

Bittern Countryside

Community Interest Company



Energy Fact Sheet 2.

“Heat from Trees”

Using a woodburning stove

Save energy, Save money

Save the environment!



Supporting the

Arnsdale Silverdale AONB

Low Carbon Landscape Initiative

Bittern Countryside Community Interest Company
Registered Office: The Old Station Building, Arnsdale, LA5 0HG
Registered number 6363720



Website: <http://www.arnsidesilverdaleaonb.org.uk/AONB/Support/Bittern-Countryside-CIC.html>

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 save you money on your energy bills and reduce your carbon emissions too.

** Fact-sheet 1 "Electricity From Sunshine" about PhotoVoltaic panels is already out. Fact sheet 3 will deal with buying, storing and using wood fuel, and the series will eventually cover wood pellet and woodchip stoves and central heating, Heat pumps and solar hot water.*

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 perhaps you should 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. Some multifuel stove designs require adjustment to switch between burning wood and burning smokeless fuels or coal. Some designs are not suitable for burning house coal and doing so will damage the stove. 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 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 and can't handle logs - can I use a woodburning stove?

Wood Briquettes or Heat logs are available. They are made from sawdust compressed at high temperature and can replace logs. They give off about 3 times the heat of a similar sized log and come in sealed polythene 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. Peat based products burn well but are not encouraged as their source is not sustainable. 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.

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. See our separate factsheet for wood pellet stoves and boilers which 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.

What are the running costs?

This depends on whether you have a free source of wood. 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 £100 - £140 a cubic metre (or half tonne). Briquettes are around £175 a half tonne but contain more energy and much less water. 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.)

So, for example, using an open fire during the winter months in the evening will probably cost around £300 in fuel. This would reduce to £100 for a woodburner. Thus if you paid £1200 for the stove and fitting, then after 6 years you would have paid for the stove and

thereafter would be saving around £200 a year. Given the likely price increases in all types of fuel this could be a couple of years less.

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. Insulated chimneys are essential. Whenever steam is in the chimney, the temperature at its outlet must be above 100°C 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:

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

So for best results after adding more wood, set to fast burn to ensure all the gases are fully burned. Only set to slow burn when all the wood has been reduced to charcoal and ash. 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 (as could smokeless solid fuel in a multifuel stove).

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, though other solutions are possible. 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. 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. Wood-pellet stoves and boilers are more expensive than other options, with prices starting around £1,500 for pellet stoves and £2,500 for boilers. These will be dealt with in a separate fact sheet.

What about the Renewable Heat Tariff?

This is a proposed government scheme where anyone who has had a renewable heat source installed since 2009 will be paid for any heat they generate from renewable sources, even if they use it themselves. At the moment it looks as though wood-burning stoves will be covered.

The Chancellor of the Exchequer announced on 20th October 2010 that the scheme will be introduced in June 2011. To keep an eye on how the government plans are progressing look at

http://www.decc.gov.uk/en/content/cms/what_we_do/uk_supply/energy_mix/renewable/policy/renewable_heat/incentive/incentive.aspx

Are there any grants available?

The number of grants has fallen considerably. There are still grants available for

certain categories of users, Schools, Community projects etc. but they are now few and far between.

Case Studies,

Bob and Val Hamnett,

I bought a Stovax Riva 55 in October 2007. This is known as a cassette type woodburning stove which was inserted into an existing but previously sealed chimney breast in our kitchen. It therefore took no extra space.

The stove has an airspace surround that ventilates into the room providing most heat by convection. The installation is onto a flat chimney breast wall with no fireplace surround needed. The old flue was lined with a stainless steel flexible pipe. It lights very easily. It soon develops a roar like a furnace when lit and the dampers are fully open. Normally, however, it is left on low draught to tick over when it provides plenty of heat for a large kitchen/diner, even on the coldest of days. Often the kitchen door is left open so that surplus heat is dispersed to the rest of the house. Consequently our gas central heating can be turned off after an early morning boost for most of the daylight hours.

We spend about £100 per year buying logs. These are supplemented by logs from garden tree casualties and thinnings. There have also been some opportunities to collect wood for free. I probably spend 2/3 days per year gathering, sawing and chopping wood to supplement bought logs. I have a chainsaw and hydraulic splitter to achieve this. We soon discovered that it is hopeless trying to burn unseasoned logs. I store wood for one to two years before burning. I have two stores, one a temporary covered stack for seasoning and one stacked during early summer in a permanent store with seasoned wood, enough for burning the following winter. We use a basket of around 12 small logs for each day it is lit which is probably about 70 days of the winter.

Costs Autumn 2007: Total £1730

The Stovax Riva 55 cost £1050 supplied by Robert Whitaker, Little Fell Farm, Quernmore, Lancaster LA2 9EE Tel. 01524 32664 website: www.bob-whitaker-stoves.co.uk

The installation cost was £680 including flue lining (a major item of cost). The installer was Philip Bolland Tel. 01524 770639, recommended by Whitaker. I know that he has also satisfactorily recently installed two other stoves locally.

Roger and Natalia Walton have a woodburning stove with a back boiler that is linked into their gas central heating. They say that it is very good but was expensive to buy and install. It would only be cost effective if you have a free source of wood (or the Renewable Heat Tariff to be announced in June 2011, is particularly generous).

Contact the Bittern CCIC or the AONB office for a list of people who are happy to demonstrate their woodburning stoves.

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 they are best if burning at maximum output so do not buy one that provides more heat than you need. The AONB Unit and CIC have used the following firms and contractors with success.

Chimney lining – Phoenix Chimneys Ltd. <http://phoenixchimneys.co.uk/>

Stoves – Cumbria Green Fuels Ltd. <http://www.cumbriagreenfuels.co.uk/>

Other local suppliers who have done work in our area include:

Cumbria Stoves of Staveley, <http://www.cumbriastoves.co.uk/>

Bob Whitaker Lancaster, www.bob-whitaker-stoves.co.uk

Burning Curiosity of Kendal, <http://www.burning-curiosity.com/index.html>

Where can I find more information*?

The following have very informative websites.

<http://www.euroheat.co.uk/>

<http://www.beacon-stoves.co.uk/wood/wood-as-fuel.shtml>

<http://www.nef.org.uk/logpile/index.htm>

** Neither the AONB nor the Bittern Countryside CIC is 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: bitternccic@arnsidesilverdaleaonb.org.uk or by telephone on 01524 761034 for more information.

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