



Replacing or Buying a New Wood Stove



Considering purchasing a new wood stove, or replacing the old stove for a new more efficient burning wood stove? There are some basic questions that need answering to ensure you are purchasing the correct size of stove, and placing it in the correct location. This will save you money on firewood and will reduce air pollution.

1) Q. How do I know which size of wood stove is best for my home?

- A. *Evaluate your home's floor plan and make a sketch of the layout of the rooms on each floor (including the basement), write the size of each room, where the thermostats, doors and windows are, and if there are ceiling fans.*
 - B. *Make a note at the bottom of your floor plan, on how often you are wanting to use the wood stove – Is it your main heating, or for occasional use.*
 - C. *If you are changing out your old stove for a new stove, take a photo of the area where your existing stove is located and a photo of your stove pipe and chimney. Bring this in to your dealer along with the sketch.*
- *Some stoves can heat an entire house, although that is not the intention*
 - *Stoves work best as zone heaters for the most-used areas*
 - *A stove placed in one room will heat adjacent rooms if there's good airflow at the ceiling and floor*
 - *If your home is divided into many small rooms, you probably won't be able to move the heat around the rest of the house without the use of fans*
 - *Size considerations must take account of your house type, climate zone and standard fuel*

2) Q. What if my home is an older home and very drafty – does this affect the size or type of stove needed?

- A. *Most definitely, unless you wish to feed your stove very frequently. Not only will a larger stove be required but extra wood will need to be split, carried & burned. Good exercise but not the best choice. The only bonus might be plenty of air for combustion. Logically, seal those drafts.*

3) Q. How do I know which room is the best room to place a wood stove?

- A. *Generally bedrooms are kept cooler so a central location of living/dining room/ kitchen area is best suited for placement of a wood stove. Use fans to warm the extremities.*

4) Q. If I want to place a wood stove in the basement what do I need to know?

- A. *How can outside air be sourced? How can warm air be moved upstairs? Stairway, fans, main floor registers open to basement? If a furnace exists, can its summer fan circulate the warm air throughout the house? Well planned chimney placement is necessary for efficiency & safety.*

5) Q. Do I need a sketch if I know that I just want to use a wood stove to heat one room?

- A. *Yes, if the wood stove is placed in the room with the only thermostat in the house, the adjacent rooms (especially if there is not good air flow - room to room) will be colder.*

6) Q. Do I need a sketch if I am already using a wood stove and I just want to upgrade?

A. *Yes, it is a good idea to make sure your new stove will work at its optimum. A new stove may have different clearances that may allow an advantage in adjusting the location of the stove.*

7) Q. Should I buy a woodstove based on how many square feet a particular stove states it will heat?

A. *Not necessarily, stove manufactures will state how many square feet of space that the stove will heat but it is important to evaluate your home's floor plan and this will determine the size of stove needed. Floor plan, insulation, windows, weather sealing & ceiling height all have bearing on stove size choice. Heating capacity of a wood stove can vary with the type of wood you will use. Burning softwood like spruce will put out much less heat per firebox load than it will when burning a hardwood like maple.*

8) Q. Should I buy a woodstove based on heat output?

A. *Not necessarily, as the ratings are not standardized and some manufactures base their heat output on EPA testing which uses soft wood and others based on their own testing using hard wood. (Using hardwood for heat output testing will have a higher heat output) The average medium size house needs 5,000 to 20,000 BTUs per hour of continuous heating power, even during cold weather. Heat output on non-catalytic stoves tend to produce a higher peak heat output, but this doesn't mean they'll produce more heat over an eight hour burn cycle, which is more relevant performance indicator.*

9) Q. How do I know how a stove will heat over an eight hour burn cycle?

A. *Take all relevant house information to a well informed, reliable dealer to advise you. A medium or larger stove will usually be required.*

10) Q. Which materials are used to build wood stoves?

- A. *Cast iron, welded steel, soap stone.*
- B. *Poor maintenance and improper burning can damage any stove. Some stoves may be rebuilt.*

11) Q. Does the quality and or thickness of cast iron or welded steel vary on each stove and why is this important?

A. *Yes, the thickness can vary & so will the cost. Less expensive steel stoves usually use thinner steel than stoves found in specialty Hearth Stores. It is important that a stove is tested, certified and labeled by a proven facility.*

12) Q. I heard that wood stoves have insulation in them – Does the quality/thickness of insulation vary per stove model and per brand?

A. *There is not much variance. This insulation is typically above and beside the baffle to help maintain high firebox temperatures.*

13) Q. I heard that some stoves are built with soapstone panels in their sides, back and top – what is the benefit?

A. *Manufacturers of soapstone stoves state that they will hold heat for many hours, however these stoves are slower to heat up.*

14) Q. I heard that baffles are used in non-catalytic stoves to divert gas flow – what does this mean and does the quality of baffles vary per stove model and per brand?

A. *Baffles block direct exit from the burn chamber so that a new fresh air feed reburns the gases & smoke. In certified stoves all baffles should perform well.*

15) Q. In terms of durability (the life of a wood stove) what should I look for?

A. *Internal parts of a wood stove, get heat stressed, so many manufactures of both cast iron and welded steel stoves have designed their products so that the highly-stressed internal parts are replaceable. It is important to replace the internal parts when worn so that the stove operates at its optimum. Some parts are stainless steel and last longer than steel. Some stoves are not designed for years of continuous winter use, and key parts may be welded in and therefore cannot be replaced.*

16) Q. Which parts in a woodstove need replacing and how often?

A. *Use & abuse determine frequency. Door, glass & other gaskets are more commonly replaced. Firebricks would be next, followed by baffle kits & catalytic combustors. Over burning will shorten the life of stove parts. Door glass seldom breaks unless impacted. Most door glass will remain clean if dry wood is used and venting is correct.*

➤ *There is a simple test for a failing door gasket (a failure could be indicated by the glass becoming smoky or black in the corners or when the air supply is dampened down and the fire remains brisk). Unless you have excess cash, please do this test only when the stove is cold.*

1) *Using a paper bill of \$5.00 or more, open the door and lay an end of the bill across the gasket and close firmly the latch of the door.*

2) *Holding both corners of the bill, attempt to slide it out. If it slides out....*

- *If it slides out with little resistance, your gasket is worn.*
- *If it slides with moderate resistance then all is well with door gasket.*
- *If it won't move and tearing the bill is likely – Stop! – All is well with your door gasket.*

17) Q. Should my decision on the type of wood stove purchased be also based on how often I tend to use the wood stove.

A. *This is a factor but not the most important. The seasons of use are more relevant as Winter use dictates the stove size regardless of frequency. Non winter use allows a smaller stove.*

18) Q. I noticed that some wood stoves have an EPA label on the back of the stove, what does this mean?

A. *All wood stoves and wood inserts sold now in BC must meet the Environment Protection Agency Standard (EPA) and be CSA approved. EPA, established a mandatory smoke emission limit for catalytic wood stoves of 4.1 grams of smoke per hour (g/h) and for non-cat stoves of 7.5g/h.*

19) Q. Are all the wood stoves and wood inserts sold today, emitting 7 grams or less per hour?

A. *Yes, but wood stoves and inserts, and chimneys need to be maintained so that they continue to operate at optimum level. The type of wood, its dryness, and how one operates will also affect the level of pollution (amount of emissions) emitted into the air from burning. The type of, placement and proper installation of a chimney also plays a bigger role in proper stove operation than most think.*

20) Q. Is wood smoke pollution?

A. *Yes, science now tells us that there are no safe levels of smoke. Smoke contains a number of toxic pollutants and fine particulate. Fine particulate settles into the deepest parts of the lungs. Those with heart conditions, respiratory illnesses, and children are most at risk, but everyone is affected. Fine particulate from wood smoke will seep into neighboring homes so it is important to check go outside and check your chimney and adjust your operating methods until you can burn without producing the smoke.*

21) Q. I would like to use wood heat, what would be the lowest emitting appliance?

A. *See "List of EPA Certified Stoves" at the following website.*
<http://www.epa.gov/oecaerth/resources/publications/monitoring/caa/woodstoves/certifiedwood.pdf>

22) Q. What is the lowest emission rating on wood stoves using cord wood and where can I see this information on the stove?

A. *Those rated at 1 gram/hr EPA (Ratings are usually in the information booklet, please ask your Dealer)*

23) Q. What is the difference between a catalytic versus non-catalytic?

A. *Ongoing debate over which is one is better has been debated for many years but both burn up to 90% cleaner than older conventional stoves. Both have their benefits and limitations and their performance differs.*

I. Stoves with a catalytic combustion

Smoke passes through the catalyst-coated honeycomb where the smoke is burned (smoke is not only pollution it is wasted fuel – passing through the catalyst, this smoke turns into heat). Catalytic combustion produces a long steady output of heat.

The catalytic element degrades over time, resulting in higher emission output and must be replaced; with careful use the catalyst can last more than six seasons, but if the stove is over fired, trash has been burned or there has been no maintenance the catalyst can fail in two years, (never burn trash such as magazines, white paper, cereal boxes, any plastic).

One advantage of catalytic stoves is that the good ones can deliver a lower burn rate over a longer period than a non-cat and still burn clean. The stove manual will be detail frequency of removing and cleaning the combustor. Following it will save money and the amount of wood used.

Does the catalytic stove have to get to a certain temperature before the catalytic combustion starts working and if so, does this temperature have to be maintained to keep the catalytic combustion system working?

A. A thermometer inserted through a hole in the top of the firebox indicates when the combustor should be engaged after which time a thermostat setting will maintain the temperature necessary.

*II. **Non-catalytic combustion appliances** do not use a catalyst. Instead it uses good secondary burn technology. The three key features to create good combustion are insulation, a baffle to divert gas flow and pre-heated secondary air introduced through small holes all around the upper part of the firebox. Good conditions for combustion include high temperatures, so the baffle and some other internal parts will need replacement as they deteriorate with heat.*

24) Q. How often should I have my stove or insert internal parts inspected (How can I tell that parts are worn out)?

A. Annually or more. Door gasket becomes hard & crusty or the glass may smoke up or turn black indicating leakage. Baffles or rails may crack or warp. Firebricks wear thinner or break with contact by wood. Again, over fired stoves result in higher maintenance. Study the manual.

25) Q. I heard that a wood stove chimney is the engine that drives the stove. Please explain?

A. A warm chimney of proper length draws air into the stove for efficient combustion & then exhausts the stove. A straight interior chimney is most efficient & elbows or horizontal runs reduce the effective draw of the chimney.

B. The greatest efficiency is achieved when the size of the stove flue collar, the flue and the chimney is the same. (Buying too large, improper location will result in more wood being burned, more smoke pollution and unhappy neighbors)

26) Q. What style of chimney will give me the most benefit – Why?

A. A straight double wall pipe going into a metal insulated chimney creates the best draw, is most efficient & hence creates the least creosote & least cleaning.

27) Q. Is an inside chimney better than an outside - Why?

A. Yes. Warmer, hence better draw particularly on cold days. Also, less creosote.

28) Q. What is the difference between flue collar and chimney – is it just different words but means the same?

A. *The flue collar is the ring on surface of the stove into which the pipe (single or double wall) or flue fits. The chimney is the metal insulated “pipe” that goes from inside the house out through the attic and roof to the chimney cap. So, terminology says stove then flue then chimney.*

29) Q. What happens when there are lots of flue joins that bend?

A. *Elbows cause a burbling so reduce the draw & the efficiency. Small angles are best & 90 degree along with tees are the worst. More elbows decrease draw & efficiency & increase the possibility of creosote.*

30) Q. My friend has a wood stove upstairs and one in their basement, both are EPA stoves but the downstairs one always smokes (He is using dry firewood)? What could be the problem?

A. *The greatest likelihood is the lack of direct outside air into the stove or immediately beside it. A negative pressure situation could occur when the air pressure in the chimney & the house above is greater than the basement so the smoke is pushed out the stove door. To help alleviate the negative pressure problem, close windows and doors upstairs and open a window near the stove. Directing outside air to the stove & some fresh air into the basement should alleviate the problem. HINT!!! Stoves like warm chimneys so when the basement stove needs to be lit and it's cold DON'T FIGHT IT get a hair dryer direct it up through the stove for 3 to 5 minutes (after the wood is set) & light it up! Your stove & family will love you for your wisdom. It should be noted that direct combustion air does not necessarily resolve a negative pressure situation.*

*If there is still smoke coming out of the outside chimney then it could be that your wood is wet, and or there is creosote buildup which reduces the draw causing the combustion to be incomplete or your chimney is not long enough to create a proper draw. Some stoves require specific chimney lengths. Check the manual carefully. **There are installation regulations regarding top of chimney relative to peak of the roof to achieve successful draw. Ask your dealer or inspector.***

31) Q. Does the location of the outside portion of the chimney matter? What should I beware of?

A. *The less amount of chimney exposed outside creates a warmer chimney resulting in a more efficient burn. Close to the peak is the best location. If you must go up the outside wall a chase around the chimney is advantageous for warmth. A chase is a three wall, framed, insulated box from where the chimney exits the house up to the top of the chimney. The chase would be drywall lined with a 2” clearance from the heat shield around the chimney.*

Typically it is sided to match the house. The “chase” needs to be part of the envelope of the house, not simply a three-sided box added to the outside.

32) Q. What are the installation guidelines?

A. *The guidelines allow you to do an installation that would be accepted by an inspector. They should be available at your dealer or from any WETT inspector.*

33) Q. Can I install my own woodstove or who should be doing the installation?

A. *Yes you may & follow manufacturer's guidelines precisely. A WETT certified installer has had training to install wood heating units correctly.*

34) Q. What does stove clearance mean?

A. *The manufacturer's specifications for the distance a part of the stove must be from combustibles. Wood behind drywall is defined as combustible.*

35) Q. Where does a wood stove state its clearance?

A. *The plate on the back of the stove will have this information as well as brochures and manual for stoves.*

36) Q. What does WETT mean?

A. *WETT (Wood Energy Technical Training) is a training organization. As such, WETT trains people who wish to get involved with the sale, installation, inspection and maintenance of wood heating appliances. Once people complete the training program and acquire enough experience, they become WETT certified in the specific area for which they sought training. WETT certification implies that they have met the educational and experience requirements.*

37) Q. Should I be calling my insurance company if I am installing a wood stove or wood insert for the first time or replacing my old stove for a more efficient burn technology stove?

A. *Yes & preferably have it inspected.*

38) Q. Do I need a building permit when I am replacing an old stove or installing one for the first time?

A. *Check with your local Municipality or Regional District*

39) Q. May I use an existing masonry chimney to vent my free standing stove or fireplace insert stove?

A. *Yes*

1) Free Standing Stove: *Depending upon the chimney flue liner size, some stoves may be connected directly to a masonry chimney. However, BEST RESULTS and a greater efficiency is gained using a stainless steel flue liner. The liner may be rigid or flexible depending upon the installation. This can be a do it yourself project but an experienced installer is preferable.*

2) Fireplace Insert Stove: *A direct liner connection to the insert stove is necessary when using a masonry chimney. Modification to the steel liner of the existing fireplace may be necessary, as will a choice of rigid or flue liner. Hire a qualified and experienced installer to install insert stoves. When visiting your dealer for information ask for help in selecting an installer.*

Before buying a woodstove you want to:

- Make sure you set aside enough time to discuss your needs with the Dealer
- Choose an experienced, reliable Dealer who will take the time to educate you
- Check requirements for proper insurance
- Read safety regulations for location of stove & clearances to combustibles for all flue & chimney
- Install required size of floor protection for the stove
- WOOD FOR BURNING!! If spruce or pine , cut, buck & split in late winter or early spring & air dry under cover for 6 months, This IS DRY & ready to burn, **Standing dead is NOT DRY**
- If the wood is fir, dry for at least 2 seasons. Hardwoods require longer
- Remember, the chimney is the engine (Be sure to match chimney size with stove flue collar size for best results, less pollution and happier neighbors. Please see **Q – 25**)
- All wood stoves and inserts sold in BC must be EPA approved

Before purchasing be certain to acquire all the facts, information on safety, insurance and proper installation

List of EPA Certified Stoves

<http://www.epa.gov/oecaerth/resources/publications/monitoring/caa/woodstoves/certifiedwood.pdf>

Visit the following website and view the informative & entertaining wood heating videos:

www.rdos.bc.ca *click on air quality and then click on wood heating (scroll to the bottom of the page and to view by clicking on each of the following titles)*

“Advanced Wood Stove Technology”, “Firewood from Forest to Woodshed”, “Efficient Wood Stove Operation”, “Chimney Smoker PSA”, “Outdoor Smoker PSA”