



FAQ about the Berwick Community Wind Turbine Project



Why Wind?

The UK has the best wind resource in Europe and our proposed site has a consistent and good quality resource at approx 7.8 m/s.

Where will the turbine be located?

At the Steps of Grace to the north of the Ramparts Business Park between the A1 and the East Coast Main Line. OS Grid Ref NT 986555.

How big will it be?

The mast will be 50m high and the rotors 24m long. The total height will be 74m when a rotor is in the vertical.

What will I see from my property?

There are 14 properties within 1km, all of which will have views of the turbine. For others the view will vary according to location: photomontages are available at CoRE's offices.

What is the visual impact on the surrounding countryside?

The photomontages give an indication of the visual impact. The site identified for this project is close to an industrial estate, a dual carriageway and a main railway line. We do not believe the visual impact of this project will be significant.

How noisy will it be?

Very quiet. At 8m/s the turbine will generate 101.5 dB(A) and at 500m this is likely to be 25-35 dB(A). If the wind is blowing away from you the noise will immediately be reduced by 10 dB(A). Outside the nearest houses, which are at more than 400 metres away, the sound of the wind turbine generating electricity is likely to be about the same level as noise from a flowing stream about 50-100 metres away or the noise of leaves rustling in a gentle breeze. This is similar to the sound level inside a typical living room with a gas fire switched on, or the reading room of a library or in an unoccupied, quiet, air-conditioned office.

Source/Activity	Indicative noise level dB (A)
Threshold of hearing	0
Rural night-time background	20-40
Quiet bedroom	35
Wind farm at 350m	35-45
Car at 40mph at 100m	55
Busy general office	60
Truck at 30mph at 100m	65
Pneumatic drill at 7m	95
Jet aircraft at 250m	105
Threshold of pain	140

Information taken from The Scottish Office, Environment Department, Planning Advice Note, PAN 45, Annes A: Wind Power, A.27. Renewable Energy Technologies, August 1994.

Community Renewable Energy (CoRE)

Will it affect the value of my property?

This is difficult to assess and will depend upon the proximity of a property to the turbine. Evidence from Dunbar, elsewhere in Scotland and Cornwall suggests that in the long term property values are not affected by the development of wind farms except where the proximity is extremely close. In the United States there is some evidence to suggest that in the longer term property values can actually increase as result of wind farm construction.

How much electricity will it produce?

Approximately 2,522MWh annually, enough to power around 570 homes.

How will it benefit local people?

50% of all profits will go to the Berwick Community Trust. The trust will use this income to support its existing activities and to initiate new projects for the benefit of Berwick residents. A sum equivalent to 10% of the Trust's income from the turbine over the first ten years of operation will be invested in a Community Benefit Fund to which local groups can bid for support for their projects. We anticipate that in excess of £2m will be available, through the Trust, to the community over 25 years.

How long does it take for a turbine to 'pay back' the electricity used to manufacture it?

The average wind farm will pay back the energy used in its manufacture within 3-5 months of operation. This compares favourably with coal or nuclear power stations, which take about six months.

Are wind turbines a danger to birds and bats?

According to the Royal Society for the Protection of Birds (RSPB), the available evidence suggests that appropriately positioned wind farms do not pose a significant hazard for birds. There is no evidence that turbines of the size proposed are a danger to bats.

Is wind power reliable?

Modern turbines are extremely reliable operating through storms, ice and lightning strikes. Although the wind doesn't always blow a modern wind turbine in the UK will produce electricity 70-85% of the time. Electrical output varies according to wind speed but, over the course of a year, a turbine will typically generate about 30% of the theoretical maximum output. This is known as its load factor. The load factor of conventional power stations is on average 50%. Interim analysis of wind data suggests a load factor of around a maximum 38% for this project.

Is it safe?

Wind energy is one of the safest energy technologies, and enjoys an outstanding health & safety record. In over 20 years of operating experience and with more than 50,000 machines installed around the world, no member of the public has ever been harmed by operating wind turbines. Wind energy has no associated emissions, harmful pollutants or waste products.

Where is the nearest wind turbine to me?

A variety of commercial sites exist in southern Scotland including Crystal Rig near Duns. A privately owned small scale turbine can be seen from the A1 just to the north of Haggerston castle.

How does a wind turbine make electricity?

Wind passes over the blades exerting a turning force. The rotating blades turn a shaft inside the nacelle and the generator uses magnetic fields to convert the rotational energy into electrical energy. The power output goes to a transformer, which converts the electricity from the generator at around 700 Volts (V) to the right voltage for the distribution system, typically between 11 kV and 132 kV. The regional electricity distribution networks or National Grid transmit the electricity around the country, and on into homes and businesses.

How strong does the wind have to blow for the wind turbines to work?

The proposed Enercon unit begins generating at 2m/s (4.5mph), generates maximum power at 14m/s (31mph) and begins to shut down at 28m/s (63mph).

How fast do the blades turn?

Between 16-30 rpm according to wind speed.

How much space do wind turbines require?

Very little space is required; including the hard standing around the turbine a circle of approximately 10m diameter.

What happens when the wind stops blowing?

The turbine requires an effective air flow to generate electricity and will stand still when no wind blows. Wind flow at 50m above ground is far more consistent than at sea level and UK based turbines are typically operational for approximately 70%-85% of the year.

How long do wind turbines last?

This varies according to manufacturer; most projects are designed for a 25 year period although the actual turbine unit will typically last 30+years if serviced properly.

Isn't wind power really expensive?

The price of wind energy has fallen considerably over the last ten years and compares favourably with conventional energy generation. Power generation costs are determined by the installed costs of the plant (including interest during construction), operation and maintenance costs, fuel costs, energy productivity, cost of capital and the capital repayment period. In the case of wind energy, the fuel - the wind itself - is free. The available wind speed determines the final cost of wind energy from specific wind farms sites.

The average generation costs of onshore wind power are around 3.2 pence per kilowatt hour (p/kWh) and around 5.5 p/kWh for offshore. Once the cost of carbon to the society and environment is included in electricity generation costs, the price of wind power will be even lower since wind energy is a clean and renewable source of electricity generation, producing no harmful emissions.

Aren't wind turbines inefficient?

The generator efficiency of a modern turbine is in the range 80-95%. Energy is lost in the passage through the conversion electronics and supply lines but these losses are common to all generator types.

Why don't we put all the wind turbines out to sea?

The engineering challenges of offshore technology are complex particularly with regard to the production of electricity in a salt water environment and connection to the grid. As technology and expertise develops a significant increase in offshore turbine numbers will occur but we need a mixture of both on and off shore installations if we are to hit our renewable energy targets and meet our commitment to tackle climate change.



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