Bittern Countryside

Community Interest Company

Energy Fact Sheet 2.

New for 2021

"Heat from Trees"

Using a woodburning stove

Save energy,

Cut your carbon footprint

Save the environment!

Supporting the

Arnside Silverdale AONB

Low Carbon Landscape Initiative

Bittern Countryside Community Interest Company
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Introduction

This is the second in a series* of leaflets prepared by the Bittern Countryside CIC to help you understand renewable energy and how it can reduce your carbon emissions and perhaps save you money on your energy bills.

Installing and using a woodburning or multifuel stove.

Do you use an open fire either as a top up heating system or as a focal point in your room? If so consider replacing it with a modern woodburning or Multifuel stove. If you are only going to use wood you should use a dedicated woodburning stove, as they are more efficient than a multifuel stove when burning logs. If you have any problems with wood storage, handling or supply then a multifuel stove might be better. In order to get the maximum benefits from burning wood you do need to be able to store a reasonably large amount of fuel in a covered store. Ensure you know what you want to be able to burn before you purchase. A woodburning boiler stove can be used to heat water as well.

Why should I burn wood?

Burning seasoned wood is good - it is a clean, low carbon renewable energy source which offers many benefits. It can deliver significant cost savings because of lower fuel costs: woodfuel can be cheaper than fossil fuels when replacing electric, LPG, coal or heating oil. It can provide an alternative, competitively priced source of heat for use in power cuts.

Woodfuel is carbon lean. Burning wood releases carbon dioxide but this is balanced by the carbon dioxide absorbed by the original trees and in the growth of new ones. The biggest savings of carbon dioxide occur when wood is burned in an efficient woodburning stove. In areas like the AONB it can provide a cost effective way of helping local woodfuel businesses and managing our local woodlands.

I don’t want to burn coal or logs - can I use a woodburning stove?

Wood Briquettes or Heat logs are available. They are made from sawdust, or waste wood compressed at high temperature with no additives and can replace logs. They give off about 3 times the heat of a similar sized log and come in sealed bags. They expand in the stove (so leave enough room). While they are only slightly more expensive than well seasoned logs per unit of heat if bought in quantity, they are much cheaper than burning poor quality or unseasoned logs.

You can make your own newspaper logs but these, although they burn well and produce a good amount of heat, do produce a lot more ash and you will need to empty your ash tray more frequently. They are better mixed with logs or briquettes. Coffee briquettes are made from used coffee grounds but require a filler to keep their shape. They are more expensive. Peat based products burn well but should not be used as digging peat destroys one of our main carbon sinks. For more details see Fact Sheet 3.

Do I need a chimney?

No, you can put a woodburning stove wherever there is sufficient room and the flue can be properly installed satisfying building regulations. If there is no chimney an insulated flue can be used. If you are using a pre-existing chimney it will need to be lined.

What about pollution from particulates?

In a rural area these are not likely to be a problem if you use your stove responsibly. Many activities from making toast to vacuuming give off particulates. A good discussion of this can be found on the Which website at https://www.which.co.uk/reviews/wood-burning-stoves/article/wood-burning-stoves-what-you-need-to-know/stoves-and-pollution-aIPXC8g7lbu5

Things to consider.

Efficiency:

An open fire will give about 25% of the heat it generates into the room. The rest goes straight up the chimney. In addition, whenever the fire is not in use, warm air from the inside of the house will rise up the chimney drawing in cold air from outside and causing draughts. Around 75% of the heat generated by an enclosed fire that is properly installed and used will go into the room. In addition because the fuel is being burned more efficiently at a higher temperature, less air is drawn into the room and passed up the chimney. If the stove is not lit then there is no air drawn up through the chimney. Wood pellet stoves and boilers are usually extremely efficient – some designs are better than 90% efficient.

Safety:

If properly used a woodburning stove can safely be left unattended. There is no risk of sparks or embers setting fire to carpets etc. Some types of wood fuel are prone to

spitting – most softwoods such as spruce and pine – and should not be burned on an open fire but they can be burned safely in a woodburning or multifuel stove.

It will give you a back-up if your main source of heating fails

In these days of rising gas prices and possible power outages a wood-burning stove with a year's supply of fuel will give you the re-assurance that you can keep at least part of the house warm.

What are the running costs?

This depends on whether you have a free source of wood. If you collect your own when volunteering it is free. For volunteering oportunities look at the AONB website at https://www.arnsidesilverdaleaonb.org.uk/get-involved/volunteer/ .
You will also need somewhere to store the logs so that they are dry when you burn them. If you have to buy wood, well-seasoned logs will cost around about £150 - £170 a cubic metre (or half tonne). Briquettes (heat logs) are around £200 a half tonne but contain more energy and much less water. Coffee logs from recycled coffee grounds are more expensive but are made from a waste product. Logs are often sold by "the load" or a "pickup full" etc. with no reference to weight or volume. Better to talk to someone who has already got a reliable firewood supplier, than just pick a log supplier at random from the local paper! (Fact Sheet 3 deals with buying, storing and using wood.)

If you already have a simple open fire that you use, you can easily work out how much you will save by taking your annual wood/solid fuel costs and dividing them by 3. This gives a fair estimate of your fuel cost using a stove.

What other costs are there?

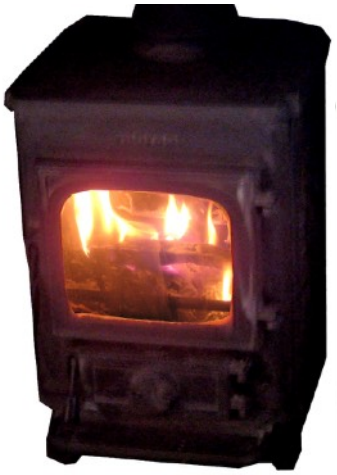
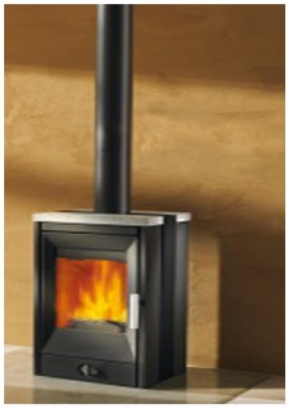
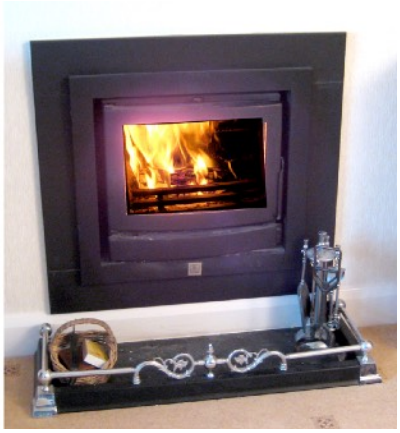
As with an open fire you will need to have your chimney swept regularly. If you burn well seasoned dry wood then this should not need to be done as often as with an open fire. There are no other extra ongoing costs associated with a stove as opposed to an open fire.
Obviously a woodburning **boiler** stove will need slightly more maintenance and usually will have an electric circulation pump for the radiators. A plumber should be able to connect a woodburning boiler stove into an existing central heating system, or install a completely new system. If you have an existing system that will continue to use a gas or oil boiler to back up the woodburner you will need to seek specialist advice from a qualified heating engineer.

Choosing an efficient Woodburning/Multifuel stove

Stove design:

There are 3 types of stove:

(i) a free standing stove with a flat top that stands in the hearth and has a pipe that runs up inside an existing chimney;
(ii) a freestanding stove with a flue that goes out through the wall and up through an insulated metal flue;
(iii) an enclosed stove, (or insert or cartridge stove) that fits flush into a chimney.

Choose the smallest fire box for your heat requirement, with controlled hot secondary air, and ash retained in the base of the fire. Always keep the doors of your stove closed. Stoves with doors open provide extra radiant heat but are less efficient. They also suffer from the drawbacks of an open fire. If you have an external flue rather than a chimney it must be well insulated. Whenever steam is in the chimney, the temperature at its outlet must be above 100^0C to avoid water condensing.

Visible smoke emission from the chimney is a sign of inefficient burning.

Operating a stove burning wood:

Lighting the fire.

Open the air wash vent to full. Start the fire with a bed of crumpled newspaper and a few pieces of kindling. (You should not need to use firelighters which are designed to be long burning for coal fires). Once the kindling is burning brightly introduce some larger logs keeping the vent open until they are burning well. Once the logs are burning the amount of air entering through the vent can be progressively reduced.

Stoking the fire

Under efficient controlled conditions of burning, wood breaks down with air into ash, carbon dioxide and steam. Control of the air supply is critical. Burning occurs in four stages:

When the fire is lit the stove must pre-heat to 200ºC to oven dry the wood and drive off the steam. (very little heat is produced at this stage). A good air supply is needed.
Once this temperature is reached the wood burns at 200 to 500^{0}C producing hydrocarbon gases and charcoal.
At 500^{0}C the stove is hot enough to heat the secondary air supply so that gases burn at 600 to 700^{0}C producing carbon dioxide and steam.
Once the gases have been burnt off the charcoal continues to burn at 300 to 500^{ø}C into carbon dioxide and ash.

So for best results after adding more wood, set to fast burn to drive off any water. Only set to slow burn when the wood is burning properly. Newly added wood set to burn slowly will create smoke and tarry deposits in the chimney.

Users of older stoves are advised to consult their stove centre about current recommendations to achieve the best results.

Keeping the fire in overnight

The stove should not be banked up with logs. A bright fire which has turned the wood into charcoal should be left with the day's ash and with minimal air. Charcoal or bark briquettes could be added.

If hydrocarbons are not all burned they set as tar in the chimney.

Cleaning the fire

The ash pan will need to be emptied periodically. A wood fire burns best on a bed of ash so this should be left in the grate until it becomes unsightly. It is important to keep the glass clean. This can be done easily when the fire is out by moistening a cloth, dipping it in the cold ash and rubbing this over the glass to loosen any deposits. Polish off with newspaper.

If the glass becomes very dirty it is a sign that you are not burning the wood at a high enough temperature.

What will it cost to install?

A small good quality woodburning/multifuel stove can start from around £500 plus installation. However if you want one that can heat water for radiators as well as provide room heating you will need to pay quite a bit more (from £1500 upwards). Unless your chimney is in very good condition, you will most probably need to have the chimney lined. The easiest solution is a stainless steel flexible liner. Make sure the liner fitted is suitable for the fuel you will be burning. Multifuel liners and wood-burner liners are different and any liner designed for gas fires/boilers is never suitable for use with a solid fuel stove of any kind. You should probably allow between £2,000 and £3,000 for the total purchase and installation.

Alterations to chimneys, including fitting liners, are covered by Building Regulations and therefore the best way to deal with the red-tape is to pay for installation. Use a HETAS approved contractor and they will issue the necessary approval papers required by the Local Authority Building Control department. The range of stove designs is huge, with modern or traditional styles available to suit the character of your home. If you are keen to burn wood, but are looking for the advantages of a modern central heating system, you will need to consider a wood pellet boiler. These are capable of fully automatic operation, with micro-processor controls and the fuel takes up less room than required for logs as the pellets are highly compressed saw-dust and therefore denser than natural wood. The fuel must be stored indoors in dry conditions.

Where can I go to get the work done**?

There are a lot of suppliers and installers in our area. Going to a showroom will enable you to see whether the stove will look good in your room.

Remember that stoves are best if burning at maximum output so do not buy one that provides more heat than you need.

The AONB Unit and CIC members have used the following firms and contractors with success.

Burning Curiosity of Kendal http://www.woodburningstoveskendal.co.uk

Cumbria Stoves of Staveley, https://www.cumbriastovesltd.co.uk

Bob Whitaker Lancaster, https://www.robertwhitakerheating.co.uk

** Neither the AONB nor The Bittern Countryside CIC are endorsing any of these particularly.

Where did the CIC get its information from?
All the information is drawn from recognised official websites, publications and from practical experience - contact us by email: info@bitterncountrysidecic.org.uk or by telephone on 01524 761034 for more information.

If we all work together we can help reduce our carbon footprint and help preserve our AONB from the ravages caused by climate change.

If you have found this helpful please pass it on to a friend to read. All the fact sheets are available free of charge on our web site.

The BCCIC has produced 5 Energy *Fact Sheets and a directory.*
They are all available free on our website at
http://bitterncountrysidecic.org.uk/?BCCIC_PUBLICATIONS .

Fact Sheet 1 "**Electricity From Sunshine**" deals with PhotoVoltaic panels.
Fact Sheet 2 "**Heat from Trees**" deals with woodburning and multifuel stoves.
Fact Sheet 3 " **Woodfuel Wisdom**" deals with buying, storing and using wood.
Fact Sheet 4 "**Avoiding energy waste**" looks at small ways you can lower your carbon footprint.
Fact Sheet 5 "**Heat from Ground and Air"** deals with Heat Pumps.

*"**Feel Good about Wood**" is a directory that gives more information about local wood management, wood products and wood suppliers in the AONB.*

We also produce a series of Nature Atlases about the flora and fauma of our AONB which are also available on our website, or hard copies can be purchased from the Landscape Trust Online Bookshop or from the shop at RSPB Leighton Moss.