

Small Scale Wind Turbines

RESOURCE
RENEWABLE ENERGY

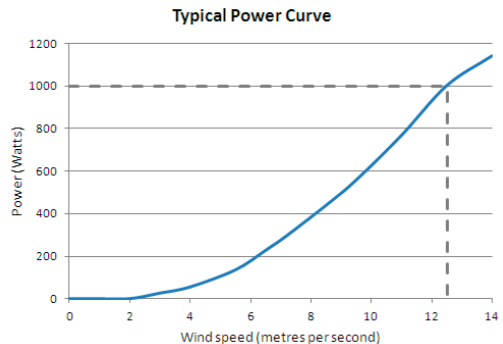
What to look at when considering a wind turbine;

Swept Area

This is determined by the blade length, the longer the blades, the larger the swept area of the blades. This means that the turbine will catch more of the wind and therefore more energy.

Generator

Most small wind turbines use a permanent magnet generator (PMG). Manufacturers will claim a 'rated power'. This is one point on the turbines 'power curve' and only generates this at a particular wind speed. A power curve is a graph of power output at each wind speed. A typical power curve is shown here of a 1kW wind turbine. You can see that the turbine will only generate 1000W at wind speeds over 12m/s, which is almost 28mph! It is important to find out your average wind speed at your practical tower height and then look at the power output for your wind speed.



You can find out UK mean wind speeds on NOABL database (<http://www.bwea.com/noabl/index.html>).

The swept area or blade lengths are far more reliable indicators for comparisons on wind turbines.

What to think about when siting a wind turbine;

Obstacles

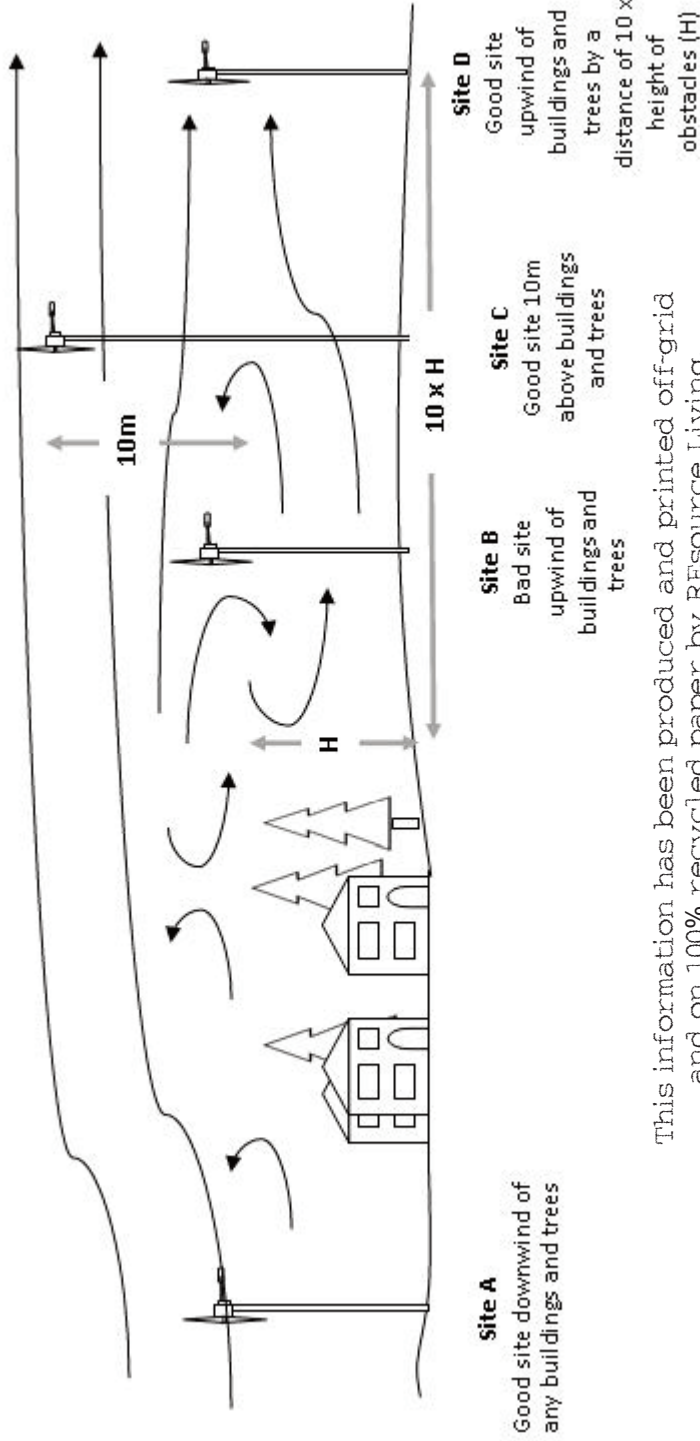
It may seem obvious to site a wind turbine away from obstacles BUT the turbulence created by these obstructions goes further than you think! A couple of rules of thumb are;

Distance of 10x the height of the obstacle, away from the obstacle.

A height of 10m above any obstruction, within 70m of tower.

It is a weigh up between the space you have and how high you can build!

Prevailing wind direction



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