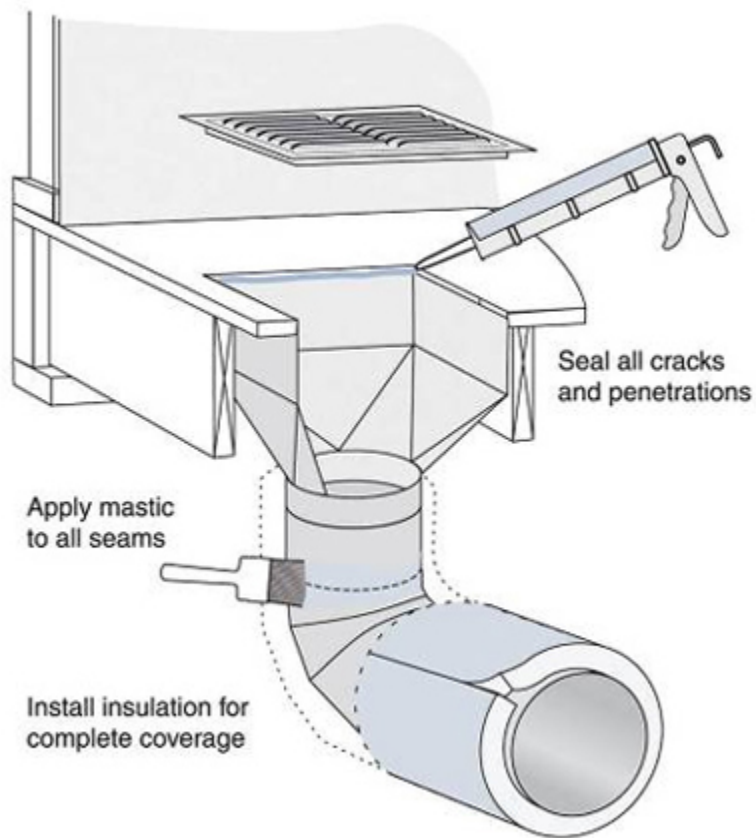
Below are seven photos and two illustrations of tightly sealed ducts.



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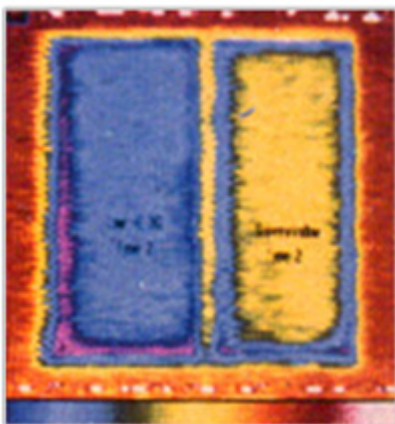
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## Advanced Windows for Comfort

Windows are an important part of your home's beauty. But in typical homes, windows made with older techniques are simply too cold in the winter and too warm in the summer — making you feel uncomfortable and wasting energy unnecessarily.



**Photo of Two Windows from Interior:** The view is the same, but the window on the left is conventional; the window on the right is ENERGY STAR qualified.



**Infrared Image of Same Two Windows from Interior:** In this infrared photo, the ENERGY STAR qualified window on the right is warmer (yellow) in the winter with 1/3 the heat loss of the window on the left.

### Photos of Fabric Swatches

New homebuyers often spend thousands of dollars decorating their homes — from furniture and floor coverings to window treatments and artwork. Without high performance windows that block damaging ultraviolet radiation, these furnishings will fade and degrade over time.



**Without Low-E windows,** furnishings are more faded.

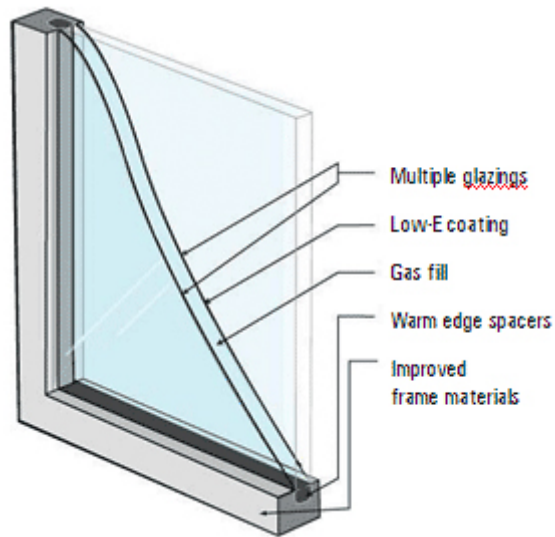


**With Low-E windows,** furnishings are less faded.



### In an ENERGY STAR qualified home...

ENERGY STAR windows, doors, and skylights keep your home cooler in the summer and warmer in the winter, reduce moisture condensation on window panes and sills, and minimize interior fabric fading.



**Diagram of Window Cross-section:** Shows elements of advanced technologies in an energy-efficient window.

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# Independent Testing and Inspection to Ensure Quality Construction

Most builders will tell you that they build energy-efficient homes. But builders whose homes earn the ENERGY STAR back up their claims. ENERGY STAR qualified homes are inspected and tested by an independent Home Energy Rater to meet EPA's new and more rigorous guidelines for energy efficiency.

## In an ENERGY STAR qualified home...

The builder's construction crews know that their work will be tested for performance, quality, and attention to detail. Home Energy Raters inspect insulation installation, perform tightness tests on the home's envelope and duct system, and ensure that all energy-efficient features and equipment are properly installed in your new home.



**Photo of Infrared Camera in Use:** Many Home Energy Raters use infrared cameras to pinpoint areas where heat and cold can escape from a home so they can be sealed and properly insulated by the builder.



**Photo of Man Conducting Blower Door Test:**

A blower door test evaluates the leakiness of the house.



**Photo of Man Conducting Duct Blaster Test:**

A duct blaster test evaluates the leakiness of the duct system.

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