



Sharing what we know... Sheet 5. Biomass



Biomass heating systems burn organic matter, such as wood, to create energy. Several types of systems can be found in homes, some of which provide heat to a single room and others power central heating and hot water boilers.

How it works

Domestic biomass heating systems typically burn wood pellets, chips or logs to provide heat, and in some cases, hot water.

Wood burning stoves typically only heat one room or space using logs. Some of these have a back boiler, which heats hot water and can circulate this hot water through radiators.

Biomass boilers work the same way as a gas boiler but, instead of burning gas, they burn wood pellets. The heated water circulates around the home through a wet central heating system. Biomass boilers are typically much bigger than gas or oil boilers because of the volume of the fuel. Automated pellet boilers are gaining popularity since these feed wood pellets continuously to provide constant heat.

Costs and savings

For biomass boilers, an automatically fed pellet boiler for an average home can cost between £11,000 and £17,000. Manually fed log boiler systems may be slightly cheaper. The cost of pellets varies depending on the size and method of delivery. If you have a large enough room to store several tonnes of pellets, then costs can be kept down to about £255 per tonne. Costs for logs depend on the wood supplier but are generally cheaper than pellets. Unseasoned logs are likely even cheaper, however they must be seasoned for a year before burning. Carbon dioxide savings are significant and can be up to 14.3 tonnes per year when a biomass boiler replaces a solid (coal) fired system. Financial savings are variable and depend on the heating system being replaced.

Existing System to be replaced:	Annual Fuel Bill Savings by replacing the old system:	Carbon Dioxide Savings by replacing the old system:
Gas older (G-rated)	-£115 – -£120	4.8 – 5.1 tonnes/year
Gas newer (A-rated)	-£375 – -£405	2.5 – 2.6 tonnes/year
Electric (older storage heater)	£640 – £700	3.8 – 4.1 tonnes/year
Electric (newer storage heater)	£240 – £255	2.8 – 2.9 tonnes/year
Oil older (worst rated)	£225 to £240	8.0 – 14.3 tonnes/year
Oil newer (best rated)	-£360 – -£380	5.0 – 6.5 tonnes/year
LPG older (G-rated)	£920 – £980	5.7 – 6.1 tonnes/year
LPG new (A-rated)	£105	3.0 – 3.2 tonnes/year
Coal	£40 – £50	10.0 – 15.7 tonnes/year

<https://energysavingtrust.org.uk/advice/biomass/>

A number of financial incentives can help with the cost of this technology.

Key considerations

- **Local air quality controls.** Be aware of regulations in [smoke control areas](#).
- **Type of biomass heating.** Biomass boilers can be used instead of a gas or oil boiler to heat radiators and hot water. Stoves can be used to heat individual rooms. Stoves may have a back boiler that can provide hot water. Choose the technology best suited to your needs.
- **Fuel type.** Chips are usually used to heat larger buildings. Pellets are simpler to use, as they can run automatically, similar to traditional boilers. Automatic fuel feeders are used for pellets, which need to be re-filled at regular intervals. Using logs for stoves and boilers requires considerably more work, as wood needs to be re-filled by hand.
- **Availability of fuel.** Check that there are local fuel suppliers who deliver in the area.
- **Maintenance.** Ash must be removed from biomass heating systems regularly.
- **Space.** Wood boilers can be large in size and additional space is needed to store fuel.
- **Ventilation.** In order to comply with national regulations on wood burning appliances, householders must install a flue.
- **[Air pollution and health](#).** Wood burning produces a lot of particulate pollution which can impact on health.