



## **GB Grid Code and Renewable Energy**

### **December Monthly Report**

### **Econnect Project No: 1484**

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## 1 Scope

Econnect is carrying out work for the British Wind Energy Association (BWEA) funded under a contract agreement between the Secretary of State for Trade and Industry and the BWEA.

A key deliverable of this contract is a monthly report to the BWEA members on key Grid Code issues and developments. The latest of these monthly reports is presented in Appendix A in a format suitable for dissemination by the BWEA to its members.

## 2 Appendix A – GB Grid Code Development and Renewable Energy Report for December 2005

### 2.1 Meeting of NGETL and Wind Turbine Manufacturers

Guy Nicholson and Richard Ford were invited to attend a meeting organised by National Grid for wind turbine manufacturers to explain NGETL's plans for capturing and storing generic wind turbine technical data for Grid Code compliance. NGETL's key driver was to cut down the overhead involved in assessing Grid Code Compliance, as there are now a much larger number of generators progressing through the compliance process than has traditionally been the case in the past.

Presentations were made to manufacturers and these and a number of follow up documents are available on request from BWEA/Econnect.

### 2.2 Extraordinary meeting on Grid Code Changes & Impact on Wind Developments (23<sup>rd</sup> November)

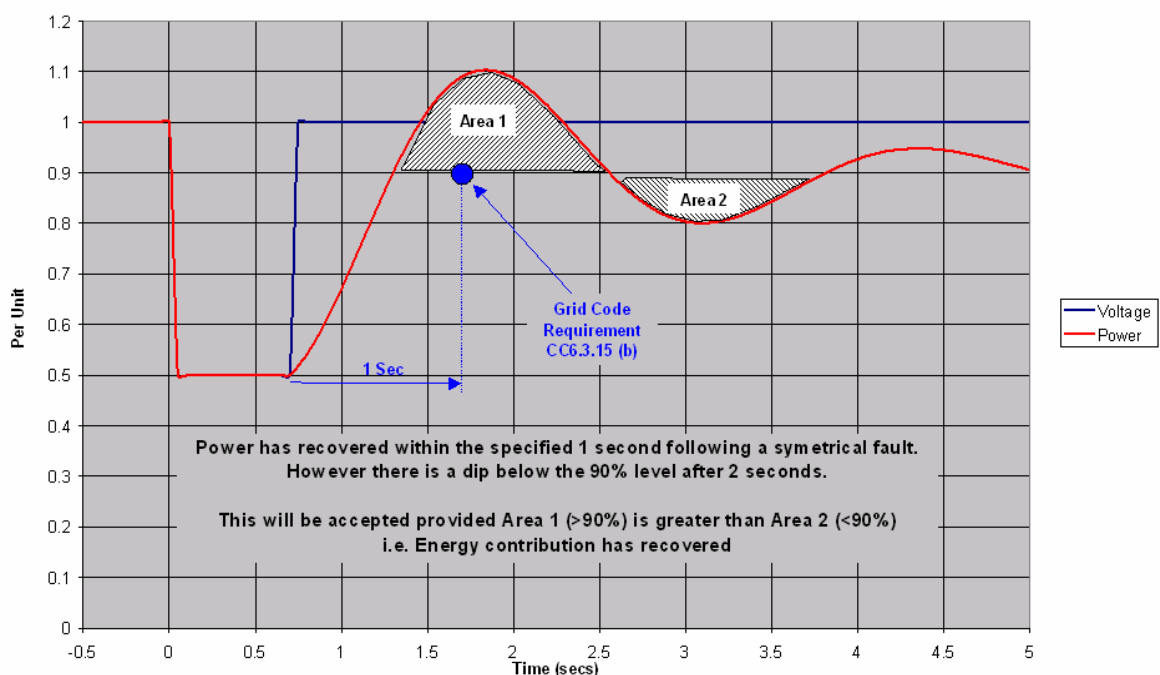
This extraordinary meeting was called together by Guy Nicholson for the purpose of exchanging views on the implementation and application of the GB Grid Code as a whole, and specifically the clauses that impact on wind power, based on the albeit limited experience to date. Representatives from a number of wind farm developers attended, as did Richard Ford of the BWEA.

In summary the meeting: -

- Welcomed the publication of the **Grid Code Guidance Notes for Power Park Developers**, however it was noted that these
  - should not be regarded as requirements
  - are a work in progress
  - must be flexible to accommodate experience
  - were published three months after the Grid Code changes and were therefore too late for some projects.
- Welcomed NGETL's initiative (which was introduced to wind turbine manufacturers at a meeting with NGETL on the 14<sup>th</sup> November) to gather and hold **standard turbine data sets**. It should be recognised however that there were potential limitations to such an approach i.e.
  - It is the wind farm in its entirety, not the turbine, which has to meet the majority of the Grid Code Requirements.
  - Wind turbines comprise hardware and control software. Both can have a significant impact on Grid Code compliance and the latter can and is updated on a frequent basis for various reasons.
- Is looking to NGETL to accommodate the shorter construction timescales for wind farms compared to conventional plant within their **compliance process**, and to acknowledge that some data is not available until close to energisation.

- Confirmed that the issue of **dynamic voltage control and reactive capability** is a major concern for both developers and the BWEA. This is because: -
  - The **dynamic voltage requirements** being demanded from wind farms are significantly in excess of the requirements specified in the Grid Code and are beyond that envisaged by developers or manufacturers.
  - Reactive capabilities** are being specified for embedded generators that the generator cannot utilise without exceeding the statutory voltage limits on the distribution network.
  - The Grid Code Review Panel has recently discussed the implementation of a **Generic Technical Standard** (see section 2.4 below). The Panel had agreed that this standard should include all standard (non site-specific) requirements. It was apparent that NGETL were applying additional standard dynamic voltage requirements for windfarms through other means such as
    - Bilateral Agreements
    - Construction Agreements
- Welcomed the clarification provided by NGETL at the 14<sup>th</sup> November meeting presentation regarding the **allowance for power swings post fault**. It was made clear that provided the power recovered to >90% it could subsequently dip below 90% provided that it was a damped oscillation such that the area above 90% exceeded the area below 90%. BWEA have requested that this specification was added to the Grid Code.

## Power Recovery - Interpretation of Results



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Figure 1 NGETL's interpretation of post fault power recovery

- Raised concerns that the **wind data** requested by NGETL would not meet their requirements due to a lack of understanding of the subject. BWEA proposed that a meeting should be convened with NGETL to assist them in understanding the collection and use of appropriate wind velocity and power data so that NGETL could use and process such data as appropriate for their end use requirements.

## 2.3 Regional Differences Working Group

The regional differences working group was tasked with simplifying and rationalising the current definitions of small, medium and large power stations in the GB Grid Code. (See Table 1). As such the three Transmission Owners (TOs) independently assessed whether the current definitions be adjusted without impacting on their ability to plan and operate secure networks. The BWEA's position along with the other generator representatives was that the number of 'bands' should be reduced if possible and that the capacity limits within each 'band' should be raised as high as possible to remove any unjustified expense for developers, whilst acknowledging that system security must be maintained, and the relative strength of the network & capacities of generation connected in the three TO areas. A request was also made to the TO' that they analyse whether the applicable capacity for those connection conditions which have more system wide implications, such as frequency response and fault ride through could be raised above current levels.

Transmission Owner Licence Area	Small MW Capacity	Medium MW Capacity	Large MW Capacity
NGETL (England & Wales)	<50	50-100	>100
SPTL (Southern Scotland)	<5	5 -30	>30
SHETL (Northern Scotland)	<5	N/a	>5

**Table 1** Current Definitions of Small Medium and Large power stations

The final report, which will contain the proposals that will go forward to the Grid Code Review Panel, is yet to be published, however the definitions that were agreed at the final working group meeting are given in table 2 below.

Transmission Licence Area	Small MW Capacity	Medium MW Capacity	Large MW Capacity
NGETL (England & Wales)	<50	50-100	>100
SPTL (Southern Scotland)	<30	N/a	> =30
SHETL (Northern Scotland)	<10	N/a	>=10

**Table 2** Proposed Definitions of Small Medium and Large power stations

## **2.4 Connection Standards**

NGETL has collated all the relevant aspects of the 18 technical standards (NGTS) that apply to NGET assets inside the bus protection zone into a single document called the Relevant Electrical Standards document. This standard will be implemented from 9<sup>th</sup> January 2006.

This document does not apply in Scotland where the existing technical standards remain unchanged. There are currently no plans for amalgamating the Scottish technical standards into a similar single document.

The document does not yet include all the standard items from the Bilateral Agreements. Generators are pressing NGET to ensure that only very site specific and unique conditions are included in Bilateral Agreements in the future, and that all standard items should be included in either the Grid Code or the Relevant Electrical Standards document.

## **2.5 GB Grid Code Consultations**

### **2.5.1 I/05 Grid Code Balancing Code changes associated with Embedded Exemptible Large Power Stations**

Effectively this is an amendment to the wording of Balancing Code 1 and 2 to clarify that data is not required from Embedded Exemptible Large Power Stations on a generating unit basis but rather on a power park module basis (i.e. the entire wind farm rather than on an individual turbine basis).

## **2.6 GB Grid Code Revisions**

None since last report, the current version of the GB Grid Code is Issue 3 Revision 12 dated 30<sup>th</sup> September 2005.