GRID CODE

CONSULTATION DOCUMENT

and REPORT TO THE AUTHORITY

Regional Differences

The purpose of this document is to consult on the above Grid Code Modification Proposal with authorised electricity operators liable to be materially affected by the proposed changes and forms the basis of the subsequent Report to the Authority

Consultation Ref	B/06
Issue	1
Date of Issue	25 April 2006
Responses required by	**25 May 2006**
Prepared by	National Grid

DOCUMENT LOCATION

National Grid website:

http://www.nationalgrid.com/uk/Electricity/Codes/gridcode/consultationpapers/

DISTRIBUTION

Name	Organisation
AEO's	Various
GCRP Members/Alternates	Various
Interested Parties	Various
National Grid Website	

Summary of Proposals

0.1 The proposals put forward in this consultation paper are that changes should be made in the following areas:

- The definitions of Small, Medium and Large Power Stations and the applicability of these definitions to Power Stations that are Embedded close to a TO Licensed Area boundary.
- The threshold below which Power Park Modules are not obligated to provide a frequency response capability
- The threshold above which Demand side BM Units must provide PNs

0.2 Due to the differing nature of the three licensed areas across Great Britain some Regional Differences will remain between each TO Licensed Area even if these proposals were to be approved. However through the implementation of the recommended changes put forward in this report they can be reduced. These reductions include:

- The removal of a Medium Power Station range across all of Scotland
- The requirement for a Power Park Module in Scotland to have a Frequency Response capability has been aligned with that in England and Wales.

0.3 Should these proposals ultimately be approved by the Authority National Grid believes that the following benefits will be able to be realised:

- The relaxation of Grid Code obligations for certain Power Stations where these obligations are no longer deemed necessary in order to plan or operate the GB Transmission System meaning that Generators will have obligations which National Grid believe are more proportionate to the post-BETTA regime.
- The simplification of arrangements in Scotland through the elimination of the Medium Power Station definition allowing for a simpler contractual framework for Generators. This will mean a reduction in the number of agreements needed to manage Embedded Medium Power Stations be this either a BEGA (for Licensed Medium Power Stations) or a contractual agreement with the host DNO for Licence Exempt Embedded Medium Power Stations.
- The introduction of a GB-wide standard for the provision of a Frequency Response capability by Power Park Modules allowing for a consistent approach to obligations across Great Britain in this area.

0.4 A summary of the proposals is as follows:

Small, Medium and Large Power Station Definitions

0.5 The existing definitions of a Small, a Medium and a Large Power Station are as follows:

	Small	**Medium**	**Large**
NGET	<50MW	≥50MW & <100MW	≥100MW
SPT	<5MW	≥5MW & <30MW	≥30MW
SHETL	<5MW	-	≥5MW

0.6 It is proposed that the above definitions of Small, Medium and Large Power Stations be amended as follows.

Area	Small	Medium	Large
NGET[1]	<50MW	≥50MW, <100MW	≥100MW
SPT	<30MW	-	≥30MW
SHETL	<10MW	-	≥10MW

0.7 Currently a Power Station is classified as Small, Medium or Large based on where it is geographically sited. It is proposed that alongside the above proposals to change the Small, Medium and Large Power Station thresholds that the applicability of the definitions will be amended such that it is on an electrical rather than a geographic basis. For example it is possible for a Power Station to be Embedded in a Distribution System that is physically located in one TO's Licensed Area (Transmission Owner A), however that part of the Distribution System is in fact connected electrically to a neighbouring TO's Transmission System (Transmission Owner B). Under the proposals being consulted upon in this paper such Power Stations would be subject to the Small, Medium and Large Power Station definitions in the TO Transmission Area to which it is electrically connected (i.e. that Transmission System belonging to Transmission Owner B in the above example despite the fact it is physically located in the Transmission Area of Transmission Owner A).

Frequency Response Capability of Power Park Modules in Scotland

0.8 It is proposed that hard coded thresholds (currently 30MW) within the Grid Code above which Power Park Modules in Scotland must be capable of "…contributing to Frequency control by continuous modulation of Active Power…" may be relaxed to 50MW.

Submission of Demand PNs

0.9 It is proposed that the hard coded thresholds regarding the de-minimis level for the submission of Demand PNs within the Grid Code be amended such that BM Units with a Demand Capacity of 10MW or more in SHETL's Licensed Area, of 30MW or more in SPT's Licensed Area and 50MW or more in England and Wales will be required to submit Physical Notifications.

[1] Note that the definitions in the NGET Licensed Area are unchanged from the present arrangements

A. INTRODUCTION

1. Paragraph 2 of Condition C14 of the Transmission Licence granted to the National Grid Electricity Transmission plc ("National Grid") provides that National Grid shall, in consultation with authorised electricity operators liable to be materially affected thereby, periodically review the Grid Code and its implementation. That paragraph also requires National Grid, following such review, to send to the Authority:-

   (a) a report on the outcome of such review;

   (b) any proposed revisions to the Grid Code as National Grid (having regard to the outcome of such review) reasonably thinks fit for the achievement of the objectives set out in sub-paragraph (b) of Condition C14 of the Transmission Licence; and

   (c) any written representations or objections from authorised electricity operators (including any proposals by such operators for revisions to the Grid Code not accepted by National Grid in the course of the review) arising during the consultation process and subsequently maintained.

2. This review is concerned with changes to the Grid Code developed through the Regional Differences Working Group. The changes developed aim to reduce the Regional Differences that exist within the Grid Code across Great Britain. They encompass three areas:

   - Changes to the definition of Small, Medium and Large Power Stations and the applicability of such definitions;
   - Changes to the threshold at which Demand PNs must be submitted; and,
   - Changes to the threshold above which Power Park Modules in Scotland must be capable of providing a frequency response service.

3. In addition to the changes associated with the Small, Medium and Large Power Station definitions a further clarification of the applicability to these definitions to Power Stations embedded close to a TO Licensed Area boundary is also proposed.

4. The proposed changes to the Grid Code were discussed with the Grid Code Review Panel on 23rd February 2006. Panel members agreed that having taken account of comments received, National Grid should issue a Consultation Paper.

5. The revisions to the Grid Code proposed by National Grid and sent to the Authority, require approval by that body and will, if approved, come into force on such date (or dates) of which you will be notified by National Grid, in accordance with the Authority's approval.

6. Comments should be sent to National Grid by **25 May 2006** as detailed below in Section C. The comments will be reviewed and responded to.

7. Unless otherwise marked as confidential any responses including those containing objections to the proposals which are maintained will be published on our website.

B. DESCRIPTION OF THE PROPOSED AMENDMENTS AND THEIR EFFECTS

8. Background

8.1 The GB Grid Code includes within it a number of regional differences where technical or critical procedural variations meant that some differentiation became necessary between rights or obligations in Scotland and the equivalent rights or obligations in England and Wales. The recognition of 132kV as a transmission voltage in Scotland has also resulted in other regional differences.

8.2 In developing the GB Grid Code it was acknowledged that given the timescales it would not be possible to harmonise all arrangements, and in certain circumstances there may be justifiable reasons for treating plant in Scotland differently. To ensure that work continued after Go-live the duties of the Grid Code Review Panel as defined in the Grid Code General Conditions were amended to include:

'Consider and identify changes to the Grid Code to remove any unnecessary differences in the treatment of issues in Scotland from their treatment in England and Wales'

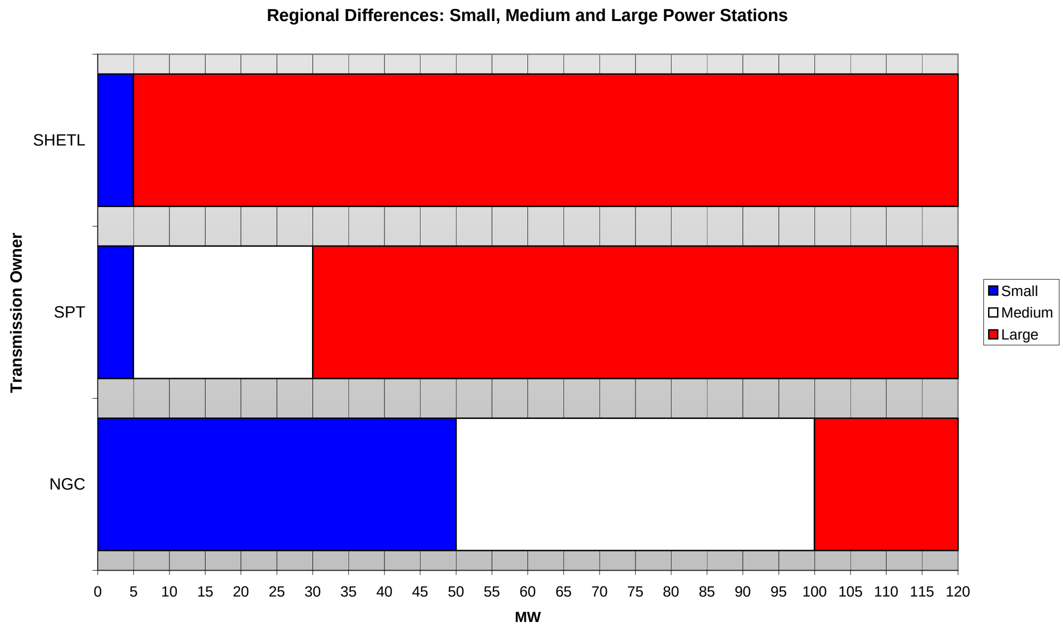
8.3 The GCRP agreed at their meeting in July 2005 that a GCRP working group should be formed to review the regional differences triggered by the existing definition of Small, Medium and Large Power Stations within the Grid Code. This Working Group reported back its conclusions to the GCRP in February 2006 and this consultation paper seeks the views of interested parties on those conclusions.

9. Current Arrangements

Small, Medium and Large Power Station Definitions:

9.1 The existing definitions of a Small, Medium and Large Power Station are as follows:

	Small	Medium	Large
National Grid	<50MW	≥50MW & <100MW	≥100MW
SP Transmission Ltd	<5MW	≥5MW & <30MW	≥30MW
Scottish Hydro-Electric Transmission Ltd	<5MW	-	≥5MW



9.2 These definitions are applied on a TO Licensed Area basis. That is to say if a Power Station is physically located within a TO's Licensed area then it is categorised according to the above definitions.

Demand PNs

9.3 Currently all BM Units in Scotland with a Demand Capacity greater than 5MW and BM Units in England and Wales with a Demand Capacity greater than 50MW are required to submit PNs.

Power Park Modules and the Provision of Frequency Response

9.4 At present all Power Park Modules in Scotland with a Registered Capacity less than 30MW are not obliged to have a frequency response capability.

10. Proposed Changes

Small, Medium and Large Power Station Definitions:

10.1 It is proposed that the existing definitions of Small, Medium and Large Power Stations be amended to the following levels:

Area	Small	Medium	Large
NGET[2]	<50MW	≥50MW, <100MW	≥100MW
SPT	<30MW	-	≥30MW
SHETL	<10MW	-	≥10MW

[2] Note that the definitions in the NGET Licensed Area are unchanged from the present arrangements

10.2 The rationale behind the above changes was developed through discussions in the Regional Differences Working Group. The complete record of how the change proposal was developed can be found in the Working Group Report

http://www.nationalgrid.com/uk/Electricity/Codes/gridcode/workinggroups/RDWG/

10.3 However a summary of the rationale behind the changes are as follows:

SPT Area:

10.4 The view of SPT Transmission is that the issue of Grid Code compliance becomes a matter of judgement of the effect of new generation on the transmission system. SPT stated that by examining the queue of possible connectees and the MW involved compared to the plant currently connected, there appears no good reason to extend the Grid Code compliance regime down towards 5MW in the SPT area. However, raising the limit from 30MW creates difficulties. The potential connection queue in the 30-50MW band in the SPT network is significant and as such SPT believes that information and Grid Code compliance from these new connectees will need to be retained so as to allow SPT to plan their licensed area in an efficient and secure manner.

10.5 Overall, SPT supports the proposed amendment to the Small, Medium and Large definitions contained in this consultation paper. SPT believes that by eliminating the Medium Power Station category for SP Transmission would bring harmonisation with the arrangements for SHETL – albeit that the size threshold for SHETL remained different. SPT also believe that on the basis of their experience of operating the SPT network, the proposed limits should not preclude the effective operation of the SPT portion of the GB Transmission System.

10.6 National Grid has similarly examined the Small, Medium and Large Power Station thresholds in the SPT Transmission Area and also believes that the proposed change would not adversely impact upon the ability of National Grid to operate the GB Transmission System.

10.7 National Grid notes that currently it does not have operational control over existing Medium Power Stations in Scotland and that this has not led to difficulties therefore the reclassification of these Power Stations as Small would not lead to any reduction in the ability of National Grid to operate the system. National Grid has also examined the expected levels of future Power Station connections in SPT's area and notes also the significant volume of new applications in the 30-50MW capacity range. National Grid would wish to retain full Grid Code compliance for these new Power Stations and as such would wish that these Power Stations continue to be classified as Large Power Stations.

10.8 All of the members of the Regional Differences Working Group supported the proposals for the SPT area contained within this consultation document.

10.9 **Views are invited upon the proposed amendments to the Small, Medium and Large Power Station definitions in SPT's area contained within this consultation document. Detailed Legal Text to give effect to the proposed changes may be found in Appendix A.**

SHETL Area

10.10 SHETL and National Grid have both examined the expected levels of future Power Station connections in SHETL's area. SHETL is of the view that the retention of the Large Power Station threshold at 10MW is necessary to allow SHETL to continue to plan a compliant Transmission System in accordance with its licence obligations. National Grid believes that the proposal in this consultation document to move the existing Small-Large threshold to 10MW from 5MW would not adversely impact upon its ability to operate the GB Transmission System.

10.11 All of the members of the Regional Differences Working Group also supported the proposals for the SHETL Transmission Area contained within this consultation document.

10.12 **Views are invited upon the proposed amendments to the Small, Medium and Large Power Station definitions in SHETL's area contained within this consultation document. Detailed Legal Text to give effect to the proposed changes may be found in Appendix A.**

Applicability of Definitions

10.13 Currently the definitions of a Small, Medium and Large Power Station are applicable on a geographic basis. However the proposal developed through the Regional Differences Working Group would see this application subtly altered such that the test for applicability would be on an electrical rather than geographic basis.

10.14 In essence the further changes proposed would only affect Embedded Power Stations close to a TO Licensed Area boundary. There are parts of Distribution Systems in the North of England for instance that are only connected to the SPT Transmission System. Any Power Stations connected to this Distribution System would under the existing arrangements be classified as Large, Medium and Small according to the England and Wales definitions. However it is clear that such Power Stations would electrically impact on the SPT Transmission System rather than the Transmission System in England and Wales and that therefore it would be more appropriate to define them according to the SPT Small, Medium and Large Power Station Definitions. A similar situation can exist on either side of the SPT – SHETL Licensed Area boundary.

10.15 To remedy this a second proposal for the definitions of Small, Medium and Large Power Stations was agreed by the members of the Regional Differences Working Group and is put forward in this consultation. This second proposal applies the same Small, Medium and Large Power Station thresholds as in the previous proposal, however for a given set of definitions it applies them to:

(a) Power Stations directly connected to the GB Transmission System in a TO Licensed Area,
(b) Power Stations Embedded within a Distribution System that is normally connected to the GB Transmission System in a TO Licensed Area, and
(c) Power Stations Embedded within a Distribution System that is not connected to the GB Transmission System but that is within a TO

Licensed Area. (This last element is to cover permanently islanded systems such as the Shetland Islands.)

10.16 **Views are invited on this proposal to clarify the applicability of the new definitions for a Small, Medium and Large Power Station for Embedded Power Stations close to a TO Licensed Area boundary. Detailed Legal Text to give effect to the proposed changes may be found in Appendix A.**

Submission of Demand PNs

10.17 Given the proposed changes to the definitions of a Small Medium and Large Power Station to avoid discrimination between the generation and Demand BM Units it is proposed to realign the requirement to submit PNs for Demand and Generation. As National Grid will by default only receive PN information from BM units at Large Power Stations in Scotland, to align the requirements for the Demand Side it is proposed to amend the requirement for Demand BM Units to submit PNs to mirror that of a Large Power Station in each TO Licensed Area. Therefore Demand PNs are proposed to be required to be submitted by BM Units with a Demand Capacity greater than 10MW in SHETL's Area, and by BM Units with a Demand Capacity greater than 30MW in SPT's Licensed Area.

10.18 **Views are invited on the proposal to amend the threshold for the submission of PNs by Demand BM Units to 10MW and above in SHETL's Licensed Area and to 30MW and above in SPT's Licensed Area. Detailed Legal Text to give effect to the proposed changes may be found in Appendix A.**

Power Park Modules and Frequency Response Capability

10.19 Based on the rationale that the threshold for the provision of a frequency response capability by Power Park Modules in England and Wales is 50MW (i.e. those Power Park Modules at Medium Power Stations), and as frequency response is a "national" service it is proposed to set the threshold for Power Park Modules in Scotland at 50MW also, an increase from the existing level of 30MW.

10.20 The 30MW threshold was originally set through the Scottish Grid Code. This level was set based upon the requirements placed on the Scottish transmission system operators to manage the system frequency in Scotland alone. As the system frequency is now managed on a GB Basis it is therefore proposed that the threshold could be aligned nationally and raised to 50MW.

10.21 **Views are invited on the proposal to amend the threshold for the provision of a Frequency Response service by Power Park Modules in Scotland to 50MW. Detailed Legal Text to give effect to the proposed changes may be found in Appendix A.**

C. RESPONSES

11. This section will contain a summary of responses received during the Consultation and will be completed as part of the Report to the Authority.

12. Your formal responses may be:-

Posted to: Mark Duffield
Electricity Codes
Commercial Frameworks
National Grid Electricity Transmission plc
National Grid House
Warwick Technology Park
Gallows Hill
Warwick
CV34 6DA

Emailed to: mark.duffield@uk.ngrid.com

Appendix 1: Revisions to the Grid Code for Regional Differences

Three proposals are to be taken forward from the recommendations of the Regional Differences Working Group.

1. The first sees a revision to the Small, Medium and Large Power Station thresholds within the Grid Code.
2. The second amends the threshold level at which Demand PNs are submitted by Users
3. The third amends the threshold above which Power Park Modules in Scotland must be capable of providing a frequency response service.

Proposal 1: Small, Medium and Large Power Station Definitions

The first proposal is split into two elements; the first is the amendment to the Grid Code to amend the Small, Medium and Large Power Station thresholds to those levels proposed by the Regional Differences Working Group, namely:

Area	Small	Medium	Large
NGET	<50MW	≥50MW, <100MW	≥100MW
SPT	<30MW	-	≥30MW
SHETL	<10MW	-	≥10MW

The second element then takes the above changes but aims to clarify the application of these thresholds to Embedded Power Stations that connect close to a TO boundary. It seeks to clarify the treatment of Embedded Generators that are connected to a Distribution System (or part of a Distribution System) that is geographically sited in one Transmission Licensee's area but electrically it is connected to another Transmission Licensee's System. This situation exists both across the England and Wales border and the SPT-SHETL border. The intention of the amendments are therefore to classify Power Stations "electrically" rather than "geographically".

Proposed Changes to the Grid Code

Delete the existing definitions of "Large Power Station", "Medium Power Station" and "Small Power Station" within the Glossary and Definitions and replace with the following definitions.

"**Large Power Station**"	A **Power Station** which is (A) directly connected to; (a) **NGET's Transmission System** where such **Power Station** has a **Registered Capacity** of 100MW or more; or, (b) **SPT's Transmission System** where such **Power Station** has a **Registered Capacity** of 30MW or more; or, (c) **SHETL's Transmission System** where such **Power Station** has a **Registered Capacity** of 10MW or more; or, (B) **Embedded** within a **User System** (or part thereof) where such **User System** (or part thereof) is connected under normal operating conditions to ; (a) **NGET's Transmission System** and such **Power Station** has a **Registered Capacity** of 100MW or more; or, (b) **SPT's Transmission System** and such **Power Station** has a **Registered Capacity** of 30MW or more; or, (c) **SHETL's Transmission System** and such **Power Station** has a **Registered Capacity** of 10MW or more; or, (C) **Embedded** within a **User System** (or part thereof) where the **User System** (or part thereof) is not connected to the **GB Transmission System**, although such **Power Station** is in; (a) **NGET's Transmission Area** and such **Power Station** has a **Registered Capacity** of 100MW or more; or, (b) **SPT's Transmission Area** and such **Power Station** has a **Registered Capacity** of 30MW or more; or, (c) **SHETL's Transmission Area** and such **Power Station** has a **Registered Capacity** of 10MW or more.
"**Medium Power Station**"	A **Power Station** which is (A) directly connected to **NGET's Transmission System** where such **Power Station** has a **Registered Capacity** of 50MW or more but less than 100MW; or, (B) **Embedded** within a **User System** (or part thereof) where such **User System** (or part thereof) is connected under normal operating conditions to **NGET's Transmission System** and such **Power Station** has a **Registered Capacity** of 50MW or more but less than 100MW; or, (C) **Embedded** within a **User System** (or part thereof) where the **User System** (or part thereof) is not connected to the **GB Transmission System**, although such **Power Station** is in **NGET's Transmission Area** and such **Power Station** has a **Registered Capacity** of 50MW or more but less than 100MW.

"**Small Power Station**"	A **Power Station** which is (A) directly connected to; (a) **NGET's Transmission System** where such **Power Station** has a **Registered Capacity** of less than 50MW; or, (b) **SPT's Transmission System** where such **Power Station** has a **Registered Capacity** of less than 30MW; or, (c) **SHETL's Transmission System** where such **Power Station** has a **Registered Capacity** of less than 10MW; or, (B) **Embedded** within a **User System** (or part thereof) where such **User System** (or part thereof) is connected under normal operating conditions to; (a) **NGET's Transmission System** and such **Power Station** has a **Registered Capacity** of less than 50MW; or, (b) **SPT's Transmission System** and such **Power Station** has a **Registered Capacity** of less than 30MW; or, (c) **SHETL's Transmission System** and such **Power Station** has a **Registered Capacity** of less than 10MW; or, (C) **Embedded** within a **User System** (or part thereof) where the **User System** (or part thereof) is not connected to the **GB Transmission System**, although such **Power Station** is in; (a) **NGET's Transmission Area** and such **Power Station** has a **Registered Capacity** of less than 50MW; or, (b) **SPT's Transmission Area** and such **Power Station** has a **Registered Capacity** of less than 30MW; or, (c) **SHETL's Transmission Area** and such **Power Station** has a **Registered Capacity** of less than 10MW.

Proposal 2: Demand Side PNs (BC1.4.2 (a))

BC1.4.2 *Day Ahead Submissions*

……………

(a) ***Physical Notifications***

Physical Notifications, being the data listed in **BC1** Appendix 1 under that heading, are required by **NGET** at 11:00 hours each day for each **Settlement Period** of the next following **Operational Day,** in respect of;

(1) **BM Units**:-

(i) with a **Demand Capacity** with a magnitude of 50MW or more in England and Wales or ~~5MW~~ 10MW or more in ~~Scotland~~SHETL's Transmission Area or 30MW or more in SPT's Transmission Area; or

(ii) comprising **Generating Units** (as defined in the Glossary and Definitions and not limited by BC1.2) and/or **CCGT Modules** at and/or **Power Park Modules** in each case **Large Power Stations** and **Medium Power Stations;** or

(iii) where the **BM Participant** chooses to submit **Bid-Offer Data** in accordance with BC1.4.2(d) for **BM Units** not falling within (i) or (ii) above,

and

…………

BC2.5.5.1 In the event that a **BM Participant** in respect of a **BM Unit** with a **Demand Capacity** with a magnitude of less than 50MW in England and Wales or less than ~~5MW~~ 10MW or more in ~~Scotland~~SHETL's Transmission Area or 30MW or more in SPT's Transmission Area in Scotland or comprising **Generating Units** (as defined in the Glossary and Definitions and not limited by BC2.2) and/or **CCGT Modules** and/or **Power Park Modules** at a **Small Power Station** notifies **NGET** at least 30 days in advance that from a specified **Operational Day** it will:

(a) no longer submit **Bid-Offer Data** under BC1.4.2(d), then with effect from that **Operational Day** that **BM Participant** no longer has to meet the requirements of BC2.5.1 nor the requirements of CC6.5.8(b) in relation to that **BM Unit**. Also, with effect from that **Operational Day**, any defaulted **Physical Notification** and defaulted **Bid-Offer Data** in relation to that **BM Unit** arising from the **Data Validation, Consistency and Defaulting Rules** will be disregarded and the provisions of BC2.5.2 will not apply;

(b) submit **Bid-Offer Data** under BC1.4.2(d), then with effect from that **Operational Day** that **BM Participant** will need to meet the requirements of BC2.5.1 and the requirements of CC6.5.8(b) in relation to that **BM Unit**.

BC2.5.5.2 In the event that a **BM Participant** in respect of a **BM Unit** with a **Demand Capacity** with a magnitude of 50MW or greater in England and Wales or ~~5MW~~ 10MW or more in ~~Scotland~~SHETL's Transmission Area or 30MW or more in SPT's Transmission Area or comprising **Generating Units** (as defined in the Glossary and Definitions and not limited by BC2.2) and/or **CCGT Modules** and/or **Power Park Modules** at a **Medium Power Station** or **Large Power Station** notifies **NGET** at least 30 days in advance that from a specified **Operational Day** it will:

(a) no longer submit **Bid-Offer Data** under BC1.4.2(d), then with effect from that **Operational Day** that **BM Participant** no longer has to meet the requirements of CC6.5.8(b) in relation to that **BM Unit**; Also, with effect from that **Operational Day**, any defaulted **Bid-Offer Data** in relation to that **BM Unit** arising from the **Data Validation, Consistency and Defaulting Rules** will be disregarded;

(b) submit **Bid-Offer Data** under BC1.4.2(d), then with effect from that **Operational Day** that **BM Participant** will need to meet the requirements of CC6.5.8(b) in relation to that **BM Unit**.

Proposal 3: Threshold for providing Frequency Response by Power Park Modules in Scotland

It is proposed to align the threshold above which Power Park Modules in Scotland are required to have a frequency response capability to 50MW from the existing 30MW in order that these units have the same obligation as units in England and Wales (where only Medium Power Stations are required to have this response capability). This requires the following changes to CC.6.3.6, CC.6.3.7, CC.8.1, CC.A.3.1, BC3.3, BC3.4.1, BC3.5.1, BC3.5.3 and BC3.5.4.

CC.6.3.6 (a) Each:

(i) **Generating Unit**; or,

(ii) **DC Converter** with a **Completion Date** on or after 1 April 2005; or,

(iii) **Power Park Module** in England and Wales with a **Completion Date** on or after 1 January 2006; or,

(iv) **Power Park Module** in operation in Scotland on or after 1 January 2006 (with a **Completion Date** after 1 July 2004 and in a **Power Station** with a **Registered Capacity** of ~~30MW~~ 50MW or above),

must be capable of contributing to **Frequency** control by continuous modulation of **Active Power** supplied to the **GB Transmission System** or the **User System** in which it is **Embedded**.

…………

CC.6.3.7 (a) Each **Generating Unit, DC Converter** or **Power Park Module** (excluding **Power Park Modules** in Scotland with a **Completion Date** before 1 July 2004 or in a **Power Station** in Scotland with a **Registered Capacity** less than ~~30MW~~50MW) must be fitted with a fast acting proportional **Frequency** control device (or turbine speed governor) and unit load controller or equivalent control device to provide **Frequency** response under normal operational conditions in accordance with **Balancing Code 3** (**BC3**). The Frequency control device (or speed governor) must be designed and operated to the appropriate:

(i) **European Specification**; or

(ii) in the absence of a relevant **European Specification**, such other standard which is in common use within the European Community (which may include a manufacturer specification);

as at the time when the installation of which it forms part was designed or (in the case of modification or alteration to the **Frequency** control device (or turbine speed governor)) when the modification or alteration was designed.

The **European Specification** or other standard utilised in accordance with sub-paragraph CC.6.3.7 (a) (ii) will be notified to **NGET** by the **Generator** or **DC Converter Station** owner or, in the case of an **Embedded Medium Power Station** not subject to a **Bilateral Agreement** or **Embedded DC Converter Station** not subject to a **Bilateral Agreement**, the relevant **Network Operator**:

(i) as part of the application for a **Bilateral Agreement;** or

(ii) as part of the application for a varied **Bilateral Agreement;** or

(iii) in the case of an **Embedded Development**, within 28 days of entry into the **Embedded Development Agreement** (or such later time as agreed with **NGET**); or

(iv) as soon as possible prior to any modification or alteration to the **Frequency** control device (or governor); and

(b) The **Frequency** control device (or speed governor) in co-ordination with other control devices must control the **Generating Unit, DC Converter** or **Power Park Module Active Power Output** with stability over the entire operating range of the **Generating Unit, DC Converter** or **Power Park Module**; and

(c) The **Frequency** control device (or speed governor) must meet the following minimum requirements:

(i) Where a **Generating Unit, DC Converter** or **Power Park Module** becomes isolated from the rest of the **Total System** but is still supplying **Customers**, the **Frequency** control device (or speed governor) must also be able to control **System Frequency** below 52Hz unless this causes the **Generating Unit, DC Converter** or **Power Park Module** to operate below its **Designed Minimum Operating Level** when it is possible that it may, as detailed in BC 3.7.3, trip after a time. For the avoidance of doubt the **Generating Unit, DC Converter** or **Power Park Module** is only required to operate within the **System Frequency** range 47 - 52 Hz as defined in CC.6.1.3.;

(ii) the **Frequency** control device (or speed governor) must be capable of being set so that it operates with an overall speed **Droop** of between 3% and 5%;

(iii) in the case of all **Generating Units, DC Converter** or **Power Park Module** other than the **Steam Unit** within a **CCGT Module** the **Frequency** control device (or speed governor) deadband should be no greater than 0.03Hz (for the avoidance of doubt, ±0.015Hz). In the case of the **Steam Unit** within a **CCGT Module**, the speed governor deadband should be set to an appropriate value consistent with the requirements of CC.6.3.7(c)(i) and the requirements of BC3.7.2 for the provision of **Limited High Frequency Response**;

For the avoidance of doubt, the minimum requirements in (ii) and (iii) for the provision of **System Ancillary Services** do not restrict the negotiation of **Commercial Ancillary Services** between **NGET** and the **User** using other parameters; and

(d) A facility to modify, so as to fulfil the requirements of the **Balancing Codes**, the **Target Frequency** setting either continuously or in a maximum of 0.05 Hz steps over at least the range 50 ±0.1 Hz should be provided in the unit load controller or equivalent device.

(e) (i) Each **Generating Unit** and/or **CCGT Module** which has a **Completion Date** after 1 January 2001 in England and Wales, and after 1 April 2005 in Scotland, must be capable of meeting the minimum **Frequency** response requirement profile subject to and in accordance with the provisions of Appendix 3.

(ii) Each **DC Converter** at a **DC Converter Station** which has a **Completion Date** on or after 1 April 2005 must be capable of meeting the minimum **Frequency** response requirement profile subject to and in accordance with the provisions of Appendix 3**.**

(iii) Each **Power Park Module** in operation in England and Wales with a **Completion Date** on or after 1 January 2006 must be capable of meeting the minimum **Frequency** response requirement profile subject to and in accordance with the provisions of Appendix 3.

(iv) Each **Power Park Module** in operation on or after 1 January 2006 in Scotland (with a **Completion Date** on or after 1 April 2005 and a **Registered Capacity** of ~~30MW~~ 50MW or greater) must be capable of meeting the minimum **Frequency** response requirement profile subject to and in accordance with the provisions of Appendix 3.

…………

CC.8.1 **System Ancillary Services**

The **CC** contain requirements for the capability for certain **Ancillary Services**, which are needed for **System** reasons ("**System Ancillary Services**"). There follows a list of these **System Ancillary Services**, together with the paragraph number of the **CC** (or other part of the **Grid Code**) in which the minimum capability is required or referred to. The list is divided into two categories: Part 1 lists the **System Ancillary Services** which

(a) **Generators** in respect of **Large Power Stations** are obliged to provide (except that **Generators** in respect of **Large Power Stations** which have a **Registered Capacity** of less than 50MW which are registered as **Power Park Modules** under the **PC** are obliged to provide **System Ancillary Services** in respect of **Reactive Power** only) and

(b) **DC Converter Station** owners are obliged to have the capability to supply; and

(c) **Generators** in respect of **Medium Power Stations** (except **Embedded Medium Power Stations**) are obliged to provide in respect of **Reactive Power** only:

and Part 2 lists the **System Ancillary Services** which **Generators** will provide only if agreement to provide them is reached with **NGET**:

Part 1

(a) **Reactive Power** supplied (in accordance with CC.6.3.2) otherwise than by means of synchronous or static compensators (except in the case of a **Power Park Module** where synchronous or static compensators within the **Power Park Module** may be used to provide **Reactive Power**)

(b) **Frequency** Control by means of **Frequency** sensitive generation - CC.6.3.7 and BC3.5.1

Part 2

(c) **Frequency** Control by means of **Fast Start** - CC.6.3.14

(d) **Black Start Capability** - CC.6.3.5

(e) **System to Generator Operational Intertripping**

CC.A.3.1 SCOPE

The frequency response capability is defined in terms of **Primary Response**, **Secondary Response** and **High Frequency Response**. This appendix defines the minimum frequency response requirement profile for:

(a) each **Generating Unit** and/or **CCGT Module** which has a **Completion Date** after 1 January 2001 in England and Wales and 1 April 2005 in Scotland,

(b) each **DC Converter** at a **DC Converter Station** which has a **Completion Date** on or after 1 April 2005.

(c) each **Power Park Module** in England and Wales with a **Completion Date** on or after 1 January 2006.

(d) each **Power Park Module** in operation in Scotland after 1 January 2006 with a **Completion Date** after 1 April 2005 and in **Power Stations** with a **Registered Capacity** of ~~30MW~~ 50MW or above.

For the avoidance of doubt, this appendix does not apply to:-

(i) **Generating Units** and/or **CCGT Modules** which have a **Completion Date** before 1 January 2001 in England and Wales and before 1 April 2005 in Scotland,

(ii) **DC Converters** at a **DC Converter Station** which have a **Completion Date** before 1 April 2005.

(iii) **Power Park Modules** in England and Wales with a **Completion Date** before 1 January 2006.

(iv) **Power Park Modules** in operation in Scotland before 1 January 2006.

(v) **Power Park Modules** in Scotland with a **Completion Date** before 1 April 2005.

(vi) **Power Park Modules** in Scotland in **Power Stations** with a **Registered Capacity** less than ~~30MW~~50MW.

(vii) **Small Power Stations** or individually to **Power Park Units**.

The functional definition provides appropriate performance criteria relating to the provision of **Frequency** control by means of **Frequency** sensitive generation in addition to the other requirements identified in CC.6.3.7.

In this Appendix 3 to the **CC**, for a **CCGT Module** or a **Power Park Module** with more than one **Generating Unit**, the phrase **Minimum Generation** applies to the entire **CCGT Module** or **Power Park Module** operating with all **Generating Units Synchronised** to the **System**.

The minimum **Frequency** response requirement profile is shown diagrammatically in Figure CC.A.3.1. The capability profile specifies the minimum required levels of **Primary Response**, **Secondary Response** and **High Frequency Response** throughout the normal plant operating range. The definitions of these **Frequency** response capabilities are illustrated diagrammatically in Figures CC.A.3.2 & CC.A.3.3.

BC3.3 SCOPE

BC3 applies to **NGET** and to **Users**, which in this BC3 means:-

1. **Generators** with regard to their **Large Power Stations** (except those **Large Power Stations** comprising of **Power Park Modules** in ~~SHETL's Transmission Area~~Scotland with a **Registered Capacity** less than ~~30MW~~50MW),

2. **Network Operators,**

3. **DC Converter Station** owners,

4. other providers of **Ancillary Services**, and

5. **Externally Interconnected System Operators**.

BC3.4.1 Statutory Requirements

When **NGET** determines it is necessary (by having monitored the **System Frequency**), it will, as part of the procedure set out in **BC2**, issue instructions (including instructions for **Commercial Ancillary Services**) in order to seek to regulate **System Frequency** to meet the statutory requirements of **Frequency** control. **Gensets** (except those comprising of a **Power Park Module** in ~~SHETL's Transmission Area~~Scotland in a **Power Station** with a **Registered Capacity** less than ~~30MW~~ 50MW and those comprising of a **Power Park Module** in Scotland with a **Completion Date** before 1 July 2004) and **DC Converters** at **DC Converter Stations** when transferring **Active Power** to the **Total System,** operating in **Frequency Sensitive Mode** will be instructed by **NGET** to operate taking due account of the **Target Frequency** notified by **NGET**.

BC3.5.1 Capability

Each **Genset** (except those comprising of **Power Park Modules** in ~~SHETL's Transmission Area~~Scotland in a **Power Station** with a **Registered Capacity** less than ~~30MW~~ 50MW and those comprising of **Power Park Modules** in Scotland with a **Completion Date** before 1 July 2004) and each **DC Converter** at a **DC Converter Station** must at all times have the capability to operate automatically so as to provide response to changes in **Frequency** in accordance with the requirements of CC.6.3.7 in order to contribute to containing and correcting the **System Frequency** within the statutory requirements of **Frequency** control. . For **DC Converters** at **DC Converter Stations,** BC.3.1.3 also applies**.** In addition each **Genset** (and each **DC Converter** at a **DC Converter Station**) must at all times have the capability to operate in a **Limited Frequency Sensitive Mode** by operating so as to provide **Limited High Frequency Response**.

BC3.5.3 (a) **Existing Gas Cooled Reactor Plant**

NGET will permit **Existing Gas Cooled Reactor Plant** other than **Frequency Sensitive AGR Units** to operate in **Limited Frequency Sensitive Mode** at all times.

(b) **Power Park Modules** in operation before 1 January 2006
NGET will permit **Power Park Modules** in operation before 1 January 2006 to operate in **Limited Frequency Sensitive Mode** at all times. For the avoidance of doubt **Power Park Modules** in England and Wales with a **Completion Date** on or after 1 January 2006 and **Power Park Modules** in operation in Scotland after 1 January 2006 with a completion date after 1 July 2004 and in a **Power Station** with a **Registered Capacity** of ~~30MW~~ 50MW and greater will be required to operate in both **Limited Frequency Sensitive Mode** and **Frequency Sensitive Mode** of operation depending on **System** conditions.

BC3.5.4 **Frequency Sensitive Mode**

(a) **NGET** may issue an instruction to a **Genset** (or **DC Converter** at a **DC Converter Station** if agreed as described in BC.3.1.3) to operate so as to provide **Primary Response** and/or **Secondary Response** and/or **High Frequency Response** (in the combinations agreed in the relevant **Ancillary Services Agreement**). When so instructed, the **Genset** or **DC Converter** at a **DC Converter Station** must operate in accordance with the instruction and will no longer be operating in **Limited Frequency Sensitive Mode**, but by being so instructed will be operating in **Frequency Sensitive Mode**.

(b) **Frequency Sensitive Mode** is the generic description for a **Genset** (or **DC Converter** at a **DC Converter Station)** operating in accordance with an instruction to operate so as to provide **Primary Response** and/or **Secondary Response** and/or **High Frequency Response** (in the combinations agreed in the relevant **Ancillary Services Agreement**).

(c) The magnitude of the response in each of those categories instructed will be in accordance with the relevant **Ancillary Services Agreement** with the **Generator** or **DC Converter Station** owner**.**

(d) Such instruction will continue until countermanded by **NGET** or until;

(i) the **Genset** is **De-Synchronised;**, or

(ii) the **DC Converter** ceases to transfer **Active Power** to or from the **Total System** subject to the conditions of any relevant agreement relating to the operation of the **DC Converter Station**,

whichever is the first to occur.

(e) **NGET** will not so instruct **Generators** in respect of **Existing Gas Cooled Reactor Plant** other than **Frequency Sensitive AGR Units**.

(f) **NGET** will not so instruct **Generators** in respect of **Power Park Modules**:

(i) in Scotland in a **Power Station** with a **Completion Date** before 1 July 2004; or,

(ii) in ~~SHETL's Transmission Area~~Scotland in a **Power Station** with a **Registered Capacity** of less than ~~30MW~~50MW.

(iii) in England and Wales with a **Completion Date** before 1 January 2006.