

WIND ENERGY CASE STUDY

Community-owned wind turbine in the Dulas Valley

Introduction

In April 2003 the UK's first wind turbine owned and developed by the community, was switched on in the Dulas Valley in Wales. Residents of Pantperthog village initially conceived the idea for a community-owned wind turbine in October 1999, which led to the installation of the 75 kW second-hand Vestas wind turbine, located on the hill above the Centre for Alternative Technology (CAT).

Aims & objectives

An association was formed to develop the idea, which aimed to promote wind energy projects that benefit local people and that are subject to a significant degree of local control.

Who is involved?

The unique aspect of this project is not only the community ownership of the wind turbine, but also the fact that the project was entirely community-led. Early advice from two local professionals, working for ecodyfi (a local community regeneration group) and Powys Energy Agency, was particularly advantageous. Public meetings from the outset meant an initial small core of interested community members led to the formation of the Dulas Valley Community Wind Partnership (DVCWP) in December 1999. Public opinion at the first public meeting ranged from strongly supportive to cautious but most were pleased at the prospect of local people profiting from wind power, rather than non-local developers. CAT's enthusiasm and involvement in the project was extremely beneficial, as it provided a secure recipient for the generated electricity, and the project could also be used for demonstration and educational benefits.

The approach

The DVCWP was open to all community members and delegated sub-groups were established to undertake specific project management tasks, such as the technical and financial research and the environmental impact assessment.

The DVCWP model is based on community members taking shares in an Industrial and Provident Society. Members then benefit from dividends from the sale of the electricity with net income returned to the community via dividend payments over a 15-year period, the expected lifespan of the turbine. In order to register the group as an Industrial and Provident Society, a legal identity with limited liability was required, so Bro Dyfi Community Renewables Ltd (BDCR) was established. From this point BDCR had prime responsibility for managing the landowner agreements.

The Renewable Energy Investment Club (REIC) also issued the share offer to its members. REIC was set up by Dulas Ltd and Groundwork Bridgend during an EC-funded project to facilitate the purchase of shares in renewable energy projects. The agreement of Baywind Energy Co-operative to underwrite the offer, and therefore purchase any unsold shares, provided confidence for securing funding. In the event, shares for the wind turbine project were over-subscribed and had to be limited to a maximum of £1000 each.

The scheme is favoured by the fact that CAT has agreed to buy all the electricity for the lifetime of the turbine. CAT is able to sell on the "green benefits" (the Renewables Obligation and Climate Change Levy¹ exemption) as well as any power surplus to current requirements. The prices agreed with CAT were better than those offered by selling direct to the grid at the time but now that the green benefits are worth more, this is no longer the case.

¹ There is a briefing note on the Climate Change Levy available on the Practical help website.



Information



Support



Funding

Funding

The total capital project costs amounted to £81,000. BDCR applied for and successfully obtained a European Regional Development Fund (ERDF) grant for £19,500 through ecodyfi. This was later complemented by a further £10,000 from the ScottishPower Green Energy Trust, and a £17,500 grant from the Energy Saving Trust (EST). The rest of the capital came as equity from community members, the EST (whose dividend goes to a community energy conservation fund) and the Baywind Energy Co-operative. BDCR's 57 members invested over £23,000 in the project.

The planning procedure

The original plan was for a 30 kW turbine, which was then altered to a 50 kW turbine from the USA. In April 2001 the DVCWP submitted a planning proposal for a 50 kW turbine to Powys County Council and permission was granted in July, despite an objection from Snowdonia National Park. However, several unforeseen changes to design and the dollar exchange rate meant that in August 2001 the proposal was changed to a 75 kW Vestas turbine from Denmark. This change was accepted as an amendment to the application.

Securing a site

CAT had been secured as the primary consumer for the electricity generated from the wind turbine but the increased output expected as a result of the upgrade from a 30 kW to a 50 kW turbine meant that the low-capacity connection between CAT and the National Grid needed to be strengthened. The landowner of the proposed turbine site raised objections to the additional cabling that this upgrade would require and therefore an alternative site was located on Forest Enterprise (now Forestry Commission Wales) land. Forest Enterprise was supportive in agreeing a temporary access licence for construction and a longer-term lease at a "non-commercial" annual rental. The project benefited from being in-line with the Woodlands for Wales strategy for involving communities in woodlands.

The benefits

The wind turbine project has resulted in a number of benefits for the local community, including significant direct economic benefit for the Dulas and Dyfi valleys, many of which would not have occurred if the installation had been by a non-local developer:

- The work undertaken in developing the project was carried out by members of the local community;
- The partnership placed the construction contract with a local company (CAT);
- Some of the people involved in the project agreed for some or all of their work on planning and finance to be paid in shares in the project;
- The project brought approximately £55,000 into the local economy (70% of the total project cost);
- The administration and operation and maintenance contracts have been placed locally;
- All revenue from the project will be retained within the local economy;
- The wind turbine provides renewable electricity to CAT;
- It provides an additional demonstration turbine and educational resource for CAT;
- The project is a community-owned scheme where each shareholder has one voting share irrespective of the amount of investment, and
- One third of the annual project profit goes into a community energy fund for energy efficiency measures.

The Energy Conservation Fund

A proportion of the income generated from the wind turbine is diverted into an Energy Conservation Fund, which aims to reduce carbon dioxide emissions within the Dulas and Dyfi valleys. The Fund is jointly managed by representatives from BDCR, CAT, ecodyfi and the local Community Council (Glantwymyn). The Fund receives income from the dividends accruing to shares purchased with an EST grant of £12,650. The Fund pays for practical measures such as CFLs and several events that have been run to promote household energy efficiency.

The wind turbine is predicted to generate about 160 MWh in an average year and the promotion of energy efficiency measures through the Fund could offset a further 784 MWh a year.

Achievements

Between April 2003 and March 2004, during which time wind speeds were much lower than average, the turbine generated 94,002 kWh (94 MWh). The amount was actually up to 10% greater than this but due to the complicated transmission system, distribution losses were quite high. Extra capacitors were added and the control regime improved to reduce these losses. Over the same period CAT used 64,364 kWh on site. Theoretically the surplus (28,638 kWh) was exported to the grid but this is a simplistic view because there are times when CAT has to import electricity from the grid (when there is no wind for generation) and other times (when there are high winds) when the turbine meets all the demands from CAT and the surplus is exported.

The project has received significant publicity and helped raise the profile of the community dimension of wind developments as seen, for example, in the draft Technical Advisory Note on renewable energy in Wales. In addition, academics and other communities have either visited the site or sought information to inform their own studies or plans.

Next steps

There are no plans to expand the number of turbines on the site, but BDCR plans to buy a separate 600 kW turbine nearby, replacing it with a second-hand 500 kW machine. Capital is expected to come from shares (which will be offered to members of REIC as well as existing share-holders), and a bank loan. It is hoped that some of the shares will be allocated to ecodyfi, in exchange for grants raised by ecodyfi for the project. Ecodyfi will use the dividends for its work on sustainable community regeneration, including carbon-saving transport initiatives.

Lessons learned/issues raised

Based on their experiences during this project, BDCR have summarised the points that should be considered by any community group planning a similar scheme:

- “Fixed” costs (e.g. planning, grid connection) are a much bigger proportion of overall project costs for small schemes;
- Premium prices should be sought for the sale of electricity for the scheme (particularly true for small schemes);
- Premium prices are most likely found by offsetting an existing electrical load, which the turbine should be selected to match;
- Capital grants are often required for small-scale wind turbines to enable them to compete with standard investment options;
- Voluntary labour is frequently essential to facilitate community wind projects (much of which needs high skill levels and specialist knowledge);
- Community-controlled community wind projects are a way for ordinary individuals to take control of a basic resource and requirement of modern living;
- Community wind is a way of getting local people working together, and
- Community wind projects get people working towards a more sustainable lifestyle (sometimes by directing profits into energy conservation or appropriate local rural renovation initiatives).

Further information

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Practical help also offers a free enquiries service – the team will undertake to answer any query regarding sustainable energy or sustainable road transport within a maximum of 3 working days.

Abbreviations used

BDCR	Bro Dyfi Community Renewables Limited
CAT	Centre for Alternative Technology

CFL	Compact Fluorescent Lightbulb
DVCWP	Dulas Valley Community Wind Partnership
ERDF	European Regional Development Fund
EST	Energy Saving Trust
kW	kilowatt
kWh	kilowatt hour
MWh	megawatt hour
REIC	Renewable Energy Investment Club

At the time of publication and to the best of our knowledge, the information contained in this case study was correct.

Practical help cannot vouch for any of the organisations involved.

Practical help

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