

DIY: Detecting Air Leaks

The potential energy savings from reducing air leaks ranges from 5 to 30% per year. By sealing air leaks you will save money and your home will likely feel less drafty and more comfortable.

DIFFICULTY: BEGINNER

TIME: 1+ hours

MATERIALS:

- notepad
- pen
- flashlight
- candle
- incense stick
- hair dryer
- gloves
- closed-toe shoes
- face mask
- long sleeved shirt

ADDITIONAL INFO

- There are professionals who will detect air leaks in your house, usually part of a home energy assessment. They use a blower door which sucks air out of the house. Outside air then rushes in through leaks which can be located using a smoke pencil. Look for a professional that uses a calibrated blower door. This will allow them to determine the amount of air leakage and the effectiveness of an air-sealing job.
- The incense stick method can be made more effective by first sealing your house by closing doors and windows then turning on all exhaust fans such as the dryer, bathroom fan, and stove hood. This creates low pressure inside your house and outside air will rush in through leaks allowing you to detect them more easily.



E-Conservation
power to control what you spend

SAFETY PRECAUTIONS: Use care when inspecting your attic. Provide yourself with adequate lighting and watch your step. Enter the attic at a time when temperatures are comfortable. For more information on [attic safety](#), look here.

OUTSIDE INSPECTION: Start by doing a visual inspection of the outside of your house. Walk around and look for potential air leaks. Write down any obvious air leaks along with the size and location of the air leak. Doors and windows can be weatherstripped and, generally, smaller cracks can be filled with caulk while larger cracks might require an expanding foam spray.

INSIDE INSPECTION: Before checking for air leaks inside, do your best to seal the house by closing doors and windows and anything else that might allow the movement of air in to or out of your house. Start your inspection in the attic first, followed by the basement as these usually have the largest air leaks due to the stack effect.

WHERE TO LOOK FOR AIR LEAKS: Air leaks often occur where different building materials meet. Carefully inspect around doors, windows, chimneys, where pipes, ducts, faucets, or wiring enter your house, where pipes or wires go through walls, recessed lights, unfinished spaces, outlets, baseboards, the attic hatch, faucets, and vents or fans.

HOW TO FIND AIR LEAKS: Once you know where air is likely to leak into and out of your home, you need to know how to check for air movement. Check to see if air can flow through the places above using one of these methods and write down the location and size of potential air leaks so you can return later to properly seal them.

1. In the attic, look for dirty insulation, a sign air is leaking and the insulation is filtering air. Pull back insulation where pipes or wires penetrate the attic space and conduct a visual inspection, looking for spaces where air can pass through. Be sure to check around knee walls and ducts.
2. Hold a feather or lightweight piece of string in front of potential air leakage areas. If it moves there is airflow.
3. Look for cobwebs—spiders put their webs where there is air movement.
4. Carefully (avoiding drapes and other flammables) light an incense stick and hold it close to any areas where you suspect an air leak. The smoke will “flutter” where there is leakage.
5. Have someone outside blow a hair dryer around each window while you hold an incense stick inside. If the smoke flickers you need to caulk or weatherstrip around the frame.
6. After dark, walk around your house and shine a flashlight on places that are likely to have air leaks. Have someone on the inside recording where they see light entering through gaps.
7. Check doors and windows for rattling as this can indicate an air leak.

RESOURCES:

<http://energy.gov/energysaver/articles/blower-door-tests>
<https://docs.google.com/viewer?url=http%3A%2F%2Fwww.ces.ncsu.edu%2Fwp-content%2Fuploads%2F2013%2F09%2FHEMS-Home-Energy-Self-Assessment.pdf>
<http://energy.gov/energysaver/articles/detecting-air-leaks>
www.youtube.com/watch?v=2ZLVfBWcGs4
www.youtube.com/watch?v=NrC3Mb2YBmE

The information contained herein is provided as a public service with the understanding that NC Cooperative Extension makes no warranties, either expressed or implied, concerning the accuracy, completeness, reliability, or suitability of the information. Nor does NC Cooperative Extension warrant that the use of this information is free of any claims of copyright infringement. NC Cooperative Extension web pages do not endorse any commercial providers or their products.

March 2014



NC STATE UNIVERSITY