

## Fact Sheet 3: Solar Photovoltaic Panels (Solar Electric)

### What are they?

Photovoltaic (PV) or solar electric panels convert sunlight to electricity. They are typically panels of about 1-2m<sup>2</sup>, but there are many sizes and models available.



**An array of PV panels on a roof**

### What do they do?

PV panels generate electricity from sunlight. People who own PV panels can claim money from the 'Feed-in Tariff'. A typical installation should generate around 200-400 units (kWh) per year for every m<sup>2</sup> of panels<sup>1</sup>, depending on panel type and correct positioning.

### How do they work?

A PV panel is made of layers of semi-conducting material. Sunlight causes electrons to jump between these layers, generating electricity. The electricity needs to be treated in an inverter before it can be used in conventional machines or exported to the grid. MCS Certified solar PV panels are eligible for the Feed-in Tariff scheme. PV panels have no moving parts and require very little maintenance. They should work well for at least 25 years.

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<sup>1</sup> Jardine and Lane, 2003

[Christian N. Jardine and Kevin Lane, "PV-COMPARE: Relative Performance of Photovoltaic Technologies in Northern and Southern Europe", PV in Europe Conference and Exhibition, Rome, 2002]

## Where do they go?

PV panels generate more electricity the more sunlight they receive. The sun's position changes throughout the day. To get the maximum electricity generated, the panels should be south facing, on a roof that slopes at about 30 degrees. A west or east facing array loses about 20% of its potential output<sup>2</sup>.

## What issues need to be considered?

PV panels require about 8m<sup>2</sup> for every kW of capacity, and a typical domestic system is around 4kW capacity, so you will need plenty of free roof space.

The Feed-in Tariff provides a return on investment for PV panels, making them a potential investment for domestic and commercial properties.

## What are the planning requirements?

Some small works can be carried out without the need for planning permission. This is known as '**permitted development**'.

Domestic solar PV panels are classed as permitted development, subject to certain conditions being met. These are summarised below:

### i. Solar PV panels in homes

Fitting solar panels on the roof of a house or a block of flats is permitted development, but the following limits apply:

- Panels should not be installed above the roof ridgeline (excluding the chimney) and should project no more than 200mm from the roof or wall surface.
- If your home is in a conservation area or within a designated World Heritage Site, planning permission will be required if panels are to be fitted on a wall which fronts a highway.
- If your home is a listed building or on a site of a designed scheduled monument, planning permission, and in some cases listed building consent, may be required.

*Please note: You may also need Building Regulations approval to ensure the roof can take the weight of the panel(s).*

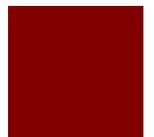
### ii. Solar PV panels in gardens or the grounds of non-domestic buildings

A single free standing solar panel array can be installed within a residential garden area or the curtilage of a non-residential building without the need for planning permission, providing the array:

- Is no higher than 4m and no bigger than 9m<sup>2</sup> in area..
- Is set more than 5m away from the garden boundary.

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<sup>2</sup> Solar Photovoltaics in buildings – A Design Guide (DTI 1999)



- Where the building is in a conservation area or World Heritage Site, and the curtilage is bounded by a highway, it should not be installed closer to the highway than the building.

If your home is a listed building or on a site of a designated scheduled monument, planning permission, and in some cases listed building consent, may be required.

### iii. Solar PV panels on other buildings

In addition to the conditions applied to a house or block of flats solar thermal panels may be installed on non-domestic buildings providing the panels are:

- Not more than 1 metre higher than the highest part of a flat roof (excluding the chimney)
- At least 1 metre from the edge of the roof or wall on which they are installed;
- Not installed on a roof or wall that fronts the highway
- If on a wall, at least 1 metre from a junction of the wall with another wall or with the roof of the building

Where permission is required, to help the planning officer make an informed judgement, it is useful to submit information on the technology with the application e.g. the size and external appearance of the panels) and provide plans showing where the equipment will be installed.

Solar panel applications will generally be simple and straight forward, but it is always recommended that applicants speak to the Planning Department as soon as possible to identify the planning requirements, especially if the building is listed, or within a conservation area.

*Please note: You may also need Building Regulations approval to ensure the roof can take the weight of the panel(s).*

## More info

An introduction to PV by “The Renewable Energy Centre”:

[http://www.therenewableenergycentre.co.uk/power-from-the-sun-\(photovoltaics\)/](http://www.therenewableenergycentre.co.uk/power-from-the-sun-(photovoltaics)/)

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](http://www.planningportal.gov.uk)

The permitted development regulations outlined in this factsheet are for guidance only. Developers are always advised to check with their Local Planning Authority.

