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Paul Hogan
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By email to: phogan@cer.ie

Dear Mr Hogan

RE: Arrangements for Microgeneration Consultation Paper

Thank you for the opportunity to comment on this paper.

Firstly, we applaud CER for finally recognising the benefits that will arise from small-scale embedded generation, and for formulating a policy for connection of such.

We wish to comment from the point of view of small wind generators, being long-time advocates of small systems, representatives of Proven turbines from Scotland, who manufacture turbines suitable for grid-connection, and the installers of the first grid-connected small wind system in Ireland, completed in 2005 in east Cork.

1. General Considerations

The advances in technology and increasing reliability that are mentioned in the paper's introduction have been around for some time now, and one might ask why this has not been recognised before. We have argued for the ability to connect SWTs to the grid for a number of years, and in fact it took over two years to get permission from ESB Networks (ESBN) to connect the first small wind turbine (SWT) to the low voltage network.

Relative Energy Generation of Small Wind Turbines (SWTs)

What is lacking in the paper is an analysis of the size of the market projected by CER. The need for such analysis is important, in order to justify decisions which are going to impact substantially on a market we believe will not be very large in the short-medium term. Unfavourable directions by CER on this issue could put back the industry years.

We therefore assume a very favourable development of SWTs in Ireland, in order to illustrate the scale of the generation that is being discussed.

Assumptions:

- 10,000 individual installations in RoI by 2012 (this is significantly more than that achieved in the UK under the 3 year Clear Skies programme that ended this year)

- All SWTs are 6kW installations (maximum allowed under CENELEC standard 50438, i.e. 25A at single phase)
- Average annual output is 12,000kWh (manufacturer's predicted output for a moderate wind site with 5 m/sec annual average wind speed)
- Irish Total Electricity Requirement (TER) in 2010 of 32,481GWh (Median demand forecast, Generation Adequacy Report 2006-2012, Eirgrid, 2005, p.86)
- Irish TER Peak, exported, in 2010 of 5685MW (Median demand forecast, Generation Adequacy Report 2006-2012, Eirgrid, 2005, p.86)

Total SWT generation in RoI would therefore be 10,000 x 12,000 = 0.12GWh.

Energy production from 10,000 SWTs will therefore represent 0.0004% of the total energy requirement of Ireland.

In terms of power production, even ignoring all smoothing effects resulting from the geographical dispersion of wind turbines (e.g. Ref. 1), the maximum theoretical power output of 10,000 No. 6kW SWTs will be 60MW. This will be only ~ 1% of the generation peak.

Note, this broad-brush analysis does not take into account the fact that most generation will be consumed at the point of generation, and therefore the real maximum energy and power penetration figures will be much lower.

The main conclusion is that SWTs will have very little effect on the operation and safety of the electrical network.

2. Responses to Specific Points

2.1 Technical Considerations

SWTs are unlikely to ever be installed in a high proportion of premises in a new or existing estate, for the simple reason that such locations would be the worst environments for them, from a wind resource point of view (high turbulence) and from a planning point of view (proximity to houses).

SWTs of a suitable size for producing a significant proportion of household use (usually over 2kW) are most suited to single rural dwellings, therefore any voltage rise problems at pole-mounted transformers will almost always be very low.

2.2 Notifying the Network Operator

Any system which deals with SWT applications in the timely matter suggested is an improvement over the previous system, where application forms were the same for SWTs as for wind farms or even CCGTs.

We support the requirement for type certification. This will avoid unsafe installations, which are contrary to good engineering practice and which also will damage public opinion of SWTs.

2.3 Inform, Consent and Fit

2.3.1 Informing ESB of Installation

The commission's approach to inform, consent and fit will better suit greater uptake of microgeneration, however, the most appropriate body to maintain a register of approved units would be an independent body, such as a University or Instititue of Technology. In the UK, this function is carried out by the STaR facility at the University of Southampton.

2.3.6 Licensing and Levy Order

We agree with the commission that microgeneration should be exempt from paying any Levy. In fact, the reasons given (that "in most cases little or no export may take place") support very strongly the argument that there should be full net-metering: Because the total amount of energy that will be generated will be absolutely minimal to that which is generated by all major generators (fossil and large renewables).

3. Metering and Commercial Arrangements

What seems to have been lost in the discussion of whether some income will be lost by a large organisation like the DSO or by an electricity supply company, is that what will be a tiny pool of generators (even after a few years of development of the small-scale wind industry) will only produce a fraction of the energy consumption of the country as a whole. These small amounts do, however, have an environmental benefit, particularly as they are contributing to lower distribution losses, and the owners of these systems should be rewarded for these benefits. These are the 'externalities' that are often overlooked in other renewables as well.

SWTs should get priority access to the grid. Arguments put forward about "time-of-day" spilling do not – again – take into consideration the miniscule amounts of energy that will be spilled onto the system. These small amounts can be considered as negative load, in the same manner as wind farms originally were, for system balancing purposes.

It is therefore obvious to everyone except the incumbents, that a net-metering approach for SWTs is the most sensible and approach and the one with the greatest environmental benefit to Ireland.

Standard meters do not all come with a back-stop, and statements which say they do should be removed from all ESBN and CER documents on this subject.

For those individuals or small businesses that are interested in installing a SWT who have a meter that does not go backwards, we suggest that they should be allowed to change their meter to one that can. This is a simple solution and would only require ESBN to maintain a list of meters which meet all other ESBN technical and safety standards. It would also require a once-off attendance by ESBN at a residence to change a meter, but this would ensure a safe installation and prevent non-compliant metering.

If separate import and export meters are installed, it is inevitable that only a fraction of the import price will be paid for the exported power (which is the case with a number of PES companies in the UK). The arguments for the time-varying "value" of spilled energy are noted, but again, for the simplicity of accounting and the over-riding environmental benefit, an export unit should be equal in value to an import unit. The second meter option (with equal import and export tariffs) could provide the ability to monitor progress of the technology over a period of, say, 5 years. After that time, the reward system could be reviewed. There would also be no chance of "negative" readings (assuming that is as serious an issue for 'state-of-the-art' accounting systems as we have been led to believe).

It is really all down to cost: "How much benefit does Ireland want from small wind, wind being arguably the country's greatest natural resource?"

The policy document states: "It may be prudent *not* to introduce any alternative metering options for microgeneration at this time". Denmark became a world leader in wind energy in the 80's by granting priority access to wind turbines when their proportion of the generation mix was very small. Successive reviews have changed this status while penetration grew. This should be a lesson to Ireland: To stifle the opportunity of growth in this tiny sector before it even has a chance, will result in a foregone opportunity. We do not have to be stuck with a system of support once the SEM is up and running, nor in 5 or 10 years after experience with a larger number of SWTs embedded into the distribution system.

SWTs need more support than just payment for spilled power – a capital grant scheme is essential, for instance; planning for SWTs needs to be formalised etc, and these are issues beyond the CER. However, the over-riding benefit of small wind turbines embedded into the distribution system at low voltage level will have a very tangible benefit to the environment, and allow individuals more control over their own environmental impacts, in this case the climate change impacts from their household's electricity consumption.

We believe it would be a drop in the ocean to support small wind turbines in Ireland. The arrangements for connection of microgeneration and their metering is an excellent opportunity to lead from the front and provide this first support.

Yours sincerely

Steven Lang

References

1. Lang, S., Möhrlen, C., Jørgensen, J., Ó Gallachóir, B. and McKeogh, E., *Application of a Multi-Scheme Ensemble Prediction System for wind power forecasting in Ireland and comparison with validation results from Denmark and Germany*, Scientific Proceedings, European Wind Energy Conference, 27 February – 2 March, Athens, Greece, 2006.