



## coordinated woodfuel Initiative

A guide to small-scale wood fuel (biomass) heating systems

This guide has been written by the Wood Fuel South West Advice Service; a project funded by Woodland Renaissance, Areas of Outstanding Natural Beauty in the South West (AONBs) and the Forestry Commission. It is for people interested in finding out more about biomass boiler systems.

As a priority, before considering the installation of a biomass heating system, you should investigate the potential for energy efficiency measures. These will help to lower heating demands and result in the installation of a smaller and cheaper biomass system requiring less fuel.

Domestic projects should contact their local Energy Savings Trust Energy Advice Centre today on: 0800 512 012.

# CONTENTS

<b>1</b>	<b>Introduction to using wood fuel .....</b>	<b>3</b>
1.1	Categorising biomass.....	4
1.2	The benefits of using biomass as a fuel.....	5
1.3	How much biomass? .....	5
1.4	What you should expect from your biomass fuel supplier .....	6
1.5	Finding a biomass fuel supply.....	7
1.6	Using your own wood resource.....	7
1.7	Woodfuel Standards.....	8
<b>2</b>	<b>Modern biomass heating systems .....</b>	<b>10</b>
2.1	How do modern biomass boilers work? .....	12
2.2	Selecting the right boiler.....	13
2.3	Capital and running costs.....	13
2.4	Operating and maintenance.....	14
<b>3</b>	<b>Basic calculations .....</b>	<b>15</b>
3.1	Boiler sizing.....	15
3.2	Annual biomass consumption and storage space .....	16
<b>4</b>	<b>Legal and planning issues .....</b>	<b>17</b>
<b>5</b>	<b>Grant funding .....</b>	<b>18</b>
5.1	The Low Carbon Buildings Programme (Helpline 0800 915 0990) .....	18
5.2	Utility Green Funds .....	18
<b>6</b>	<b>Further information .....</b>	<b>19</b>
6.1	Training .....	19
<b>7</b>	<b>Installers and suppliers of wood boilers .....</b>	<b>20</b>
<b>8</b>	<b>Suppliers of biomass fuel south west delivery.....</b>	<b>21</b>
<b>9</b>	<b>Installers and suppliers of wood stoves.....</b>	<b>23</b>

# 1 Introduction to using wood fuel

In this guide we will refer to wood fuel as biomass.

People have been producing energy from biomass for centuries, and in many parts of the world it is still the principle source of heat. However, modern technologies are far more efficient and cleaner than the traditional open fire and there are an increasing number of fuels being used namely logs, wood chips, wood pellets and wood briquettes. In these times of uncertain fuel prices more diverse sources of fuel such as straw, straw pellets, grain and miscanthus are also being investigated.



**Figure 1 - Wood chip and pellets**  
*[photo courtesy of bioenergycentre.org.uk]*

Energy from biomass refers to energy produced from organic matter of recent origin. This excludes fossil fuels which have taken millions of years to evolve. Biomass is also referred to as 'bioenergy' or 'biofuels' (in terms of renewable energy). Biofuels have been defined by the Energy Technology Support Unit (ETSU, 1991) as:

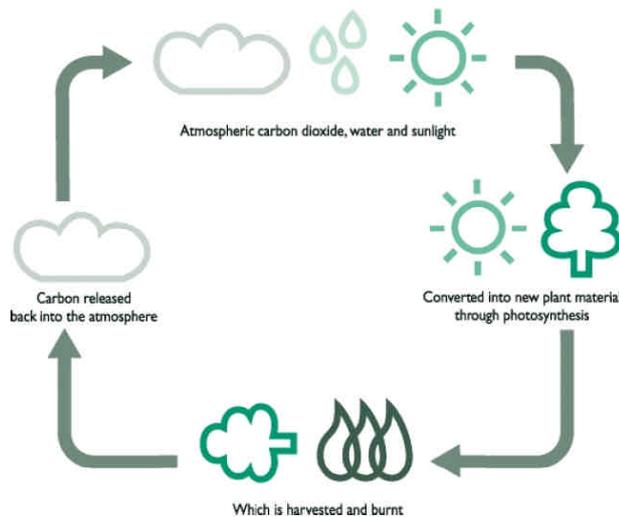
*'any solid, liquid or gaseous fuels produced from organic materials either directly from plants or indirectly from industrial, commercial, domestic or agricultural wastes'.*

However, throughout this document we are concerned with woody biomass – logs, wood chips, wood pellets and wood briquettes.

Producing energy from wood brings environmental and economic advantages both nationally and locally and has considerable potential within the UK.

Biomass heating systems, unlike other renewable energy sources, do emit carbon dioxide. However, it is the carbon dioxide (CO<sub>2</sub>) taken from the atmosphere by trees for photosynthesis that is released during burning. This closed CO<sub>2</sub> cycle means that biomass heating is considered a renewable energy source.

For sustainably managed woodland, or energy crops, the process is similar. Wood is never removed faster than it is added by new growth, therefore the CO<sub>2</sub> released when the wood fuel is burned is never more than the CO<sub>2</sub> absorbed by new tree growth.



**Figure 2 -The carbon neutral wood heating cycle**

However, biomass heating systems in reality create small net emissions of CO<sub>2</sub> to the atmosphere through operations including harvesting, transport, processing and the construction and commissioning of the boiler. Wood fuel emits 25 grams of CO<sub>2</sub> per kilowatt-hour (g/kWh); wind energy emits 8g/kWh; gas emits 194g/kWh; oil emits 265g/kWh and coal emits 291g/kWh<sup>1</sup>.

### 1.1 Categorising biomass

Biomass used for fuel falls into two main categories.

1. Woody biomass, including:

- Forest residues – from woodland thinnings, “lop and top” after felling and arboricultural trimmings
- Untreated wood waste – e.g. from sawmills, furniture factories
- Crop residues – e.g. straw
- Woody crops e.g. Short Rotation Coppice (SRC) willow and miscanthus (elephant grass)

2. Non-woody biomass, including:

- Animal wastes – e.g. slurry from cows and pigs, chicken litter
- Industrial and municipal wastes including food processing wastes
- High energy crops – e.g. rape, sugar cane, maize

SRC and high energy crops are sometimes referred to under the more general term of ‘Energy Crops’; i.e. crops that are grown specifically for energy production.

Animal wastes and industrial and municipal wastes are not covered in this guide because these types of feedstock require different technologies other than biomass boilers, such as anaerobic digestion.

<sup>1</sup> Building Regulations Part L2A - Emissions Factors  
[http://www.planningportal.gov.uk/uploads/br/BR\\_PDF\\_ADL2A\\_2006.pdf](http://www.planningportal.gov.uk/uploads/br/BR_PDF_ADL2A_2006.pdf)

## **1.2 The benefits of using biomass as a fuel**

Biomass is a renewable, low carbon fuel that is already widely, and often economically, available throughout the UK. Its production and use also brings additional environmental and social benefits.

Correctly managed, biomass is a sustainable fuel that can offer a significant reduction in net carbon emissions compared with fossil fuels and also many ancillary benefits:

- Biomass can be sourced locally, within the UK, on an indefinite basis, contributing to security of fuel supply
- UK sourced biomass can offer local business opportunities and support the rural economy
- The establishment of local networks of production and usage allows financial and environmental costs of transport to be minimised. There is no region in the UK that cannot be a producer of biomass, although some will have greater levels of productivity than others
- Woodlands, forestry and agriculture are generally perceived by the UK population to be an environmentally and socially attractive amenity; providing opportunities for recreation and leisure activities
- Biomass fuels generate significantly lower levels of atmospheric pollutants than fossil fuels, e.g. sulphur dioxide (a major cause of 'acid rain')
- Modern biomass combustion systems are highly sophisticated, offering combustion efficiencies comparable with the best fossil fuel boilers
- Using arboricultural residues, forestry arisings, sawmill co-products and waste as fuel diverts materials that would otherwise be consigned to landfill. This eliminates costs for disposal, and reduces the burden on limited landfill resources
- Utilising biomass as fuel encourages more woodlands to be sustainably managed, thus benefiting biodiversity.

## **1.3 How much biomass?**

The annual demand for biomass fuel for a particular site depends on the following:

- Scale of the installation
- Conversion option (heat only, combined heat & power [CHP], boiler or stove)
- Operating hours
- Boiler efficiency
- The energy content (net calorific value or energy density) of the fuel (Mj/tonne or kWh/tonne), which is determined by:
  - Moisture content of the fuel<sup>2</sup>
  - Species of tree
  - Type of wood (conifer/hardwood, whole tree/residues)

A useful rule of thumb for a heat only installation is 1 tonne of wood chip at 30% moisture content per year per kilowatt installed.

---

<sup>2</sup> In combustion systems any water content in the fuel must be driven off before the first stage of combustion can occur, requiring energy, and thus reducing overall system efficiency and potentially reducing combustion temperature below the optimum. [www.biomassenergycentre.org.uk](http://www.biomassenergycentre.org.uk) Forestry Commission

Table 1 below shows approximate figures for how much energy is contained in different fuels per unit weight, or the 'energy density' of a fuel. The table illustrates that 1 tonne of wood chip contains three times less energy than 1 tonne of oil. Because wood is less energy dense than oil or gas, a greater volume and weight is required to provide the same value of energy.

Fuel	Energy density by mass (GJ/tonne)	Energy density by mass (kWh/kg)	Bulk density kg/m <sup>3</sup>	Energy density by volume (MJ/m <sup>3</sup> )	Energy density by volume (kWh/m <sup>3</sup> )
Wood chips (very dependent on MC)	7-15	2-4	175-350	2,000-3,600	600-1,000
Log wood (stacked - air dry: 20% MC)	15	4.2	300-550	4,500-8,300	1,300-2,300
Wood (solid -oven dry)	18-21	5-5.8	450-800	8,100-16,800	2,300-4,600
Wood pellets	18	5	600-700	10,800-12,600	3,000-3,500
Miscanthus (bale)	17	4.7	120-160	2,000-2,700	560-750
Coal (lignite to anthracite)	20-30	5.6-8.3	800-1,100	16,000-33,000	4,500-9,100
Oil	42	11.7	36,500	36,500	10,200
Natural gas (NTP)	54	15	39	39	10.8

**Table 1. Energy density and bulk density of fuels (1Mj = 0.27kWh & 1Gj = 277.8kWh). MC refers to Moisture Content as a %. Source: Forestry Commission.**

#### **1.4 What you should expect from your biomass fuel supplier**

As mentioned previously, the quality of your biomass supply will influence whether or not your project will be a success or not. This is particularly relevant to with wood chip which can vary a great deal in terms of quality. If you are going to be using wood chip you should ensure the following:

- The wood chip comes from a supplier who understands biomass fuel. If this is the case they will be able to sell you wood chip either by the tonne, volume or energy content (number of kWh)
- Moisture content must be consistent and matched to your boiler type
- The wood chip must be of a consistent size; containing no slivers that will clog or jam the fuel feed mechanism (although for larger installations, > 500kW, this is much less of an issue, because the fuel feed systems are large enough to accommodate all sizes of fuel)
- The wood chip must be free from contaminants. For example, if the wood chip is coming from arboricultural or tree surgery arisings it may contain grit, litter and dust. Any foreign objects could damage your boiler
- If you are unable to use ash on your garden or site, the supplier may be able to remove it
- Deliveries should be regular, easy to schedule and reliable
- Your supplier should be willing to provide you with details of quality assurance

- The supplier should be able to deliver fuel into your fuel storage container
- If you are purchasing logs they should be seasoned and of uniform size and shape (some suppliers will stack logs for you).

### **1.5 Finding a biomass fuel supply**

The contacts list at the end of this document can be used to help you find a reliable biomass fuel supply, whether you need logs, wood chips or wood pellets. Please note we will be regularly updating this list as we hear about new fuel suppliers.

### **1.6 Using your own wood resource**

Some customers are able to utilise their own woodland resource. As long as the wood is managed sustainably, where appropriate and fuel is processed properly, this option will reduce running costs and improve the financial viability of the project. Processing your own wood for fuel may also open up the opportunity to sell surplus wood chip to other biomass heating installations in the vicinity.

You may need to apply for felling permission from the Forestry Commission if you plan on using your own woodland resource, see [www.forestry.gov.uk/forestry/INFD-6DFKXF](http://www.forestry.gov.uk/forestry/INFD-6DFKXF) for more information on Felling Licences, or contact the Forestry Commission on 01223 314 546.

If purchasing your own wood chipper or log splitter is not an option, it is possible to hire a wood fuel contractor (see the fuel supplier list for more details) to process your wood; you can also hire chippers.

Experienced wood fuel suppliers suggest that drum chippers produce the most consistent high quality chip, however good quality disc chippers are also suitable.

In some cases grants from the Forestry Commission's English Woodland Grant Scheme may be available, see <http://www.forestry.gov.uk/forestry/inf-d6dccc> or call 01223 314 546 for more information.

Managing woodlands also has the added benefit of improving biodiversity!



**Figure 3 - Chipper, chipping into a fuel store**

### **1.7 Woodfuel Standards<sup>3</sup>**

The species and quality of trees used for wood fuel production, and in particular wood chips, primarily determines the overall quality of the fuel. In many instances, woodland and tree management determines which trees are to be removed and therefore directly affects quality. For instance forestry thinnings, arboricultural waste, sawmill co-products, tree stumps and forest residues that include needles/leaves and bark will all be different.

It is vitally important for customer confidence to have fuel which is fit for purpose and delivered to a quality standard and specification. This has been demonstrated time and time again internationally. Even with a specific form of fuel, such as wood chips, there can be major differences in characteristics and properties between different batches chipped using different chippers, from different material, with different moisture content.

This means that while it is all eminently usable, one batch will allow a particular piece of equipment to operate according to specification, but another may cause blockages in the fuel feed line, inefficient operation, emissions, condensation in the flue, or automatic shut down of the equipment as it moves outside its design operating regime. In different equipment, however, the second batch of fuel may be perfectly acceptable.

Clear technical specifications are needed which can be incorporated into supply contracts. The European Union has developed specifications and standards – CEN/TC 335 for solid biofuels.

---

<sup>3</sup> Referenced from the Forestry Commission's Biomass Energy Centre

**CEN/TC 335** is the technical committee developing the draft standard to describe all forms of solid biofuels within Europe, including wood chips, wood pellets and briquettes, logs, sawdust and straw bales.

CEN/TC 335 allows all relevant properties of the fuel to be described, and includes both normative information that must be provided about the fuel, and informative information that can be included but is not required. As well as the physical and chemical characteristics of the fuel as it is, CEN/TC 335 also provides information on the source of the material. For more information about CEN/TC 335 visit the Forestry Commission's Biomass Energy Centre website<sup>4</sup>.

Normative specifications for wood chips:

- Origin
- Particle size
- Moisture content
- Ash content

For wood pellets standards are in use across the EU, CEN/TC 335 will include pellets. Wood pellets are only as good as the standard to which they are manufactured. Poor quality pellets tend to disintegrate into sawdust more readily than those of better quality. They may also have lower energy densities.

It is also worth being aware of the Austrian ONORM standards which are often used in place of the centralised European ones. There are standards appropriate for both chips and pellets which follow a similar system as above.

The chip size standard is detailed below:

Parameter	Measurement	G30	G50	G100
Max cross sectional area	<i>Cm<sup>2</sup></i>	3	5	10
Max length (long thin material)	<i>Cm</i>	8.5	12	25
Coarse material, max 20%	<i>retained by sieve mesh width, mm</i>	16	31.5	63
Main material, 60 to 100%	<i>retained by sieve mesh width, mm</i>	2.8	5.6	11.2
Fine material (inc dust), max 20%	<i>retained by sieve mesh width, mm</i>	1	1	1
Dust, max 4%	<i>Passing sieve mesh width, mm</i>	1	1	1

<sup>4</sup> [http://www.biomassenergycentre.org.uk/portal/page?\\_pageid=77,19836&\\_dad=portal&\\_schema=PORTAL](http://www.biomassenergycentre.org.uk/portal/page?_pageid=77,19836&_dad=portal&_schema=PORTAL)

## 2 Modern biomass heating systems

If you are considering installing a biomass boiler system there are many important things you must consider for successful project. Perhaps the three most important points are:

1. **Identify your intended fuel type and supply, be it chip, pellets or logs.**
2. **Use proven technology – Your project should not try to do anything that hasn't been done before!**
3. **Ensure you use good quality wood fuel which meets a recognised standard – Most problems encountered with wood heating projects tend to be caused by poor quality or incorrect wood fuel rather than the system installed.**

By the end of this guide you should be able to go some way towards addressing each of these points. This guide is principally concerned with wood fuelled boiler systems, not room stoves (although we do provide basic information on stoves). Typically the boilers will be fed with either wood chip, wood pellets or wood logs however some people may wish to use energy crops (straw, miscanthus, SRC).

Biomass boiler technology is proven, reliable, clean and efficient. Modern biomass boilers are very common across Europe, particularly in Austria, Sweden and Finland. Austria has approximately 110,000 biomass boilers installed, with a reliable local wood fuel supply network in place. Biomass boilers can operate at 92% efficiency levels, comparable with modern gas condensing boilers.

Within this information pack we have included a list of suppliers and installers who are able to undertake projects in the South West. Many of these companies use technology from Austria, Sweden, Germany and other countries who have been working with biomass boilers extensively over the last 20 years.

The images below demonstrate how varied the application of biomass can be. (The uses are not limited to those depicted):



***Figure 4: 150kW wood chip boiler heating a leisure complex***



***Figure 5: A small (22kW) stove with back up boiler heating a farm house***



**Figure 6: Farm 2000 boiler suitable for heating farm buildings and estates; will burn a variety of fuels**



**Figure 7: KWB (25kW) woodchip boiler heating an organic farm shop**



**Figure 8: Binder (50kW) wood chip boiler meets 50% of large educational centre's heating requirement**



**Figure 9: KWB Easyfire (15kW-30kW) pellet boiler, suitable for small scale domestic use**



**Figure 10: Pellet stove with back boiler suitable for small scale domestic use to heat water and radiators**

## 2.1 How do modern biomass boilers work?

In the case of automated biomass boilers (chip and pellet), the fuel is fed automatically into the boiler from the fuel store using an auger screw system (see Figure 13). The fuel then burns in the combustion chamber, where a regulated flow of oxygen ensures a clean and efficient combustion process. The resulting hot gases then heat water in a heat exchanger which feeds the hot water storage tank, or for smaller stoves a back boiler, and ultimately the heating circuit (radiators in most cases). You can read more about the specific design of combustion systems on most boiler installer and manufacturer websites; it makes interesting reading for the technically minded!

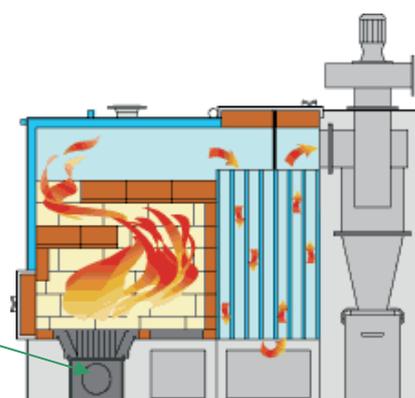
In order to achieve 100% modulation larger boilers are coupled with large energy stores (hot water tanks or accumulator tanks) which are very well insulated. The boiler can then work at maximum efficiency for a shorter period of time to charge the energy store, as the user requires hot water this is taken from the store. Smaller biomass stoves are not operated in this way. Biomass boilers are as controllable as modern gas condensing systems; heating controls allow the user to adjust all personal parameters for the central heating and domestic hot water. Some controls even allow the user to switch on the boiler remotely via text messaging!



**Figure 11: Inside a log boiler**

Heat exchanger via water pipes

Fuel feed auger



**Figure 12: Inside a chip boiler**



**Figure 13: Woodchip auger screw**

## 2.2 Selecting the right boiler

There are several factors that will influence the type of boiler suitable for a particular project. Below is a list of the most important points for consideration.

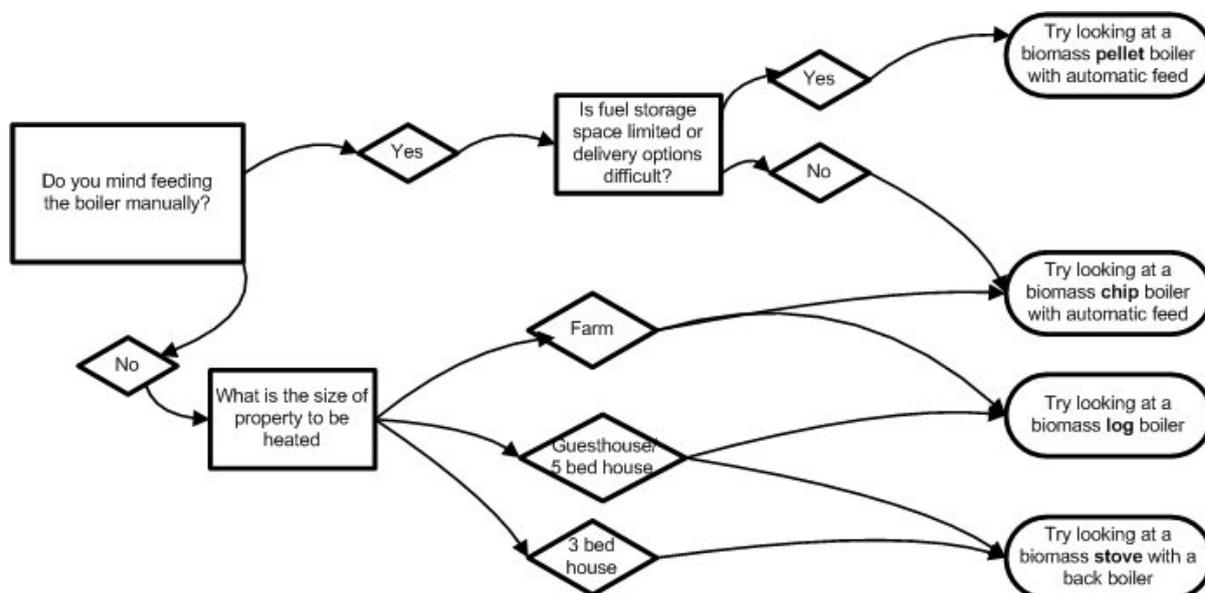


Figure 14: Schematic of boiler options

**Space** – If there is limited space on site then storage of wood fuel could be a restriction. Wood chips will occupy up to three times more room than wood pellets for the same weight of wood. Biomass boilers also tend to be larger than conventional fossil fuel boilers, you will need to have a large enough space to house the unit.

**Size of the property** – Typically the larger the building is, the greater requirement for space heating and therefore the larger the boiler needs to be. Larger systems will consume more fuel and therefore tend to be automated systems with minimal manual intervention. Biomass boilers with automatic auger feed mechanisms and fuel stores are generally too large for domestic installations. However, domestic systems allow the user to fill a hopper attached to the boiler.

**Access** – For most systems a fuel delivery vehicle will need to access your site. Fuel can be delivered in a variety of ways, however for bulk chips and pellet orders direct access to the fuel store is critical. For small domestic deliveries it is important to have a dry place to stack logs or store bags of pellets. Projects in urban areas will need to be mindful of the number of fuel deliveries (large vehicle movements) necessary throughout the year as this may have planning implications.

**Fuel supply** – You may have your own fuel supply, in which case using logs or chips would dictate the boiler type. Generally if space and access are not a problem larger projects would consider wood chip; however if space is at a premium or the area is sensitive to a greater number of fuel deliveries then pellets are the preferred option.

## 2.3 Capital and running costs

All costs quoted should be used as a guide only and are based on 2008 data. Prices vary significantly depending on the type of boiler you select; this can indicate quality or just exchange rate issues.

Capital costs generally follow the breakdown:

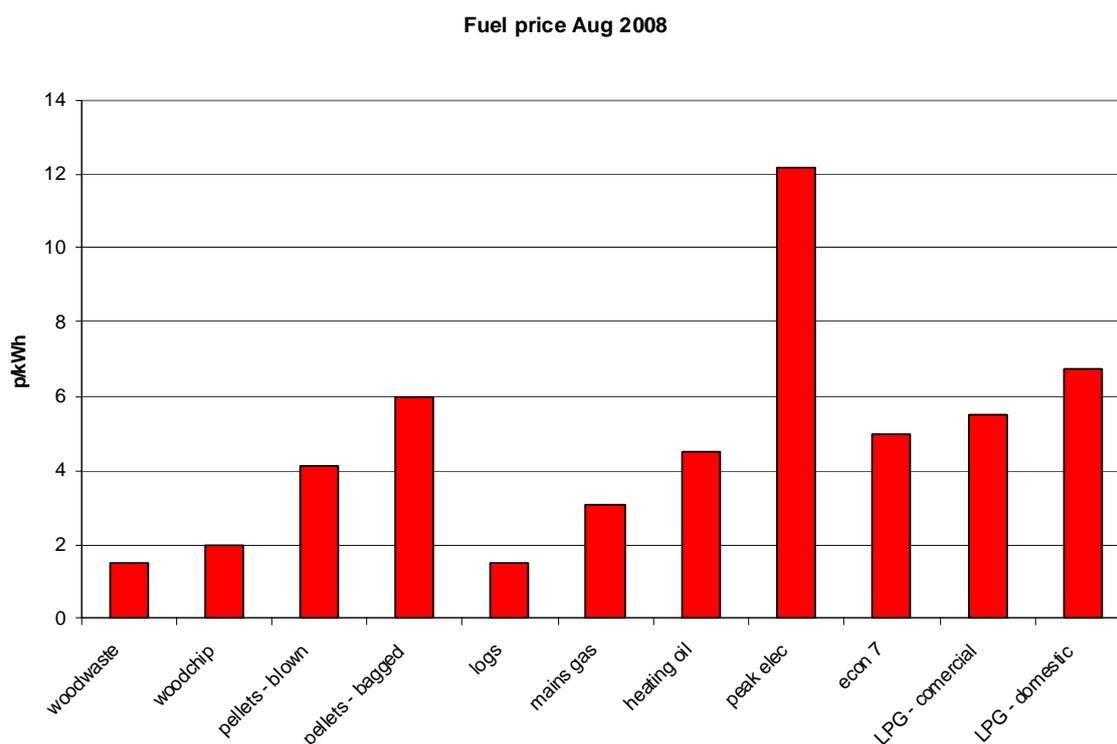
- Boiler & associated controls - 60%
- Fuel feed equipment - 10%
- Buffer - 10%
- Flue - 20%

As a general guide for domestic installations the price per installed kW (including flue, fuel storage, fuel feed, commissioning and design, ex. VAT) is around £750 - £1000. So a 15kW pellet boiler would cost approximately £11,000.

Log boilers tend to be cheaper than both wood chip and wood pellet boilers; for example a 20kW system suitable for a 3 or 4 bed property would cost in the region of £500-750 per kW installed (£12,000). Larger boilers (>20kW) tend to be cheaper.

Additional costs include housing for fuel storage and, for larger installations with multiple buildings, a heat main to distribute hot water to where it is needed. A general rule of thumb for the installation of heat mains is approximately £150 per metre.

In terms of running costs these will vary depending on the type of wood fuel used. For example, wood pellets are currently more expensive than wood chips and logs. The graph below is based on current fuel prices and shows the cost (in pence) per unit of energy (kWh). One tonne of wood pellets is currently selling for approximately £200 (5,000kWh), a tonne of wood chip approx. £45 to £75 (2,000-4,000kWh) and a tonne of logs approx. £50-£60 (4,200kWh).



**Figure 15: Graph showing fuel prices in pence per unit of heat (p/kWh)**

## **2.4 Operating and maintenance**

As with gas and oil fired boilers, biomass boilers will need an annual safety and maintenance check.

Unlike open fires biomass boilers produce very little ash; as a rule of thumb about 0.5 - 2% of the original volume of wood burned. This is because modern biomass boilers combust fuel very efficiently and cleanly. The ash produced is deposited in an ash pan for easy

removal (see figure 16). You can dispose of the ash as low grade fertiliser on your garden or alternatively it might be possible to arrange for your fuel supplier to remove ash when they deliver your fuel.

It is worthwhile noting that if you are thinking of burning energy crops (straw or miscanthus) these produce much more ash (4-8% depending on moisture content and proportion of bark). This will require ash to be removed more frequently.



**Figure 16: Ash bin**

### **3 Basic calculations**

Sizing a biomass boiler is an exercise your installer will undertake. However, several people who contacted the advice service expressed an interest in knowing how this is done, as well as how to calculate annual biomass fuel needs.

This section looks at various basic calculations to find out what size boiler your project will require; the quantity and volume of wood fuel you will need, as well as what carbon dioxide savings you can expect by installing a biomass boiler.

#### **3.1 Boiler sizing**

Traditionally fossil fuel boiler installers over-size systems to meet peak heat load requirements. Because biomass installations tend to include hot water/ thermal storage or accumulator tanks, the peak heating loads can be managed and a smaller boiler can be fitted. This means the biomass boiler you install will need to be a slightly lower kW rating than your current system.

Calculating required boiler capacity (typically stated in kilowatts, kW) is not as straightforward as replacing your current boiler with a biomass boiler of the same size; installers use a combination of experience and detailed heat load calculations. Fortunately there are some rules of thumb we can use to work out approximate figures instead of employing more complicated procedures

Three methods for calculating the kW capacity or size of boiler you might need:

##### **Method 1**

Using a large detached 4 or 5 bed property as an example.

Multiply the volume of the building by 0.035.

e.g. Volume = length x width x height.

$600\text{m}^3 = 20\text{m} \times 10\text{m} \times 4\text{m}$

$600\text{m}^3 \times 0.035 = 21\text{kW}$

Tip – use the Planning Portal volume calculator to calculate the volume of your building  
<http://www.planningportal.gov.uk/england/genpub/en/1115311947796.html>

## Method 2

If you know your annual fuel spend it is possible to calculate a rough estimate of the size of boiler you might need in kW. In this worked example we take a 3 bedroom house spending £1,000 per year on oil.

### Step 1 - Calculate your annual consumption in litres

Assuming you pay 35p per litre of oil you can convert this to litres based on your annual fuel bill. For a bill of £1000 this works out at:

$$£1000/\text{yr} \div £0.35/\text{l} = 2,857 \text{ litres/yr.}$$

Other prices shown below:

Price of oil p/l	Amount of oil (litres) for every £1000 spent per year
35	2857
45	2222
55	1820

### Step 2 – How much energy is in 2,857 litres of heating oil

Heating oil or 28sec oil has an energy density of 37Mj (mega joules) per litre.

$37\text{Mj} \times 2,857 \text{ litres} = 105,709\text{Mj}$  or  $105.7\text{Gj}$  (giga joules).  $1\text{Gj} = 277.78\text{kWh}$ .

$105.7\text{Gj} \times 277.78 = 29,561\text{kWh}$ .

So 2,857 litres of 28 sec heating oil contains approximately 29,384kWh.

### Step 3 – Calculating useful energy

Unfortunately you will not be able to use all 29,384kWh directly for heating and hot water, a proportion of the energy is lost when it is burned in the boiler. Boiler efficiency determines what proportion you are able to use. The efficiency of a 25 year old oil boiler will be about 60%. Therefore the useful energy used for heating and hot water is  $29,384 \times 60\% = 17,630\text{kWh}$ .

### Step 4 – How many kilowatts (kW)?

Because we know the house needs 17,630kWh, we want to remove the hours to leave us with kilowatts. A very approximate way of doing this is to divide our heating consumption in kWh by the number of full load hours the boiler will be running for. Because boiler use varies daily, weekly and seasonally we use a simplification called Full Load Heating Hours Equivalent or FLHE. For a domestic property we expect about 1,200 FLHE.  $17,630\text{kWh} \div 1,200\text{hrs} = 14.7\text{kW}$ . About what you would expect for a 3 bed property.

## Method 3

The third option is to use an online tool, such as the one hosted by South West Wood Fuels: <http://www.swwf.info/images/boilersizewpdf.pdf> - boiler sizing worksheet.

## 3.2 Annual biomass consumption and storage space

Although this method gives only approximate quantities and volumes it is a useful calculation to perform as it will indicate running costs, quantity (of logs, wood chips or wood pellets) and associated volume.

### Step 1 – Convert your heating demand into biomass quantities

Taking the 3 bed example above, converting 17,630kWh into biomass quantities is straightforward. To do this you need to know the energy densities of biomass fuels, see table 1. Before calculating biomass quantities though, it is important to make another boiler efficiency adjustment. If you install a wood boiler it will be 90% efficient,  $17,630\text{kWh} \div 90\% =$

19,589kWh. So in order to generate 17,630kWh, a 90% efficient biomass boiler will require an input of 19,589kWh.

- Wood chip =  $19,589\text{kWh} \div 3,000\text{kWh/tonne} = 6.5$  tonnes (at 30% moisture content)
- Wood pellets =  $19,589\text{ kWh} \div 5,000\text{ kWh/tonne} = 4$  tonnes
- Logs =  $19,589 \div 4,200\text{ kWh/tonne} = 4.7$  tonnes (20% air dried stacked logs)
- Grain =  $19,589 \div 4000\text{ kWh/tonne} = 4.9$  tonnes (15% moisture content)

## Step 2 – Convert the biomass quantities into required storage space

Each type of biomass has a different bulk density (see table 1), the weight per unit volume, in this case kilograms per cubic metre ( $\text{kg/m}^3$ ).

- Wood chip = 6.5 tonnes =  $6,500\text{kg} \div 275\text{kg/m}^3 = 23.6\text{m}^3$
- Wood pellets = 4 tonnes =  $4,000\text{kg} \div 650\text{kg/m}^3 = 6.2\text{m}^3$
- Logs = 4.7 tonnes =  $4,700\text{kg} \div 400\text{kg/m}^3 = 11.8\text{m}^3$
- Grain = 4.9 tonnes  $\div 760\text{ kg/m}^3 = 6.4\text{ m}^3$

For a 3 bedroom property, storage space is likely to be a major constraint and therefore a biomass storage space larger than  $5\text{m}^3$  is likely to be unfeasible. This means multiple deliveries will be necessary. Assuming a  $5\text{m}^3$  storage space the example property would need 5 deliveries of wood chip, 1 to 2 deliveries of pellets/grain and 2 to 3 deliveries of logs per year.

## 4 Legal and planning issues

We recommend that for any installation it is advisable to contact your local planning department to inform them of your intentions.

- Biomass boilers are allowed as 'Permitted Development' under the Government's new legislation which came in force April 2008, as long as the flue does not rise more than 1m above the roof line and/or faces into and visible from a highway in a conservation area or World Heritage Site.
- If you live in an urban area you should check if it is in a smoke control zone. If this is the case the biomass boiler you install must be an exempted appliance. See the lists below or ask your installer.

Follow this link to find out if you live in a smoke control zone:

<http://uksmokecontrolareas.co.uk/locations.php>

Then check to see if the appliances you are considering are exempt:

<http://uksmokecontrolareas.co.uk/appliances.php>

- Outside smoke control areas there is no legislation other than a general prohibition on not creating a nuisance, and a requirement not to emit "dark smoke". Burning dry wood on well designed appliances should give no cause for concern. Chimneys should be designed in accordance with Building Regulations Document J.
- Some sites have had to get planning consent for change of use of an agriculture building when placing a boiler in an out building. If you think this could be an issue it is best to contact your local planning officer and have an informal discussion.
- Visual impact. If you live in a listed building, conservation area, AONB, National Park or other designated area then you will need to consult your local planning authority about the installation and construction of a chimney flue, fuel storage silo or boiler house.

- Fuel deliveries. For larger installations the number of vehicle movements may be a planning issue, as might the size and type of delivery trucks.

## 5 Grant funding

### 5.1 *The Low Carbon Buildings Programme (Helpline 0800 915 0990)*

Provides grants for householders, communities, non-profit organisations and businesses. The website contains everything you need to know about this government funded capital grants initiative. [www.lowcarbonbuildings.org.uk](http://www.lowcarbonbuildings.org.uk). Householders are able to apply online. The funding for biomass systems is as follows:

#### 5.1.1 Householders

Pellet stoves and pellet room heaters	£600 regardless of size
Wood boiler systems inc log boilers	£1,500 regardless of size
Log stoves	No funding available

Before applying for a grant towards a biomass system, householders are required to undertake a number of energy efficiency measures:

- Insulate the whole loft of the property to meet current building regulations (270mm)
- Install cavity wall insulation (if the property has cavity walls)
- Fit low energy light bulbs in all appropriate light fittings
- Install basic controls for the heating system (thermostats and programmers/ timers)

In order to take advantage of any offers in your area you should contact your local Energy Saving Trust Advice Centre on 0800 512 012.

#### 5.1.2 Community groups, schools, local authorities, charities Low Carbon Buildings Programme Phase 2

Non-profit community organisations such as registered charities, community groups, local authorities and schools can apply to the Low Carbon Buildings Programme. Organisations can apply for up to £30,000, or 50% of the capital and installation cost of the biomass system. [www.lowcarbonbuildingsphase2.org.uk/](http://www.lowcarbonbuildingsphase2.org.uk/)

#### 5.1 Community Sustainable Energy Programme

This is a Big Lottery funded scheme offering 50% capital funding for RE technologies – this can be matched with the LCBP 2 for, potentially 100% funding.

[www.communitysustainable.org.uk/](http://www.communitysustainable.org.uk/)

0845 3 671 671 or email at [info@communitysustainable.org.uk](mailto:info@communitysustainable.org.uk)

### 5.2 *Utility Green Funds*

These are available for not-for-profit organisations considering biomass heating installations. Up to £30,000 is available for capital funding.

See the following links:

E.On Source fund: [www.eon-uk.com/about/source.aspx](http://www.eon-uk.com/about/source.aspx)

Scottish Power Green Energy Trust:: [www.scottishpowergreentrust.co.uk](http://www.scottishpowergreentrust.co.uk)

EDF Green Fund: [www.edfenergy.com/products-services/for-your-home/our-green-products/green-energy-fund.shtml](http://www.edfenergy.com/products-services/for-your-home/our-green-products/green-energy-fund.shtml)

## 6 Further information

The following is a list of links and organisations where you can get further information about wood heating:

- **The Forestry Commission:** [www.biomassenergycentre.org.uk](http://www.biomassenergycentre.org.uk) lots of useful documents about fuel supply and boiler types
- **Rural Development Initiatives:** [www.ruraldevelopment.org.uk](http://www.ruraldevelopment.org.uk) provide a suite of woodfuel training courses
- **Energy Saving Trust:** [www.est.org.uk/myhome/generating/types/biomass](http://www.est.org.uk/myhome/generating/types/biomass) some basic downloadable factsheets
- **Bio Energy Group (East Midlands):** [www.bioenergygroup.org.uk/index.php](http://www.bioenergygroup.org.uk/index.php) some good case studies
- **Biomass Task Force:** [www.defra.gov.uk/farm/crops/industrial/energy/biomass-taskforce/index.htm](http://www.defra.gov.uk/farm/crops/industrial/energy/biomass-taskforce/index.htm) detailed review of current activity in the biomass sector and its potential in the UK
- **Government's response to the Biomass Task Force report:** [www.defra.gov.uk/farm/crops/industrial/energy/biomass-taskforce/index.htm](http://www.defra.gov.uk/farm/crops/industrial/energy/biomass-taskforce/index.htm)
- **The Carbon Trust's 'Biomass Sector Review':** [www.carbontrust.co.uk/publications/publicationdetail?productid=CTC512](http://www.carbontrust.co.uk/publications/publicationdetail?productid=CTC512)
- **Defra guidance on WID compliance:** <http://www.defra.gov.uk/environment/waste/topics/woodwaste.htm>
- **Wood fuel Wales:** [www.woodfuelwales.org.uk](http://www.woodfuelwales.org.uk) well written basic information and supplier lists
- **Wood Energy Business:** [www.woodenergybusiness.co.uk](http://www.woodenergybusiness.co.uk) some excellent factsheets and a useful tool for calculating boiler sizes (with useful guidance notes)
- **Centre for Alternative Technology:** [www.cat.org.uk/information](http://www.cat.org.uk/information) residential courses, resource guides and free information sheets on wood heating
- **Bioheat:** [www.bioheat.info](http://www.bioheat.info) EU initiative providing lots of helpful information and contacts lists
- **National Fireplace Association:** <http://www.nfa.org.uk/stoves.asp> search for a local supplier for your log or pellets stove/room heater
- **Logpile – National Energy Foundation website** <http://www.nef.org.uk/logpile/> A list of local woodfuel suppliers

### 6.1 Training

- **RegenSW** – periodically fund biomass information events – contact them on 01392 494 399
- **Ignite courses** – Ignite is the UK's first and only formal accredited wood fuel training course, leading to The LANTRA Technical Award in Woodfuel Technology and Production. The three day course provides an excellent grounding in the economics of woodfuel supply, the technology that's available to produce wood fuel and the systems that burn it. For more details contact Rural Development Initiatives on 01670 790444.

## 7 Installers and suppliers of wood boilers

### South West based:

**Bioheat** Contact: Roger Perry  
Farmageddon, Stoke Trister, Wincanton, Somerset BA9 9PF. Tel: 01963 32604  
Email: [roger@biomassheating.co.uk](mailto:roger@biomassheating.co.uk) Website: [www.biomassheating.co.uk](http://www.biomassheating.co.uk)

**Dunster Woodfuels Ltd** Contact: Clifford Frost  
Loxhole Sawmills, Dunster, Minehead, Somerset, TA24 6NY Tel: 01643 821188  
Email: [info@dunsterwoodfuels.co.uk](mailto:info@dunsterwoodfuels.co.uk) Web: [www.dunsterwoodfuels.co.uk](http://www.dunsterwoodfuels.co.uk)

**Eco-Exmoor Ltd** Contact: Nick Backhouse  
The Old Post Office, Parracombe, Barnstaple, Devon. EX31 4QG Tel: 01598 763595  
Email: [info@eco-exmoor.co.uk](mailto:info@eco-exmoor.co.uk) Web: [www.eco-exmoor.co.uk](http://www.eco-exmoor.co.uk)

**Econergy Limited** Contact: Dawn Rigget  
69 Hampton Park, Redland, Bristol. BS6 6LQ Tel: 0870 054 5554  
Email: [sales@econergy.ltd.uk](mailto:sales@econergy.ltd.uk) Web: <http://www.econergy.ltd.uk>

**Treco Ltd** Contact: James Trebble  
Howe Complex, Kentisbeare, Cullumpton, Devon. EX15 2BR Tel: 0845 130 9012  
Email: [info@treco.co.uk](mailto:info@treco.co.uk) Web: [www.treco.co.uk](http://www.treco.co.uk)

**Wood Energy Ltd** Contact: Patrick Thornberry  
Pink Worthy Barn, Oakford, Tiverton, Devon. EX16 9EU Tel: 01398 351349  
Email: [sales-domestic@woodenergyltd.co.uk](mailto:sales-domestic@woodenergyltd.co.uk) Web: [www.woodenergyltd.co.uk](http://www.woodenergyltd.co.uk)

### Outside South West:

**3G Energi Ltd** Contact: Gavin Gulliver-Goodall  
Unit 3, The Knowles, Kelso, Roxburghshire. TD5 7BH. Tel: 01573 229198  
Email: [admin@3genergi.co.uk](mailto:admin@3genergi.co.uk) Web: [www.3genergi.co.uk](http://www.3genergi.co.uk)

**Ashwell Engineering Services Ltd** Contact: Barry West  
36- 38 Marsden Avenue, Queniborough, Leicester, Leicestershire. LE7 3FL  
Tel: 0116 260 4050  
Email: [ashwelleng@hotmail.com](mailto:ashwelleng@hotmail.com) Web: [www.ashwellengineering.com](http://www.ashwellengineering.com)

**Bioenergy Technology Ltd** Contact: Sam Langridge  
Pound Lane, Framfield, Uckfield, East Sussex. TN22 5RU Tel: 01825 890140  
Email: [sales@bioenergy.org](mailto:sales@bioenergy.org) Web: [www.bioenergy.org](http://www.bioenergy.org)

**Energy Innovations (UK) Ltd** Contact: India Bacon  
Units 5 & 6 Richmond Old Dairy, Gedgrave, Woodbridge, Suffolk. IP12 2BU  
Tel: 0844 800 6805  
Email: [info@energyinnovationsuk.com](mailto:info@energyinnovationsuk.com) Web: [www.energyinnovationsuk.com](http://www.energyinnovationsuk.com)

**Forever Fuels/ (old name: The Energy Crops Co)** Contact: Peter Webster  
32 Anyards Road, Cobham, Surrey, KT11 2LA Tel: 01932 584455  
Email: [sales@energy-crops.com](mailto:sales@energy-crops.com) Web: [www.energy-crops.com](http://www.energy-crops.com)

**FBC** Contact: Heather Jackson  
Sells Close, High Street, Barley, Royston, Hertfordshire. SG8 8HY Tel: 01763 849468  
Email: [info@fbcgroup.co.uk](mailto:info@fbcgroup.co.uk) Web: [www.fbcgroup.co.uk](http://www.fbcgroup.co.uk)

**Greenearth Energy Ltd** Contact: Dai Rees  
Unit 2A Westwood Industrial Estate, Pontrilas, Hereford, Herefordshire. HR2 0EL  
Tel: 01981 241399  
Email: [info@greenearthenergy.co.uk](mailto:info@greenearthenergy.co.uk) Webs: [www.greenearthenergy.co.uk](http://www.greenearthenergy.co.uk)

**Mercia Energy Ltd** Contact: Andrew Russell  
86 Grosvenor Road, Rugby, Warwickshire. CV21 3LE Tel: 01788 842377  
Email: [andy-russell@mercia-energy.co.uk](mailto:andy-russell@mercia-energy.co.uk) Web: [www.mercia-energy.co.uk](http://www.mercia-energy.co.uk)

**Midlands Wood Fuel Supply Ltd** Contact: Edward Lewis  
The Barns, Harnage Grange, Harnage Cressage, Shrewsbury, Shropshire. SY5 6EB  
Tel: 01952 510001  
Email: [ed@wood-fuel.co.uk](mailto:ed@wood-fuel.co.uk) Web: [www.wood-fuel.co.uk](http://www.wood-fuel.co.uk)

**Rural Energy Ltd** Contact: Paul Clark  
Manor Farm, Main Street, Oakham, Leicestershire. LE15 8DH Tel: 01664 454989  
Email: [info@ruralenergy.co.uk](mailto:info@ruralenergy.co.uk) Web: [www.ruralenergy.co.uk](http://www.ruralenergy.co.uk)

**Solar Thermal Ltd** Contact: Paul Brimble  
The Old Engine House, Goodes Hill, Corsham, Wiltshire. SN13 9PP Tel: 01249 715295  
Email: [info@solarthermal.co.uk](mailto:info@solarthermal.co.uk) Web: [www.solarthermal.co.uk](http://www.solarthermal.co.uk)

**Talbott's Heating Ltd** Contact: Amy Fielding  
Drummond Road, Astonfields Industrial Estate, Stafford, Staffordshire. ST16 3HJ  
Tel: 01785 213366  
Email: [sales@talbotts.co.uk](mailto:sales@talbotts.co.uk) Web: [www.talbotts.co.uk](http://www.talbotts.co.uk)

**Teisen Products Ltd** Contact: Peter Teisen  
Bradley Green, Redditch, Worcestershire. B96 6RP Tel: 01527 821621  
Email: [heat@farm2000.co.uk](mailto:heat@farm2000.co.uk) Web: [www.farm2000.co.uk](http://www.farm2000.co.uk)

## 8 Suppliers of biomass fuel south west delivery

Regen SW have compiled a list of fuel suppliers for the south west, contact them on 01392 494399, if you cannot find something useful here.

### Wood chip - able to supply across the region

**BoomEco Ltd** (Contact Oliver Latter) **(logs and chips)**  
Unit 1, Q Park, Bath Road, Woodchester, Gloucestershire, GL5 5HT, [www.boomeco.co.uk](http://www.boomeco.co.uk) 01453 873773

**Forest Fuels Ltd** (Contact Sam Whatmore) **(chips)**  
Grascott Farm, Shebbear, Beaworthy, Devon EX21 5RW Tel: 01409 281 977,  
Email: [sam@woodfuelsolutions.co.uk](mailto:sam@woodfuelsolutions.co.uk) Web: [www.woodfuelsolutions.co.uk](http://www.woodfuelsolutions.co.uk)

### Wood chip – localised supply

#### **Bristol:**

**Cole & Sons Tree Surgeons** **(logs and chips)**  
8 Redcar Court, Downend, Bristol, BS16 6RW, 0117 956 7298

#### **Cornwall:**

**Scott Brown Professional Tree & Landscaping Services** **(logs and chips)**  
Apple Tree Cottage, Park Bottom, Redruth, Cornwall, TR15 3XW, 01209 210154

**Tregothnan Estate Woodlands** **(logs and chips)**  
The Estate Office, Tregothnan, Truro, Cornwall, TR2 4AN, 01872 520 325

**Mount Pleasant Garden Services** **(logs and chips)**  
Mount Pleasant Farm, Gorran High Lanes, St Austell, Cornwall, PL26 6LR, 01726 843918

**Cornish Garden Nurseries** **(logs and chips)**  
CGN 2000 Ltd, Perran - ar - Worthal, Truro, Cornwall, TR3 7PE, 01872 864 380

**Cornovia Tree Services Ltd** **(logs and chips)**  
43 Dolcoath Road, Camborne, Cornwall, TR14 8RW, 01209 715010

**Harp Enterprises** Contact: Mervyn Shute **(logs and chips)**  
Penweathers, Vean, Truro TR3 6EA, Tel: 0845 459838

**Chapman Logs (logs)**

Springstein House, High Barn, Newquay, Cornwall TR8 4AF

**Cornwall Timber Ltd**

Trevarthen Sawmill, Sancreed, Penzance TR20 8QY Tel: 01736788641

**Dorset:****Broadoak Tree Care, (logs)**

6 Kings Avenue, Christchurch

**Knighton Forestry Ltd (logs and chips)**

Waddock Yard, Waddock Cross, Dorchester, Dorset, DT2 8QY, 01929 463640

**R P Joyce Tree & Woodland Specialists (logs and chips)**

Tranquil, Verwood Road, Wimborne, Dorset, BH21 8LJ, 01202 825579

**Banyards Ltd (logs and chips)**

Nettle Tree Farm, Horton Heath, Nr Wimborne, Dorset, BH21 7JN, 01202 828 800

**Wessex Independent Self Help - (Care) - (Recycling) Contact: David Spencer**

7 Butts Pond Industrial Estate, Sturminster Newton, Dorset DT10 1AZ, Tel: 01258 446 258

Email: [info@wish-charity.co.uk](mailto:info@wish-charity.co.uk)

Web: [www.wish-charity.co.uk](http://www.wish-charity.co.uk)

**Your Choice (North Dorset Furniture Recycling Project) (logs and chips)**

Unit 9, Richmar Trading Centre, Butts Pond, Sturminster Newton, Dorset, DT10 1AZ

Tel: 01258 471665

Email: [info@yourchoiceplus.co.uk](mailto:info@yourchoiceplus.co.uk)

Web: [www.yourchoiceplus.co.uk](http://www.yourchoiceplus.co.uk)

**Forest & Tree Care Ltd**

The Manor Farm, Bridport, Dorset DT6 4LQ

**Devon:****Teign Trees & Gardens (logs and chips)**

The Shambles, 28 Gloucester Road, Teignmouth, Devon, TQ14 9HN, 01626 773499

**Autumn Leaf Tree Care (logs and chips)**

14 Headingley Close, Exeter, Devon, EX2 5UH, 07762 644957

**Theo Bailhache Tree Surgeons (logs and chips)**

Theo Bailhache Tree Surgeons, Passlands Farm, Membury, Axminster, Devon, EX13 7TE,

Tel 01404 881318

**Bowrish Sawmills Contact: Jeremy Hutchinson (logs and chips)**

1 Bowrish Cottages, Crease Lane, Gulworthy, Devon PL19 8HW

Tel: 01822 612803

**The Tamar Joinery Company (logs and chips)**

Holm Oak, Bere Alston, Yelverton, Devon PL20 7HJ, Tel: 01822 840848, Email:

[nigel@tamarjoinerycompany.co.uk](mailto:nigel@tamarjoinerycompany.co.uk)

Web: [www.tamarjoinerycompany.co.uk](http://www.tamarjoinerycompany.co.uk)

**Mr Andy Fyfe**

Exmoor Tree Services, Willowdean, Oakford, Tiverton, Devon EX16 9HB, Tel: 01398 351395,

Mobile: 07817 596118

**Gloucestershire:****Fredwood Forestry (logs and chips)**

The Blue Gables, 122a Bisley Road, Stroud, Gloucestershire, GL5 1HJ, 01453 753601

**Cheltenham Tree Services (logs and chips)**

7 Loweswater Close, Hatherley, Cheltenham, Gloucestershire, GL51 3BA, 01242 581541

**BoomEco Ltd (logs and chips)**

Unit 1, Q Park, Bath Road, Woodchester, Gloucestershire, GL5 5HT, boomeco.co.uk, 01453 873773

**Guiting Manor Farm Ltd. (logs)**  
Guiting Power, Cheltenham, Gloucestershire GL54 5TT  
[gmf@guiting.org.uk](mailto:gmf@guiting.org.uk) 07971167582

## Somerset:

**AJ Charltons (chips)**  
The Sawmill, Nr Frome, Buckland Down, Somerset, BA11 2RH, 01373 812501  
Web: [www.chaltongates.co.uk](http://www.chaltongates.co.uk)

**Dunster Wood Fuels Ltd (logs and chips)**  
Loxhole Sawmills, Dunster, Somerset, TA24 6NY, Tel: 01643 821188,  
Email: [mineheadsawmills@supanet.com](mailto:mineheadsawmills@supanet.com) Web: [www.dunsterwoodfuels.co.uk](http://www.dunsterwoodfuels.co.uk)

**South Wood Waste Management (logs and chips)**  
South Wood, Evercreech, Shepton Mallett, Somerset BA4 6LX Tel: 01749 830 688,  
Email: [enquiries@southwoodskips.co.uk](mailto:enquiries@southwoodskips.co.uk) Web: [www.southwoodskips.co.uk](http://www.southwoodskips.co.uk)

**Higher Court Farm (logs and chips)**  
Contact: Mark Weatherlake  
Treborough, Watchet, Somerset, TA23 0QW, Tel: 01984 641179

**Exmoor Woodfuel (logs and chips)**  
Contact: Richard Milton,  
Crosses Leigh Cottage, Langford Budville, Wellington TA21 ORT. Tel: 01 823 401537 Mob. 07831 437108

**Brendon Hill Tree Services LTD (chips)**  
Jews Farm House, Wiveliscombe, Taunton, Somerset TA4 2HL  
Tel: 01984 624218  
[info@brendonhill.co.uk](mailto:info@brendonhill.co.uk) Web: [www.brendonhill.co.uk](http://www.brendonhill.co.uk)

## 9 Installers and suppliers of wood stoves

### South West based:

**A Davidson Chimney Services**  
44 Norman Rd., Swindon, Wiltshire. SN2 1AX. Tel: 01793 491494

**Alf Revell**  
11 New Road, Newlyn, Penzance, Cornwall. TR18 5PZ. Tel: 01736 369418

**Almondsbury Forge**  
Sundays Hill, Almondsbury, Bristol. BS32 4DS. Tel: 01454 613315  
Email: [almondsburyforge@hotmail.com](mailto:almondsburyforge@hotmail.com) Web: [www.almondsburyforge.co.uk](http://www.almondsburyforge.co.uk)

**Casterbridge Fires**  
15 Casterbridge Industrial Estate, London Road, Dorchester, Dorset. DT1 1PL. Tel: 01305 262829

**Corninium Stoves**  
Unit 14 Elliot Road, Love Lane Industrial Estate, Cirencester, Gloucestershire. GL7 1YS.  
Tel: 01285 659887 Email: [sales@corninium-stoves.co.uk](mailto:sales@corninium-stoves.co.uk) Web: [www.corninium-stoves.co.uk](http://www.corninium-stoves.co.uk)

**Faraday Heating** Contact Name: Mrs Barbara Faraday  
Shaves House, Northleigh, Colyton, Devon. EX24 6BT. Tel: 01404 831292  
Email: [bfaraday@msn.com](mailto:bfaraday@msn.com) Web: [www.wood-burning-stoves.net](http://www.wood-burning-stoves.net)

**Fosse Fires**  
Sheep Street, Stow-on-the-Wold, Gloucestershire. GL54 1AA. Tel: 01451 831519  
Email: [malcolm@creese.fsllife.co.uk](mailto:malcolm@creese.fsllife.co.uk)

**Gazco Ltd**  
Osprey Road, Sowton Industrial Estate, Exeter, Devon, EX2 7JG Tel: 01392 444030  
Email: [info@gazco.com](mailto:info@gazco.com)

**Gloucestershire Stove Centre**  
21c Ermin Street, Brockworth, Gloucester, Gloucestershire. GL3 4EG Tel: 01452 623817

**Kernow Coal & Fires** Contact Name: Simon Breckon  
Unit 2 Trenant Industrial Estate, Wadebridge, Cornwall. PL27 6HB Tel: 01208 812527  
Email: [kernowcoalfires@btconnect.com](mailto:kernowcoalfires@btconnect.com) Web: [www.kernowcoalandfires.co.uk](http://www.kernowcoalandfires.co.uk)

**Lyme Regis Eng Co Ltd**

Villager Stoves, Millwey Industrial Estate, Axminster, Devon. EX13 5HU

Tel: 01297 35596

Email: [stoves@villager.co.uk](mailto:stoves@villager.co.uk)

Web: [www.villager.co.uk](http://www.villager.co.uk)

**Mendip Fireplaces**

Windsor Hill, Shepton Mallett, Somerset. BA4 4JE

Tel: 01749 344015

Email: [sales@mendipfireplaces.co.uk](mailto:sales@mendipfireplaces.co.uk)

Web: [www.mendipfireplaces.co.uk](http://www.mendipfireplaces.co.uk)

**Moreton Stove Centre**

Mearsdon Manor, Cross Street, Moretonhampstead, Devon. TQ13 9NL

Tel: 01647 440483

**Multifuel Heating Centre**

209 Ringwood Road, St Leonards, Ringwood, Hampshire. BH24 2QA

Tel: 01202 890321

**R W Knight And Son**

Castle Farm, Marshfield, Chippenham, Wiltshire. SN14 8HU

Tel: 01225 891469

**Stovax Ltd**

Falcon Road, Sowton Industrial Estate, Exeter, Devon. EX2 7LF

Tel: 01392 474000/474011

Email: [info@stovax.com](mailto:info@stovax.com)

Web: [www.stovax.com](http://www.stovax.com)

**Stove Shop Liskeard**

Address: 7 Pike Street, Liskeard, Cornwall. PL14 3JE

Tel: 01579 345018

**The Heating Centre**

Staunton Court, Ledbury Road, Staunton, Gloucestershire. GL19 3QE Tel: 01452 840878

**The Stove Centre**

103 East Street, South Molton, Devon. EX36 3DF

Tel: 01769 574411

**Wendron Stoves Ltd**

Mallow Court, Wendron, Helston, Cornwall. TR13 0NA

Tel: 01326 572878

Email: [sales@wendronstoves.co.uk](mailto:sales@wendronstoves.co.uk)

**Yeoman Stoves Ltd**

Hill Barton Business Park, Sidmouth Road, Clyst St. Mary, Devon. EX5 1BP

Tel: 01395 233122

Email: [sales@yeoman-stoves.co.uk](mailto:sales@yeoman-stoves.co.uk)

Web: [www.yeoman-stoves.co.uk](http://www.yeoman-stoves.co.uk)

**South West Woodburning Centre**

The Airfield, Torrington Road, Winkleigh, Devon. EX19 8HR Tel: 01837 83333

Email: [sales@stoves-cookers.co.uk](mailto:sales@stoves-cookers.co.uk)

Web: [www.stoves-cookers.co.uk](http://www.stoves-cookers.co.uk)

**Metal Development Ltd**

Contact Name: Rupert Snook

The Workshop, Wheatcroft farm, Cullompton, Devon. EX15 1RA

Tel: 01884 35806

Email: [rupert@metaldev.deom.co.uk](mailto:rupert@metaldev.deom.co.uk)

Web: [www.metaldev.demon.co.uk](http://www.metaldev.demon.co.uk)

**Woodhayes**

Contact Name: Jon Snow

Dunkeswell, Devon. EX14 4QQ Tel: 07866 241783

Email: [albislug@hotmail.com](mailto:albislug@hotmail.com)