

Prior to applying for the Low Carbon Buildings Grant, you must undertake energy efficiency measures to ensure that you are minimising your energy requirements. Specifically:

- Insulate loft to 270mm
- Install cavity wall insulation
- Fit low energy light bulbs
- Install basic controls for your heating system.

Details on micro-generation certification on products and technology for the assurance of consumers can be found at: <http://www.greenbooklive.com/page.jsp?id=4>

For more details on Wind Turbines, please visit:

[www.tvenergy.org](http://www.tvenergy.org) or call 01635 817420

[http://www.energysavingtrust.org.uk/generate\\_your\\_own\\_energy/types\\_of\\_renewables/microwind](http://www.energysavingtrust.org.uk/generate_your_own_energy/types_of_renewables/microwind)

<http://www.redbooklive.com/page.jsp?id=4>

<http://www.dti.gov.uk/energy/sources/renewables/index.html>

<http://www.lowcarbonbuildings.org.uk/micro/wind/>

**To obtain a copy of this leaflet on tape or in large print please telephone (01296) 585112**



*Photograph Courtesy of TV Energy*  
For information on energy conservation in traditional buildings  
<http://www.helm.org.uk/upload/pdf/89410-EnergyConservation1.pdf>



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# Renewable Energy: Installing Wind Turbines – A Guide for Householders

## Introduction to Wind Turbines

In the UK we have 40% of Europe's total wind energy. But it's still largely untapped and only 0.5% of our electricity requirements are currently generated by wind power. Wind turbines convert wind to electricity using rotor blades mounted on a generator.

Wind power is proportional to the cube of the wind's speed, so relatively small increases in speed result in large changes in potential output. Individual turbines vary in size but as a guide, a typical domestic system would be 2.5 - 6 kilowatts, depending on the location and household electricity demand.

Systems range from very small micro-turbines supplying energy for battery charging systems (e.g. on boats or in gardens), to free-standing small turbines supplying electricity to the home and the grid.

### Requirements

Electricity generated at any one time by a wind turbine is highly dependent on the speed and direction of the wind. The wind speed itself is dependent on a number of factors, such as the height and shape of the land, the height of the turbine above ground level and distance from obstructions. An independent assessment of suitability is recommended prior to implementation.

Systems up to 1 kW will cost from £400 DIY to £3000 installed, whereas larger systems in the region of 2.5kW to 6 kW would cost between £14,000 and £25,000 installed. These costs are inclusive of the turbine, mast, inverters, electrics and installation.

Small-scale wind power is particularly suitable for remote locations where conventional methods of supply are expensive or impractical. Most small wind turbines generate direct current (DC) electricity and require an inverter to convert DC to AC (alternating current - mains electricity).

### Planning

For information relating to planning permission contact AVDC Planning on 01296 585431 or contact TV Energy on 01635 817420 for more details or visit: [http://www.energysavingtrust.org.uk/generate\\_your\\_own\\_energy/planning\\_permission\\_for\\_renewable\\_energy\\_technologies](http://www.energysavingtrust.org.uk/generate_your_own_energy/planning_permission_for_renewable_energy_technologies)

AVDC's Historic Buildings Officers can be contacted on 01296 585383 or 01296 585888 for advice regarding the installation of renewable energy systems in Listed Buildings and Conservation Areas.

### Considerations

If electricity generation is the main motivator, then wind turbines should only be considered under the following circumstances:

- There are no significant nearby obstacles (buildings, trees, hills) that may produce turbulence.
- Local average wind speed is 6m/s or more at the height of the top of the mast.

Approximate figures can be found at: <http://www.berr.gov.uk/energy/sources/renewables/explained/wind/page16085.html>

Where a turbine is being installed with an expectation of selling energy back to the grid, consideration should be given to the suitability of the local grid.

The expected lifetime of a well-sited turbine is around 25 years.

### Payback

Roof-mounted systems cost from £2,000. Energy and carbon saved depends on size, location, wind speed, nearby buildings and local landscape.

As a guide, a 2.5kW turbine could save £400/year otherwise spent on electricity, plus up to 5p per kWh earned as Renewables Obligation Certificates. At an installation cost of £14,000, this could give a payback of 18 years. This would be reduced with acquisition of a grant and is likely to fall further with increasing electricity costs.

### Household Grants

For accredited products installed by registered suppliers, a maximum grant of £1,000 per kW of installed capacity is available, subject to an overall maximum of £2,500 or 30% of the relevant eligible costs, whichever is the lesser.

Householder grants are available until June 2010 on a first come first served basis from: [www.lowcarbonbuildings.org.uk](http://www.lowcarbonbuildings.org.uk)