



Renewable Energy: The facts.

Wind Power

Wind power has been exploited for thousands of years for grinding and pumping, but its use for generating electricity grew during the 20th century. The design of modern electricity-generating wind turbines has evolved a great deal from the early corn-grinding and water-pumping 'windmills'.

Scale

You have probably all seen the big white wind turbines on the hills, often in clusters of between five and thirty. These are the 'big boys', often generating between 0.5 and 3 Megawatts (a megawatt is 1000 kilowatts) each. A one-megawatt turbine running for an hour at maximum speed would power 1000 one-bar electric fires!

At the opposite end of the scale are very small wind turbines, of the kind that you may have seen on narrowboats or caravans. These are used to help keep batteries charged, and may range from 50 watts to a few hundred watts.

In between these two extremes are 'small to medium' turbines of 2 – 10 kilowatts which can make a significant contribution to the power requirements of domestic buildings and small businesses. These can either be used to charge batteries where the property is not connected to the National grid, or (with the permission of the electricity company) the turbine can be connected into the National Grid. If you choose to do this, you need to ensure that you have, or change to, a supplier who will pay you for any surplus electricity you 'export' to the Grid.

Aren't they noisy?

Noise levels will clearly vary according to design, wind-speed and so on, but our own experience with a 2.5 kW turbine show that noise is negligible-hardly greater than the noise of the wind in the trees, and never a cause of complaint for local residents.

How big are they?

How long is a piece of string?! It depends on the output. A small turbine of 50 watts may have a diameter of perhaps 900mm and sit on a mast just tall enough to keep the turbine clear of heads and fingers, while our 2.5 kW turbine has a blade diameter of 2.5 metres and sits on an 11m mast. One of the 'big boys', the 1.5 Megawatt turbine at the Eco-Tech centre in Swaffham, Norfolk, has a mast 67 metres high and a blade diameter of 66 metres, and turbines of 2 – 3 Megawatts are beginning to be more common.

A number of building-mounted wind turbines are currently being developed. These typically have a peak output of 1 – 1.5 kilowatts

What really affects the output?

As suggested above, size has a lot to do with it, but so, of course, has wind speed. Both of these factors are governed by very useful 'rules'. For wind speed it's the 'cube rule'. This means that if you double the wind speed, the output of the turbine increases by 8 times. As far as size is concerned, output goes up by the square of the blade diameter, so if you double the blade diameter, you increase the output by 4 times.

Will I require planning permission?

Usually, yes. Always consult your local planning department for details.

How much will it cost me?

Again, it depends on size. A very small turbine of around 50-70 watts may cost between £300 and £500, while a grid-connected 6 kilowatt turbine may cost over £15,000 plus installation and V.A.T.

But...

Each Megawatt-hour (1000 kilowatt-hours, or units of electricity) you generate in a year gives rise to a **Renewables Obligation Certificate, or ROC**. These are tradeable, and can be sold for around £45 at current prices.

Can I get a grant?

Yes. The Low Carbon Buildings Programme (LCBP) currently offers grants for domestic installations. The LCBP free phone help-line is 0800 915 0990, and the web-site www.lowcarbonbuildings.org

For non-domestic installations contact Phase 2 of the Low Carbon Buildings Programme: 08704 23 23 13 or email info@lcbpphase2.org.uk

Local schemes offering further discounts may also exist. Contact your local Energy Efficiency Advice Centre on 0800 512012.

Some manufacturers of domestic-scale wind turbines are:

Proven Engineering: www.provenenergy.co.uk. Tel: 01560 485 570

Iskra Wind Turbines: www.iskrawind.com. Tel 0845 8380588

Gazelle Wind Turbines: www.mkw.co.uk. Tel: 0191 413 0000

Swift Wind Turbines: www.renewabledevices.com. Tel: 0131 5353301: Building-mounted wind turbine

Windsave: www.windsave.com. Tel 0141 420 7400:
Building-mounted wind turbine

For further advice on this and other renewable energy technologies contact SYEC on 0114 2584574 or nick.parsons@syec.co.uk

