

Small Wind Systems Quarterly News Bulletin



From the Editor

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Welcome to the first edition of **Install**, a quarterly news bulletin for manufacturers, installers and anyone who wants to find out the latest information on small wind systems.

The UK small wind system market is entering a new phase of development. New financial incentives, technological advances and a growing public and commercial interest in self generation is transforming the industry in the UK. We have launched this publication in response to growing demand from our members and wider industry for concise and up to date news briefings on small wind news, current pan industry work streams, and educational issues affecting this fast growing sector. In this issue we look at the likely implications of the Feed in Tariff, a government scheme that will pay a fixed rate for electricity generated by homes and businesses and sold to the grid (pg 1) We also provide an introduction to wind resource estimation- the most vital consideration for anyone looking to install a small wind turbine (pg 3) and an overview of the Microgeneration Certification Scheme, introducing the options available for manufacturers and installers seeking accreditation under the scheme (pg 5)

We hope you find **Install** useful, and would be delighted to hear any feedback and suggestions you have for how we can improve this publication in future. Please send any comments to me at: G.Grimes@Renewable-UK.com

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Feed-in Tariff Promises Fair Wind for Small-scale Wind Turbines



As the old adage goes, it's better late than never. Eleven years after Germany introduced the world's first feed-in tariff (FIT) for renewable energy, quickly converting itself into one of the leading markets for wind, solar and other renewable technologies, the UK finally launched its own version of the popular incentive scheme.

On 1 April, the Government's Clean Energy Cashback scheme came into effect. This now enables household, business or community-scale renewable energy projects installing wind, solar photovoltaic, hydroelectric, biomass or anaerobic digestion technologies with under 5MW of capacity to receive a guaranteed payment from their energy supplier based on how much power they generate.

The overarching goal is simple: to provide guaranteed and attractive rates of return for potential small-

scale generators of renewable energy who have been put off by the relatively high price of micro wind turbines and rooftop solar panels, and have found it difficult to navigate the existing grant schemes and Renewables Obligation support mechanism.

According to Kenneth Peterson, UK Sales Manager at Gaia Wind, the manufacturer of an 11kW-capacity wind turbine designed for use in rural locations, this improvement in outlook has already taken place. "We have seen a huge upsurge in interest and are very busy at the moment",

“...small to medium wind turbines in good locations could provide their owners with a four-figure income each year”

he says. “In the first month of this year we have had orders that were triple last year’s entire sales.”

Under the rules of the scheme, the Feed-in Tariffs (FITs) are banded for different technologies and vary depending on whether you export the power onto the grid or use it on site. The rates for small-scale wind installations range from 34.5p/kWh for sub-1.5kW systems to 18.8p/kWh for systems with capacity between 100kW and 500kW. Meanwhile, two bands serve community-scale wind farms, with installations generating 500kW–1.5MW receiving 9.4p/kWh and those between 1.5MW–5MW receiving 4.5p/kWh – a level in line with the income you can generate through the existing Renewables Obligation. The rates are also index-linked to inflation, and income generated by householders will be exempt from income tax. Anyone not using all the energy they generate on site can sell excess electricity onto the grid at market rates or access an export tariff of 3p/kWh. In short, small to medium wind turbines in good locations could provide their owners with a four-figure income each year.

According to the Department of Energy and Climate Change all tariffs have been designed to ensure households and businesses enjoy annual returns on their initial investments of between five and eight per cent, almost halving the payback period for some wind turbines and solar panels. However, industry insiders reckon well-positioned wind turbines will deliver significantly more attractive returns than those quoted by the Government. Peterson says, “The 26.7p rate [for 1.5–15kW systems] is very attractive. If you’re in a good rural location and could use 100 per cent of the energy on site with a base load of 11kW, you would be looking at payback within 4 to 4.5 years.”

Steven Crosher, commercial director at vertical axis wind turbine manufacturer Quiet Revolution, is similarly impressed by the feed-in tariffs for wind. ‘They have been set at the right level so they will not incentivise people in areas with poor wind speeds, but will provide a good incentive



for areas where wind turbines will work well’, he says. ‘And that is the way it should be.’

“Five of the world’s top ten small system manufacturers are based in the UK...”

Should the expected increase in demand for small-scale wind turbines materialise, the implications are likely to be wide ranging. Firstly, all manufacturers are set to benefit from the economies of scale realised by component suppliers and the increase in the number of trained installers. Secondly, the economies of scale enjoyed by British wind turbine manufacturers will bolster their export potential. ‘Five of the world’s top ten small system manufacturers are based in the UK, and the UK is the world’s second biggest market accounting for a quarter of global demand’, explains Indre Vaitgelaite, Small Wind Systems Manager at RenewableUK. ‘The feed-in tariff could have an impact on not just the UK, but the global market. All the leading UK manufacturers export at least half their turbines, so if the FITs help to drive down prices here they will have an effect globally.’



An Introduction to Resource Estimation By Toby Hammond

There is an old adage in the wind turbine industry that “everyone thinks they live in a windy place”. In fact, some members of the public believe they have such a consistent, howling gale at their site that there’s no point even debating the matter. The reality, of course, is that accurately estimating wind resource at a potential site is key to a project’s success. Anyone considering a wind turbine seriously will want to understand what it could generate, and what the savings or payback period might be ... all of which are strongly dictated by the actual wind resource at that site, combined with the choice of wind turbine installed.

“...underestimate the wind resource and you could be turning away perfectly good business.”

More importantly, there are risks if you get it wrong. If you’re a wind turbine installer and you overestimate a customer’s wind speed, your customer could be left feeling disappointed or even litigious a year down the line, when their turbine doesn’t generate as much as they expected. Conversely, underestimate the wind resource and you could be turning away perfectly good business. Even by playing it safe and being non-committal about the likely outputs, all but the most gung-ho clients may be so unsure that they won’t go ahead with the project at all. There are two schools of thought on the best way to estimate the wind resource. The most common method in the small wind industry is to use models to estimate the average annual wind speed at a particular grid reference location. The second way is to take on-site measurements – ideally at the proposed turbine hub height – using an anemometer.

Models

The most well-known wind speed model in the UK is the NOABL dataset, a free 1km² database developed in the late 1990s and available online. Punch in your postcode and you get an estimated annual wind speed figure at 10m above ground level. Whilst the model makes adjustments for local topography, it won’t take buildings and trees into account, which of course can have a major effect on the nature of wind at a site. As a result, NOABL tends to overestimate the wind in urban or semi-urban areas (by as much as 30 per cent according to the Warwick Wind Trials).

The new Microgeneration Installer Standard (MIS3003), which forms part of the Government’s new Microgeneration Certification Scheme (MCS), refers installers to the NOABL database, but suggests applying correction factors where there are obstructions anywhere near the proposed site.

Meanwhile, several other attempts have been made at tweaking the modelled data, notably by the Carbon Trust and the Energy Saving Trust (EST) who have published their own online tools, and there are even other projects underway to use clever Computational Fluid Dynamics algorithms to further refine the results.

Hands-on customers can conduct their own wind surveys, or installers and consultants can offer the service as part of the sales and marketing process.



Our own experience at Better Generation is that the EST service tends to overestimate the wind, and the Carbon Trust tool and the MIS3003 approach seem to get a bit closer. Whilst new tools may offer further improvements, this approach will always have its limitations (at least, until such time as Google adds the height and size of every single tree and building into their mapping databases). This means that it is dangerous to rely on these tools alone to estimate annual energy production – you could be off the mark by over 50 per cent.

Measurements

Of course, for any big utility-scale wind farm, detailed wind measurements are always undertaken before the project gets the go-ahead, and bank financing is usually built on the back of that exercise. This is a rigorous process that typically costs thousands of pounds, putting it out of the reach of most small wind projects. Many in the small wind turbine industry have concluded that on-site measurements are too expensive, technical and time-consuming for most of their customers.

In fact, it doesn't have to be that way. There are now a number of low-cost anemometry products available for less than £200, with which you can conduct a basic wind turbine site assessment. Some councils and community groups have started hiring or lending them out. Hands-on customers can conduct their own wind surveys, or installers and consultants can offer the service as part of the sales and marketing process. They can even illustrate the benefits of investing in a larger turbine and may help to unlock some of the financing that is being offered based on the new Feed-in Tariffs.

If you look closely, the Carbon Trust tool, the EST website and the MIS3003 standards all recommend conducting anemometry on site before any wind turbine installation goes ahead. So whilst some of the modelled tools – if used correctly – mean you can take a reasonable first stab at estimating a site's energy generation potential, the only way to know for sure if you, or they, "live in a windy place" is to measure the wind, which needn't be as difficult or expensive as you might think.

Links

NOABL

www.decc.gov.uk/en/content/cms/what_we_do/uk_supply/energy_mix/renewable/explained/wind/windsp_databas/windsp_databas.aspx

The Carbon Trust

www.carbontrust.co.uk/emerging-technologies/current-focus-areas/offshore-wind/_layouts/ctassets/asp/windpowerestimator/windpowerestimatorterms.aspx

EST

www.energysavingtrust.org.uk/Generate-your-own-energy/Can-I-generate-electricity-from-the-wind-at-my-home

Warwick Wind Trials

www.warwickwindtrials.org.uk

Better Generation

www.bettergeneration.com



MCS – An Introduction to the Accreditation Scheme

The Microgeneration Certification Scheme (MCS) is an independent scheme that certifies microgeneration products and installers in accordance with consistent standards. It is designed to evaluate microgeneration products and installers against robust criteria providing greater protection for consumers. The MCS is the only certification scheme to cover all microgeneration products and services, and has support from the Department of Energy and Climate Change, industry and non-governmental groups.

The MCS provides a framework through which small wind system products can be certified against robust industry standards that include MCS 010, MCS 011 and MCS 006. The latter is supported by the BWEA Small Wind Turbine Performance and Safety Standard (Feb 2008), which in turn references current international small wind standards within the IEC61400 series.

The MCS framework requires Certification Bodies (EN/ISO 45011 accredited) to verify the compliance of product testing information against related MCS documentation. Currently there are three MCS Certification Bodies for small wind systems; BRE (Building Research Establishment), BBA (British Board of Agrément) and TUV NEL (National Engineering Laboratories). For a full and up-to-date list of Certification Bodies, please see the MCS website.

The flexibility of the MCS means the Certification Bodies can consider the

compliance of product test data against robust industry standards from a number of different sources: accredited test laboratories (EN/ISO 17025 accredited); non-accredited test laboratories; and manufacturers.

These three testing options allow turbine testing to take place in a range of locations, and not just at those operated by accredited test laboratories. There are site calibration requirements within MCS / IEC61400 documentation that may take up to 3 months to complete, but it is important to note that it is the testing organisation and not the site that is accredited against EN/ISO 17025.

Currently some manufacturers have chosen to undertake their own testing, at their own test sites, with the view to presenting resulting data to their chosen certification body some months later. However any manufacturer, or product company considering whether or not to go “solo”, should consider that the technical requirements of small wind turbine testing

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“Even in these early stages of market growth customers are already, quite rightly, demanding better, more accurate performance data that can reliably predict what a given installation will achieve...”

are very precise as well as complex. What initially can seem like a minute technical variation from the testing methodology published within industry standard text may be viewed by the certification body as a non-compliance, potentially threatening their ability to certify the product in question. Our recommendation is that product companies should contact the MCS certification bodies at the earliest opportunity to gain expert guidance on how best to achieve MCS certification.

Although the Health and Safety record of small wind system installation in the UK is very good, the rates of annual installation have been relatively low. Even in these early stages of market growth customers are already, quite rightly, demanding better, more accurate performance data that can reliably predict what a given installation will achieve, in a way that allows a wide range of products to be compared on a like-for-like basis.



New financial incentives and an increasing interest in self generation are creating a potentially lucrative UK market for small wind technology, and a fantastic opportunity of UK land owners. But the sustainable growth of this market will only be maintained if consumer confidence is upheld, the industries reputation is protected, and robust industry standards deliver what UK customers have long been demanding: accurate third party performance data, confidence in the product durability, health and safety credentials, acoustic qualities, and overall performance.

RenewableUK is proud to have clarified the overwhelming support of the global small wind sector for what the UK is looking to achieve through the MCS. Small wind markets across the world are now following UK leadership and developing their own robust certification and testing procedures to support customer assurance.

RenewableUK sits on the MCS Steering Group and the MCS Working Group 3 (Wind).

For more information

Industry letter of support for MCS

www.microgenerationcertification.org/docs/press/BWEA-letter-of-support-MCS.pdf.

MCS documentation for small wind system installers

MCS 3003, MCS 001 and MCS 002.

MCS documentation for small wind system products

MCS 010, MCS 011 and MCS 006.

New guide to MCS for installers

www.microgenerationcertification.org/?ewCmd=PreviewOn&pgid=238.

MCS Home

www.microgenerationcertification.org.

Updates

The latest news from the sector.

ISWC2010 – Generating Your Future!

On 27 and 28 April 2010 RenewableUK held the second International Small Wind Conference in Glasgow.

The event included a free to attend exhibition, educational seminars for farmers, landowners, planners, and anyone looking for information on how to benefit from small scale wind technology. The exhibition hall played host to over 35 small wind exhibitors, product demonstrations, and leading advice on how to install your own turbine.

The second day of the ISWC2010 programme covered a wide range of topics including policy, marketing, planning, finance, siting and resource estimation, turbine testing, standards and certification, technical research and market development. This year's conference drew together expertise from across the global small wind sector, with over 30 presentations from leading industry experts from the USA, the UK, Spain, Portugal, the Republic of Ireland, Canada, Taiwan, China, The Netherlands and Japan.

Visit the ISWC2010 website for details of the event, including exhibitors, speakers and presentations:
www.iswc2010.com

Tackling small wind planning issues: roadshow and planning guidance for planners and councillors

RenewableUK will shortly consult on new Technical Planning Guidance dedicated to the interests of small wind systems (0–100kW). Following extensive external consultation this document will be formally published and provided to all local authority planning departments across England, Northern Ireland, Scotland and Wales. After publication this document will be updated in light of legislative and regulatory changes, to provide the leading best practice guide for the consideration of small wind system planning applications.

RenewableUK is currently supporting the development of streamlined planning policies, such as General Permitted Development Orders (GPDOs), across all UK planning regions, with particular focus given to developments in England and Scotland as policy development in these regions is at an advanced stage.

Having attracted the attendance of almost 2,000 local councilors and planning officers over the past two years, the RenewableUK Planning Roadshow is running again in 2010. This summer we will be providing free educational planning and technology seminars across the UK's planning regions. These seminars include an introduction to small wind technology and examine their operational characteristics and specific planning considerations and will continue to run through much of September.

Links

RenewableUK response to English consultation on GPDO:
www.bwea.com/pdf/small/BWEA_Consultation_Response_GPDO_England.pdf

RenewableUK Planning Roadshow:
www.bwea.com/planningconferences/index.html

The Feed-in Tariff made easy

After three years of representing the policy interests of wind energy (micro, small and large) to government, parliamentarians and industry stakeholders, RenewableUK is delighted to welcome the launch of the British Feed-in Tariff, which went “live” on 1 April.

Full details of the financial incentives scheme can be found on the DECC, MCS and Ofgem websites. To encourage public uptake, RenewableUK will soon be publishing a customer handbook containing FIT case studies for small wind systems.

As the scheme gets underway, we will continue to monitor its progress to ensure its roll-out is successful and its processes are clear and streamlined. We are seeking further clarity of scheme eligibility in the context of grant provisions, site characteristics and product eligibility (above 50kW). DECC are expected to offer further clarification on how grants interface with the FIT, but are currently waiting for a response from the European Commission on their interpretation of state aid rules in this case.

If you, or your organisation, encounter aspects of the scheme's processes that may warrant the consideration of RenewableUK's policy team, or discussion by the RenewableUK Small Wind System Strategy Group, please get in touch at i.vaizgelait@renewable-uk.com.

Links

DECC on FITs:
www.decc.gov.uk/en/content/cms/consultations/elec_financial/elec_financial.aspx

MCS:
www.microgenerationcertification.org/

Ofgem on FIT processes:
www.ofgem.gov.uk/SUSTAINABILITY/ENVIRONMENT/FITS/Pages/fits.aspx

RenewableUK press release:
www.bwea.com/media/news/articles/pr20100331-2.html

Streamlining the planning system: General Permitted Development

RenewableUK is actively supporting the development of streamlined planning policies such as General Permitted Development Orders (GPDO) across all UK planning regions. Introducing permitted development rights for small wind systems would remove the need for a planning application to be submitted for the equipment falling within the thresholds for domestic and non-domestic installations. RenewableUK is giving particular focus to developments in England and Scotland as policy development in these regions is at an advanced stage.

The Scottish Government's current consultation on Permitted Development Rights for Microgeneration Equipment on Non-Domestic Properties invites views on what the thresholds might be for microgeneration equipment on non-domestic properties and is the latest stage in fulfilling the requirements of the Climate Change (Scotland) Act 2009. The deadline for consultation responses is October 8, 2010, and RenewableUK will be leading on the industry's response.

Links

Scottish Government Consultation on Permitted Development Rights for Microgeneration Equipment on Non-Domestic Properties:

www.scotland.gov.uk/Topics/Built-Environment/planning/news/consult

RenewableUK response to English consultation on GPDO:

www.bwea.com/pdf/small/BWEA_Consultation_Response_GPDO_England.pdf

DECC funding for small wind testing

Following over two years of communicating the importance of industry standards, appropriate infrastructure and the need to support small wind manufacturing, RenewableUK is delighted to welcome recent Government announcements on small wind testing. The Department of Energy and Climate Change (DECC) released funding to support a new public test facility at TUV NEL's Myershill in East Kilbride, Scotland, this year.

The new testing infrastructure and related equipment will expand UK small wind testing capacity, improve cost efficiencies within testing processes, and help maintain the UK small industry at the forefront of research, development, and technological innovation.

Links

www.bwea.com/small/decc.html

New Chairs elected for RenewableUK Small Wind System Strategy Groups

Chris Simpson (Chairman, Proven Energy) and David Sharman (Director, Ampair) have been elected as Chairs of the Small Wind System Strategy Group and the Small Wind System Technical Sub-Group respectively, for 2010.

These industry groups meet every two months and are responsible for guiding and informing RenewableUK resources in supporting the interests of our small wind system membership. Through collaboration and cooperation these industry groups establish cross-industry positions and agreements on policy, lobbying, communications, technical matters, research projects and industry standards.

Links

To find out more, visit our website:

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