



Low Carbon Technology Guide

Wind turbines

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1. What is it?

Wind turbines are a renewable energy technology which use wind to generate renewable electricity that can power your home. When the wind blows, it pushes the blades of the turbine, forcing them to rotate. The rotation of the blades turns a shaft connected to a generator, which converts rotation into electricity. Stronger wind causes the turbine to spin faster, producing more electricity as a result.

There are two main types of domestic wind turbines available:

- **Building-mounted** – smaller wind turbines that are usually mounted on the roofs to give them the best height to take advantage of the wind blowing over the house.
- **Pole-mounted** – larger wind turbines which usually have to be installed in ample, open space (e.g. a field or ideally, the top of a hill) where there are minimal wind obstructions.

Pole-mounted turbines are usually more powerful but also significantly more expensive than building-mounted turbines.

2. What should be considered before installation?

2.1 GEOGRAPHIC REQUIREMENTS FOR WIND TURBINES

Wind turbines are most suitable for rural homes which are exposed to wind. This is because wind turbines require unobstructed space and the right wind speed to power them (ideally around five meters per second to be cost-effective).

2.2 PLANNING PERMISSIONS

Some wind turbine installations are subject to planning permissions. For example, in England and Scotland, the wind turbines must meet a particular set of criteria in order to classify as permitted development, while in Wales you would require planning permission regardless of the system installed. You can find more information on planning permissions for wind turbines [here](#).

2.3 MAXIMISING THE BENEFITS OF WIND TURBINES

Because the amount of electricity that wind turbines generate varies based on how strong the wind is, you could consider installing [battery storage](#) so you can store excess electricity and use it when there is no wind. Another often cheaper alternative to battery storage would be to install a 'diverter switch' that would use any excess electricity generated to power the immersion heater in your hot water cylinder (assuming you have one installed), which would preheat water for you to use later. Finally, if you have a [smart meter](#), you can potentially export surplus electricity to the grid and get paid for it by applying for a [Smart Export Guarantee](#) (SEG) tariff.

3. How much does it cost?

The cost of a wind turbine will depend on the size and the mounting method of the system. According to Energy Saving Trust, pole-mounted wind turbines usually cost around £33,000 to buy and install. On the other hand, a building-mounted wind turbine could cost as little as £3,000, but, in most cases, these are less powerful and would produce significantly less energy than a pole-mounted system. It is generally recommended to get quotes from at least three installers to get a good idea of how much the system would cost you.

4. What is the maintenance like?

Well-maintained wind turbines generally last for more than 20 years but replacing parts during this time may cost between £1,000 to £2,000, depending on the size of the system. Wind turbines also require maintenance checks every few years at the cost of around £100 to £200 per year.

5. How can I get it?

Wind turbines require technical knowledge to be installed properly and should only be carried out by a qualified installer.

The [Microgeneration Certification Scheme](#) (MCS) is currently the standard and quality assurance organisation for renewable generation technologies. Their website provides the most up to date list of accredited installers in the UK.

6. What funding help is available?

6.1 HOME ENERGY SCOTLAND LOAN

If you live in Scotland and considering a wind turbine for your property, you could be eligible for an interest-free [Home Energy Scotland Loan](#) of up to £2,500.

6.2 SMART EXPORT GUARANTEE (SEG)

If you live in England, Scotland or Wales, you can potentially sell excess electricity generated by a wind turbine to the grid through [Smart Export Guarantee](#) (SEG).

6.3 ADDITIONAL FUNDING INFORMATION

Depending on where you live, below are some organisations that can advise you on the funding options that could be available to you.

England and Wales: [Simple Energy Advice](#)

Scotland: [Home Energy Scotland](#)

7. Useful websites

For more information on the wind turbines, please visit the following websites.

[Energy Saving Trust](#)

[Utility Saving Expert](#)