

## Energy Audits

Do you think your utility bills are too high for your size home? Is your home drafty or uncomfortable? Does water condense on the inside of your windows? Have spiders, lady bugs and other insects invaded your living areas? The first step in resolving all these issues and more is through an energy audit. While a professional is the best way to determine your homes' energy efficiency, you can conduct your own assessment.

One major finding from an energy audit are sources of air leaks. The next step is to eliminate the air leaks by replacing faulty weather stripping, door sweeps, etc. and by using an appropriate sealant like Energy Seal® or Woodsman™. Since that subject is covered in "How to Apply Energy Seal and Woodsman," for now we will just concentrate on the energy audit. An additional benefit of eliminating drafts, is the reduction of up to 20% per year on your energy bill.

First will be a discussion for the do-it-yourselfers. Whenever the outside temperature is at least 20 degrees lower than the temperature within a home it is a good time to find any gaps that may be leaking air. All you need is a small pail of warm water, a piece of chalk and a perhaps a ladder to reach the ceilings. If you dip your hand in the water and then run your wet hand over the interior walls keeping it about six inches to a foot away from the surface, you will easily feel any cold air coming through the leaks in walls or around the windows. As you move your wet hand closer to the wall you can pretty well pinpoint where the leak is located. Be sure to mark those areas with chalk.

If you have a box fan and want an even more efficient method of locating leaks, place the fan in a window or door blowing outside and cover the remaining opening with plastic sheeting. This will create a negative pressure in your home and help draw cold air into the home through the leaks making them easier to find.

A more accurate and sophisticated method of locating air leaks is with an infrared camera. They are somewhat expensive, but there are people who specialize in energy evaluations of homes using this type of equipment.

The best way to attack air leaks is from exterior surfaces. Interior walls can be caulked but if a crack or crevice is leaking air it may also leak water. Sealing the leak from the outside prevents water penetration along with air infiltration. Sealing with Energy Seal™ or Woodsman™ can be accomplished in cold weather if the temperature is above 40° F, and the wood is not wet or frozen. However, the pails or tubes of sealant should be stored in a heated area until they are used.

Maintenance caulking is really a two-person job, one outside doing the sealing and one inside feeling for the leaks. Finding the outside source of the leak may not be as easy as it sounds, especially around window and door frames. The source of the leak may be several inches from the spot where it is felt inside the home. It is just a matter of continuing to seal the area until the person on the inside no longer detects the air leak.

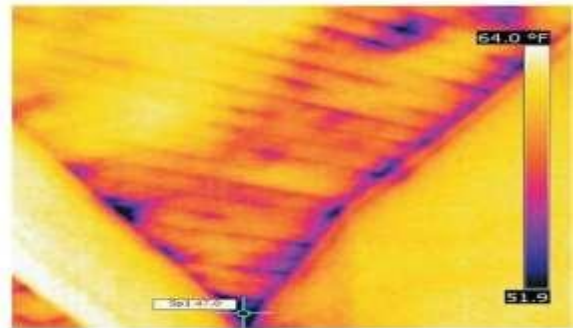
The photos below show a blower door, thermal imaging camera and the images generated by the thermal camera. The larger/stronger the blower, the higher the negative pressure will be in the house. Remember all windows and doors are to be closed. The thermal images reveal where cold air is entering your house. The blue color reveals where cooler air is entering your house; and going from yellow to orange to red reveal increasing warmer temperatures.



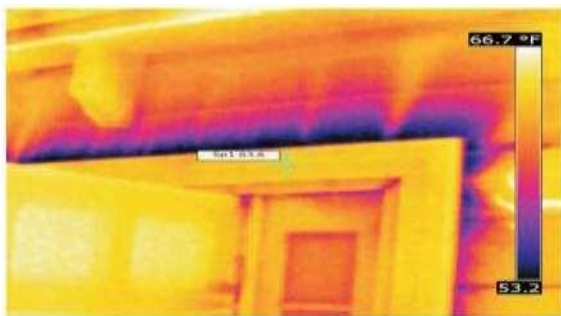
***Blower door***



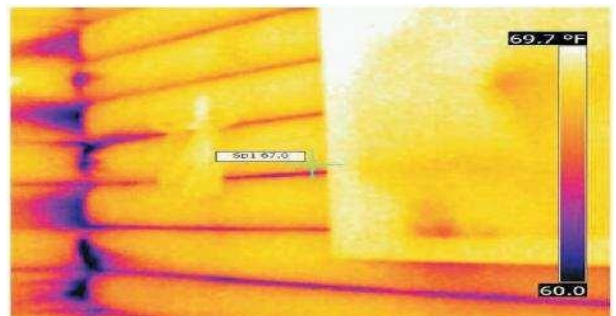
***Thermal imaging camera***



***Air leaks in tongue & groove ceiling.***



***Air leaks around doors***



***Air leaks in log corners***

There are many utility companies around the nation that offer free energy evaluations and incentives for increasing the energy efficiency of your home. It is always worth checking with your local energy provider to see what programs are available in your area.

There are a whole host of websites devoted to providing information about Energy Audits and how they identify problem situations to reduce your energy costs. One of the best places to start is [www.energystar.gov](http://www.energystar.gov). Besides offering some do-it-yourself advice, you can also find a list of certified professional energy auditors located in your specific area.

Remember that the Energy Audit is just the first step. You must next decide if you want to attempt to correct the problems yourself or use a professional contractor. For log homeowners here is where things can become complicated. Most painters and contractors are familiar with sealing and caulking conventional homes but, as you probably already know, log homes are different, and it takes someone with log structure experience and expertise to do the job correctly. Plus, general purpose caulks and sealants found at local hardware stores and DIY outlets do not offer the performance that is required for the unique parameters associated with log homes. If you need help finding someone in your area who has experience doing this type of work, give us a call and we will provide you referrals.

So let us assume you had an energy audit and corrected all the air leaks in your home. In addition to significantly reduced utility bills what other benefits will you see?

**Comfort** - Your home will be less drafty, and it will be much easier to maintain a constant temperature throughout your entire home.

**Water Leaks** – In addition to eliminating air infiltration into your home you will also eliminate water leaks that can discolor or rot your logs and trim.

**Less Dust** – Since eliminating air leaks stops a continuous flow of outside air coming into your home, it also reduces the amount of dust that accumulates within your home.

**Fewer Bugs** - Sealing air leaks closes openings used by ladybugs, ants and other insects to enter the living area of your home. Sealing these openings is much more effective and a lot safer than using pesticides.

The bottom line is that an energy audit is well worth the price and the energy savings alone will typically cover the cost of the audit plus the cost of repairs within the first two years.