

Baydon Meadow Community Wind Turbine

Supplementary Volume

May 2007



"We have a window of only 10 to 15 years to take the steps we need to avoid crossing catastrophic [global warming] tipping points... The need to respond to climate change can be seen as a burden. Or it can be seen as a once in a generation opportunity for Europe to mobilise the political will and resources to transform and modernise our energy system."

Tony Blair and Dutch Prime Minister, Jan Peter Balkenende, October 2006¹

"The question is not whether climate change is happening, but whether, in the face of this emergency, we ourselves can change fast enough."

Kofi Annan, November 2006²

"Warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global average sea level."

Intergovernmental Panel on Climate Change, February 2007³

Section 1 – Introduction

The Environmental Report prepared to support the Baydon Meadow Community Wind Turbine planning application provides detailed environmental information associated with the proposal. The Environmental Report, by its nature and in the light of previous planning decisions, has to a large extent not required significant updating since the original application in late 2002. Where updating has become necessary and where additional relevant information has become available since the original application it has been compiled in this Supplementary Volume.

The majority of the Supplementary Volume, excluding those sections specifically requiring specialist knowledge (including sections 5 and 6), has been prepared by the applicant, Mr Matt Partridge. Mr Partridge has prepared and managed the Supplementary Volume using his extensive knowledge of the UK wind energy industry, derived from some 13 years of full-time employment in the sector with National Wind Power (now npower renewables) and more recently Gamesa Energy UK. The contents of the Supplementary Volume are as set out below:

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Section 2

An examination of the differences between the current (2007) and the original proposal (2002)

2.1 – Community involvement

The original Baydon Meadow Wind Turbine proposal was a co-development between the applicant and WindWorks, a scheme developed by National Wind Power Limited (now npower-renewables) to assist landowners and farmers develop small-scale wind projects on their land. While the co-development approach inspired the initial application, it was nonetheless restricted in its approach due to the commercial pressures of being associated with a large utility.

In contrast, all development activities associated with the current proposal have been managed and paid for by the applicant. As a project proposed by a private individual, far greater flexibility is possible in the way the project is taken forward. Most significantly, this has led to the development of a strong community element to the proposal as set out below.

Community Ownership

The most striking difference between the original and the current application is that the new project is granted planning permission and built, the local community would be provided with an opportunity to purchase shares in, and thus share in the potential profits from, the project. It is intended that this will be achieved through an agreement between the applicant and Energy4All.

Energy4All was formed in 2002 to expand the number of renewable energy co-operatives in the UK as an integral part of our transition to a low carbon economy. Since then, Energy4All has become the UK's leading expert in community-owned renewable energy schemes by encouraging people from all walks of life to embrace renewable energy projects and help fight against climate change while also maximising the social, economic, and environmental benefits of schemes to the community. Energy4All is run by a dedicated team promoting the highly successful asset-ownership model pioneered by the award-winning Baywind Energy Co-operative Ltd.

Energy4All has been involved in another wind energy project in the south-east of England, the Westmill Wind Farm. The Westmill proposal, which has planning permission for 5 wind turbines on a former airfield in Watchfield, South Oxfordshire, will be one of the first 100% community-owned wind farms in the UK. The co-operative will finance the purchase and construction of 5 x 1.3 MW wind turbines through a multi-million-pound fundraising campaign that saw the public able to buy shares in the project. The project is expected to become operational by spring 2008.

Shares in the Westmill Wind Farm went on sale during November 2005 and were available to anyone across the UK. The minimum investment is £250 and the maximum is £20,000. People living within a 50 mile radius of the site were given priority as the scheme was over-subscribed. Today, the Westmill Co-operative has over 2,200 members.

It is intended that the Baydon Wind Turbine would be 100% owned by a dedicated co-operative, using the same principles successfully used by the Westmill co-operative. This would give priority to those people living close to the Baydon Meadow project to invest in, and share in any profits from, the proposal.

Community Fund

A concept invariably associated with wind energy projects in the UK is the setting up of a project-specific Community Fund. The Baydon Meadow Community Wind Turbine would provide a Community Fund with an annual budget of £2,000 (increasing each year in line with the Retail Price Index). The original proposal made no reference to community funds and this, too, therefore represents another new element to the current submission.

It is proposed that the Community Fund would comprise allocated and non-allocated elements, in order to provide direct financial benefits to the local community, funds for miscellaneous local “good causes” and to enhance the positive contribution of the proposal to reducing climate change. It is proposed, subject to further discussions with the local community, that the monies would be allocated to the following sub-funds as follows:

Local Schools Renewable Energy and Energy Efficiency Fund

This component of the community fund would provide 40% (£800 in the first year) of the total money available to local schools for the specific purpose of providing renewable energy generation (eg. micro-wind turbines and/or solar photovoltaic panels) and energy efficiency equipment. This proposal has multiple benefits related to reduced greenhouse emissions, reduced energy bills for the schools involved and excellent educational opportunities. Furthermore, it fits closely with the Energy Minister’s comments made in October 2005⁴:

“The climate change challenge is not just about national or global targets, new initiatives or new technologies. It is also about winning hearts and minds, especially young hearts and young minds.

Our schools and our children may become the most decisive force for change - a green vanguard urging their elders on.

There is currently massive investment in new or improved school buildings. Energy efficiency is already a key part of that programme. But for each project we need to use our imagination.

Imagine one day, every school with its own micro wind turbine and/or state of the art solar panelling. Imagine a clear display panel on such a school detailing how much carbon dioxide has been saved.

Imagine how the science teacher, or those teaching citizenship responsibilities, could use such technology in their teaching."

It is anticipated that money provided by this fund would be further increased by grants from a number of national, regional and local schemes to promote renewable energy and energy efficiency projects.

Local Homes Renewable Energy and Energy Efficiency Fund

This component of the community fund would provide 40% (£800 in the first year) of the total money available to local householders in the parishes of Lambourn and Baydon. The money made available would be spent specifically to provide renewable energy generation (eg. micro-wind turbines and/or solar photovoltaic panels) and energy efficiency equipment. This proposal would further reduce polluting emissions while directly reducing domestic electricity bills for properties in the area. It is anticipated that money provided by this fund would be enhanced by grants from a number of national, regional and local schemes to promote domestic renewable energy and energy efficiency projects.

Local Good Causes Fund

This component of the community fund would provide 20% (£400 in the first year) of the total money available to be spent on a number of local "good causes", mainly in the parishes of Lambourn and Baydon. Examples from other wind projects around the UK include:

- Donations to funds to repair church roofs;
- contributions towards new and/or improved play areas for children;
- financial support for local shops and post offices;
- donations to funds for school equipment; and
- charitable donations.

Furthermore, this fund could also be used to promote tree planting in the area, where appropriate, bringing the benefits of improved habitat for flora and fauna and a new source for “absorbing” carbon emissions. If it is assumed that the fund provided 250 trees (about 10 trees per year) some 183.3 tonnes⁵ of additional carbon dioxide emissions could be sequestered.

2.2 – Environmental and other benefits of the Proposal

As a result of further information relating to benefits accruing from the wind turbine itself, the table on page 4 of Chapter 4 of the Environmental Report, is updated as follows:

<i>The Predicted Clean Energy Benefits of the Baydon Meadow Wind Turbine</i>	
Benefit Type	Benefits from the wind turbine only (excluding the potential benefits associated with the Community Fund)
Annual clean electricity generation ⁶	~2,960,000 kWh (“units”)
Equivalent number of <i>local</i> homes ⁷	~507 homes
Equivalent number of <i>typical UK</i> homes ⁷	~640 homes
Annual emission ‘savings’, carbon dioxide ⁸	~2,630 tonnes
Average annual [and total] ‘climate change damage costs’ avoided ⁹	~£114,000 [~£2,280,000]
Annual emission ‘savings’, sulphur dioxide ¹⁰	~29.6 tonnes
Annual emission ‘savings’, nitrous oxides ¹¹	~8.9 tonnes

It is apparent from the table above that the project proposed would make a significant contribution to targets for increasing renewable energy generation and reducing air-borne pollution in the form of greenhouse and acid rain gases. The statistics presented also indicate that the proposal would generate sufficient electricity to meet the domestic electricity needs of either 512 “local” homes (based on independent electricity consumption statistics for south Buckinghamshire area) or, alternatively, 640 “typical UK homes”.

This can be expressed as sufficient electricity to supply over 27% of the combined number of homes in the parishes of Baydon and Lambourn, with some 215 and 1,674 homes, respectively¹². This important contribution to local electricity supplies is provided despite the assumption of relatively high average domestic electricity consumption in properties close to the proposal, perhaps due to larger than average homes and/or higher levels of electric space and/or water heating. Energy efficiency measures, including those outlined as part of the Baydon Meadow Community Fund, could help reduce average household electricity consumption thereby increasing the proportionate contribution of the proposed wind turbine to local domestic electricity demand.

References and notes

¹ Tony Blair in an open, joint letter with his Dutch counterpart Jan Peter Balkenende (20 October 2006).

² Kofi Annan, Secretary-General of the United Nations, "Climate change is not just an environmental issue", *The Independent*, 9th November 2006, p. 39.

³ Intergovernmental Panel on Climate Change (2007) "Climate Change 2007: The Physical Science Basis – Summary for Policymakers".

⁴ http://www.wired-gov.net/EDP8203R7W/WGArticle.aspx?WCI=htmArticleView&WCU=ARTCL_PKEY%3d34437%2cALERT_TYPE%3d17

⁵ This figure is derived from the Future Forests approach of "5 trees per tC [tonne of carbon]", see www.futureforests.com and converting the offset figure to carbon dioxide assuming carbon has an atomic weight of 12 and oxygen has an atomic weight of 16.

⁶ DTI (2006), "Energy Trends", March 2006, table 1, page 29, based on the average capacity factor for wind energy projects in England (26%).

⁷ DTI (2005), "Energy Trends", December 2005, table 3, page 41, 2004 average annual domestic electricity consumption per meter in South Buckinghamshire and Great Britain, as applicable.

⁸ The prediction assumes a carbon dioxide offset figure for coal fired power stations of 0.889 kg per kWh derived from DUKES 2005, table 5C, carbon emission data for coal-fired power stations. *This is based on the assumption that electricity generated by coal fired power stations is typically displaced by wind power generating capacity, a view supported by "Wind Power in the UK" published in May 2005 by the Sustainable Development Commission. However, it should be noted that future changes in the power generating mix and fuel costs in the UK over the life of the wind farm means this figure may change over time.*

⁹ Figures derived from the Stern Review Press Release (30th October 2006) "If we take no action to control emissions, each tonne of CO2 that we emit now is causing damage worth at least \$85..." and assuming £1GBP = US\$1.9, a 20 year project life and no changes in the \$85 figure during this period.

¹⁰ This prediction is derived from assuming an offset of 0.010 kg/kWh, see www.bwea.com. This figure could change of the life of the proposed project as the UK's fuel mix changes *This is based on the assumption that electricity generated by coal fired power stations is typically displaced by wind power generating capacity, a view supported by "Wind Power in the UK" published in May 2005 by the Sustainable Development Commission. However, it should be noted that future changes in the power generating mix and fuel costs in the UK over the life of the wind farm means this figure may change over time.*

¹¹ This prediction is derived from assuming an offset of 0.003 kg/kWh, see www.bwea.com. *This is based on the assumption that electricity generated by coal fired power stations is typically displaced by wind power generating capacity, a view supported by "Wind Power in the UK" published in May 2005 by the Sustainable Development Commission. However, it should be noted that future changes in the power generating mix and fuel costs in the UK over the life of the wind farm means this figure may change over time.*

¹² Data from 2001 census.