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Chairman of Scottish Grid Code Review Panel
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Dear Sir

**Response of BWEA to Scottish Grid Codes Review Panel Consultation
SB/2002 on wind farms.**

1 Introduction

The British Wind Energy Association is the trade association representing the wind energy sector in the UK. It comprises 203 companies, including all installed wind capacity, together with a number of private members. The content of this letter and supporting document has been reviewed by the membership and it is supplied on their behalf. However, you may additionally receive individual comments from companies directly.

Please note that the Association relocates from 24 June 2002. Full contact details, together with details of the Association, its membership and views can be found at www.bwea.com

The BWEA response to the consultation comprises this letter, which deals with some generic and overriding issues in the response and another document comprising a detailed response to the specific Grid Code changes and the associated guidance document.

The guidance document is titled "Transmission Connection Requirements for Wind Farms" and is referred to as the Guide in this response.



The response is focussed on the changes to the Grid Code, as it is not envisaged that the Guide will have any ongoing validity, however this needs clarification.

2 Role of the Guide in relation to Grid Code changes

The guidance document "Transmission Connection Requirements for Wind Farms" (referred to below as the Guide) has been developed in order to formulate and explain the proposed Grid Code changes and is helpful in this respect. Unfortunately its purpose is ambiguous. The Scope states that the "document provides guidance on the Grid Code provisions for wind...". The Introduction initially states that it is "provided as a guide" to wind farm operators and manufacturers, but later refers to the "requirements in the... document".

It is therefore unclear as to the exact status and purpose of the Guide.

The possible current and ongoing status of the Guide could be one of the following:

- 1) An explanation of the Grid Code changes proposed in this consultation SB2002, where after it has no valid official status.
- 2) A discussion document with no formal status that can be referred to by TNO and Generators in writing connection agreements.
- 3) An internal Scottish TSO standard that will be referred to and used by the TSO in connection agreements.
- 4) An internal TSO standard that will be referred to in the Grid Codes.
- 5) An interpretation of Grid Code Connection Conditions CC1.6 (see below).

The BWEA has assumed that the document is an explanation of Grid Code changes proposed in consultation SB2002, and from this time onwards it has no valid official status. It is therefore imperative that the Guide does not itself have or state any Requirements but points to the requirements in the Grid Code itself and gives examples or possibilities as to how this may be implemented in practice.

It is noted that there is an Ofgem consultation on governance of industry standards at present and any change of status for the Guide must be considered according to the process that emerges from this consultation.

3 Grid Code CC1.6

The Connection Conditions CC1.6 was added to the Grid Code recently to allow windfarms to connect without the need for derogations from the Grid Code. It states:

“It is recognised that some **Generating Units** have inherent characteristics that do not allow compliance with all aspects of the **Connection Conditions** and in these circumstances the **Company** will enter into discussion regarding the provisions of the **Connection Agreement** and /or **Use of System Agreement.**”

With the development of wind turbine technology and the drafting of the Guide it is unclear how this clause will now be interpreted. The “inherent characteristics” of a particular wind turbine may not be “inherent characteristics” of all turbines.

The BWEA is concerned that certain makes of turbine may be excluded by the requirements and that this clause will no longer be effective.

4 Developing Grid Requirements

The wind industry has worked with the Network Operators over the last decade in order to connect wind farms. In many cases the protection systems specified by the Network Operators have tended to trip off the generation for the most minor of network disturbances. Generators have generally sought to extend the operating range of the protection and specify schemes and settings, which reflect the real issues for the connection. This was improved with the introduction of Engineering Recommendation G75 which allows a wider range of protection settings rather than applying the narrow settings such as G59 and G59/1 in order that they can continue to be allowed to generate though a wider range of voltage and frequency parameters. However, in a very short space of time generators are being asked to guarantee operation through a wide range of voltage and frequency conditions. The wind industry must be given an appropriate time to design, develop, test, manufacture and gain approvals for new and modified equipment to achieve any such new requirements.

5 Impacts on Existing Generators

Existing generators, (both wind and other technologies) are likely to be affected by the Grid Code changes, for example the change in definition of Registered Capacity. This raises the following questions:

- Has the impact of each Grid Code change been assessed?
- How will generators be notified?
- Will exemptions be granted and if so how?
- How will changes that are being proposed in the Guide, but which have not yet come into force, affect windfarms which are built before that requirement comes into force?

BWEA proposes that a clear statement is included in the consultation process and the Guide as follows:

“Any wind farm which was exempted or derogated from Grid Code requirements and/or met Grid Code requirements in force at the time of connection will not be required to make any changes (e.g. to its systems, controls or equipment) as a result of future changes or modifications to the Grid Code”.

6 Market solutions

The general industry trend is towards market solutions and the prescription of requirements proposed by this consultation goes against that principle. It is recognised that, when market solutions eventually come in, those projects which have the capabilities to operate in these markets, as a result of the requirements of the Grid Code changes, may not have wasted the investment required to deliver the necessary services. However, if it is uneconomic to offer some or any of the services in the new markets, the requirements of the Grid Code will have resulted in wasted expenditure.

Some of the market aspects of particular issues are discussed in the detailed response to specific Grid Code changes.

7 Wind turbine technology

The BWEA notes that some manufacturers are more advanced than others in designing and delivering wind turbines that are adaptable to provide the features desired by the Transmission System Operators and that would enable windfarms to offer ancillary services or meet proposed Grid Code changes. This is partly as a result of the demands of certain grid systems where wind penetration is far higher than in the GB system.

Wind turbine manufacturers should be able gain competitive advantages from these developments through access to ancillary service markets and through better performance of wind turbines under a range of possible grid conditions as well as access to new markets.

However, wind farm developers in Great Britain should not be faced with a situation where the market is suddenly limited to a very small number of wind turbine manufacturers because of changes to Grid Code requirements.

8 Experience, studies and assessments

There appears to be a shortage of systematic research and study of the impact of windfarms on the Scottish system, with little or no evidence being offered to support changes. The BWEA believes that more evidence needs to be offered before many of the Grid Code changes are considered. If such studies were undertaken, the BWEA believes that the results and information gathered would provide the Transmission System Operators with a clearer picture of the necessary requirements to accommodate larger quantities of wind energy on the system.

9 Size thresholds for application

The Transmission System Operators have proposed a threshold of 5MW for application of the Grid Codes. The two reasons given for such a low threshold are to deal with clustering of projects, where lots of small projects are equivalent to one large project, and to avoid lots of projects being developed just under the threshold for Grid Code requirements.

9.1 Clustering

Transmission System Operators are concerned that clustering of small projects will produce operational problems for the grid and therefore all windfarms down to a very small size should have the appropriate requirements. An alternative view is that clustering creates specific problems on localised parts of the network and that these will be dealt with in the Connection Agreements of individual generators in order to make an economical connection to that part of the network. It is not therefore necessary to impose an arbitrarily low threshold of compliance for all generators to cater for these few situations.

9.2 Projects just under threshold.

It is recognised that it is a concern of Transmission System Operators that developers will size projects just under any threshold to avoid the costs associated with meeting the requirements (under-sizing). To avoid this situation the BWEA suggests that:

- The requirements should not impose significant costs beyond any threshold (without any commensurate benefits – e.g. income from ancillary service markets);
- Multiple thresholds appropriate to different requirements should be set at various wind farm sizes in order that there is not a single size limit, which can therefore be avoided by under-sizing.

9.3 Thresholds

BWEA concludes that the smallest wind farm to which any of the Grid Code should apply is 30MW.

10 Grid Code Terminology

The Guide has been written with the term MWs as a plural of MW. The standard SI units of MW should be use throughout the Guide and Grid Code.

11 Grid Code Definitions

The following definitions relate to generating plant, equipment and power stations in the Grid Code:

Black Start Generators

Cascade Hydro Plant

Centrally Despatched Unit

Cluster

Customer Generating Plant

Generating Plant

Generating Unit

Generator

Independent Generating Plant

Power Station

Pumped Storage Plant

Renewable Generating Unit

Renewable Order Generating Unit

The following are 2 new proposed definitions:

Non-Synchronous Generating Unit

Synchronous Generating Unit

Given the concern regarding the impact of wind farm and the need for clarity it is recommended that two new definitions are added and used to specify the requirements and exemptions for wind farms:

- **Wind Turbine** – A **Generating Unit** powered by wind and utilising a **Non-Synchronous Generator**
- **Wind farm** – A **Power Station** comprising at least one **Wind Turbine** and other **Apparatus**.

Alternatively all these definitions could be reviewed for simplification and clarity.

12 Additional Grid Code changes.

The BWEA believes that there are other Grid Code clauses that it is not proposed to change but that it believes require review as part of this consultation. For example Scheduling and Despatch Code 2 (SDC2) is largely not applicable to wind energy. It would be helpful therefore to extract the relevant applicable sections into a separate SDC for total clarity.

I enclose the BWEA's detailed comments on the proposed Grid Code changes and the associated document "Transmission Connection Requirements for Wind Farms".

Yours sincerely

A handwritten signature in black ink, appearing to read "Nick", with a horizontal line underneath.

Nick Goodall
Chief Executive