

Via Telefax

Commission for Energy Regulation
Plaza House
Belgard Road
Tallaght
Dublin 24

19th December 2003

Attn.: Ms. Clare Beausang, Renewables
Mr. David Naughton, Networks

Wind Generation – System Security Issues **ESBNG Proposal to Limit New Wind Connections**

In light of the current moratorium on grid connections for wind energy projects in the Republic of Ireland please allow me to summarize my outline proposal for addressing the situation in three steps:

1) The short term approach:

- a) Immediately lift the moratorium on small-scale projects, (equal to or smaller than 5 MW).
- b) Immediately lift the moratorium also on larger projects with AER contracts and an inherent obligation to commission before the end of 2004. (If not, significant resources invested in the AER-programmes would have been wasted).

2) The intermediate approach:

- a) Assess if the moratorium can be lifted on all connections at the distribution level, (equal to or lower than 38 kV).

3) The long term approach:

- a) Establish grid code requirements to wind farm connections at the transmission level (>38 kV), including technical and operational parameters that will provide for optimum wind penetration without compromising the overall grid stability.
- b) Establish the level of grid penetration that can be safely accommodated through the transmission system grid code and operational obligations imposed on the wind farmer and the transmission system operator, respectively.

I strongly encourage you to include utilities and technical consultants with documented experience in high wind penetration systems, (ELTRA, Econnect, etc.) rather than "re-inventing the wheel" and "dreaming up" academic problems. The current debate highlights the lack of hands-on operational experience with wind energy in Ireland.

Imposing strict technical and operational requirements at the distribution level would lead to unreasonably high project costs but, more importantly, it would make it unnecessarily cumbersome and risky to operate these projects. Just imagine a financier's reaction to unquantified risks of curtailment by the grid operator at peak output conditions! Wind power should always be the last power source to be curtailed, simply because no fuel is saved through curtailment of this power source, and curtailment should be limited to emergency situations and very large projects that are managed around the clock in any circumstance. One example would be that emergency curtailment services were bid in at market terms in competition between large wind farm operators, thus arriving at the "least cost" emergency curtailment compensation. These things have been accomplished before in other countries

with limited grid capacity, including California, where major utilities underestimated the output from large concentrations of wind farms in the industry's early years.

I find it alarming that Grid Code Review Panels in Scotland and in the Republic of Ireland supposedly believes that Denmark, a country with record-high wind energy penetration, experiences technical problems with its current level of wind penetration, and I would like to put the record straight:

- 1) Denmark's experiences NO technical problems related to reactive power demand, voltage variation, or similar. In fact, Denmark has a very stable power system and power disturbances are extremely uncommon.
- 2) It is correct that Denmark is "pushing the envelope" by choosing to produce approx. 30 % of its power generation by prioritised, distributed CHP plants and another 20 % of its power generation by prioritised wind power generation. Everyone will agree that it is extremely aggressive to base 50 % of a country's power generation on prioritised power sources with only very limited output control. However, Denmark still has a wide technical margin for providing added control capability. It is simply a matter of politicians introducing the economical "tools" as soon as the need is sufficiently pronounced. In other words, the current control limitations are not technically founded.
- 3) Denmark has a simple grid connection law that provides grid connection to wind turbines according to terms similar to any other customer in need of access to the public grid. In summary, the wind farm pays for the infrastructure to the closest 10 kV substation and the grid operator is responsible for the cost of accommodating the generator. The law actually favours clusters of wind turbines rather than single turbine installations by contributing economically to the grid interconnection of a cluster.
- 4) Denmark currently requires wind turbines to meet unity power factor at any load. This results in a single wind turbine or a group of wind turbines tending to raise the local voltage slightly at higher output while remaining voltage neutral at lower output. In my past working experience in the US, we were typically required to meet "no-load VAr demand", i.e., provide unity power factor at minimum output, thus tending to remain voltage neutral throughout the power spectrum due to the voltage raise caused by increasing active power output being cancelled out by the voltage drop caused by simultaneously increasing reactive power demand. Both requirements are technically sound, effective and simple to meet for the applicant.

Similar simple, streamlined and transparent procedures do NOT guide grid connection of wind turbines in Ireland and in the British Isles. Every single grid connection apparently is customised, and this could very well be justified if the customisation was conducted at the grid administrator's cost or, in case of the applicant paying for the customisation, at least in an open dialogue and at full disclosure to the applicant. Unfortunately, this is not the case! When a developer applies for grid connection in Ireland the procedure is paid for by the applicant but the procedure is shrouded in deep secrecy from the grid administrator's side. E.g., if the applicant is in receipt of planning permission for, say, a 50 MW wind farm but the local grid is only capable of transmitting 47 MW without deep reinforcement and extremely high costs that would simply kill the project, the developer is not informed about the optimum local utilisation of the grid! He is simply provided an unrealistically high cost for the grid connection of his full 50 MW of permitted capacity even though the solution would be a simple reduction of the project size or a limited curtailment of output capacity during extreme grid conditions. The current process is simply "hit or miss". In case another customer competes for a grid connection in the same local area it is even worse, because the competing parties now play "hit or miss" against a moving target!

I fail to see the logic in the ADDITIONAL AND EXTREMELY DEMANDING technical requirements that Irish and British utilities apparently wish to mandate on every single wind power project, whether large or small. My concern is that applying the utilities' proposed and very demanding technical requirements to even small, distributed wind projects will add significant and unnecessary general costs to wind power in the Ireland and the UK and cause severe delays in its implementation.

In my working experience building wind-diesel projects for the US Armed Forces we met severe technical restrictions with standard commercial wind turbines. Why is it that utilities in Ireland and the UK supposedly believe that standard wind turbine equipment cannot meet their local demands? After all, the public grid in these places is without the limitations of, say, the US Base on Ascension Island (UK), where standard, commercial grade, stall regulated wind turbines over the past 7 years have provided wind penetrations averaging approx. 18 % and peaking at approx. 60 %; and this without ANY means of special power conditioning or control to neither wind turbines nor diesel generators. To further highlight the success of this project, earlier this year the USAF tripled the installed wind power in this project to an extent where nominal nameplate wind capacity now significantly exceeds the average electrical demand on this isolated system. Again, standard stall-regulated wind turbines with asynchronous generators were chosen, and control is provided through utilization of surplus electrical energy for other purposes than pure electrical demand.

Perhaps an equally relevant analogy is the local power utility "THY-MORS ENERGI" in the north-western part of Denmark. The local utility Board experienced the very birth of the wind industry, and in the 1980's everyone was extremely concerned about this new power source, and the general complaint at the Board meetings was related to the public service obligations relative to the wind farmers, (obligations that are very limited in Ireland, as discussed above). The majority of the utility Board was pro nuclear power and did not take the wind industry serious at all. In fact, the Managing Director worked against his PSO responsibilities to a degree where he got himself fired! But what is the situation today? Wind penetration in the district of Thy-Mors Energi averages approx. 140 % of the local consumption, and income from wind farms and single wind turbines is a significant contributor to local wealth and tax revenue. What used to be poor farm land is now blessed with a new crop that thrives on the primary local resource; the wind. Why not streamline the grid connection process in the Republic of Ireland and repeat this success story?

I recommend that we start with the small-scale projects by implementing the three-step approach outlined on page 1 of this letter. Government policy strongly encourages the development of small-scale rural and local community based renewable energy resources, (ref. Green Paper on Sustainable Energy, Strategy for Intensifying Wind Energy Deployment, Programme for prosperity and Fairness). The division into small-scale and large-scale categories of successive AER Competitions by DCMNR gives explicit recognition to this, as do the arrangements adopted by the Commission for the assessment and licensing of projects less than or equal to 5MW. Under Decision Paper ref. CER03/061 this is justified on the basis that such projects connected to the distribution system "*are unlikely to have a significant impact on the security of the system*".

Yours Sincerely,

Jan Olesen
Alpha Wind Energy Ltd.
Shamrock House
Abbeyleix Road
Port Laoise, Co. Laoise
Phone (dir.): +45 2461 7199

Via Telefax

Commission for Energy Regulation
Plaza House
Belgard Road
Tallaght
Dublin 24

19th December 2003

Attn.: Ms. Clare Beausang, Renewables
Mr. David Naughton, Networks

ESBNG Proposal to Limit New Wind Connections

Everyone is probably well aware that the recent moratorium on grid connections for wind turbines in the Republic of Ireland is a very severe blow to the entire wind industry. However, I believe that it is relevant to illustrate how this decision by ESBNG and CER impacts on small scale projects in general and certain projects, in particular:

Small-scale renewable projects have limited resources and are heavily reliant upon external funding, in particular tax-based BES funding. The uncertainty created by the adoption of a total ban on new connections precludes even those projects, which hold PPAs, from successfully raising external finance. This results in a situation whereby successful winners of lowest-bid tenders are unable to fund their business plans, in contrast to the circumstances of larger organisations that typically are in a position to fund development activities from internal resources.

Carrig Wind Farm Ltd, Skehanagh Wind Farm Ltd and North Tipperary Windpower Ltd are three small-scale projects that find themselves in this precise situation. All these companies hold AER-V PPAs. The Carrig and Skehanagh projects are currently engaged in BES fund raising while the North Tipperary project is negotiating acquisition by a prospective investor in order to finance the building and construction phase of these projects, which must be completed by 31st December 2004. As the companies' grid connection applications are listed in the ESBNG data as "Applications in Process", fundamental uncertainty has now been created by the blanket ban imposed by the Commission and fund-raising activities have been suspended. If the grid connection ban is extended in its current format beyond the year-end it will have fundamental implications for the future operations of the companies.

The action taken by the Commission on 3rd December has had immediate and substantial adverse economic impacts on these projects and significant development costs are now stranded. By virtue of the extension granted by the Minister of Finance in this years Budget an opportunity exists to mitigate the damage suffered by re-launching fundraising activities in the period between 31 December 2003 and 31 January 2004. In other words, lifting the moratorium on grid connections by year-end 2003 would provide a window of opportunity of only 30 days for closing the financing on these projects!

Considering the local economic benefits, the local grid support, the general disadvantaged status, and the insignificant overall power balance implications of small-scale, distributed wind energy projects, we request that the moratorium on grid connections for small-scale projects be lifted on a priority basis.

Yours Sincerely,

On behalf of Carrig & Skehanagh Wind Farm Ltd. and North Tipperary Windpower Ltd.

Jan T. Olesen
Phone (dir.): +45 2461 7199