



Consumer Guide to Home Energy Assessments

A home energy assessment is the essential first step to lowering your energy bills.

IDENTIFYING AIR LEAKS

Depressurization Test

If you have difficulty locating air leaks, try conducting a basic building depressurization test (ideally on a cool, windy day).

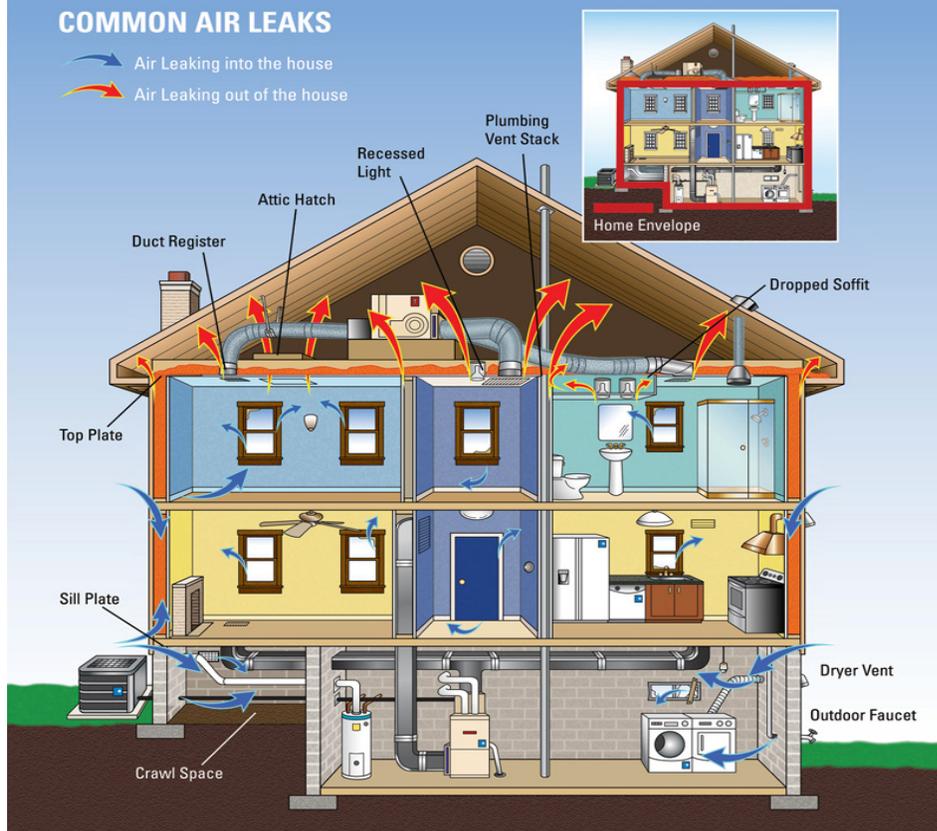
1. Close all exterior doors, windows, and fireplace flues.
2. Turn off all combustion appliances, including gas-burning furnaces and water heaters. Note: If you do not wish to turn off your furnace, you can omit step 2 and go to step 3.
3. Turn on all exhaust fans that blow air outside, such as bathroom fans or stove vents.
4. Light a smoke candle or incense stick and pass it around the edges of common leak areas. If smoke is drawn into or out of a room, then there is an air leak.

Other DIY Air Leak Detection Methods

You can also detect air leaks by shining a flashlight over potential gaps at night. You will need a partner to observe the house from outside for large gaps or cracks that will show up as rays of light. This method may not locate small gaps. You can also detect air leaks by shutting a door or window on a piece of paper. If you can remove the paper without tearing it, you have an air leak.

COMMON AIR LEAKS

-  Air Leaking into the house
-  Air Leaking out of the house



Why Have a Home Energy Assessment?

A proper home energy assessment (also called a home energy audit) will tell you how much energy you use in your house and guide you on cost-effective measures to improve the energy efficiency of your home.

Do-It-Yourself Home Energy Assessment

You can conduct a simple home energy inspection on your own or hire a professional for a comprehensive analysis. The DIY assessment involves a walk-through of your home during which you look carefully at the main areas where air leaks occur:

- Look at places where different materials, such as brick and wood siding, meet – between foundation and walls, and between chimney and siding.
- Inspect the areas around electrical outlets, switch plates, windows and door frames, baseboards, attic hatches, wall or window-mounted air conditioners, mail chutes, electrical and gas service entrances, cable TV and phone lines, and vents and fans.
- Check to see that caulking and weather stripping are applied properly and are in good condition.

Professional Home Energy Assessment

The professional home energy assessment is a much more detailed, equipment-based look at the energy efficiency of a house (or any building). The energy assessor uses special equipment to measure the rate of air flow between the inside and outside of the house.

Finding a Certified Provider

Make sure you use a certified energy assessor, sometimes known as an energy auditor. Such assessors are usually licensed contractors in the home building and remodeling industry with experience installing heating and cooling systems, windows, and lighting. To find a certified assessor, check with your local electric or gas utility provider, your state or local government energy or weatherization office, or follow the ENERGY STAR® link under Further Reading.

Preparing for an Assessment

Before the energy assessor arrives, make a list of any existing indoor problems you have noticed, such as condensation and uncomfortable or drafty rooms. Have copies or summaries of recent energy bills to share with the assessor. The assessor should do an initial walkthrough of your home to see daily energy usage patterns, both overall and in specific rooms.

Assessment Techniques and Equipment

The two most common techniques for carrying out a home energy assessment are the blower door test and an infrared camera scan, which are often done together. During these tests, the assessor may also inspect your heating and cooling systems, test for natural gas leaks, and check to see if your home is properly ventilated.

Blower Door Test

The blower door test measures the airtightness of a house. A powerful fan called a blower door is mounted into a flexible panel and frame that fits in a doorway. The fan draws air out of the house, resulting in lower pressure inside the house. This allows outdoor air to flow in through unsealed gaps and other unwanted openings. Using a smoke pencil, the auditor can then find the location of air leaks.

Make sure the assessor uses a calibrated blower door, which is connected to a pressure gauge called a manometer that measures the pressure difference between two locations as the fan is running. This results in an exact measurement of the air flow through the house. Blower doors that don't use such measurement can spot air leaks in the home, but not the amount of air leakage.

The energy assessor may also use a duct blower, a variable-speed fan attached to a duct system with a hose to measure the amount of air leakage inside ductwork.

Thermographic Scan

A thermographic scan uses an infrared scanner to detect differences in temperature in a building, such as along walls, roofs, and around windows and doors. These differences show up in a video or camera still image as whiter (warmer) or darker (cooler) areas. Assessors use the images to determine the location of air leaks. When done together with a blower door test, air leaks show up as black streaks in the infrared image.

After the Assessment

Once the assessment is completed, the energy assessor should provide you with a report of the findings and ideas for improvements. You can decide what upgrades to make to your home based on these findings. You may only need to air seal small gaps and add attic insulation. Or it may be cost-effective for you to make bigger upgrades, such as replacing heating and cooling equipment.

Cost & Financials

A professional home energy assessment can cost from approximately \$250 to \$600 or more. Many contractors will perform the assessment at a reduced rate if you hire them to make subsequent upgrades to the energy efficiency of your home based on the report. Various incentives may be available to lower income families, and the U.S. Department of Energy's Weatherization Assistance Program also provides states with funding to help low-income families weatherize their homes. There are also incentives for switching to energy-efficient products. Please see below for more information.

FURTHER READING

DOE Weatherization Assistance Program
energy.gov/eere/wap/weatherization-assistance-program

Energy Saver: Home Energy Assessments
energy.gov/energysaver/weatherize/home-energy-audits

Home Performance with ENERGY STAR Locations
energystar.gov/campaign/improvements/find-local-help/full-list

Financial Incentives
Tax credits, incentives and rebates may be available in your area. Please visit energystar.gov/about/federal-tax-credits for more information.