CLASP. Climate Change Local Area Support Programme

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^2, 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^2 of panels[1], 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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[1] 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[2].

What issues need to be considered?

PV panels require about $8m^2$ 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 has increased the return on investment for PV panels, making them an attractive investment for domestic and commercial properties.

What are the planning requirements?

Most householders can carry out small extensions or additions to their homes 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

A single free standing solar panel array can be installed within a residential garden area without the need for planning permission, providing the array is:

- No bigger than $9m^2$ in area and less than 4m in height.
- Is set more than 5m away from the garden boundary.
- If your home is in a conservation area or within a World Heritage Site, it should not be visible from the highway.

[2] Solar Photovoltaics in buildings – A Design Guide (DTI 1999)

- 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

Permitted development rights for small scale renewables do not extend to non-domestic buildings, and planning permission will most likely be required before solar panels can be installed on non-domestic buildings such as offices, schools, industrial premises and agricultural buildings.

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)/

The companion guide to planning policy statement 22 provides more information on the planning and development of renewable energy schemes across England:
http://www.communities.gov.uk/publications/planningandbuilding/planningrenewable

Please Note: National planning guidance is currently under review and the companion guide to planning policy statement 22 is referred to for information only.