

Renewable Energy Explained

The following information has been funded through the North West Climate Change Skills Fund. It provides easy to understand information on small scale renewable energy technologies and the planning requirements associated with them.

Why Is Renewable Energy Important?

Unlike conventional fossil fuels, renewable energy is free; it will never run out and produces no carbon dioxide. Renewable energy can reduce your energy bills and also reduce your carbon footprint.

Renewable energy technologies come in many forms, from large scale developments like wind farms, to small domestic add-ons like solar panels.

What Are The Drivers And Benefits?

We all use energy. In Britain, we rely heavily on fossil fuels for our electricity, our heating and our transport. Fossil fuels are limited, and as they start to run out their value will increase and prices will rise. Much of the fuel we use in Britain is imported, and global political tensions can cause prices to fluctuate. Renewable energy can reduce our consumption of this expensive fuel, and help you to regain some control of your energy bills.

When we use fossil fuels we release harmful greenhouse gases that drive climate change. Renewable energy technologies produce little or no greenhouse gases.

How Is Energy Measured?

Power is measured in watts (W), kilowatts (kW) or megawatts (MW), and household appliances usually have a power rating expressed in watts or kilowatts (e.g. a 9kW electric shower or a 4kW solar panel). Energy is a measure of how much power we use over a period of time. One unit of electricity on our energy bills is equivalent to using 1kW of power for one hour, and is expressed as 1 kilowatt hour (kWh).

1,000 units of electricity = 1,000 kilowatt hours (kWh) = 1 megawatt hour (MWh).

When Should I Use Renewable Energy?

To get maximum benefit from your renewable energy, it's important to use the energy wisely. Before installing a renewable energy technology, reduce your total energy use by following these steps:

- **BE LEAN**
Reduce the amount of energy that you use. This is almost always better value for money than more drastic measures e.g. most of the energy used in a house will be for heating. Fitting draft excluders on doors and insulation in the loft is relatively cheap and will save a large amount of energy.
- **BE CLEAN**
Be clever with the energy that you use, and use it efficiently wherever possible. Energy efficient devices may be slightly more expensive, but they will cost you less to run.
- **BE GREEN**
Use renewable energy. If you reduce your overall energy use, the renewable energy will supply a higher proportion of your energy needs. You are making maximum use of your renewable energy, and getting best value for money.

What Government Incentives Are Available?

There are currently three government backed incentives schemes; two for renewable electricity and one for renewable heat. These incentives provide a financial payment for every unit of renewable energy generated.

Renewable electricity incentives:

- **ROCs [For larger installations, above 50kW capacity]**
The “Renewables Obligations” commitment forces electricity companies to supply a certain amount of renewable energy. A renewable energy generator receives a Renewables Obligation Certificate (ROC) for every MWh they produce (a MWh is a relatively large unit of energy, roughly equivalent to the energy needed to boil a cubic meter of tap water). UK households use an average of 3.5 – 4.5MWh (or 3,500 – 4,500 kWh) of electricity a year. The holder of the ROC is recognised as the person responsible for supplying the national grid with 1MWh of energy. Electricity companies can buy these ROCs to fulfil their obligations. The price of ROCs is determined by the market and tends to fluctuate at around £50 each.
www.ofgem.gov.uk/Sustainability/Environment/RenewablObl/Pages/RenewablObl.aspx
- **Feed-in Tariff [For smaller installations, up to 5000kW (5MW) capacity]**
The Feed-in Tariff (FIT) is designed to encourage smaller renewable electricity installations. Different technologies get different amounts of support, with the level of support set to take account of the different prices to purchase the technologies. The FIT guarantees an income from your renewable energy installation for 20 years (25 years for solar photovoltaic (PV) (solar electric) panels).

The FIT consists of two payment rates, a **generation tariff** and an **export tariff**. The generation tariff is the higher of the two, and is paid for every unit (kWh) of energy generated by the technology. This is regardless of whether the energy is used by the owner or not. All the energy produced by the technology receives this tariff.

The export tariff is paid in addition to the generation tariff for every unit of energy sent to the national grid. This is set at a much lower rate to encourage people to use as much of the energy generated themselves, rather than selling it back to the grid.

www.ofgem.gov.uk/Sustainability/Environment/fits/Pages/fits.aspx

- **Renewable Heat Incentive (RHI)**

The Renewable Heat Incentive (RHI) supports renewable energy technologies that produce heat, rather than electricity. Similar to the FIT, the RHI is designed to compensate for the additional costs of using renewable heating technologies in place of conventional heating technologies. Technologies eligible to receive the RHI support include biomass boilers, ground-source heat pumps (but not air-source heat pumps) and solar thermal panels. The first phase of the RHI scheme focused on non-domestic big heat users. The second phase will extend the RHI scheme to households and will be timed to align with the Green Deal which should be introduced in 2013.

Link to Ofgem page: <http://www.ofgem.gov.uk/e-serve/RHI/Pages/RHI.aspx>

How Can I Get My Own Renewable Energy Generator?

In order to receive the government incentives, the installation needs to be accredited through the **Microgeneration Certification Scheme (MCS)**. Both the technology and the installers need accreditation if you want to receive the FIT. MCS accreditation ensures quality of product and work.

Link to MCS page: <http://www.microgenerationcertification.org/>

Will I Need Planning Permission?

Most stand-alone renewable energy installations such as wind turbines, hydro-electric generators and anaerobic digesters will require planning permission. However, the planning requirements for installing renewable energy technologies on existing buildings will depend on the size of the installation, the building type and its location.

The planning system allows for certain types of developments or changes of use to proceed without needing to apply for planning permission as long as certain conditions are met. These are called '**permitted development rights**'. Permitted development rights currently extend to some small-scale residential renewable energy installations, including solar panels on the roof of a house or installing a biomass boiler in your home (please see the individual technology fact sheets for further information). It is expected that future changes to permitted development rights will be made to encourage renewable energy equipment to be installed on non-domestic buildings such as offices, schools, industrial premises and agricultural buildings.

Please note: in some instances, permitted development rights may have been removed, and if the building is listed or within a conservation area additional restrictions will apply. Other consents such as building regulations approval may also be required.

To avoid confusion, it is always recommended that you contact the council's Planning Department before installing any renewable energy technology to confirm whether or not planning permission is required.

More information on the planning process can be found on the Planning Portal, which is the UK Government's online planning and building regulations resource for England and Wales:
www.planningportal.gov.uk

The planning portal also includes a **greener homes guide**; this guide looks at the main domestic micro-renewable energy technologies and the different ways to make more efficient use of energy in the home: www.planningportal.gov.uk/planning/greenerhomes/

Renewable Energy Facts Sheets

A series of renewable energy fact sheets have been produced to provide more information on each renewable energy technology and explain the planning requirements in more detail:

[Fact Sheet 1: Micro / small wind turbines](#)

[Fact Sheet 2: Solar thermal panels \(solar hot water\)](#)

[Fact Sheet 3: Solar photovoltaic panels \(solar electric\)](#)

[Fact Sheet 4: Ground source heat pumps](#)

[Fact Sheet 5: Air source heat pumps](#)

[Fact Sheet 6: Biomass systems](#)

[Fact Sheet 7: Combined heat and power](#)

[Fact Sheet 8: Micro-hydro electric generators](#)

[Fact Sheet 9: Biogas and anaerobic digestion](#)

For Further Information

For further information on a range of technologies, case studies and contacts visit www.claspinfo.org



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