

# tec the Environment Centre (tec)

## Wind Turbines

### What are Wind Turbines?

Modern wind turbines use the wind's lift forces to turn aerodynamic blades that turn a rotor which creates electricity. 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.

### How do they work?

Wind turbines use large blades to catch the wind. When the wind blows, the blades rotate causing electricity to be generated. The stronger the wind, the more electricity is produced. There are two types of domestic-sized wind turbine:

**Pole mounted:** these are free standing and are built in a suitably exposed position, often about 5kW to 6kW in size.

**Building mounted:** these are smaller and can be installed on the roof of a house. Often, these are around 1kW to 2kW in size.

### What are the costs and savings?

Wind turbines need to undergo maintenance checks every two to three years which will cost around £100 to £200, depending on the turbine size. If they need their inverter replaced, it can cost up to £2000 for a larger system. For turbines off the National Grid, their batteries need to be replaced every 6 to 10 years with the cost of battery depending on the size and design of the turbine. Wind turbines are eligible for the Feed-in Tariff (FIT).

Wind Turbine Type	Cost of Installation (£)*	Carbon Dioxide Savings ** (kg CO <sub>2</sub> per year)
1kW Building Mounted Wind Turbine	Up to £3,000	900kg
2.5kW Pole-Mounted Wind Turbine	£9,900 - £19,000	2,000kg
6kW Pole Mounted Wind Turbine	£21,00 - £30,000	5,000kg



#### Sources:

\*The Energy Saving Trust (Figures are based on fuel prices as of March 2016)

\*\* Partnership for Renewables calculation

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