



Preparing for the Home Performance Energy Audit

Please perform the following steps prior to the arrival of your Home Performance Contractor.

- Have available one year of energy usage (this information should be listed on your current utility bills)
- Take note of any broken or defective windows and doors
- Take note of any drafty areas or rooms that are always too hot or too cold
- Remove clutter and obstructions around water heater, AC units, and furnaces
- Close all windows and outside doors
- Shut fireplace dampers, fireplace doors, and wood stove air intakes
- Remove all ashes from fireplaces or cover the ashes with damp newspapers
- Remove anything you do not want your Home Performance Contractor to see. The contractor will need to go into every room and closet in your house as well as the basement and crawlspace.



Combustion safety: What tests will be done and why?

The certified Home Performance Contractor will look at three major issues:

- 1) the carbon monoxide levels of the gas and oil fired equipment;
- 2) backdrafting of all vented appliances; and
- 3) safety hazards, such as gas leaks and cracked heat exchangers.

The **two major reasons** for conducting combustion tests on your house are for your **health** (potential carbon monoxide exposure & poisoning) and your **safety** (fire prevention) for you and your family.

Carbon Monoxide

High levels of carbon monoxide are a sign that your combustion appliances are not operating efficiently, and they are dangerous for you and your family. According to the Centers for Disease Control and Prevention, carbon monoxide poisoning needlessly takes **more than 500 lives** every year. The contractor will test your kitchen and other areas in your home, as well as each combustion appliance for dangerous levels of carbon monoxide.

Backdraft/Venting Tests

The contractor will make sure the combustion appliance is exhausting properly: in case there was anything dangerous in the exhaust, it will leave the building. Backdrafting and poorly drafting appliances are commonly caused by poorly balanced ductwork, leaky return ductwork, exhaust fans (bath fans, kitchen hood, dryer, central vacuum system, whole-house fan), fireplaces, and other combustion appliances. It takes very little to cause venting problems.

To test for backdrafting and to determine the amount of venting of each combustion appliance, the Home Performance Contractor will turn on all the vents and exhaust fans in the house (dryer, bath fans, exhaust hood etc.). The objective is to try to create the worst case operating conditions that make the appliance most likely to back draft. If combustion appliances are drafting and operating properly under these conditions and do not pose a safety concern, they will vent properly and safely during all other conditions as well.



Inspecting HVAC equipment

Safety Hazard Examinations

Gas leaks pose a potential immediate threat of fire or explosion. Leaks are detected by an electronic gas leak detector.

Flames unexpectedly coming out the front of the appliance ("roll-out") indicate serious combustion problems. The Home Performance Contractor will check your appliance for black or rusted areas in front of the burners, burnt wires, and carbon deposits.

The contractor will also examine appliances for a breach in the heat exchanger. Checking for cracks is done by observing the flames for interference when the blower is operating and by direct inspection of the heat exchanger.

For more information on combustion safety and indoor air quality, please visit:

- www.epa.gov/iaq/homes/hip-combustion.html
- www.cpsc.gov/cpsc/pub/pubs/452.html
- www.cdc.gov/co/faqs.htm
- www.homeenergy.org/archive/hem.dis.anl.gov/eehem/95/950308.html

Energy Audit 101

Where are your home's air leaks?

This picture shows the common areas of air leakage in a home.



Air Leakage Sites

1. Complete this checklist while your contractor performs a blower-door test (see reverse for more information).
2. Use the back of your hand to find air leaks.
3. Before entering a room, close the door until it's only open a crack. Use the back of your hand to feel the air leaks of the entire room coming through the crack of the door.

Check all that apply and indicate relative amount of leakage. Ask your contractor to locate any terms you do not know. Small (least amount of air leakage), Medium, or Large (most amount of air leakage)

<input type="checkbox"/> Fireplaces	S / M / L	<input type="checkbox"/> Doors	S / M / L
<input type="checkbox"/> Electrical Penetrations	S / M / L	<input type="checkbox"/> Pocket Doors	S / M / L
<input type="checkbox"/> Plumbing Penetrations	S / M / L	<input type="checkbox"/> Foundation Wall	S / M / L
<input type="checkbox"/> Mechanical Chase	S / M / L	<input type="checkbox"/> Windows	S / M / L
<input type="checkbox"/> Stairs	S / M / L	<input type="checkbox"/> Baseboards	S / M / L
<input type="checkbox"/> Recessed Lights ____#	S / M / L	<input type="checkbox"/> Drop Soffits	S / M / L
<input type="checkbox"/> Duct System	S / M / L	<input type="checkbox"/> Furnace Flue	S / M / L
<input type="checkbox"/> Floor of Attic	S / M / L	<input type="checkbox"/> Bathroom Fans	S / M / L

The Blower Door Test

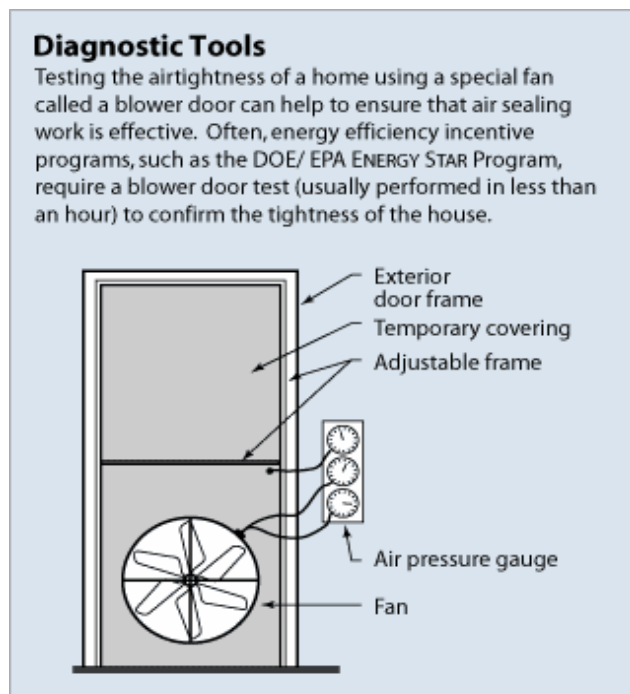
A **blower door** is a powerful fan that mounts into the frame of an exterior door. Professional energy auditors use blower door tests to help determine a home's airtightness.

The reasons for establishing the proper building tightness include:

- Reducing energy consumption due to air leakage
- Avoiding moisture condensation problems
- Avoiding uncomfortable drafts caused by cold air leaking in from the outdoors

How it works

1. The blower door is set up in the frame of an exterior door
2. The fan pulls air out of the house, lowering the air pressure inside. The higher outside air pressure then flows in through all unsealed cracks and openings.
3. The auditor determines how leaky the home is with the handheld blower door gauge, called a manometer.
4. The auditor then inspects the home to determine the size and location of all air leaks.



Source: U.S. Department of Energy Efficiency & Renewable Energy
http://www.eere.energy.gov/consumer/your_home/



Visit www.mdhomeperformance.org today!

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