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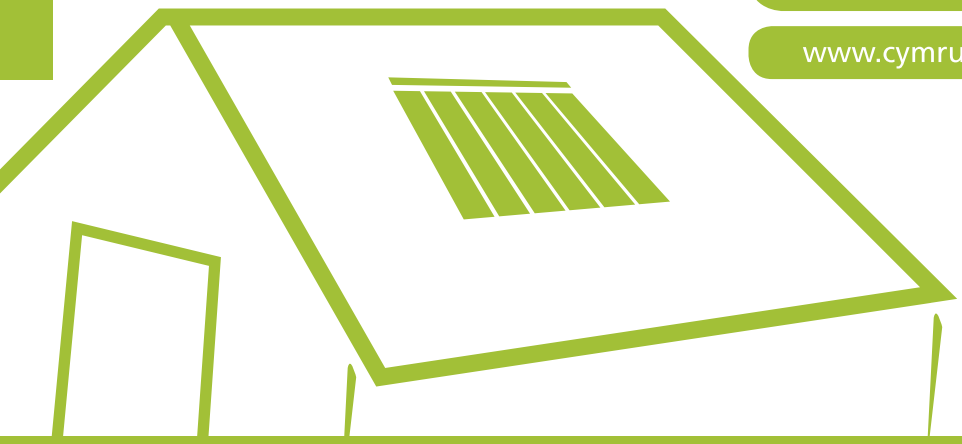

GENERATING YOUR OWN ENERGY

SOLAR ELECTRICITY

2B

Helpu Cymru i leihau
ei Hôl Troed Carbon

Help Wales reduce
its Carbon Footprint

A planning guide for householders, communities and businesses

Introduction

This leaflet is part of an information pack for householders, communities and businesses who want to generate their own energy through small or community scale renewable energy technologies. This may be to benefit from the Clean Energy Cashback Scheme (also known as the Feed-in Tariff) and to help tackle climate change.

The pack is intended to give you some useful information on what issues you should be considering when installing a renewable energy technology, including the current planning regulations and ways in which you can install the technology to reduce any impact on you, your neighbours and the local built and natural environment.

Please read Leaflet 1 **Generating Your Own Energy – A Planning Guide for Householders, Communities and Businesses**.
This can be found at www.wales.gov.uk/planning

What is solar electricity?

Solar energy involves the use of the sun's free energy to provide electricity using solar photovoltaic panels (PV). Solar PV requires only daylight and not direct sunlight to generate electricity. As such, power can be generated even on a cloudy day.

What is a solar photovoltaic panel?

- Solar photovoltaic systems comprise two main components
  - Solar collectors – Which collect the sun's rays so that when light shines on the cell it creates an electric field causing electricity to flow.
  - Wiring – This includes a converter to convert the direct current electricity from the panel to alternating current so it can be connected to the buildings main electricity distribution board.

- **Technology Type:** - There are many types of solar PV panels with different characteristics (crystalline cells, thin-film, hybrid). They consist of one or two layers of semi-conducting material, normally packaged together into panels or other modular forms.

- **Size:** - Small – scale installations can vary from 0.5m^2 to 1m^2. They can be connected together to form an array that can cover a few m^2 to hundreds of square meters. A typical small-scale array would have an area of 9 to 18m^2.

- **Location:** - Solar collectors are usually placed on the roof of a building, but can also be wall mounted or stand alone (free standing) structures. PV systems can also be found in a roof tile form and can be mounted vertically and horizontally to form part of the building structure.

- **Performance:** – For best performance solar collectors will need to face between southeast and southwest and be of the shade of trees and buildings. East or west installations can also provide good performance and can be used for a building with a roof or wall that faces within 90 degrees of south.
- **Weight:** – The roof where the solar collector is to be installed should be strong enough to support the weight and prevent any safety issues arising.
- **Maintenance:** - PV panels are considered to have low maintenance if they are installed correctly.
- **Grid connection:** – Electrical grid connection requires approval from the distribution network operator (DNO).

Ysgol y Graig
(Credit: Dulas Ltd)

Adult Education Centre, Machynlleth
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Do I need planning permission for solar electric (PV) equipment ?

Details of the current planning regulations for the installation of solar PV equipment can be found in Leaflet 3 **Generating Your Own Energy - The Current Planning Regulations** that accompanies this pack.

What planning issues should I be aware of when considering installing solar PV?

- There are economic, social and environmental impacts that should be considered when installing solar PV. Some of these impacts arise during the installation and construction phases, and there are a number of ways in which the design, location and installation of solar PV can minimise these impacts.
- The checklist below provides some of these impacts and ways in which you can minimise them.

Solar electric (PV) impacts checklist

Issue	Impact	Ways to minimise the impact
Landscape and visual	Visual impacts of solar PV systems on roof tops.	• Sensitive design and siting of panels to minimise visual impacts. • Integrate into existing building design features. • If possible, panels should be installed on unobtrusive areas of a roof, such as the inner slopes of a roof valley, or where a flat roof is obscured by a parapet.
	Shading.	• Care should be taken to make sure that the panels are not shaded for long periods of the day, as they will not function when overshadowed.

Solar electric (PV) impacts checklist (cont.)		
Issue	**Impact**	**Ways to minimise the impact**
Historic Environment	Visual impacts on the setting of historic features and damage to structure of listed building.	• Sensitive design (including colour and appearance) and siting of panels to minimise visual impacts on character and appearance of heritage features. • Installation of solar panels should avoid cutting through structural timber if installed on a listed building. • Panels need to be installed sensitively when located on lead roofs. • Panels should be mounted over existing slates, rather than replacing the historic fabric with PV roof shingles, to protect the integrity of the building. • Seek advice of a structural engineer before mounting solar units on the roof of a building, where there is any doubt regarding its structural integrity.

Explanation of terms	
Landscape	Landscape includes the statutory landscape designations which are National Parks and Areas of Outstanding Natural Beauty.
Ecology	Ecology includes the statutory nature conservation designations of Sites of Special Scientific Interest (SSSIs), sites designated under the Ramsar Convention, Special Protection Areas (SPAs) or Special Areas of Conservation (SACs).
Historic Environment	Historic environment includes archaeology and ancient monuments, listed buildings, conservation areas and historic parks, gardens and landscapes.

Other approvals

There may be other kinds of approval that you may need such as:

- Listed Building consent if a building is listed.
- Conservation area consent if the development is in a conservation area.
- Trees – Many trees are protected by tree preservation orders which mean you need the council's consent to prune or fell them.
- Building Regulations – New building work will often need to comply with Building regulations.
- Wildlife – Some buildings may hold roosts of bats or provide a refuge for other protected species – these are given special protection.
- Environment Agency licences.

Please check with your local planning authority whether any of these apply to your site or your proposal.

Sources of further information	
Welsh Assembly Government	www.wales.gov.uk www.walescarbonfootprint.gov.uk
Environment Agency Wales	www.environment-agency.gov.uk
Countryside Council for Wales	www.ccw.gov.uk
Cadw	www.cadw.wales.gov.uk
Energy Saving Trust	www.est.org.uk Tel : 0800 512 012
Carbon Trust	www.carbontrust.co.uk Tel : 0800 085 2005
Microgeneration Certification Scheme	www.microgenerationcertification.org
Department for Energy and Climate Change	www.decc.gov.uk
Solar Trade Association	www.solar-trade.org.uk
Micropower Council	www.micropower.co.uk
Renewable Energy Association	www.r-e-a.net

Publications available in this series	
1	Generating Your Own Energy – A Planning Guide for Homes, Communities and Businesses
2A	Wind
2B	Solar Electricity
2C	Solar Water
2D	Hydropower
2E	Biomass
2F	Biomass (Anaerobic Digestion)
2G	Micro-CHP
2H	Heat Pumps
3	Generating Your Own Energy – The Current Planning Regulations

These documents can be found on our website at:
www.wales.gov.uk/planning

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WG 13009
ISBN 978 0 7504 6559 5