



Thinking of Installing a Wind Turbine?

Wind turbines are extremely popular and can be an effective way of harnessing renewable energy, reducing energy costs and helping the environment. However, as with any major purchase or investment, it is important to consider all the facts beforehand in order to make an informed choice.

This guide is for customers thinking of installing a small wind turbine (up to 50kW). It should not be considered as definitive and we always recommend that professional, impartial advice is obtained before proceeding. Turbines range in size from small 1kW roof mounted models to larger scale models e.g. 20kW.

Step 1: How much energy are you using?

- Look at your energy bills for the last year
- Calculate your total annual energy consumption including electricity and fuel (oil, gas etc)
- Can you reduce your present energy use? Payback periods for energy efficiency measures are often much less than for wind turbines. For example fitting cavity wall and loft insulation will dramatically reduce heating bills and energy saving bulbs will reduce electricity costs.

Step 2: Why do you want a wind turbine?

For some, it is to save carbon and help the environment. For others, it is a business decision or even a desire to reduce their dependency on their electricity supplier.

It is unlikely that a wind turbine will provide all of the electricity you need. There are likely to be times when you will have to use 'mains' electricity. At other times you may have a surplus which you can sell to generate extra income. The balance of these is an important factor in your business case.

Step 3: Do you receive enough wind to sufficiently power a turbine?

While Northern Ireland is a wind rich country, some areas are more sheltered than others and may not get enough wind to make a turbine feasible. Surrounding buildings and trees can also block the wind. Output from turbines can vary dramatically from site to site and this is a crucial factor in establishing the viability of your installation.

- An independent site survey should be carried out to establish the suitability of your location.
- Basic annual wind speed information for your area should be obtained. Please note that most published wind speeds are generally recorded at heights above most small wind turbines and should therefore not be used as the sole basis of your decision.

Step 4: Do you have a good business case?

Before making a decision, you should develop a business plan. This should contain the information you need to calculate your expected returns and payback period. This should include:

i. Turbine cost

Wind turbines vary in cost, from around £1,500 for a small roof-mounted turbine, to around £40,000 for a 20kW turbine. Case study examples, including costs, can be found on the Action Renewables website at www.actionrenewables.org

ii. Other costs

- Planning application and building control fees
- Grid connection and metering costs – you need permission from NIE to connect a renewable generator to the grid. The cost of this is dependent on the size of your turbine and its location on the network.
- Ongoing maintenance costs.

iii. Grant availability

Grant provider	Grant details	Contact
NIE SMART programme 'top-up' for solar water heating	£400 per system from the NIE SMART programme and up to £400 from the Low Carbon Buildings Programme.	Log on to www.nie-yourenergy.co.uk for more information
NIE SMART programme household grant	Available for solar PV and wind. £1,200 per kWp for solar PV up to a maximum of £6,000 or 20% of the total overall eligible cost. For wind there is a grant of £900 per kW available up to a maximum of £4,500 or 30% of total eligible costs.	Log on to www.nie-yourenergy.co.uk for more information
Low carbon buildings programme for communities	See website as amounts vary according to funding stream	Low carbon building programme 0800 9150990 www.lowcarbonbuildings.org

iv. Savings and income

By generating your own electricity, you will buy less 'mains' electricity and make savings on your bill. In addition, there are two other possible income opportunities:

- By registering with Ofgem, you will be able to claim Northern Ireland Renewable Obligation Certificates - new levels of support are being introduced from 1st April 2010 with wind turbines up to 250kW being eligible to claim 4 NIROCs for every 1,000kWh of electricity generated, whether you use the electricity or not.
- If you have surplus electricity, you may be able to sell it to an electricity supplier.

NIE Energy's Generation Tariff is for renewable electricity generators up to 1MW and CHP generators up to 500kW. This allows owners to sell both NIROCs and exported electricity. For further information visit www.nie-yourenergy.co.uk

Appropriate sizing of the turbine is essential. Using your turbine's electricity on site is generally more valuable than selling it to a supplier.

Business case template

A template for calculating a business case is suggested below. You will need to estimate how much electricity your turbine will produce in one year, how much of this you will use and how much surplus you can sell. Please note that the guide below does not factor in the cost of financing your investment.

Outlay		
A	Installed cost	
B	Other costs eg planning, building, grid connection	
C	Grant assistance	
D = A+B-C	TOTAL COST	
Annual savings/income		
E	Electricity generated and used at your premises x your current unit rate	
F	Surplus electricity sold (NIE currently pay 5.22p/kWh)	
G	Total generation eligible for NIROCs (MWh) x expected rate per NIROC (NIE currently pay £41.60 per NIROC)	
H = E+F+G	TOTAL ANNUAL SAVING/INCOME	
Annual costs		
I	Annual maintenance fee	
J = H-I	TOTAL ANNUAL POSITION	
Payback = D ÷ J	PAYBACK = the number of years to break even from the initial outlay from annual savings and income. The payback should always be less than the expected life of the turbine.	

Useful contacts

NIE Energy Generation Tariff	www.nie-yourenergy.co.uk/
NIE grid connection	www.nie.co.uk/connectingagenerator
NIE Energy renewable energy and energy efficiency information	www.nie-yourenergy.co.uk
Energy Saving Trust Advice Centre	0800 512012
Low Carbon Building Grants	www.lowcarbonbuildings.org 0800 9150990
DTI wind resource guide	http://www.dti.gov.uk/energy/sources/renewables/renewables-explained/wind-energy/page27326.html
Carbon Trust	http://www.carbontrust.co.uk/windpowerestimator/