



Frederick County Power Saver Retrofits Combustion Appliances Guide

Why is it important to identify and test your combustion appliances?

Combustion appliances produce heat by burning fuel, such as oil, natural gas, propane, kerosene, coal, or wood. When these fuels are burned, carbon monoxide is released. Carbon monoxide is an invisible, odorless, tasteless, and potentially deadly gas. It is particularly dangerous because humans cannot detect it and there are no warning signs of its presence. Exposure to low levels of carbon monoxide can cause symptoms similar to those of the flu, while exposure to high levels can be fatal.

What do combustion appliances have to do with home energy efficiency?

Through Power Saver Retrofits, you will have the opportunity to reduce your heating and cooling costs through sealing and insulation. Air sealing and insulation in your attic, basement, duct work, windows, and doors decreases the flow of air between your interior conditioned space and the exterior of your home. While these retrofits are great for reducing energy consumption, they can be dangerous if the tightening of your home causes carbon monoxide that was previously allowed to escape to become trapped inside.

How will Power Saver Retrofits help to ensure that my combustion appliances are safe?

First, you will be required to use this guide to assess the combustion appliances in your home. The guide will help you determine if your appliances are vented or unvented. Vented combustion appliances send exhaust containing carbon monoxide outside of the home's envelope. For instance, most wood fireplaces have a chimney that vents to the outside. Unvented combustion appliances can release exhaust containing carbon monoxide directly into the living space of the home. Most kerosene space heaters are unvented.

In order to ensure your safety, we require that each participating household has only vented combustion appliances, excluding gas and propane ranges which are not required by code to be vented. Homes containing unvented combustion appliances (excluding gas and propane ranges) are not eligible for Power Saver Retrofits.

If you are selected to participate, your combustion appliances will be tested during your energy audit to assess their current level of safety, including issues such as carbon monoxide levels, spillage, and gas leakage. If they pass, the contractor will proceed with implementing the selected retrofits. However, if they do not pass, the combustion appliances must be fixed, removed, or replaced with a passing appliance in order for the household to receive services through Power Saver Retrofits. These changes cannot be made using Power Saver Retrofits funding. Already had your energy audit done? Look at the combustion testing section of your audit report to see if your combustion appliances passed.

To further ensure safety, carbon monoxide detectors will be installed as needed by your contractor as part of your retrofits. And, at the completion of the retrofit work, the contractor will repeat the combustion testing to make sure that tightening the home has not created any safety issues.

How do I qualify for Power Saver Retrofits if I have combustion appliances in my home?

First, note the combustion appliances that you do have on your Power Saver Retrofits Application Form. If the appliance is located outside of your home (e.g. in a shed or detached garage), it will not affect your eligibility. If the appliance is within your home, it must be vented outside of the home in order to be eligible, except for gas or propane ranges which do not require ventilation.

For each combustion appliance in your home, note on your Application Form whether it is vented or unvented. Use the following appliance guide to make this determination.

Natural Gas or Propane Range

- Gas and propane ranges are not required to be vented to the outside for Power Saver Retrofits. However, you can use this guide to determine if it is vented or not for your own information.
- Check for an exhaust fan over the top of the stove. If you do not have an exhaust fan, your range is **unvented**.
- If you do have an exhaust fan, feel with your hand if air comes out over the top of the fan when you turn it on. If it does, then it is just redirecting exhaust back into the room. In this case, your range is **unvented**.
- If you do have an exhaust fan and do not feel any air coming out over the top of the fan when you turn it on, then your range is most likely vented. Check over the top of the fan for a pipe that vents to the outside. You may have to use your judgment as to where this pipe goes. If it goes to the outside of the home, and not to your attic or other part of the house, it is **vented**.



Vent hood should exhaust to outside

Clothes Dryers

- If your dryer has a **regular 3-prong plug**, this is likely a **gas dryer**. It should also have a gas line attached at the back of the dryer.
 - Check to see if it has a connected and functioning **exhaust vent** that runs to the outside. If it does, then the dryer is **vented**, and your home may be eligible.
 - If your dryer **does not have an exhaust vent** that runs to the outside, then it is **unvented** and the home is not eligible.
- If your dryer has a **large-sized plug**, then it is likely an **electric dryer**. If your electric dryer has a **functioning vent** to the outside, then your home may be eligible (lack of ventilation can cause



Gas dryer plug

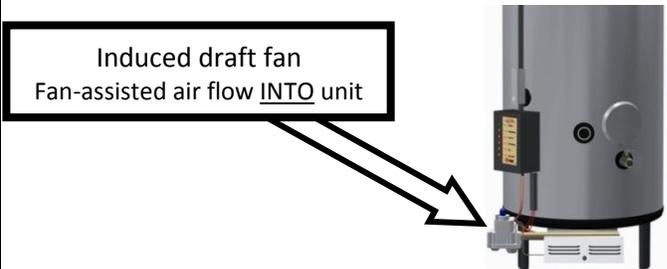
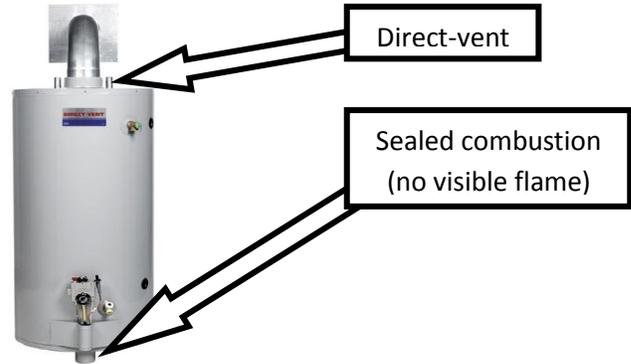


Electric dryer plug

moisture build-up issues inside the home).

Natural Gas, Propane, or Oil Water Heater

- If your water heater is a **sealed-combustion, direct-vent, power-vented, or induced draft** unit, your unit is **vented** and your home may be eligible.
 - A **sealed combustion, direct vent** water heater means that the flame of the water heater is sealed off from mixing with the house air around it and the exhaust vent goes directly to the outside.
 - A **power-vented** unit has fan-assisted air flow **OUT** of the burner on the vent-side of the water heater exhaust pipe (generally the top).
 - An **induced draft** water heater has fan-assisted air flow **INTO** the burner (generally below or at the bottom of the water heater tank).

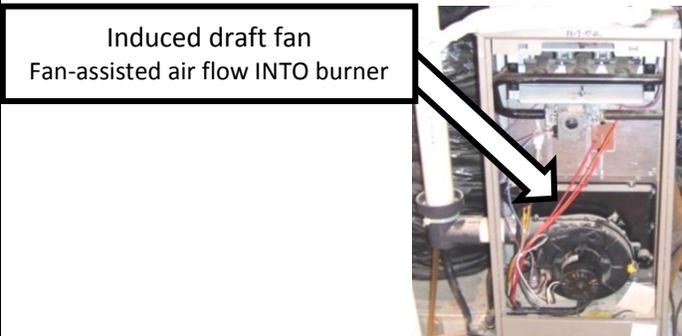
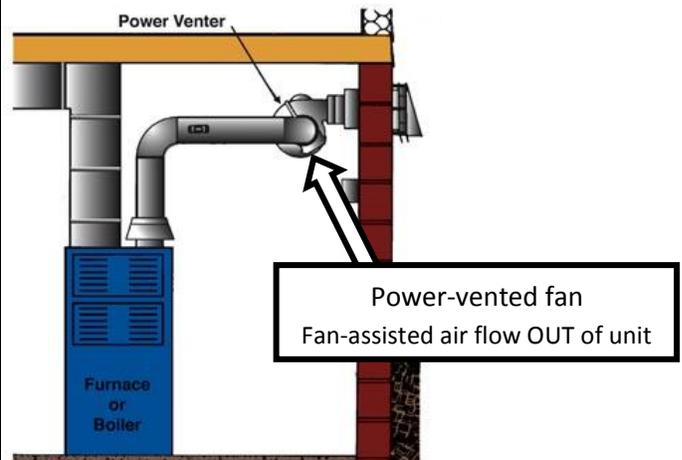
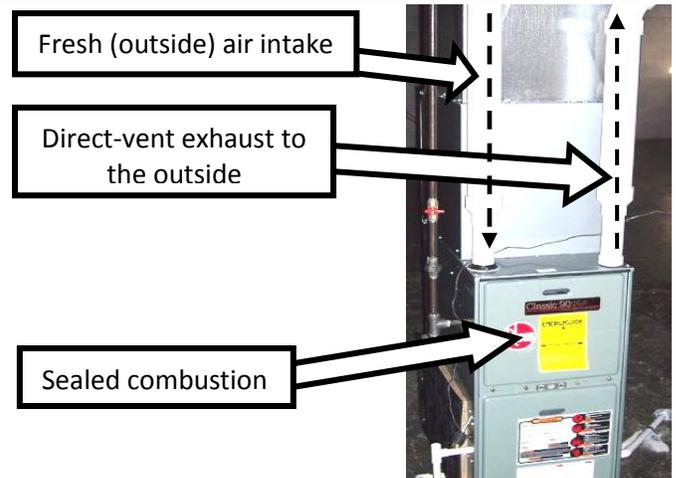


- If your water heater is **atmospherically vented** and **does not have a fan**, then your water heater is considered **unvented** and your home is not eligible. This type of water heater uses the atmosphere around it to assist in the up-draft, instead of a fan. Usually, you can see a **visible flame** at the bottom of an atmospherically vented water heater.

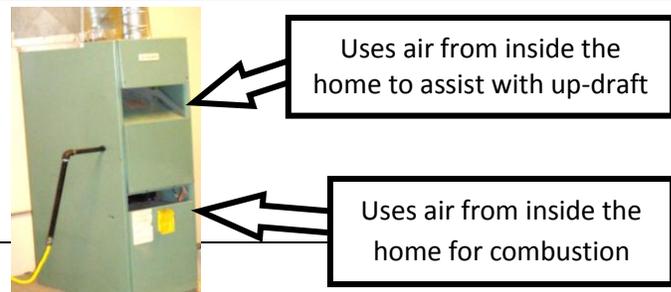


Natural Gas, Propane, or Oil Furnace

- If your furnace is a **sealed-combustion**, **direct-vent**, **power-vented**, or **induced draft** unit, your unit is **vented** and your home may be eligible.
 - A **sealed combustion**, **direct vent** furnace means that the flame of the furnace is sealed off from mixing with the house air around it and the exhaust vent goes directly to the outside.
 - A **power-vented** furnace has fan-assisted air flow **OUT** of the burner on the vent-side of the furnace exhaust pipe (generally the top).
 - An **induced draft** furnace has fan-assisted air flow **INTO** the burner (generally inside the furnace unit).



- If your furnace is **atmospherically vented**, then it is considered **unvented** and your home is not eligible. This type of furnace uses the atmosphere around it to assist in the up-draft and combustion, instead of a fan.



--	--

Natural Gas, Propane, or Kerosene Space Heater	
<ul style="list-style-type: none"> • If your space heater is a sealed-combustion, direct-vent, power-vented, or induced draft unit, your unit is vented and your home may be eligible. Look for incoming/outgoing air ducts and incoming/outgoing unit fans. Sometimes a wall-mounted heater is direct-vent; check carefully. 	 <p style="text-align: right;">External vent on the outside of a house</p>
<ul style="list-style-type: none"> • If your space heater does not have any direct venting to the outside of the home, then it is unvented, and your home is not eligible. <ul style="list-style-type: none"> ○ Kerosene space heaters are usually unvented. ○ Wall-mounted heaters are often unvented. Usually, if it is unvented there is a visible flame and there is no external vent (see photo above). ○ If you have an unvented space heater in your home, you must remove it and never use it in the home to be eligible. 	 <p style="text-align: center;">Kerosene space heater (usually unvented)</p>  <p style="text-align: center;">Wall-mounted space heater (often unvented)</p>

Natural Gas or Propane Fireplace	
<ul style="list-style-type: none"> • If your fireplace is a sealed-combustion or direct-vent unit, your fireplace is vented and your home may be eligible. These fireplaces have a full glass front so that the flame and exhaust is separate from the air inside the home. • If gas logs are inserted into a working chimney, the fireplace is vented and your home may be eligible. A chimney is considered to be working if no smoke enters the home during or after the fire activity. 	 <p style="text-align: right;">Exhaust is directed to the outside from the back or top of the fireplace</p> <p style="text-align: right;">Glass front seals it off from the house air</p>  <p style="text-align: center;">Gas logs inserted into working chimney</p>

- If the fireplace **does not have a working chimney**, it is **unvented** and your home is not eligible.



Unvented gas logs with no working chimney

Wood Burning Fireplace

- If your fireplace has a **working chimney**, it is **vented** and your home may be eligible. A chimney is considered to be working if no smoke enters the home during or after fire activity.
- If the fireplace **does not have a working chimney**, it is **unvented** and your home is not eligible.



Working chimney
Smoke does not back-draft into house

Natural Gas, Wood, or Coal Burning Stove

- If your stove has a **working chimney**, it is **vented** and your home may be eligible. A chimney is considered to be working if no smoke enters the home during or after fire activity.
- If your stove **does not have a working chimney**, it is **unvented** and your home is not eligible.

Exhaust pipe to working chimney

Air intake can be from outside or inside home



Questions?

Visit www.FrederickCountyMD.gov/GreenHomes, call 301.600.1306, or email NRobinson@FrederickCountyMD.gov.