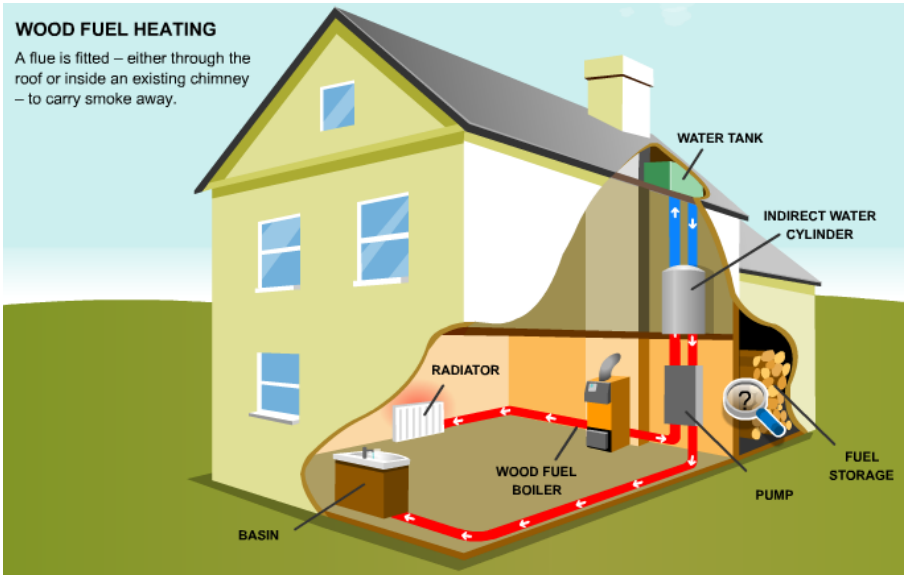
Action Surrey
SURREY'S LOW CARBON COMMUNITY

Biomass

Installed cost: from £7,000
Annual Fuel bill saving: Negligible (it could cost more to heat your home with biomass if you are displacing gas)
Carbon saving: 7-9 tonnes (significant!)
Premium Heat Payment (Grant): £950
Generation Tariff: expected to be introduced in the summer of 2013 following a UK Government consultation in September 2012. Government has confirmed that renewable heat installations installed in homes since 15 July 2009 will get the RHI once it comes in, provided they meet the eligibility criteria.

What is biomass energy production?

Biomass energy burns wood in order to produce energy. The biomass can come in the form of pellets, chips or logs which can be burned in a boiler or stove. Biomass heating is one of the best ways of reducing CO_2 emissions from a household and is capable of providing space heating and hot water. The CO_2 emissions savings are certainly significant with a biomass heating system; able to save up to 7.5 tonnes every year (depending on what fuel is being displaced). Financial savings are however, less impressive. If your house is heated by electricity or oil alone, then a biomass heating system could save you £100-350 per year[1], but if you have gas the potential savings are not obvious and in some cases negligible.



[1] All statistics come from the Energy Saving Trust

Biomass heating system (source: EST)

Types of Biomass heating devices

The two main types of domestic biomass heating devices are:

- Automatic Stoves – provides space heating for a single room
- Boilers – which are connected to the central heating (these can be gravity fed, automated or 'batch-fed' by hand).

Is my house suitable and what should I consider before installation?

- **Planning** – Check that your home is not a listed building or in a conservation area by contacting Woking Borough Council Planning department[2]. If the flue is to extend over 1m above your property this must also be cleared with the planning authority.
- **Building Control** – Check the installation complies with safety and building regulations by contacting Woking Borough Council Planning department[3]. Also see the Government's Planning Portal for further information (www.planningportal.gov.uk/)
- **Space** – You will need adequate space for storing your fuel (to prevent lots of small deliveries) and keeping it nice and dry, and adequate access to the boiler for mechanical loading of the fuel into the boiler. The storage room will also need to be as air-tight as possible to avoid the wood fuel absorbing moisture from the surrounding air.
- **Type of boiler** – An average 3 bedroom house will typically require a 15kW boiler. However, this will depend upon your heat demand and how well insulated your house is. For larger applications, it is worth investigating what type of fuel is readily available in your area before specifying whether your boiler will take pellets or wood chips. In some cases boilers are specified to take both (and possibly sawdust) to enable fuels to be switched depending on which is cheapest at any one time.

[2] http://www.woking.gov.uk/planning/listedbuildings or 01483 755855
[3] http://www.woking.gov.uk/planning/building/bcservice/contact

- **Fuel** – Ensure you have a reliable local fuel supplier and adequate access on your property for fuel delivery. For the average size domestic biomass boiler wood pellets/chips are usually delivered on a one tonne pallet to the kerbside. The pallet usually consists of 10-15kg bags. For larger systems (for community buildings) the pellets or chips maybe delivered by a lorry that pumps the wood fuel into the store (normally in an adjacent room). In this case adequate vehicle access will be required.
- **Energy content** – The energy content of the fuel will depend on moisture content. A general rule of thumb suggests that the lower the moisture content the more energy can be yielded per kilogram or tonne of fuel. High grade pellets usually have a moisture content under 10% whilst woodchips have a moisture content of around 30%. This is however, very variable and the cost of the fuel usually reflects its quality.
- **The cost of fuel** – The cost of the fuel will fluctuate over time. Historically, the price of commercially produced biomass has fluctuated roughly in line with the price of oil. This reflects the importance of getting a local and reliable supply of wood fuel that does not have to be imported. It is worth speaking with the Surrey Hills Wood Fuel Group to discuss possible local sources of fuel in this area (0845 478 6370 or email enquiries@shwfg.org.uk). In addition to this, the fluctuation in biomass fuel prices also reiterates the fact that your house should first be thoroughly insulated and maximise energy efficiency. As a rule of thumb, the price of biomass fuel ranges between 2.5-5p/kWh.
- **Flue** – A flue is a type of chimney used to transport gases from the boiler to outside. You will require a lined flue that is specifically designed for wood fuel appliances to provide the appropriate air movement for the appliance to operate effectively. Existing chimney stacks can be fitted with flue pipes without too much hassle or expense. When you speak with the planning department you may be asked whether the stove or boiler you are proposing to install has an open or closed-flue. An open-flue uses air from inside the room for combustion whereas a closed-flue takes air from a separate air source for combustion. Different regulations apply for each type.
- **Maintenance** – Both the flue and chimney stack will require maintenance in order to get the most out of our biomass boiler. The flue-way, through which hot flue gases pass to the chimney will require a brief clean once a month or so,

depending on usage. You will also need to get the flue/chimney swept once a year by a HETAS registered chimney sweep (http://www.hetas.co.uk/).

- **Ash Removal** – Generally speaking, the higher the quality of biomass fuel the more efficiently it burns (Grade A Wood pellets are considered the highest quality). Nonetheless, there will be some residue left over that will need to be cleaned out. The installer can advise on how often this needs to be done and how it is removed. The ash can be deposed of in the garden as it contains high levels of potash. If this is not an option, small quantities can be placed in the main waste stream which will go to landfill. However, for larger quantities of ash from boilers with flue gas cleaning equipment, special waste collection and treatment may need to be arranged. If this is the case, it is best to speak with your local authority's Environmental Health / Waste Department.
- **Smokeless Zone** – Confirm with your supplier that your appliance is compliant with the Clean Air Act 1993. You can also check www.uksmokecontrolareas.co.uk for areas that are part of smoke control areas and appliances that are exempt from the Act.
- **A back-up heating source** – For example a small gas condensing boiler or retention of your old boiler. Combining your existing heating system with a biomass boiler will largely depend on the type of system you have already and a professional installer should be contacted.

Benefits

- Biomass is renewable and low carbon, because it only releases the same amount of CO_2 that it absorbed by the tree/crop whilst growing (however, it is important to source wood locally as possible to reduce transportation emissions);
- Biomass contributes to good waste management because it uses energy from products that are often disposed of at landfill sites;
- Using a locally sourced biomass fuel can protect a household from future fossil fuel price rises;
- Using a local fuel supplier promotes local business and is more sustainable as transportation emissions and costs are reduced (speak with the Surrey Hills Wood Fuel Group (see above) or see the Log Pile website for your nearest supplier;
  http://www.nef.org.uk/logpile/fuelsuppliers/index.htm

Alternatively, the Renewable Energy Centre; http://www.therenewableenergycentre.co.uk/biomass-and-biofuel/woodchip-log-and-pellet-suppliers/)

Cost & cost saving

This will vary depending on the size, model and fuel used. However, a standalone room heater will generally cost £2,000 to £4,000 installed. For a larger building such as a farmhouse, the capital cost can rise up to £8,500. Savings will depend on how often you use your boiler and which fuel you are replacing.

The cost for boilers varies depending on the system choice; a typical 15kW (average size required for a three-bedroom semi detached house) pellet boiler would cost around £5,000 installed, including the cost of the flue and commissioning. Biomass systems require you to pay for the fuel, the cost of which will depend on the distance from your supplier and the quantities you purchase.

Grants

Grants for biomass boilers are available under the national government grant scheme; Renewable Heat Incentive (RHI) and can be applied for via link below:

http://www.energysavingtrust.org.uk/Generate-your-own-energy/Financial-incentives/Renewable-Heat-Premium-Payment-Phase-2

Useful links and other points of interest:

http://www.biomassenergycentre.org.uk – this is the government sponsored research hub of biomass fuels and combustion appliances. It contains a great deal of information about all types of biomass and all related issues.

http://www.hetas.co.uk/ - the Heating Equipment Testing and Approval Scheme is a government approved certification scheme for manufacturers and models of biomass boilers, fuels, services and installers of domestic solid fuel heating systems. You should look for this mark when choosing a model or manufacturer and this website should be your first port-of-call when researching biomass boilers.

http://www.solidfuel.co.uk – the solid fuel association which was set up by the solid fuel industry. This website has a lot of information on it regarding models and different types of solid fuel appliances.