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GENERATING YOUR OWN ENERGY WIND



2A



Helpu Cymru i leihau
ei Hôl Troed Carbon
Help Wales reduce
its Carbon Footprint

A planning guide for
householders, communities
and businesses

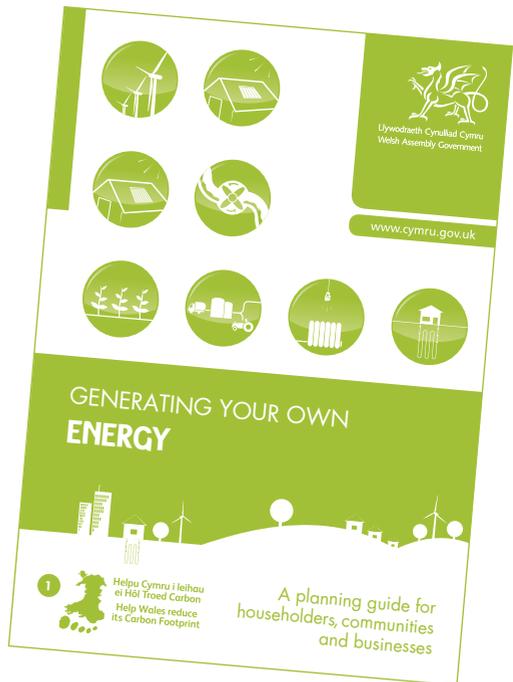
Introduction

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 wind energy?

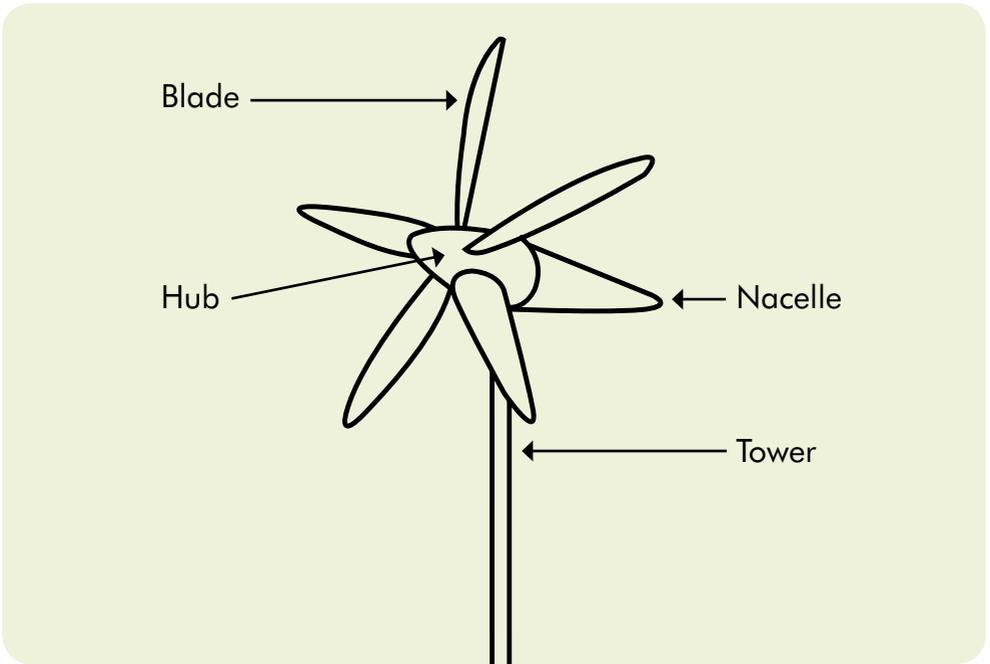
Wind turbines convert the power within moving air mass (wind) into electricity by rotating a shaft. Power increases threefold as wind speed increases. Small-scale wind turbines can be used to provide power to a single home, or to provide a proportion of a building's or communities' electricity demand.

What is a wind turbine?

- Wind turbines consist of four main components:-
 - a tower
 - a nacelle (mounted on the tower and houses the generator and gear box)
 - a hub (rotor)
 - blades (attached to the hub)
- **Types:** - There are two types of wind turbine – horizontal axis turbines and vertical axis turbines. Vertical axis turbines are more common at the micro scale, with turbines designed to perform more efficiently at the lower, more turbulent wind speeds typically found in built-up areas.
- **Installation:** - Turbines can be installed with a free-standing mast or building-mounted, and are commonly deployed as single machines supplying energy to specific buildings or developments such as single homes, farm buildings, schools and businesses.
- **Size** - Small/community scale wind turbines cover those that range between 5 Watt battery charging models up to 5 MW individual wind turbines which provide a proportion of a building's or communities' electricity demand.



- **Speed:** - Turbines operate between a range of wind speeds defined by the cut-in and cut-out wind speed, which is specific to the turbine model. The power is conditioned and transformed to an appropriate voltage, and is then supplied directly to a building at micro/small scale.
- **Location/Siting:** - Turbines should be sited in a reasonably exposed location and work best at a height where there are no obstructions from buildings, trees or other features that would cause turbulence (as this will affect the amount of energy the wind turbine can generate).



Do I need planning permission for a wind turbine?

Details of the current planning regulations for wind turbines 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 a wind turbine?

- There are economic, social and environmental impacts that should be considered when installing a wind turbine. Some of these impacts arise during installation and construction phases, and there are a number of ways in which the design, location and installation of a turbine can minimise these impacts.
- The checklist below details some of these impacts and the ways in which they can be minimised.

Wind energy checklist		
Issue	Impact	Ways to minimise the impact
Landscape and visual	<ul style="list-style-type: none">• Townscape character.• Landscape character.• Cumulative impacts (in combination with other existing or proposed wind energy developments).	<ul style="list-style-type: none">• Position the turbine sympathetically to surrounding built forms and choose sympathetic paint and finishes for the turbine components.• Use screening (e.g. planting) to minimise unsympathetic views.• Ensure careful siting of the turbine.



Wind energy checklist (cont.)

Issue	Impact	Ways to minimise the impact
Ecology	<ul style="list-style-type: none">• Loss of habitat/species (from turbine blades, mast foundations or buried cabling).	<ul style="list-style-type: none">• Site the turbine away from sensitive habitats/species.• Be aware of legislation protecting certain species/designated sites.
Birds	<ul style="list-style-type: none">• Risk of bird collision.	<ul style="list-style-type: none">• Site the turbine in an area to avoid high flight activity and bird nests.
Shadow Flicker	<ul style="list-style-type: none">• Sunlight being interrupted by the blades which cause a flicker or reflection on neighbouring properties.	<ul style="list-style-type: none">• Site and position the turbine to avoid shadow flicker (where possible).• Screen shadow flicker impacts using planting.• Use matt or semi-matt finish on the turbine blades.
Hydrology	<ul style="list-style-type: none">• Impact on ponds/river etc during construction/installation.• Drainage.	<ul style="list-style-type: none">• Site the turbine away from watercourses (ponds/river etc).
Noise	<ul style="list-style-type: none">• Impact from the mechanical and/or aerodynamic noise during operation on neighbouring buildings.	<ul style="list-style-type: none">• Site the turbine to minimise noise impact on neighbours.• Choice of turbine technology.



Wind energy checklist (cont.)

Issue	Impact	Ways to minimise the impact
Historic Environment	<ul style="list-style-type: none">• Visual impact on the character of a building or site of historical value.	<ul style="list-style-type: none">• Site the turbine to avoid detrimental impact on a designated building/site or conservation area, and features of known archaeological value.• Site the turbine so that when viewed from a sensitive location it will be seen against a landscape backdrop, rather than open sky.
Building Design	<ul style="list-style-type: none">• Structural impacts of mounted micro-wind turbines on buildings.	<ul style="list-style-type: none">• Avoid fixing to chimneys or into soft materials, including colm, rendered infill panels, soft brick or stone or anywhere showing signs of pre-existing structural problem such as cracked or de-laminating stone walls.• Consult a structural engineer.• Site to avoid structural vibration.



Explanation of terms

Shadow Flicker	Shadow flicker occurs when sunlight falling on a building is interrupted by the blades which cause a flicker effect.
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 such as of Sites of Special Scientific Interest (SSSIs), sites designated under the Ramsar Convention, Special Protection Areas (SPAs) or Special Areas of Conservation (SACs). It also includes those species protected by law.
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.

Other approvals? (cont.)

- 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
Renewable Energy Statistics Database (RESTATS)	www.restats.org.uk
Renewable UK	www.bwea.com
Micropower Council	www.micropower.co.uk



Publications available

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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