Consumer Guide to Home Energy Savings: Condensed Online Version

The Building Envelope - Walls, Attic, Basement, Doors and Windows

Before buying a new heating or cooling system, it makes sense to **tighten up your house first.** The following steps will reduce your heating and cooling load, improve your comfort, and maybe even allow you to purchase a smaller—and less expensive—furnace or air conditioner when the time comes to replace your existing system.

Step 1: **Consider an Energy Audit**
Step 2: **Find and Seal Air Leaks**
Step 3: **Insulate**
Step 4: **Upgrade Inefficient Windows & Doors**
Step 5: **Replace Old Windows**

If you are replacing your roof, find out how to reduce energy with **"cool" roofing materials*

Consider an Energy Audit

Find out from a pro where heat is being lost through your home's shell and what you should do about it. Energy auditors use sophisticated equipment, like a blower door and infrared camera, to help pinpoint air leaks and areas with inadequate insulation. Depending on the service, you may be able to have your heating or cooling system cleaned, tuned up, and tested at the same time. They will often perform air sealing work as they go, and can usually connect you with qualified contractors to complete other major work. Some utility companies provide basic energy audits free of charge.

Finding a contractor who can perform high-quality energy auditing services can be difficult, and they may be listed under a variety of names, such as home performance contractor, energy rater, or energy doctor. Some key resources to help you get started are listed below. Also contact your state energy office or cooperative extension service for information on qualified auditors and contractors in your area. To learn more about contractor services, visit **Home Energy Tune-Up**.

- **Building Performance Institute.** Some of the most reliable contractors are certified by the **Building Performance Institute**, although they are not available in every state.

- **RESNET.** One of the largest lists of certified energy auditors is maintained by RESNET, which offers home energy ratings. A home energy rating entails the same kind of on-site diagnostic tests that an energy auditor would do; but with a rating, your house will be given a point score between 1 and 100 that

Top

Insulate

Insulation is your primary defense against heat loss through the house envelope. However, putting insulation into a house after it is built can be pretty difficult. If there isn't any insulation, the best option is to bring in an insulation contractor to blow cellulose or fiberglass into the walls.

- **Attic.** Adding insulation to an unheated attic is easier than insulating existing walls and is likely to have a greater impact on comfort and energy use. If there is no floor in the attic, simply add more insulation between the ceiling beams, either loose fill or unfaced fiberglass batts. In most of the country, a full foot of fiberglass or cellulose insulation is cost-effective in the attic floor. However, it is critical to install fiberglass batts properly in order for them to do the job. If you do it yourself, make sure you read up on correct installation practices.

- **Basement.** Materials that could be damaged by moisture, such as fiberglass batts and cellulose, should never be used to insulate a basement. Interior vapor barriers can also be very damaging because they prevent basements from drying to the inside. Interior basement insulation should start with rigid foam installed against the basement walls. If you are considering finishing your basement and using it as a living space, seek the advice of an experienced professional.

  If you have a crawl space, it should be sealed, not ventilated. To do this, use 6-mm thick polyethylene sheeting as a moisture barrier to cover the ground and seal tightly to walls and columns. Then use rigid foam to insulate the foundation walls. In the South, it is important to keep an uninsulated band for inspection of possible termite tunnels.

For more information about insulation, or to locate a contractor, dealer, or manufacturer please visit the insulation trade association links below:

Association	Acronym	Website
Air Barrier Association of America	ABAA	www.airbarrier.org
Blow-In-Blanket Contractors Association	BIBCA	www.bibca.org
Cellulose Insulation Manufacturers Association	CIMA	www.cellulose.org
Extruded Polystyrene Foam Association	XPSA	www.xpsa.com
Insulation Contractors Association of America	ICAA	www.insulate.org
National Insulation Association	NIA	www.insulation.org
North American Insulation Manufacturers Association	NAIMA	www.naima.org
Spray Polyurethane Foam Alliance	SPFA	www.sprayfoam.org

Top

Upgrade Inefficient Windows and Doors

About one-third of the home's total heat loss usually occurs through windows and