

HOW TO FIND THE RIGHT WOOD OR PELLET BURNING STOVE:

These devices burn efficient alternatives to natural gas, oil, and coal.

Rising energy costs have prodded Americans to buy not only more fuel-efficient cars, but also wood pellets, which generally are made from sawdust and wood shavings, as fuel to heat their homes. About 800,000 homeowners are already using them.

Although you can use pellets to run a whole-house heating system, the fuel is more commonly used to feed fireplace inserts and freestanding stoves serving as supplemental heating appliances. Turn on an insert or stove when you're in a room and you can turn down the household thermostat and thus save money. Turning wood waste (and other biomass, like shelled corn and wheat hulls) into energy-dense fuel results in less waste being heaped onto landfills. Plus, pelletized wood and more-traditional solid wood are eco-friendly alternatives to nonrenewable fossil fuels such as natural gas, oil, and coal.

Before you jump on the wood-burning bandwagon, though, consider a few of the drawbacks. Because most homes aren't equipped with thermostats in every room, the heat from an insert or stove might cause nearby thermostats to think the temperature throughout their zones is at the set level. The result? Rooms adjacent to the heated space could become cold, and you might be tempted to boost the thermostat when in those rooms. That defeats the purpose of the stove or insert, because it will save money only if you keep the thermostat turned down. Also, your actual savings depend on fuel costs in your area. It's also worth noting that wood and wood pellets don't burn quite as cleanly as natural gas or fuel oil, which is a concern if you or family members have respiratory difficulties. Perhaps most important to note is that wood-burning and pellet-burning appliances require constant attention--loading, lighting, tending, and cleaning--especially compared with the "just press start" ease of most gas- and oil-powered appliances.

HOW TO CHOOSE

Appliance type. If you already have a fireplace, don't use it for space heating. Fireplaces often cause all areas except the room they're in to become cold. And their efficiency is very low--generally about 25 percent. But you can boost the efficiency of a fireplace with a fireplace insert. Essentially a self-contained firebox, the insert fits into the existing box and allows air to circulate around it, thus heating it. The insert is connected to the chimney to vent the smoke and combustion by-products. If you don't have a working fireplace, choose a freestanding stove, which you can place nearly anywhere in your home. (Venting a freestanding stove requires punching through the building envelope and installing a chimney of appropriate design, or alternatively, using an aftermarket power vent designed for wood-burning appliances.) Whichever type of appliance you choose, expect to pay at least \$750 plus installation fees of \$250 and up. A [National Fireplace Institute-certified installer](#) should install the appliance.

Heating needs. Heat load is measured in British thermal units per hour, or Btu/h. You need 25 to 30 Btu/h per square foot, or at least 5,000 Btu/h for a 200-square-foot space. The actual heat loss (and conversely the amount of heat needed) is based on where you live (outdoor air temperature), the amount of insulation in the ceiling and exterior walls of the space, the number and size of

space's windows, and whether or not there is heated space above and below the room. Calculate how many Btu/h you need to heat your space and select an appropriately-sized insert or stove.

Fuel. According to the United States Department of Energy, the average cost of a cord of firewood or a ton of wood pellets is \$190. But for a true comparison of the costs, you have to look at not just the price of the fuel but also the heating value of the fuel, also measured in BTU, and the efficiency of the heating appliance. Using averages for all three, the Energy Information Administration's Heating Fuel Comparison Calculator estimates it costs \$14.39 to produce 1 million Btu using pellets and \$15.83 using solid wood. Those figures are between the costs of coal (\$5.35) and natural gas (\$19.62) and are well below the costs of oil (\$22.59), propane (\$27.77), and electric furnaces, baseboards, and space heaters (\$30.82).

Other significant differences between wood and pellets:

- **Availability.** Cord wood is sold in most parts of the United States. If you're lucky, you might be able to harvest the fuel for free from your own property. Wood pellets aren't as widely available, though manufacturers are in every region of the country. When you're buying cord wood, be sure you get what you pay for. A true cord is a stack that's 8 feet long x 4 feet deep x 4 feet high; a "cord run" is the same length and height but includes only 16-inch logs, making it a third the volume of a true cord.
- **Grade.** Use whatever hardwood is plentiful in your area and prepare and store it properly. There are two types of wood pellets: standard grade, which contain more ash, and premium grade, which burn a bit cleaner but are a bit more expensive. Some stoves can burn both grades and others are designed to burn pellets made of corn, wheat, and other materials. "Multi-fuel" inserts and stoves can burn pellets made from wood and wood alternatives.

Emissions. Traditional wood-burning fireplaces and older stoves can be woefully inefficient, and are known to produce upwards of 40 grams of smoke per hour. The latest wood-burning inserts and stoves are much better--EPA-certified to produce no more than 7.5 grams of smoke per hour. Pellet emissions are so minimal that the EPA does not regulate them (though voluntary certification is available). In areas of the country where burning solid wood is restricted, pellet burning is often unrestricted.

Convenience. Wood-burning appliances are literally "off the grid," so you need to load, light, and stoke them by hand. Pellet-burning devices, on the other hand, can be fully automated but require electricity to operate. (Battery backups are available, and you can also connect the units to a backup generator. Although you don't need to tend to pellet appliances, you do need to fill the hopper frequently, depending on the size of the reservoir and amount of use. You'll need to dedicate sufficient space to store wood (an average of 6.5 cords to heat a home for one heating season--obviously less to fuel a single supplemental heating appliance) or premium wood pellets (7.3 tons) according to the USDA's Fuel Calculator.

Regardless of what you burn, you'll have to clear out the ashes, clean the chimney, vent connector, and flueways, and perform basic maintenance. Also have the unit inspected annually by a [Chimney Safety Institute of America-certified contractor](#).

Safety. Burning solid wood produces sparks, shifting embers, and creosote, a flammable liquid

that can accumulate in and clog vents and chimney stacks. Wood can also ferry things like mold and mildew into the home, and stacked cords can shelter spiders, termites, insects, and even rodents. There's also the risk of fire and carbon-monoxide poisoning, so be sure to install and regularly test smoke and carbon-monoxide alarms. If you're felling trees and cutting wood with a chain saw, there are additional safety concerns.

Design considerations. Unlike boilers and furnaces, fireplace inserts and freestanding stoves often occupy public spaces of the home and might be the focal point of the room, which means they're made to be seen. They're available in a variety of styles and finishes--classic cast-iron potbellies and contemporary stainless-steel models--to match any décor. You'll get a sense of the options at the Web sites of these manufacturers as well as at the [Hearth, Patio & Barbecue Association Web site](#).

Have any questions for Jack Dever? Email him at jackdever@sbcglobal.net