



Air Seal and Insulate with ENERGY STAR

Sealing and insulating the "envelope" or "shell" of your home — its outer walls, ceiling, windows, doors, and floors — is often the most cost effective way to improve energy efficiency and comfort. ENERGY STAR estimates that a knowledgeable homeowner or skilled contractor can [save up to 20% on heating and cooling costs \(or up to 10% on their total annual energy bill\)](#) by sealing and insulating.

To Seal and Insulate with ENERGY STAR:

- Seal air leaks throughout the home to stop drafts,
- Add insulation to block heat loss in winter and heat gain in summer,
- Choose ENERGY STAR qualified windows when replacing windows.

If your attic is accessible and you like home improvement projects, you can Do-It-Yourself with help from our [Guide to ENERGY STAR Home Sealing](#)

· The Guide offers step-by-step instructions for sealing common air leaks and adding insulation to the attic.

You can also hire a contractor who will use special [diagnostic tools](#) to pinpoint and seal the hidden air leaks in your home. A [Home Energy Rater](#) can help you find contractors that offer air sealing services in your area.



Sealing Leaks



[Click for larger image.](#)

Many air leaks and drafts are easy to find because they are easy to feel — like those around windows and doors. But holes hidden in attics, basements, and crawlspaces are usually bigger problems. Sealing these leaks with caulk, spray foam, or weather stripping will have a great impact on improving your comfort and reducing utility bills. Click on the house diagram to see common air leak locations that you should aim to seal.

Homeowners are often concerned about sealing their house too tightly; however, this is very unlikely in most older homes. A certain amount of fresh air is needed for good indoor air quality and there are specifications that set the minimum amount of fresh air needed for a house. If you are concerned about how tight your home is, hire a contractor, such as a [Home Energy Rater](#), who can use [diagnostic tools](#) to measure your home's actual leakage. If your home is too tight, a fresh air [ventilation](#) system may be recommended.

After any home sealing project, have a heating and cooling technician check to make sure that your combustion appliances (gas- or oil-fired furnace, water heater, and dryer) are venting properly. For additional information on Indoor Air Quality (IAQ)

issues related to homes, such as combustion safety, visit [EPA's Indoor Air Quality Web site](#).

Adding Insulation



[Click for larger image.](#)

Insulation keeps your home warm in the winter and cool in the summer. There are several common types of insulation — fiberglass (in both batt and blown forms), cellulose, rigid foam board, and spray foam. [Reflective insulation \(or radiant barrier\)](#) is another insulating product which can help save energy in hot, sunny climates.

When correctly installed with air sealing, each type of insulation can deliver comfort and lower energy bills during the hottest and coldest times of the year.

Insulation performance is measured by R-value — its ability to resist heat flow. Higher R-values mean more insulating power. Different R-values are recommended for walls, attics, basements and crawlspaces, depending on your area of the country. Insulation works best when air is not moving through or around it. So it is very important to seal air leaks before installing insulation to ensure that you get the best performance from the insulation.

- See [Recommended Levels of Insulation](#) to determine what is most cost-effective for your home.
- For more comprehensive information, check the Department of Energy's online [Insulation Guide](#) [EXIT](#) ↗ .

To get the biggest savings, the easiest place to add insulation is usually in the attic. A quick way to see if you need more insulation is to look across your uncovered attic floor. If your insulation is level with or below the attic floor joists, you probably need to add more insulation. The recommended insulation level for most attics is R-38 (or about 12–15 inches, depending on the insulation type). In the coldest climates, insulating up to R-49 is recommended.

Sealing Ducts



In houses with forced-air heating and cooling systems, ducts are used to distribute conditioned air throughout the house. In a typical house, however, about 20 percent of the air that moves through the duct system is lost due to leaks and poorly sealed connections. The result is higher utility bills and difficulty keeping the house comfortable, no matter how the thermostat is set.

Because some ducts are concealed in walls and between floors, repairing them can be difficult. However, exposed ducts in attics, basements, crawlspaces, and garages can be repaired by sealing the leaks with duct sealant (also called duct mastic). In addition, insulating ducts that run through spaces that get hot in summer or cold in winter (like attics, garages, or crawlspaces) can save significant energy.

[Learn more about improving your ducts.](#)

Learn More

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- View [ENERGY STAR Insulation Manufacturer Partners](#)
- About [ENERGY STAR qualified windows designed for your climate](#)

Helpful Tools & Resources



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