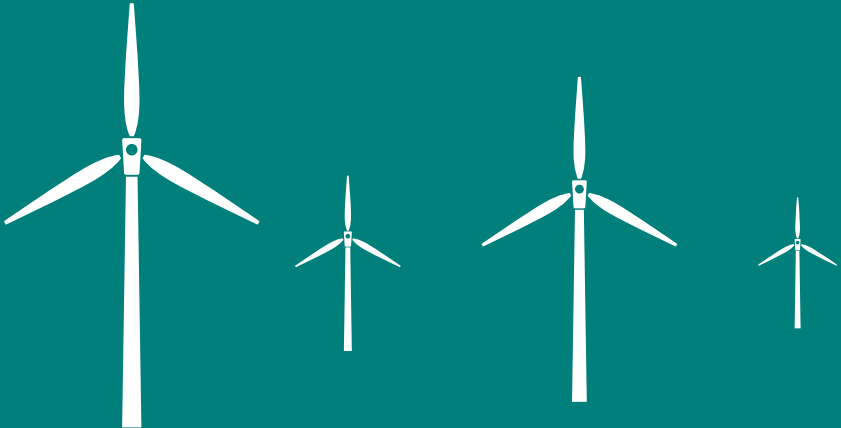


Renewables Factsheet #6

# WIND TURBINES



SUPPORTED BY



CLASP.



Cheshire West  
and Chester



Cheshire East  
Council



Warrington  
Borough Council

## OVERVIEW

Wind turbines use the kinetic energy of the wind to generate electricity. A wind turbine is made of a series of blades arranged either vertically or horizontally. It also has an electricity generator and a series of other mechanical and electronic controls. When wind strikes on the blades, they are forced to rotate, thereby rotating the electric generator, which in turn produces electricity.

Wind turbines come in different sizes from ones rated a few watts to those rated in megawatts. But domestic turbines are usually in the range 1-6 kW.

All large turbines are freestanding with appropriate support structures. Small turbines can either be roof-mounted or freestanding.

## SUITABILITY

Generally wind turbines are suitable where the wind speed is high enough to support them. The advised minimum annual average wind speed that could support a wind turbine is 5m/s. Ideally the air flow should not be turbulent and so the location should be free from wind breaks such as trees and other buildings and have uninterrupted sight of the prevailing wind at all times. It is recommended that wind speed be monitored, on site, for an extended period before wind turbines are installed.

Other restrictions that can affect the installation of a wind turbine are:

- a. The suitability of the supporting structure: if it's a roof-mounted turbine, the building has to have the integrity to support the wind turbine.
- b. Population: wind turbines are better suited to less populated areas.
- c. Shadow flicker.
- d. Conservation Areas: wind turbines are less likely to be granted planning permission within Conservation Areas.
- e. The acceptance of other residents: this can affect the granting of planning permission.
- f. Birds and Bats: locations with high bird population or on migration routes may not be granted planning permission. Similar restrictions may also apply in areas used for bat roosting or as flight paths for bats.
- g. Noise.

## SCALE AND TYPE OF DEVELOPMENT

There are two types of domestic-sized wind turbine:

- a. **Mast mounted:**  
These are free standing and are erected in a suitably exposed position, often around 2.5kW to 6kW.
- b. **Roof mounted:**  
These are smaller than mast mounted systems and can be installed on the roof of a home where there is a suitable wind resource. Often these are around 1kW to 2kW in size.

## TYPICAL INSTALLATION, COSTS AND SAVINGS

Cost for domestic scale wind turbines vary very dramatically because of the wide range in scale and types of installation.

A small 1kW roof mounted system can cost from £2,000, while 2.5 kW mast mounted system can cost around £15,000. The total cost of a larger 6kW mast mounted system is around £23,000.

Recent monitoring of a range of small domestic wind systems has shown that a well sited 6kW turbine could generate around 10,000kWh per year which would produce CO<sub>2</sub> savings of around 5.5 tonnes a year.

The introduction of the Feed-in-Tariff provides a financial incentive, through cost savings and income, for electricity generation. The incentive is comprised of three parts:

- The Feed-in-Tariff itself, currently paying approximately 36 pence for every kWh generated by systems up to 1.5 kW and 27 pence for every kWh generated by systems up to 6kW. This is a 20 year contract and is index linked.
- The free use of electricity generated.
- Payment for each kWh fed into the grid, through a contract with a Utility Company.

A 6kW system could generate income and savings of around £3,200 a year when eligible for the Feed-In-Tariff 1. It should be noted however that equipment will need to be installed by a Microgeneration Certification Scheme (MCS) accredited installer to be eligible for Feed-In-Tariffs. Further information on Feed-In-Tariffs can be found on the Department of Energy and Climate Change's website at:

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[www.decc.gov.uk](http://www.decc.gov.uk)

## PLANNING

Wind turbines are not one of the technologies that have been granted Permitted Development Rights.

Therefore, before a wind turbine is installed, an application will need to be made to the local authority. Whilst broadly speaking considerations will be the same across the country, local authorities may have different requirements for the consideration of planning applications.

It is therefore recommended that you contact your local planning authority, or the planning authority of the area where the wind turbine is to be installed, to discuss these requirements at an early stage.

Further information on planning considerations is provided later in this factsheet.

## SOURCES OF FURTHER INFORMATION AND ADVICE

The following websites provide further information and advice on wind turbines:

**a. The Energy Saving Trust:**

<http://www.energysavingtrust.org.uk/Generate-your-own-energy/Wind-Turbines>

**b. DECC:**

[http://www.decc.gov.uk/en/content/cms/what\\_we\\_do/uk\\_supply/energy\\_mix/renewable/explained/microgen/micro\\_turbines/micro\\_turbines.aspx](http://www.decc.gov.uk/en/content/cms/what_we_do/uk_supply/energy_mix/renewable/explained/microgen/micro_turbines/micro_turbines.aspx)

**c. Direct.gov.uk:**

[http://www.direct.gov.uk/en/Environmentandgreenerliving/Energyandwatersaving/Renewableandlowcarbonenergy/DG\\_072626](http://www.direct.gov.uk/en/Environmentandgreenerliving/Energyandwatersaving/Renewableandlowcarbonenergy/DG_072626)

**d. BWEA:**

<http://www.bwea.com/small/cases.html>

**e. The Micropower Council:**

<http://www.micropower.co.uk/what-microgeneration/microgeneration-technologies>

**f. Local Government Improvement and Development:**

<http://www.idea.gov.uk/idk/core/page.do?pagelId=23051802>

**g. The Microgeneration Certification Scheme:**

<http://www.microgenerationcertification.org/mcs-consumer/installer-search.php>

# PLANNING CONSIDERATIONS

## Permitted Development Considerations

Planning permission will normally be needed for all scales of wind turbines, including domestic and non-domestic installations, whether building-mounted or within the grounds of the property in question.

The government is currently investigating the possibility of extending permitted development rights for the erection of wind turbines on or within the curtilage of some domestic properties (as at March 2011) and is exploring similar measures for non-domestic sites, but as of yet no decision has been taken on this matter. For further information on permitted development rights, please refer to the Planning Portal and the Department for Communities and Local Government websites:

<http://www.planningportal.gov.uk/permission/commonprojects/windturbines>

<http://www.communities.gov.uk/documents/planningandbuilding/pdf/smallscalefinal.pdf>



Advice should always be sought from your local planning authority if you are unsure whether your development falls under permitted development rights. Your local planning authority will be able to advise you on the need to obtain planning permission.

If you want certainty that your renewable energy proposal is considered permissible (in that you do not need to make a planning application) you should apply for a Lawful Development Certificate (LDC).

## Development Management and Planning Policy Considerations

The planning regime for installing wind turbines is complex and evolving. Currently planning permission will normally be required for all scales of wind turbines, including building-mounted and free standing installations on domestic and non-domestic sites, plus larger scale schemes.

Proposals which would result in an output of less than 50MW are determined by local planning authorities and schemes with an output greater than 50MW are currently determined by the Infrastructure Planning Committee (IPC). Please note that as part of reforms to the planning system, the powers of the IPC are due to be transferred to the Major Infrastructure Planning Unit, when the Localism Bill receives Royal Assent. This new body will broadly carry out the same functions as the IPC, but decision making powers will be returned to Ministers, based on the recommendations of the Unit.

When determining an application for a wind turbine the main issues likely to be taken in to account will include visual and landscape impacts, noise, vibration and safety considerations, electrical interference, shadow flicker, natural (ecology and ornithology) and built environment impacts and planning policy considerations, such as Green Belt designations. This list is not exhaustive however and the factors that need to be taken into account are likely to vary depending on the location of the property or site in question, plus the number of turbines being installed.

Your local planning authority will be able to assist you in identifying the issues and planning policies that will be need to be taken into account for a particular proposal. Advice should always be sought from your Local Planning Authority before submitting an application.



## Conservation Area or Listed Building Considerations

Additional planning considerations will apply when determining proposals for building-mounted or free standing wind turbines that could affect listed buildings, which are protected for their special architectural or historic interest. Generally, they may not be extended or altered, internally or externally, in any way which may affect this interest.

A proposal for a building-mounted or free standing wind turbine would be assessed against the extent to which it would interfere with the appearance, structure, design or character of a listed building. When this would have a negative effect on a listed building's special interest, a proposal would not be allowed. Proposals for free standing buildings in the vicinity of a listed building may also be assessed against their impact on the setting of the building in question, any potential visual or physical damage they may cause to it, or any other adverse effect they may have on it.

It is more than likely that listed building consent will also be required when proposing development which could affect a listed building. This is in addition and separate to the granting of planning permission, but similarly seeks to ensure that any alterations to a listed building, whether internal or external, do not alter the special interest of the building.

**You should always consult your local planning authority before submitting an application if you think it could affect a listed building.**

Conservation Areas are areas of special historical or architectural interest which have a character or townscape that it is desirable to preserve or enhance.

As a general rule development must preserve or enhance the character and appearance, setting and views into and out of a Conservation Area. Accordingly, building-mounted and free standing wind turbines are unlikely to be appropriate within a Conservation Area where they would be visually intrusive or prominent features. Proposals for development on sites or buildings which lie outside of a Conservation Area, but which would affect its setting or the views in or out of a Conservation Area, would also be required to preserve or enhance the character or appearance of the area in question.

**You should always consult your local planning authority before submitting an application if you think it could affect a Conservation Area.**

In addition to listed buildings and Conservation Areas, the development of wind turbines could affect scheduled monuments, historic parks and gardens, historic battlefields and World Heritage Sites. There will be other considerations to take into account when proposing development within or in the vicinity of these sites and areas. Local designations may also apply to specific sites and buildings.

**Advice should always be sought from your Local Planning Authority before submitting an application.**

# PLANNING APPLICATION REQUIREMENTS

The following information will normally be required in support of a planning application for a building mounted or free standing wind turbine. Guidance on how to make a planning application can be obtained from the Planning Portal website at:

<http://www.planningportal.gov.uk/planning/applications/howtoapply>

National requirements for all planning applications will apply to any proposal. These can be found at:

<http://www.communities.gov.uk/publications/planningandbuilding/validationguidance>

Alternatively, this information can usually be obtained from your local planning authority, along with details of the application fee that will apply.

**It is recommended that you contact your local planning authority for further advice before submitting an application.**

Local planning authorities can set out local requirements for the information that will be required in support of a planning application and will usually be able to agree the information that is required in order for an application to be registered with a developer, before an application is submitted. In most cases it is likely that the following information would be needed to support an application:



- Design and Access Statement
- Landscape and Visual Assessment
- Noise Impact Assessment
- Environmental Statement
- Biodiversity Surveys and Reports
- Conservation Statement and Heritage Impact Assessment
- Energy Statement

Please note that this is not an exhaustive list and additional information may be required to assess to an application depending on the characteristics of a site. It is likely that additional information would be required to support a larger scale scheme. In accordance with the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999, a local planning authority will also be required to screen applications for the need for an Environmental Impact Assessment where they involve more than one turbine or a single turbine with a hub height greater than 15m.



# PLANNING APPLICATION REQUIREMENTS

In addition to any statutory consultees that a local planning authority is required to consult in order to assess the above information, wind turbine installations may have an effect on air traffic movement and safety, Ministry of Defence Installations and telecommunications equipment.

Consequently, a local planning authority will be required to undertake consultations with these organisations, or bodies representing these organisations and it would therefore be prudent for developers to have consulted with them prior to submitting an application in order that their views can be obtained and any information they require can be submitted with an application. These bodies include:

## **Civil Aviation Authority**

Surveillance & Spectrum Management, Directorate of Airspace Policy (DAPS), Civil Aviation Authority, CAA House, 45-59 Kingsway, London, WC2B 6TE

E: [windfarms@caa.co.uk](mailto:windfarms@caa.co.uk).

## **National Air Traffic Services Ltd**

(NATS): Navigation Spectrum & Surveillance, Corporate & Technical Centre, 4000 Parkway, Whitley, Fareham, Hampshire, PO15 7FL

## **Ministry of Defence**

Defence Estates, Kingston Road, Sutton Coalfield, West Midlands, B75 7RL

T: 0121 311 2140

## **Joint Radio Company Ltd**

Provide scanning telemetry clearance on behalf of the electricity and gas public utilities.

The Wind Farm Team, Dean Bradley House, 52 Horseferry Road, London, SW1P 2AF

T: 020 7707 5199

E: [windfarms@jrc.co.uk](mailto:windfarms@jrc.co.uk).

# PLANNING APPLICATION REQUIREMENTS

## **Atkins Limited**

Provide advice on scanning telemetry clearance on behalf of the water public utilities and non-public utility licensees.

Atkins Limited, 200 Broomielaw, Glasgow, G1 4RU

## **BBC**

Provides an internet-based wind farm assessment tool, which is intended to provide a 'first pass' indication of whether reception problems might be caused by wind turbines.

The tool is available at:

[www.bbc.co.uk/reception/info/windfarms.shtml](http://www.bbc.co.uk/reception/info/windfarms.shtml)

BBC Reception Advice, PO Box 1922, Glasgow, G2 3WT

T: 03700 100 123

## **Ofcom**

Produces maps showing the locations of the UK's TV transmitters, as well as lists of the frequencies and powers used by the transmitter networks. These are available at:

[www.ofcom.org.uk/tv/ifi/tech](http://www.ofcom.org.uk/tv/ifi/tech)

Ofcom wind farm clearance for fixed links and:

[www.ofcom.org.uk/radiocomms/ifi/licensing/classes/fixed/Windfarms](http://www.ofcom.org.uk/radiocomms/ifi/licensing/classes/fixed/Windfarms)

## **Television transmitter lists and location maps**

Riverside House, 2a Southwark Bridge Road, London, SE1 9HA

Further information can be found at:

[http://licensing.ofcom.org.uk/binaries/spectrum/fixed-terrestrial-links/wind-farms/tall\\_structures.pdf](http://licensing.ofcom.org.uk/binaries/spectrum/fixed-terrestrial-links/wind-farms/tall_structures.pdf)

[www.ofcom.org.uk/contactus](http://www.ofcom.org.uk/contactus)

T: 020 7981 3040

## BUILDING CONTROL REQUIREMENTS

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It is recommended that you contact your local planning authority for further advice before submitting an application.

When it is believed that equipment is permitted development and considered permissible (in that you do not need to make a planning application) you should apply for a Lawful Development Certificate (LDC). The fee for LDC applications relating to proposed development is half of that payable for a planning application. Further information on LDCs can be found at:

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<http://www.planningportal.gov.uk/planning/applications/howtoapply>

or alternatively you should contact your local planning authority.

In addition to any planning related permissions, it is recommended that you ensure that your scheme meets any other regulatory standards or requirements as necessary, though these are only likely to apply to larger proposals.

It is recommended that you contact your local authority's planning department or environmental health team, who may be able to assist you in identifying such requirements.

Domestic and non-domestic building-mounted wind turbines need to comply with Building Regulations Part A-Structure. Domestic building-mounted and free standing wind turbines also fall within the scope of Building Regulation Part P-Electrical Safety.

The fixing system used to secure building-mounted wind turbines is crucial for the safety of persons around the building and structure of the building itself. When in use, the actual weight of the turbine, combined with the load asserted from the wind, will induce considerable forces onto any bracket used. Key considerations to take into account to ensure a secure and durable fixing system will include the condition and structural integrity of the chosen location and the fixing bolts used. Wherever the fixing is located, there should be sufficient structural mass to ensure the loadings will not adversely affect the structure of the building.

The electrical connection and installation of domestic building-mounted wind turbines will normally need to be approved under Part P of the Building Regulations. Free standing domestic turbines are also covered by these requirements, but do not require any further building regulations approval.

It is recommended that you contact your local authority Building Control section for further advice when considering a particular proposal.

FURTHER INFORMATION ON PLANNING  
REQUIREMENTS WILL BE AVAILABLE FROM  
YOUR LOCAL COUNCIL.

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## CHESHIRE EAST COUNCIL

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Development Management

**T:** 0300 123 5014

**E:** [planning@cheshireeast.gov.uk](mailto:planning@cheshireeast.gov.uk)

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## CHESHIRE WEST AND CHESTER COUNCIL

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Development Management

**T:** 0300 123 7027

**E:** [planning@cheshirewestandchester.gov.uk](mailto:planning@cheshirewestandchester.gov.uk)

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## WARRINGTON BOROUGH COUNCIL

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Development Management

**T:** 01925 442819

**E:** [devcontrol@warrington.gov.uk](mailto:devcontrol@warrington.gov.uk)

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