



A bright future - Solar electricity

Would you like to generate cheap, green electricity from sunlight? Then installing solar photovoltaic (PV) cells could be for you.

Photovoltaic cells are used in solar electricity systems to capture the sun's energy. The cells, which can be attached to your roof and walls, convert the sunlight into electricity, which can be used to run household appliances and lighting. You may think that there are not enough sunny days to warrant investing in a solar electricity system, but solar PV cells don't need direct sunlight to work – you can still generate some electricity on a cloudy day.

How do photovoltaic (PV) cells work?

Each cell is made from one or two layers of semiconducting material, usually silicon. When light shines on the cell it creates an electric field across the layers. The stronger the sunshine, the more electricity is produced.

Solar PV cells come in a variety of shapes and colours, from grey "solar tiles" that look like roof tiles to panels and transparent cells that you can use on conservatories and glass. The strength of a solar PV cell is measured in kilowatts peak (kWp). That's the amount of power the cell generates in full sunlight.

Solar electricity – advantages

So what are the benefits of harnessing this abundant energy source?

- Cut your electricity bills: sunlight is free, so once you've paid for the initial installation your electricity costs will be greatly reduced. A typical home solar PV system can produce around 75% of the electricity a household uses in a year.

- Sell electricity back to the Grid: if your system is producing more electricity than you need, or when you can't use it, someone else can – and thanks to the Feed-In Tariff scheme, you could make a bit of money.
- Cut your carbon footprint: solar electricity is green, renewable energy and doesn't release any harmful carbon dioxide (CO₂) or other pollutants. A typical home PV system could save around 1.3 tonnes of CO₂ per year – that's around 30 tonnes over its lifetime.

Is solar electricity suitable for my home?

To tell if solar electricity is right for you, there are a few key questions to consider:

- Do you have a sunny place to put it? You'll need a roof or wall that faces within 90 degrees of south, and isn't overshadowed by trees or buildings. If the surface is in shadow for parts of the day, your system will generate less energy.
- Is your roof strong enough? Solar panels are not light and the roof must be strong enough to take their weight, especially if the panel is placed on top of existing tiles. Before proceeding with the installation, you should check with your Local Authority Building Control officer that all proposed work is compliant with current building regulations.
- Do you need planning permission? In England, Wales and Scotland you don't need planning permission for most home solar electricity systems, so long as the panels don't protrude more than 200mm above your building roofline and your home is not a listed building or is in a conservation area or World Heritage Site. If in doubt, consult with your local planning officer.

Cost, savings and maintenance

Costs for installing a solar electricity system vary a lot – an average system (2.9kW) costs around £11,700 (including VAT at 5%).

In general:

- the more electricity the system can generate, the more it costs but the more it could save

- solar PV tiles cost more than conventional panels
- panels built into a roof are more expensive than those that sit on top, but
- if you need major roof repairs, solar PV tiles can offset the cost of roof tiles

Savings can be considerable – around 1.3 tonnes of CO₂ a year. A 2.9 kWp system can generate around 75% of a household's yearly electricity needs. If the system is eligible to receive the Feed-In Tariff it could generate savings and income of around £1,190 per year.

Maintenance is generally minimal although you will probably have to replace the inverter at some stage at a cost of around £1,000. You'll also need to keep the panels relatively clean and make sure trees don't begin to overshadow them.

Selling your own electricity

You can make money on excess electricity by selling it back to the Grid through a scheme called Feed-In Tariffs (FITs).

Feed-In Tariffs became available in Great Britain on 1st April 2010 and the scheme guarantees a minimum payment for all electricity generated by the system, as well as a separate payment for the electricity exported to grid. These payments are in addition to the bill savings made by using some of the electricity generated on-site.

Once you have a microgeneration technology installed you should experience a monthly reduction in your electricity bill and then receive an income from your Feed-In Tariff provider. However, if you have taken out a loan to pay for the installation you will have to make monthly repayments to your loan company.

Feed-In Tariffs are designed so that the income from a typical system will give a reasonable financial return on the money invested.

Choosing an installer

Householders should only choose installers and products that are certified under the Microgeneration Certification Scheme (MCS) and are signed up to the Renewable Energy Association Ltd (REAL) consumer code. Installers signed up to this code will also have customer's deposits insured and should not ask for any more than a 25% deposit.

What to do next?

To find renewable technologies to suit your home contact your local Energy Saving Trust advice centre free on 0800 512 012 or visit energysavingtrust.org.uk

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For more information, please contact:

- Call your local Energy Saving Scotland advice centre for free impartial advice: 0800 512 012
- For more about the Energy Saving Trust's key achievements:
www.energysavingtrust.org.uk/scotland

For more info: **call the Energy Saving Trust press office on 020 7227 0398**

About the Energy Saving Trust in Scotland

The Energy Saving Trust is the UK's leading impartial organisation helping people save energy and reduce carbon emissions. Founded in 1992, we are a not-for-profit company limited by guarantee, set up to help reduce the UK's carbon emissions by reducing UK domestic and transport energy use. Our mission is to find the best ways to change people's behaviour and to introduce energy-saving measures into homes.

We do this by providing expert insight and knowledge about energy saving, supporting people to take action, working with business, government, local authorities and others to drive improvements in the energy saving market, and providing quality assurance and certification for goods, services and installers.

The Energy Saving Trust's work in Scotland is funded by the Scottish Government. It manages a network of advice centres in Scotland specifically designed to help consumers take action to save energy. This Energy Saving Scotland advice network aims to reach 250,000 people every year.

Call your local Energy Saving Scotland advice centre for free impartial advice: 0800 512 012 or visit www.energysavingtrust.org.uk/scotland

For more information on Solar PV:
Microgeneration Certification Scheme (MCS)
www.microgenerationcertification.org

Renewable Energy Assurance Ltd (REAL)
www.realassurance.org.uk