



GB Grid Codes for Wind Energy

June Monthly Report

Econnect Project No: 1294

Prepared For	BWEA Renewable Energy House 1 Aztec Row Berners Road London N1 0PW
--------------	---

	Name	Date	Signature
Prepared By	A. Oliver	07/07/2005	<i>A. Oliver</i>
Checked By	S. Cowdroy	08/08/2005	<i>S. Cowdroy</i>
Approved By	S. Cowdroy	08/08/2005	<i>S. Cowdroy</i>

Document History		
Issue No	Description	Date
01	Original Document Issue	08/07/2005

Copy No.	Copy Issued To	Company
1	Richard Ford	BWEA
2	Econnect (Client File)	Econnect Ltd
3	Econnect (Project File)	Econnect Ltd

Table of Contents

1	Scope	4
2	Appendix A - GB Grid Code Representation for Wind Energy Monthly Report for June 20055	
2.1	Grid Code Consultations	5
2.1.1	Revised Grid Code for Renewables	5
2.1.2	Requests from Scottish Generators for Lifetime Grid Code Derogations	5
2.1.3	Transmission Event Reporting Procedure Review	5
2.2	Overseas News	6
2.2.1	Germany	6
2.3	Grid Code Review Panel	6
2.3.1	Appendix F of Bilateral Agreements	6
2.3.2	Single Technical Standard for NGC	6
2.3.3	Transmission or Distribution Connections	6
2.3.4	Effects on embedded generators of transmission events	7
2.3.5	License Exempt Embedded Medium Power Stations (LEEMPS)	7
2.3.6	Small, Medium or Large Power Station Definition	7
2.4	GB Grid Code Revisions	7

1 Scope

Econnect is carrying out work for the British Wind Energy Association (BWEA) funded under a contract agreement DG/DTI/00035/00/00 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 Representation for Wind Energy Monthly Report for June 2005

2.1 Grid Code Consultations

2.1.1 Revised Grid Code for Renewables

The main point of note is that Revision 10 of the current Grid Code (Issue 3), incorporating the modifications proposed in H/04 (Grid Code Changes to Incorporate New Generation Technologies and DC Inter-connectors) and SA/2004 (Consultation on Technical Requirements for Wind farms) as amended following consultation by Ofgem, was released by National Grid Company (NGC) on 1st June 2005.

A discussion paper by Econnect on behalf of the BWEA on how this latest Grid Code might be implemented for offshore wind and other renewable energy technologies will follow in due course.

2.1.2 Requests from Scottish Generators for Lifetime Grid Code Derogations

Prior to the implementation of the British Electricity Transmission and Trading Arrangements (BETTA), a number of generators in Scotland requested lifetime derogation against specific Grid Code requirements. Ofgem granted temporary derogation until September or December 2005 and is currently consulting on whether these derogations should be converted to lifetime derogations.

The consultation which closes on 7th July, has grouped the derogation requests into the following 3 categories:

- Derogation from Connection Condition CC.6.3.2
- Derogation from Connection Conditions CC.6.3.6, CC.6.3.7 (a), CC.6.3.7 (c) (iii) and CC.6.3.7 (d)
- Derogation from Balancing Code No 2 BC2.A.2.6

2.1.3 Transmission Event Reporting Procedure Review

NGC are currently reviewing their Rate of Change of Frequency (RoCoF) event analysis and reporting procedure, and have been asked to expand this to look at how the effect of Transmission Events such as circuit faults on embedded generation are analyzed and reported. It is hoped that this process will clarify how embedded renewable energy generation is actually responding in practice to events on the Transmission system, which will help to inform the debate on future Grid Code developments.

2.2 Overseas News

2.2.1 Germany

The Germany Energy Agency (DENA) published the results of their study, “Planning of the Grid Integration of Wind Energy in Germany Onshore and Offshore up to the Year 2020” (the DENA grid study) at the end of March. The study, designed to enable fundamental and long-term energy planning, studied the effects of wind power feed-in on the transmission network for various scenarios of increased renewable energy usage up to the year 2020.

The study drafted technical solutions for the integration of renewable energy into the transmission network, for a contribution of up to 20% electricity generation from renewable energy sources. Viable solutions for a major increase in the concentration of offshore wind farms (as is anticipated after 2015), could not be developed in the scope of the study and will be addressed in future investigations.

An English language summary of the report as well as its full text is available for download on the DENA website:

<http://www.deutsche-energie-agentur.de/page/index.php?id=717&L=4>

2.3 Grid Code Review Panel

A meeting of the GB Grid Code Review Panel (GCRP) was held on 19th May and was attended by Guy Nicholson. Grid Code changes affecting wind were discussed at the meeting and are reported below.

2.3.1 Appendix F of Bilateral Agreements

Concern was raised by generator representatives that Appendix F is being used by NGC, to apply requirements that should either be in the Grid Code or a Technical Standard governed by the Grid Code. It was agreed that Appendix F should only be used for very site specific or unusual requirements, which are peculiar to a particular plant. Yet it was apparent that NGC were using standard pro-forma Appendix F conditions for many users. Generators should challenge such use and if unsuccessful can refer to Ofgem.

Guy Nicholson has written to the GCRP on the matter.

2.3.2 Single Technical Standard for NGC

NGC are working on developing a single technical standard to replace the existing 18 standards and remove any unnecessary user requirements, some of which result from the introduction of PLUGS (super shallow charging). They are also considering including specifications, which currently sit in Appendix F of the bilateral agreements, where these specifications are generic for several users.

2.3.3 Transmission or Distribution Connections

The potential for confusion regarding the classification of the connection of generators in Scotland (e.g. especially where a dedicated Grid Supply Point is created solely to connect the generator)

was discussed, though considered outside the scope of GCRP business (as it was at Distribution Code Review Panel (DCRP) and Connection Use of System Code (CUSC) panel). The matter has been flagged for Ofgem's attention.

2.3.4 Effects on embedded generators of transmission events

It is believed that this reporting system will provide important information to feed the ongoing Fault Ride Through (FRT) and Low Voltage Ride Through (LVRT) debate, as outlined in 2.1.3. This reporting was discussed again and is awaiting some ideas from SP transmission. Guy Nicholson has emailed David Nichol to move this forward.

2.3.5 License Exempt Embedded Medium Power Stations (LEEMPS)

It was agreed that once the Grid Code changes for wind power stations are approved, work could be completed on changes to the Grid Code and Distribution Codes for LEEMPS.

Revision 10 of the Grid Code has now been released incorporating these changes for wind and an extraordinary GCRP meeting will take place on 20th July 2005, to review Grid Code compliance for Medium Power Stations.

2.3.6 Small, Medium or Large Power Station Definition

These definitions and other Regional Variation are due for review by the panel later this year. There is a special provision for Embedded Large and Medium power stations in the Grid Code under GC15 until 31st March 2006.

2.4 GB Grid Code Revisions

The GB Grid Code (Issue 3) came into effect on 1st September 2004 at the beginning of the BETTA transition period that extended until the BETTA go-live date of 1st April 2005. Most of the provisions in the GB Grid Code that relate to Scotland were 'switched off' until the go-live date, as the Scottish Grid code remained in effect until that time.

There have been nine minor revisions to the GB Grid Code since 1st September.

a) Grid Code Issue 3 Revision 1 Effective from the 4th October 2004

Revision 1 is modified as a result of Consultation F/04 (Development of Maximum Generation Service). Basically the change is that this service will now be utilised in accordance with the terms of the CUSC rather than the Maximum Generation Service Agreement.

b) Grid Code Issue 3 Revision 2 Effective from the 11th October 2004

Revision 2 is modified as a result of Consultations A/04 (Changes to Data Validation, Consistency, and Defaulting Rules) and G/04 (Changes to Operating Codes 1 & 2). Both are minor changes and do not appear to have any implications for wind.

c) Grid Code Issue 3 Revision 3 Effective from the 29th November 2004

Revision 3 is modified as a result of Consultations F/03 (Changes to Operating Code OC2 – Outage Planning), E/04 (Further changes to Grid Code OC2) and D/04 (Grid code compliance issues with refurbishment of plant). It has also updated the Grid Code to include requirements associated with Cascade Hydro Schemes.

F/03 and E/04, update the obligations to more fully reflect the current practices, changing most pages of OC2. F/03 updates generation and transmission outage planning by clarifying requirements regarding data records and timescales, together with general updates to improve ease of reading and remove redundant text. E/04 clarifies that for the 2 to 49 day ahead period generators should provide National Grid with an estimate of daily output usable forecasts, on a Genset basis.

The changes resulting from D/04, have updated section OC5 “Testing and Monitoring”, enabling the addition of a process to check that plant items that have been refurbished or replaced comply with Grid Code requirements, and to demonstrate delivery of Ancillary Services.

Additionally changes have been made to define the Cascade Hydro terms “Cascade Hydro Scheme” and “Cascade Hydro Scheme Matrix”. A Cascade Hydro Scheme being defined as:

“Two or more hydro-electric Generating Units, owned or controlled by the same Generator, which are located in the same water catchment area and are at different ordnance datum’s and which depend upon a common source of water for their operation”

Requirements on such schemes have been included in the Planning Code, Connection Conditions, OC2, OC5 and Balancing Codes 1 and 2 sections of the Grid Code.

d) *Grid Code Issue 3 Revision 4 Effective from the 19th January 2005*

The Revision 4 changes arise from the implementation of modifications proposed in Consultation Paper T01/04 for Scottish Generators to provide planning data to NGC in advance of BETTA Go-live,

(Provision of OC2 data under OC2.4.1.2.3(a) and OC2.4.1.2.4.(b))

1. An additional paragraph has been included in the General Conditions (GC.A2.12) to activate OC2.4.1.2.3 (a) and OC2.4.1.2.4 (b) to require Scottish Users to comply with such requirements to send 2 to 52 week, 2 to 7 week and 2 to 14 day Generation forecast data to NGC.

2. The submission in respect of each of the above need only be that data applicable from go-live e.g. the first 2 –14 day submission starting on 22 March 2005 need only include information starting from 1 April 2005.

e) *Grid Code Issue 3 Revision 5 Effective from the 4th February 2005*

The Revision 5 changes arise from the implementation of modifications proposed in Ofgem/DTI Consultation 251/04 (Ofgem/DTI BETTA consultation on outstanding matters concerning the Grid Code under BETTA and associated STC drafting). They deal with a number of issues involving the interaction between the three Transmission Owners, and hence have little impact on Generators. The changes are listed below for information.

1. Glossary and Definitions

- Reinstatement of the definition of GB Transmission System Warning.
- Amendment of Definition of Operational Switching.
- Amendment of definition of Local Joint Restoration Plan.
- Amendment of the definition of Power Island.
- Add definition of Control Engineer
- Add definition of Local Switching Procedure.

2. Planning Code.

- Amend Appendix C to refer to GB Security and Quality of Supply Standard.

3. Connection Conditions

- Add proformas for SHETL and SPT Site Responsibility Schedules in Appendix 1.
- Amendment to Appendix A.

4. Operating Codes

- OC7- Additional text in relation to the procedure in respect of Operational Switching.
- OC8 – Additional text to clarify how safety precautions are established when work on one Transmission System requires Safety Precautions to be established on an adjacent Transmission System or on a User System connected to the Transmission System.
- OC9 – Additional text in respect of the establishment of Local Joint Restoration Plans In Scotland. Changes reflecting the difference between existing operational practice in respect of Black Start in Scotland and England and Wales and the role of the transmission owner in a Black Start situation in Scotland.

5. General Conditions

- Addition of lists of Electrical Standards for SPT and SHETL.
- Amendment to GC.A2.12

f) *Grid Code Issue 3 Revision 6 Effective from the 4th March 2005*

The revision 6 changes arise from the implementation of modifications proposed in Ofgem/DTI Consultation 55/05 (Ofgem/DTI BETTA consultation on The Treatment of Embedded Exemptable Large Power Stations under BETTA)

1. Glossary and Definitions

- Amend definition of Bilateral Agreement
- Amend definition of BM Participant
- Amend definition of Construction Agreement
- Amend definition of Control Point
- Amend definition of Physical Notification.
- Add definition of Exemptable
- Add definition of Generating Unit Data

2. Operating Codes

- OC5 - New section of text indicating how OC5 applies to Embedded Exemptable Large Power Stations.

3. Balancing Codes

- BC1 - Amended to specifically include Generating Unit and Generating Unit Data
- BC2 - Amended to specifically include Generating Unit and Generating Unit Data

4. General Conditions

- Addition of GC.15

g) Grid Code Issue 3 Revision 7 effective from the 16th March 2005

The changes in review 7 arise from the implementation of modifications proposed in Transition Consultation T02/04 (Grid Code – BETTA Go-Live cut over requirements). Basically the change is to activate BC1, BC2 and BC2A in Scotland prior to BETTA Go-Live.

h) Grid Code Issue 3 Revision 8 Effective from the 30th March 2005

These changes resulting from the implementation of modifications proposed in Ofgem/DTI Consultation 67/05 (Ofgem/DTI BETTA consultation on Information Exchange under the STC – The development of Schedule 3 and associated STC and Grid Code changes) are basically to allow NGC to pass on user data to a relevant transmission licensee as required under a condition of the STC.

i) Grid Code Issue 3 Revision 9 Effective from the 1st April 2005

These changes relate to the application of Grid Code requirement Connection Conditions CC.6.3 to small power stations in Scotland. They amend CC.6.3.1 in order for the Grid Code to retain the nearest equivalent requirements, consistent with the GB wide transmission and trading arrangements, to those that currently exist for Small Power Stations in Scotland.

j) Grid Code Issue 3 Revision 10 Effective from the 1st June 2005

The changes are a result of the implementation of modifications proposed in H/04 (Grid Code Changes to Incorporate New Generation Technologies and DC Inter-connectors) and SA/2004 (Consultation on Technical Requirements for Wind farms) and subsequent Ofgem GB consultation.

Substantial changes have been made incorporating Grid Code provisions for non-synchronous generating plant, to the following sections:

- Preface
- Glossary and Definitions
- Planning Code
- Operating Code OC2, OC5, OC7, OC10, OC11, OC12
- Balancing Codes BC1, BC2, BC3
- Data Registration Code
- General Conditions