

Solar PV your guide to generating clean electricity



energy saving trust®



Installing a solar electric system on your home is a positive step towards a sustainable future.

What is a Solar PV system?

Most electricity is generated by burning fossil fuels. This releases carbon dioxide and other gases into the atmosphere which contributes to climate change. A Solar Photovoltaic (PV) system is one which converts light directly into electricity on your roof with no waste and no emissions. This electricity is used throughout your home in the same way as the electricity you currently buy from your energy supplier. Harnessing the sun's energy and converting it into electricity will reduce your fuel bills and at the same time reduce your daily impact on the environment.

How does it work?

When light hits the silicon in a solar PV cell, electrical energy is created. The electricity flows through a cable and is collected at a central point, often located in your roof space. At this central point the electricity is converted from Direct Current (DC) to Alternating Current (AC) and carries on into your household electricity system. The electricity generated by your system works hand in hand with your existing electrical supply to power your household appliances and lighting. During the day you may generate enough electricity from your own system for all your electrical needs. If not, your needs will be supplemented by your electricity supplier. If during the day you generate more electricity than you need this excess will flow out of your home and back in to the main electricity grid.

Call us on 0800 915 7722 or visit www.est.org.uk/myhome

Are you ready to go solar?

Before going solar, ask yourself if you are already using energy efficiently in your home.

With 27% of the UK's carbon dioxide emissions coming from domestic energy use, it is important that we consume the energy we need as efficiently as possible. Using energy saving recommended products (which display the logo above) can save you money and reduce your energy consumption, as can switching off appliances such as televisions at night.



Certification mark

What systems are available?

Some solar PV systems are available as roofing products which replace conventional roof tiles. They can be integrated into your roof without changing its shape or style. Not all roofs will suit all types of products. An integrated system is particularly suitable if you are building or re-roofing a property. If your roof does not need replacing, a framed system can be installed. This type of system is made up of a number of standard solar panels that fit into a frame which is then attached to your existing roof. These systems are neat, unobtrusive and can be fitted on flat or sloped roofs or even mounted on the ground.

What am I getting?

The electricity you currently buy from your energy supplier is sold to you in electrical units. You may pay less for units you consume during the night and more for units used during daylight hours. An electrical unit as itemised on your electricity bill is also known as a kilowatt hour (kWh). When you invest in a Solar PV system you are buying a system which produces electrical units for use in your own home.

Every unit you produce reduces the amount of electricity bought from your energy supplier and therefore the amount of carbon dioxide released into the atmosphere.

How much electricity can Solar PV panels produce?

A solar PV system is measured in size according to the number of electrical units it would produce in an ideal environment. The smallest system size usually installed on a domestic property is 1 kilowatt peak (kWp). In the UK, a 1 kWp system is expected to produce at least 750 electrical units - kilowatt hours - every year. The average household in the UK uses approximately 3,300 kWh every year. Therefore a 2 kWp system will produce nearly half of your yearly requirements and avoid around 650 kilograms of carbon dioxide emissions. With a life span of at least 25 years, a 2 kWp system will generate around 37,500 kWh and avoid approximately 16 tonnes of carbon dioxide emissions in its lifetime - enough to fill three hot air balloons.

What type of system is suitable?

The size and type of system suitable for your property depends on your available roof area and your budget.

Whatever size system you choose, you will fully benefit from producing electricity directly on your property. With very low transmission losses, clean electricity will continue to be generated efficiently and reliably. It will help protect you from rising energy prices, protect the environment from carbon emissions and prove a sound investment.



You should be matching your system to your daily electrical requirements to make best use of the electricity you generate. You should try to plan for any future electricity requirements, such as more household appliances, given that your system will continue operating for at least 25 years and electricity prices are likely to rise in that time.

What are the key considerations for installing Solar PV?

The ideal roof pitch is approximately 35-40 degrees or less. PV can be successfully installed on a flat roof as there is much scope for ideal orientation. However on a pitched roof in excess of 35-40 degrees the area exposed to light will be restricted and this will affect your system's performance.

You will need at least 10 square meters of un-shaded, exposed roof area facing predominantly south, with a horizontal angle of up to 40 degrees. Chimneys, roof lights or nearby trees can all shade your PV and need to be taken into consideration when deciding where best to position it.

Your installer will be able to advise you on the best location.





When is a system completed?

A system is completed once commissioned, i.e. when it has been tested and shown to be operating correctly. Once the system is generating electricity, a commissioning certificate will be issued by your installer. Your solar PV system is now fully functional and contributing to your property's electricity usage.





Other requirements

Planning

In some instances, you may need to obtain planning consent for your system. This usually applies to listed buildings or those in conservation areas. If you are in any doubt, check with your local planning authority.

Access to the Distribution Network

By producing your own electricity you essentially become a supplier yourself. As well as producing electricity for your own needs, there will be times when your system produces more than you need. In this situation, the surplus electricity will be fed into the local network. It is the responsibility of your installer to ensure your system is installed according to the existing electrical installation regulations. It is also their responsibility to contact the local Distribution Network Operator to advise that a new solar PV system is being connected in their area. The connection of solar PV systems to the electricity grid has become standard procedure and paperwork will likely be dealt with by the installer as part of the service.



What happens next?

With your own solar PV system you join an increasing number of homeowners who have decided to make an investment in their homes and in a sustainable energy future. The renewable electricity market has been developing rapidly over the last 10 years, delivering more and more benefits for those individuals who have made the decision to go solar. As well as producing your own electricity there are other benefits to be gained from your system.

Buy back schemes

Many energy supply companies offer buy back schemes. This is when they purchase the electricity you produce for a fixed rate. As a customer you can change your supply company at any time allowing you to always secure the best deal for the purchase and sale of your electricity.

Registering for Renewable Obligation Certificates

You can also register as an independent energy generator and sell your own electricity in the form of Renewable Obligation Certificates (ROCs) to the Gas and Electricity Markets Authority, Ofgem. One ROC is equal to 1000 kWh or electrical units. Therefore, on average, for every 1 kWp you have installed you are generating sufficient electricity for one ROC. The ROC system will remain in place until 2027, which provides further security to those deciding to invest now in renewables.

For more information on buy back schemes or registering as an electricity generator visit www.ofgem.gov.uk.



Your Solar PV checklist:

- Have you got the right sort of roof to accommodate a solar system? Ideally, it should be facing south and have at least 10 square metres of available area.
- Have a look at your electricity bills to see how many units of electricity you use every year. This will help you understand how a solar PV system can contribute to your home's energy needs.
- Log on to www.est.org.uk/housingbuildings/funding/solarpv or call 0800 298 3978 to find an accredited installer.
- When you are looking for a solar installer, shop around. Get more than one quote before deciding who to work with. The installer may ask you to send in photos of your house or pay you a visit to advise where best to locate your solar PV system.
- Contact your local planning authority to see if you need planning permission. Your installer may well be in a position to answer any questions they might have for you.
- Contact your electricity supplier and find out if they have a scheme whereby they will buy back your green electricity.
- Find out if it is worth switching to a supplier who will pay you for every electrical unit you generate. For full details of the best energy deal for your home visit www.uswitch.com or ask your solar installer for advice.
- Once installed and switched on, your system will be up and running and you can start generating green electricity!

Further information guide:

The Department of Trade and Industry

has a section on its website dedicated to renewable energy sources, including solar PV.
www.dti.gov.uk/renewables

The British Photovoltaic Association also has plenty of useful information on its website.
www.pv-uk.org.uk

The National Energy Foundation is an independent educational charity which works for more efficient, innovative and safe use of energy.
www.nef.org.uk

The UK Solar Energy Society is a non-profit organisation. It is a forum for all those interested in the increased use of the sun's energy.
www.uk-ises.org

The Renewable Power Association is a trade body whose membership spans the range of renewable technologies and resources. Find out about renewable technologies available.
www.r-p-a.org.uk

About the Energy Saving Trust

The Energy Saving Trust is committed to helping you achieve sustainable and efficient use of energy in your home and to work towards the reduction of carbon dioxide emissions which are one of the key contributors to climate change.

To find out about other ways of helping combat climate change visit www.est.org.uk/myhome or call 0800 915 7722.





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