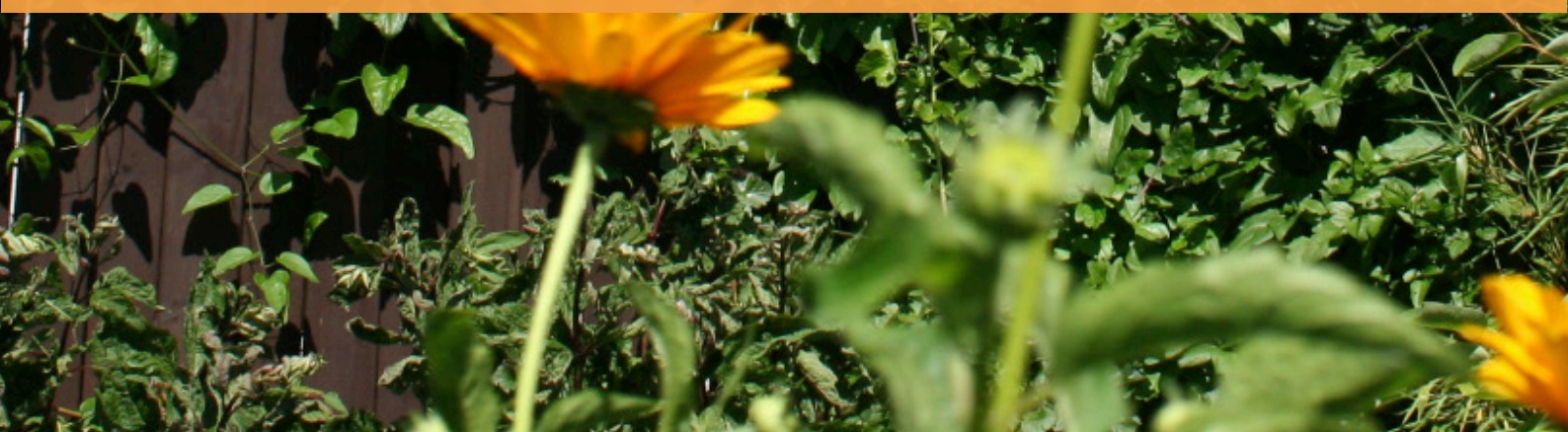




A consumer's guide to solar pv installation



Welcome to your definitive guide to get you started on the path to powering your home with Solar PV panels.

Solar PV, also known as solar photovoltaic, is widely regarded as the renewable energy of choice across the globe. The technology has risen in prominence and popularity over the last five years or so, generating a surge in installations as people look to enhance their green credentials, cut their carbon footprint and reduce their household energy bills. And now, thanks to falling installation costs the technology is more accessible than ever. So there's never been a better time to invest in solar!

To give you a helping hand on the journey to going solar, we've put together this handy little guide to tell you everything you need to know about residential solar installations. Inside we'll explain the basics and the benefits of PV technology and, most importantly, what it can do for you.

This guide has been produced on behalf of the website Solar Guide - the free online resource for homeowners and engineers regarding all solar-related issues. To find out more about our site and what we can do for you, check us out by visiting www.solarguide.co.uk.

Solar Guide

Solar power

Solar panels capture the sun's energy, harnessing its power for use in our homes and businesses. And it's all down to photovoltaic (PV) cells. It's these cells which convert sunlight into electricity, which can then be used to run household appliances and lighting.

Using the sun to generate renewable sources of green electricity is a win-win situation. We've already mentioned that it can save you money on your utility bills, but there's even more good news. If you install solar panels you'll also be able to take advantage of the Feed-in Tariff – a Government incentive which pays you money for generating your own electricity. So thanks to solar you'll be able to cut your energy bills and get paid for doing so. What's not to like?



Did you know?

Solar PV isn't as expensive as you think. Prices start at £3,660 for a 2kWp system

Solar PV - How it works

As we mentioned previously photovoltaic cells are used to harness the energy of the sun and then convert it into electricity. Commonly known as PV, photovoltaic cells are batched together to create solar panels, which in turn can be installed onto roof tops or ground mounted for residential and commercial use. The cells themselves are made from a thin layer of semi-conducting material, most commonly silicon, which is enclosed in a glass or plastic casing.

There are three basic types of PV panels:

- Monocrystalline
- Polycrystalline
- Amorphous

All are made from silicon, but what sets them apart is the way in which the silicon is cut and treated.

When exposed to sunlight the semiconducting material causes electrons in the materials' atoms to be knocked loose. The electrons that are knocked loose then flow through the material to produce an electric current known as a direct current (DC). The direct current is carried through wiring to an inverter which converts the current to alternating current (AC) so it can be connected to your property's main electricity distribution board. This wiring, in most cases, can easily be fed through existing cable routes in your home.

Contrary to popular belief, PV cells do not need direct sunlight to work. Electricity can still be generated on a cloudy day. But it is recommended that solar panels are installed on south facing roof tops to produce the best results – although if your roof is east or west facing then it will work quite well too.



Did you know?

Solar PV module prices have fallen by
over 50% since 2010

Solar myths – true or false?

Solar energy myths are widespread. Confusion continues to cloud the renewable energy, which makes it hard at times to separate the fact from the fiction. So we thought we'd attempt to put the record straight by addressing some of the most common myths and misconceptions currently doing the rounds.



They won't work in a cloudy cold climate – definitely false. Yes, solar panels are going to be in their element in a hot sunny country. However it's actually radiation from the sun as opposed to temperature and heat which is responsible for photovoltaic generation. Solar panels aren't afraid of a bit of cloud and cold and given that the UK is famed for this type of weather, then solar panels are perfectly suitable for use here. If you're still not convinced, take Germany for example. The country has become a world leader in solar energy and its climate is pretty similar to that in the UK. So don't be fooled in to thinking that solar PV won't work on a typical cloudy day.



Solar panels require a lot of maintenance – that's also false. To maintain their maximum efficiency the panels need to be kept clean from dust. However if you live in a rainy climate – and let's face it, it rains quite a lot in the UK – then the panels are pretty much self-cleaning of sorts.



Solar panels don't work at night – true, solar PV panels don't produce any electricity at night. In order to get power at night most solar households will draw their electricity from the grid or in some cases use a storage system to collect excess energy produced in the day which can then be used when the sun goes down.



The inverter will need to be replaced and it's quite expensive – yes that's true. But on average a good quality inverter should last around 15 years before it needs replacing. And when you do need to replace it, it'll cost around 10% of the cost of your system if not less, because by that time prices should have come down.



Solar panels won't last forever – well true, but nothing lasts forever. They are designed to last for at least the life of the feed-in Tariff scheme (more about that later) which is 20 years. Panels should last a good 25-30 years and there are some systems which were installed in the 70s that are still producing electricity today. However, it stands to reason that their efficiency will diminish slightly with age.



Renewable technologies like solar PV are only for the wealthy – false. Perhaps that was a fair assumption a few years ago, but the price of PV systems have come down considerably. Currently prices for a 2kWp system start from £3,660, with prices for a 4kWp system starting from £5,560.

Frequently asked questions

Okay so we've tackled some of the most common solar energy myths. But no doubt you've still got lots of questions swirling around in your head, right? Which brings us to some of the most frequently asked questions about solar PV.

How much will an average PV system cost me?

Prices for installing a solar electricity system can vary greatly, so it pays to shop around and obtain three quotes. As we've already established the price of the technology has reduced by over 50% since 2010. You're going to be looking in the region of £3,660 for a 2kWp system and around £5,560 for a 4kWp installation. Obviously the bigger the system the more it costs. But it's swings and roundabouts really, because the more energy it can generate the more you'll earn.

What's the best position for solar panels?

PV panels can be attached to pitched roofs or flat roofs, fixed vertically onto external walls or located on the ground. 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. And because solar panels are not exactly light your roof must be strong enough to take their weight, especially if the panel is placed on top of existing tiles.

How much can I save?

A typical home PV system can produce up to around 40% of the electricity a household uses in a year, greatly reducing your electricity costs.

Are there any hidden costs?

Once you've paid for your system, aside from needing to replace the inverter eventually, then no. Sunlight is free, and as long as your home is able to access it you'll be able to take advantage of this reliable source of energy, with no hidden costs.

Who is solar most suitable for?

If you consume a lot of energy during the day then solar PV is going to be very well suited to meet your needs. It's great for stay-at-home mums, retirees or anyone who works from home.

Did you know?

80% of the UK public say they support solar energy

Do I need planning permission?

As long as the installation is below a certain size you do not need planning permission for most home solar panels in England, Wales, Scotland and Northern Ireland. However, you should check with your local planning officer, especially if your home is a listed building, or is in a conservation area or World Heritage Site.

Frequently asked questions

What happens at night if I need electricity?

There are two main ways to get electricity at night when you rely on solar panels. The majority of households use energy from the grid to power their homes once it gets dark, or when extra electricity is needed. Alternatively you can store energy generated during the day using batteries such as the Tesla Powerwall and use it during the evening.

What's the Feed-in Tariff?

It's a scheme the Government introduced to pay you for generating your own electricity. We'll be discussing the scheme in more detail a bit later.

Can I get solar PV panels for free or are there any grants available to help towards the costs?

There aren't any grants to help you pay for a solar PV system. The closest you'll get to any sort of financial help is through the Government's Feed-in Tariff. If you are looking for a way to have solar panels installed for free then you'll need to look into what is known as Rent-a Roof schemes there are some solar companies who will install a system on your roof for free. Now that might sound great, but there is one main disadvantage to these schemes – and it's a pretty big one. While you'll still be able to benefit from free electricity, the company who installs your solar panels will be eligible for the Feed-in Tariff, not you.

Did you know?

If your roof isn't suitable for solar panels there are other options available - such as ground mounted systems



Savings & benefits

There are a whole host of reasons to go for solar – from its green credentials to the savings you can make on energy bills. We took a look at 6 of the biggest benefits to installing solar PV right now.



Reduce your carbon emissions - As we become aware of the importance of clean and renewable energy, solar becomes a more and more attractive option. By installing a solar PV system you can cut your household emissions and reduce your carbon footprint dramatically. In fact, according to the Energy Saving Trust, a solar installation on a typical home could save more than 30 tonnes of carbon over its lifetime!



Slash your energy bills - We all dread opening our energy bills but by installing solar PV panels on your home you could actually cut them by up to £226 per year for a 4kWp system on a south facing roof. This saving is made before you even consider the payments you would receive from the Feed-in Tariff.



Get solar panels for half of the cost - The price of a solar PV system has dropped by over 50% since 2010, making it a more affordable option for homeowners looking to embrace renewable energy. This price drop comes down to the technology maturing and more companies producing panels – great news as it means you can grab a high quality system for half of the cost!



Protect yourself against utility price changes - By generating your own energy through solar you can greatly lessen your reliance on utility providers. This means you are less likely to be affected as deeply by any fluctuations in prices and tariffs over time as a household who solely relies on power from the grid would.



Earn money from the Feed-in Tariff (FiT) - There are 2 parts to the (FiT) - the generation tariff and the export tariff. The generation tariff pays you a set rate for each unit of energy you generate and is currently set at 4.01p whilst the export tariff pays 5.03p for each kWh of surplus energy you sell back to the National Grid. Providing you have your system installed by an MCS certified solar company you should be able to benefit from these payments.



Benefit from solar storage - From Tesla's Powerwall to the UK developed Powervault, storage systems suitable for residential use have been taking the solar market by storm. Now you can store the excess energy your solar panels generate and use it at night and during your household's peak energy use periods – giving you even further dependence from the grid.

Did you know?

The Export Tariff pays out 5.03p/kWh for surplus electricity you want to sell back to the National Grid

The Feed-in Tariff – what you need to know

The Feed-in Tariff is a Government-backed measure which aims to encourage people to take advantage of renewable energy. Sometimes shortened to 'FiT', the Feed-in Tariff became available in Great Britain on 1 April 2010. Under this scheme households which produce their own electricity from renewable or low carbon sources, such as solar PV panels, can receive a fixed income for every kilowatt hour of electricity they generate and use in their property.

As part of the scheme, energy suppliers are required to make regular payments to householders and communities who comply with the Feed-in Tariff. In addition to the fixed income payments, households can also make money by exporting their green electricity. This means you can earn an additional fixed income for every kilowatt hour of electricity you generate and sell back to the National Grid.

The scheme is the responsibility of the Department of Energy and Climate Change and covers electricity-generating technologies for installations of various sizes. It will depend on the type of technology and size of the system as to how much money you'll get paid for every kilowatt hour of electricity you generate for your home.

If you are eligible for the scheme then you will be able to benefit in three ways:

Generation Tariff – a set rate is paid by the energy supplier for each unit (or kWh) of electricity you generate. Currently the rate is 4.01p/kWh for systems of 10kW or less in size. This rate will change each year for new entrants to the scheme, but once you join you will continue on the same tariff for 20 years in the case of solar electricity (PV).

Export Tariff - you will currently receive a further 5.03p/kWh from your energy supplier for each unit you export back to the electricity grid - that is when it isn't used on site. The export rate is the same for all technologies.

Energy bill savings - you will be making savings on your electricity bills, because generating electricity to power your appliances means you don't have to buy as much electricity from your energy supplier. The amount you save will vary depending how much of the electricity you use on site. See our [Solar PV Feed-In Tariff Calculator](#) to find out how much you could earn.

See our [Solar PV Feed-In Tariff Calculator](#) to find out how much you could earn.

Did you know?

A typical residential solar system could save over a tonne and a half of carbon dioxide per year

Top 5 tips for installing solar pv

If you're going to install solar PV panels – or any type of renewable technology for that matter – it's worthwhile following a check list. So before you go ahead with the installation consider the following:



Make sure your chosen installer is a member of the Renewable Energy Consumer Code (RECC) assurance scheme.



You can only benefit from the Feed-in Tariff if your solar PV system was installed by a company certified under the Microgeneration Certification Scheme (MCS), so make sure the installer you choose is accredited under this scheme.



Do your research. And that means sourcing at least three quotes before you choose an installer.



Ask family and friends for recommendations. Before you go ahead and instruct an installer check them out to see if they have any testimonials. Solar Guide features genuine verified customer reviews and ratings.



Make sure you obtain a comprehensive quote before signing any contract or hand over any money as a deposit. RECC advises to never pay more than 25% of the contract price upfront. And don't forget to check that it will be protected with insurance.

Did you know?

[Solar Guide](#) will provide you with three free no obligation quotes from approved installers in your area

Quotes from Solar Guide

We hope you've found this guide useful. If you'd like to source some quotes from solar installers in your area Solar Guide will be able to help you. We can provide you with up to three quotes from both local and nationwide solar installers. It's free and there's no obligation! All you need to do is fill out a quote form.

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