



# Pellet Stoves

Pellet stoves are a relatively new biomass heating appliance. They are similar to wood stoves in concept, but they have automated operation and burn processed biomass.

## Fuel

Pellet stoves burn pellets, which are manufactured from compacted sawdust, wood chips, agricultural crop waste, waste paper, and other materials. They can also be made from biomass fuels such as nutshells, corn kernels, sunflowers, and soybeans. Pellets are about 1 inch long and look like rabbit food. The pressure and heat created during production binds the pellets together without the need for glue. Pellets are manufactured in Alaska and are available at local hardware stores and by delivery from manufacturers.

## Distribution system

Pellet stoves do not have a distribution system. The fire inside the combustion chamber causes the stove to warm up and radiate heat throughout a room. Pellet boilers are available that use a hydronic distribution system.

## How it works

Stoves are designed to heat a space directly. The stove consists of a combustion chamber, ashtray, and a flue to vent exhaust gases. In a pellet stove, the flue can be direct-vented through a wall, meaning that no chimney is required. Pellets are stored in a hopper near the stove. The hoppers come in various sizes, but generally can hold enough pellets for the stove to run for more than a day.

Pellet stoves use electricity to run three motorized systems:

1. A screw auger feeds pellets into the fire at a controlled rate;



Pellets are made from processed biomass such as sawdust, wood chips, agricultural waste and waste paper.

2. An exhaust fan vents exhaust gases and draws in combustion air;
3. A circulating fan forces air through the heat exchanger and into the room.

The motorized systems are controlled by a control system and allow pellet stoves to operate automatically.

## Maintenance

As with other wood-burning devices, pellet stoves require frequent maintenance. However, they require less maintenance than a wood stove. The stove should be inspected regularly. Also, the hopper must be filled and the ashtray should be emptied, usually on a weekly basis (though this depends on the size of the hopper and ash tray, and the frequency of use).

Additionally, the stove should have a yearly check-up by a professional. Heating professionals can check that the doors, gaskets, electric connections and seals on

the stove are in good condition. Also, they can check the chimney for creosote, rust, and corrosion.

### Efficiency Range

Pellet stove efficiency ratings are published by pellet stove manufacturers. The efficiency ratings are a combination of electrical efficiency, combustion efficiency (a measure of the heat produced from burning fuel), and heat transfer efficiency. Efficiencies are typically between 60–80%. The best way to ensure you are getting an efficient stove is to buy an EPA-certified model, which can be found on the EPA website. More efficient stoves lose less heat up the chimney and deliver more heat into the home.



The pellet stove installed at the University of Alaska Fairbanks Sustainable Village has an efficiency of 78%

Advantages	Disadvantages
<ul style="list-style-type: none"> <li>• Pellets are considered a renewable resource.</li> <li>• Depending on local fuel costs, pellets can be an inexpensive method of heating.</li> <li>• Pellets have low particulate emissions when burned.</li> <li>• There are pellet factories in Alaska.</li> <li>• Unlike wood stoves, pellet stoves have controls that allow for unattended, controlled heating.</li> </ul>	<ul style="list-style-type: none"> <li>• Requires electricity and thus stove won't work during an outage</li> <li>• Fuel cost dependent on pellet market</li> <li>• The ash must be emptied from a pellet stove every few days.               <ul style="list-style-type: none"> <li>• The safety of the pellet stove is dependent on proper use and maintenance.</li> <li>• Large hoppers on a pellet stove can take up considerable space in the interior of a home.</li> </ul> </li> </ul>



For more information on home heating devices:  
 –CCHRC website: [cchrc.org](http://cchrc.org)  
 –Consumer Guide to Home Heating:  
[http://cchrc.org/docs/reports/Consumer\\_Guide\\_Home\\_Heating.pdf](http://cchrc.org/docs/reports/Consumer_Guide_Home_Heating.pdf)  
 –Your Northern Home: <http://cchrc.org/your-house>