

Our Ref:

Your Ref:

Date: 22<sup>nd</sup> March 2010

Regulatory Frameworks  
Electricity Codes

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Dear Sir/Madam

### THE SERVICED GRID CODE – ISSUE 4 REVISION 1

Revision 2 of Issue 4 of the Grid Code has been approved by the Authority for implementation on **22<sup>nd</sup> March 2010**.

I have enclosed the replacement pages that incorporate the agreed changes necessary to update the Grid Code Issue 4 to Revision 2 standard.

The enclosed note provides a brief summary of the changes made to the text.

Yours faithfully

Tom Derry  
Electricity Codes



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**THE GRID CODE – ISSUE 4 REVISION 2**

**INCLUSION OF REVISED PAGES**

Title Page

Glossary and Definitions - **Pages 7, 8 & 40 - 59**

Balancing Code BC2 - **Pages 14 - 35**

Planning Code PC.A.3 - **Pages 30 - 36**

Operating Code OC.2 - **Entire section reissued**

DRC DRC - **Page 48**

Revisions - **Pages 1 - 2**

NOTE: See Page 1 of the Revisions section of the Grid Code for details of how the revisions are indicated on the pages.

# NATIONAL GRID ELECTRICITY TRANSMISSION PLC

## THE GRID CODE – ISSUE 4 REVISION 2

### SUMMARY OF CHANGES

The changes arise from the implementation of modifications proposed in the following Consultation Paper:

- **E/09** – Consequential Grid Code changes relating to CUSC Amendment Proposal 169: Provision of Reactive Power from Power Park Modules, Large Power Stations and Embedded Power Stations.

#### Summary of Proposals

19. *The intention of the proposals is to provide greater communication and clarity of the availability for reactive despatch of Power Park Modules and Embedded Generation. Such changes are required by CUSC Amendment Proposal 169, which seeks to improve the reactive provisions within in the CUSC for Power Park Modules, Large Generators and Embedded Generators.*

The categories of Users affected by this revision to the Grid Code are:

- Distribution Network Operators; and
- Embedded Generators

A brief description of the proposals is as follows:

- Clarity has been provided on the communication of reactive despatch availability of Power Park Modules and Embedded generation:
  - The format of the capability table submission made by Power Park Modules and Embedded Medium power stations
  - The format of DRC Schedule 11 has been updated to allow the communication of the existence of a Reactive Despatch Network Restriction by a DNO.

# THE GRID CODE

**Issue 4 Revision 2**

**22<sup>nd</sup> March 2010**

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**Category 2**  
**Intertripping Scheme**

A **System to Generator Operational Intertripping Scheme** which is:-  
(i) required to alleviate an overload on a circuit which connects the **Group** containing the **User's Connection Site** to the **National Electricity Transmission System**; and  
(ii) installed in accordance with the requirements of the planning criteria of the **Security and Quality of Supply Standard** in order that measures can be taken to permit maintenance access for each transmission circuit and for such measures to be economically justified,  
and the operation of which results in a reduction in **Active Power** on the overloaded circuits which connect the **User's Connection Site** to the rest of the **National Electricity Transmission System** which is equal to the reduction in **Active Power** from the **Connection Site** (once any system losses or third party system effects are discounted).

**Category 3**  
**Intertripping Scheme**

A **System to Generator Operational Intertripping Scheme** which, where agreed by **NGET** and the **User**, is installed to alleviate an overload on, and as an alternative to, the reinforcement of a third party system, such as the **Distribution System** of a **Public Distribution System Operator**.

**Category 4**  
**Intertripping Scheme**

A **System to Generator Operational Intertripping Scheme** installed to enable the disconnection of the **Connection Site** from the **National Electricity Transmission System** in a controlled and efficient manner in order to facilitate the timely restoration of the **National Electricity Transmission System**.

**CENELEC**

European Committee for Electrotechnical Standardisation.

**CCGT Module Matrix**

The matrix described in Appendix 1 to BC1 under the heading **CCGT Module Matrix**.

**CCGT Module**  
**Planning Matrix**

A matrix in the form set out in Appendix 3 of OC2 showing the combination of **CCGT Units** within a **CCGT Module** which would be running in relation to any given MW output.

**Cluster**

1. Before Telemetry

A cluster of wind turbines will be formed when the total wind capacity within any circle of five kilometre radius has a **Registered Capacity** of not less than 5MW

2. After Telemetry

Any wind turbine installed within a five kilometre radius of the anemometer position (whether installed before or after the installation of that anemometer) will be deemed to be within the cluster for that anemometer and will not count towards the creation of any new cluster. All other wind turbines may count towards the creation of further clusters.

**Combined Cycle Gas Turbine Module or CCGT Module**

A collection of **Generating Units** (registered as a **CCGT Module** under the PC) comprising one or more **Gas Turbine Units** (or other gas based engine units) and one or more **Steam Units** where, in normal operation, the waste heat from the **Gas Turbines** is passed to the water/steam system of the associated **Steam Unit** or **Steam Units** and where the component units within the **CCGT Module** are directly connected by steam or hot gas lines which enable those units to contribute to the efficiency of the combined cycle operation of the **CCGT Module**.

**Combined Cycle Gas Turbine Unit or CCGT Unit**

A **Generating Unit** within a **CCGT Module**.

**Commercial Ancillary Services**

**Ancillary Services**, other than **System Ancillary Services**, utilised by NGET in operating the **Total System** if a **User** (or other person) has agreed to provide them under an **Ancillary Services Agreement** or under a **Bilateral Agreement** with payment being dealt with under an **Ancillary Services Agreement** or in the case of **Externally Interconnected System Operators** or **Interconnector Users**, under any other agreement (and in the case of **Externally Interconnected System Operators** and **Interconnector Users** includes ancillary services equivalent to or similar to **System Ancillary Services**).



<b><u>Commercial Boundary</u></b>	Has the meaning set out in the <b>CUSC</b>
<b><u>Committed Project Planning Data</u></b>	Data relating to a <b>User Development</b> once the offer for a <b>CUSC Contract</b> is accepted.
<b><u>Common Collection Busbar</u></b>	A busbar within a <b>Power Park Module</b> to which the higher voltage side of two or more <b>Power Park Unit</b> generator transformers are connected.
<b><u>Completion Date</u></b>	Has the meaning set out in the <b>Bilateral Agreement</b> with each <b>User</b> to that term or in the absence of that term to such other term reflecting the date when a <b>User</b> is expected to connect to or start using the <b>National Electricity Transmission System</b> . In the case of an <b>Embedded Medium Power Station</b> or <b>Embedded DC Converter Station</b> having a similar meaning in relation to the <b>Network Operator's System</b> as set out in the <b>Embedded Development Agreement</b> .
<b><u>Complex</u></b>	A <b>Connection Site</b> together with the associated <b>Power Station</b> and/or <b>Network Operator</b> substation and/or associated <b>Plant</b> and/or <b>Apparatus</b> , as appropriate.
<b><u>Connection Conditions or CC</u></b>	That portion of the <b>Grid Code</b> which is identified as the <b>Connection Conditions</b> .
<b><u>Connection Entry Capacity</u></b>	Has the meaning set out in the <b>CUSC</b>
<b><u>Connected Planning Data</u></b>	Data which replaces data containing estimated values assumed for planning purposes by validated actual values and updated estimates for the future and by updated forecasts for <b>Forecast Data</b> items such as <b>Demand</b> .
<b><u>Connection Point</u></b>	A <b>Grid Supply Point</b> or <b>Grid Entry Point</b> , as the case may be.
<b><u>Connection Site</u></b>	A <b>Transmission Site</b> or <b>User Site</b> , as the case may be.
<b><u>Construction Agreement</u></b>	Has the meaning set out in the <b>CUSC</b>

<b><u>Contingency Reserve</u></b>	The margin of generation over forecast <b>Demand</b> which is required in the period from 24 hours ahead down to real time to cover against uncertainties in <b>Large Power Station</b> availability and against both weather forecast and <b>Demand</b> forecast errors.
<b><u>Control Calls</u></b>	A telephone call whose destination and/or origin is a key on the control desk telephone keyboard at a <b>Transmission Control Centre</b> and which, for the purpose of <b>Control Telephony</b> , has the right to exercise priority over (ie. disconnect) a call of a lower status.
<b><u>Control Centre</u></b>	A location used for the purpose of control and operation of the <b>National Electricity Transmission System</b> or <b>DC Converter Station</b> owner's <b>System</b> or a <b>User System</b> other than a <b>Generator's System</b> or an <b>External System</b> .
<b><u>Control Engineer</u></b>	A person nominated by the relevant party for the control of its <b>Plant</b> and <b>Apparatus</b> .
<b><u>Control Person</u></b>	The term used as an alternative to " <b>Safety Co-ordinator</b> " on the <b>Site Responsibility Schedule</b> only.
<b><u>Control Phase</u></b>	The <b>Control Phase</b> follows on from the <b>Programming Phase</b> and covers the period down to real time.
<b><u>Control Point</u></b>	<p>The point from which:-</p> <p>a) A <b>Non-Embedded Customer's Plant</b> and <b>Apparatus</b> is controlled; or</p> <p>b) A <b>BM Unit</b> at a <b>Large Power Station</b> or at a <b>Medium Power Station</b> or representing a <b>Cascade Hydro Scheme</b> or with a <b>Demand Capacity</b> with a magnitude of:</p> <ul style="list-style-type: none"> <li>(i) 50MW or more in <b>NGET's Transmission Area</b>; or</li> <li>(ii) 30MW or more in <b>SPT's Transmission Area</b>; or</li> <li>(iii) 10MW or more in <b>SHETL's Transmission Area</b>,</li> <li>(iv) 10MW or more which is connected to an <b>Offshore Transmission System</b></li> </ul> <p>is physically controlled by a <b>BM Participant</b>; or</p> <p>c) In the case of any other <b>BM Unit</b> or <b>Generating Unit</b>, data submission is co-ordinated for a <b>BM Participant</b> and instructions are received from <b>NGET</b>,</p> <p>as the case may be. For a <b>Generator</b> this will normally be at a <b>Power Station</b> but may be at an alternative location agreed with <b>NGET</b>. In the case of a <b>DC Converter Station</b>, the <b>Control Point</b> will be at a location agreed with <b>NGET</b>. In the case of a <b>BM Unit</b> of an <b>Interconnector User</b>, the <b>Control Point</b> will be the <b>Control Centre</b> of the relevant <b>Externally Interconnected System Operator</b>.</p>

**Quiescent Physical Notification or QPN**

Data that describes the MW levels to be deducted from the **Physical Notification** of a **BM Unit** to determine a resultant operating level to which the **Dynamic Parameters** associated with that **BM Unit** apply, and the associated times for such MW levels. The MW level of the **QPN** must always be set to zero.

**Range CCGT Module**

A **CCGT Module** where there is a physical connection by way of a steam or hot gas main between that **CCGT Module** and another **CCGT Module** or other **CCGT Modules**, which connection contributes (if open) to efficient modular operation, and which physical connection can be varied by the operator.

**Rated Field Voltage**

Shall have the meaning ascribed to that term in **IEC 34-16-1:1991** [equivalent to **British Standard BS4999 Section 116.1 : 1992**].

**Rated MW**

The “rating-plate” MW output of a **Generating Unit, Power Park Module** or **DC Converter**, being:

- (a) that output up to which the **Generating Unit** was designed to operate (Calculated as specified in **British Standard BS EN 60034 – 1: 1995**);  
or
- (b) the nominal rating for the MW output of a **Power Park Module** being the maximum continuous electric output power which the **Power Park Module** was designed to achieve under normal operating conditions;  
or
- (c) the nominal rating for the MW import capacity and export capacity (if at a **DC Converter Station**) of a **DC Converter**.

**Reactive Despatch Instruction**

Has the meaning set out in the **CUSC**

**Reactive Despatch Network Restriction**

A restriction placed upon an **Embedded Generating Unit, Embedded Power Park Module** or **DC Converter** at an **Embedded DC Converter Station** by the **Network Operator** that prevents the **Generator** or **DC Converter Station** owner in question (as applicable) from complying with any **Reactive Despatch Instruction** with respect to that **Generating Unit, Power Park Module** or **DC Converter** at a **DC Converter Station**, whether to provide Mvars over the range referred to in CC 6.3.2 or otherwise.

**Reactive Energy**

The integral with respect to time of the **Reactive Power**.

**Reactive Power**

The product of voltage and current and the sine of the phase angle between them measured in units of voltamperes reactive and standard multiples thereof, ie:

$$1000 \text{ VAr} = 1 \text{ kVAr}$$
$$1000 \text{ kVAr} = 1 \text{ Mvar}$$

**Record of Inter-System Safety Precautions or RISSP**

A written record of inter-system **Safety Precautions** to be compiled in accordance with the provisions of **OC8**.

## Registered Capacity

- (a) In the case of a **Generating Unit** other than that forming part of a **CCGT Module** or **Power Park Module**, the normal full load capacity of a **Generating Unit** as declared by the **Generator**, less the MW consumed by the **Generating Unit** through the **Generating Unit's Unit Transformer** when producing the same (the resultant figure being expressed in whole MW, or in MW to one decimal place).
- (b) In the case of a **CCGT Module** or **Power Park Module**, the normal full load capacity of the **CCGT Module** or **Power Park Module** (as the case may be) as declared by the **Generator**, being the **Active Power** declared by the **Generator** as being deliverable by the **CCGT Module** or **Power Park Module** at the **Grid Entry Point** (or in the case of an **Embedded CCGT Module** or **Power Park Module**, at the **User System Entry Point**), expressed in whole MW, or in MW to one decimal place.
- (c) In the case of a **Power Station**, the maximum amount of **Active Power** deliverable by the **Power Station** at the **Grid Entry Point** (or in the case of an **Embedded Power Station** at the **User System Entry Point**), as declared by the **Generator**, expressed in whole MW, or in MW to one decimal place. The maximum **Active Power** deliverable is the maximum amount deliverable simultaneously by the **Generating Units** and/or **CCGT Modules** and/or **Power Park Modules** less the MW consumed by the **Generating Units** and/or **CCGT Modules** in producing that **Active Power**.
- (d) In the case of a **DC Converter** at a **DC Converter Station**, the normal full load amount of **Active Power** transferable from a **DC Converter** at the **Onshore Grid Entry Point** (or in the case of an **Embedded DC Converter Station** at the **User System Entry Point**), as declared by the **DC Converter Station** owner, expressed in whole MW, or in MW to one decimal place.
- (e) In the case of a **DC Converter Station**, the maximum amount of **Active Power** transferable from a **DC Converter Station** at the **Onshore Grid Entry Point** (or in the case of an **Embedded DC Converter Station** at the **User System Entry Point**), as declared by the **DC Converter Station** owner, expressed in whole MW, or in MW to one decimal place.

## Registered Data

Those items of **Standard Planning Data** and **Detailed Planning Data** which upon connection become fixed (subject to any subsequent changes).

## Registered Import Capability

In the case of a **DC Converter Station** containing **DC Converters** connected to an **External System**, the maximum amount of **Active Power** transferable into a **DC Converter Station** at the **Onshore Grid Entry Point** (or in the case of an **Embedded DC Converter Station** at the **User System Entry Point**), as declared by the **DC Converter Station** owner, expressed in whole MW.

In the case of a **DC Converter** connected to an **External System** and in a **DC Converter Station**, the normal full load amount of **Active Power** transferable into a **DC Converter** at the **Onshore Grid Entry Point** (or in the case of an **Embedded DC Converter Station** at the **User System Entry Point**), as declared by the **DC Converter** owner, expressed in whole MW.

<b><u>Regulations</u></b>	The Utilities Contracts Regulations 1996, as amended from time to time.
<b><u>Reheater Time Constant</u></b>	Determined at <b>Registered Capacity</b> , the reheater time constant will be construed in accordance with the principles of the IEEE Committee Report "Dynamic Models for Steam and Hydro Turbines in Power System Studies" published in 1973 which apply to such phrase.
<b><u>Relevant E&amp;W Transmission Licensee</u></b>	As the context requires <b>NGET</b> and/or an <b>E&amp;W Offshore Transmission Licensee</b>
<b><u>Relevant Scottish Transmission Licensee</u></b>	As the context requires <b>SPT</b> and/or <b>SHETL</b> and/or a <b>Scottish Offshore Transmission Licensee</b>
<b><u>Relevant Transmission Licensee</u></b>	Means SP Transmission Ltd ( <b>SPT</b> ) in its <b>Transmission Area</b> or Scottish Hydro-Electric Transmission Ltd ( <b>SHETL</b> ) in its <b>Transmission Area</b> or any <b>Offshore Transmission Licensee</b> in its <b>Transmission Area</b> .
<b><u>Relevant Unit</u></b>	As defined in the <b>STC</b> , Schedule 3
<b><u>Remote Transmission Assets</u></b>	Any <b>Plant</b> and <b>Apparatus</b> or meters owned by <b>NGET</b> which: <ul style="list-style-type: none"> <li>a) are <b>Embedded</b> in a <b>User System</b> and which are not directly connected by <b>Plant</b> and/or <b>Apparatus</b> owned by <b>NGET</b> to a sub-station owned by <b>NGET</b>; and</li> <li>b) are by agreement between <b>NGET</b> and such <b>User</b> operated under the direction and control of such <b>User</b>.</li> </ul>
<b><u>Requesting Safety Co-ordinator</u></b>	The <b>Safety Co-ordinator</b> requesting <b>Safety Precautions</b> .
<b><u>Responsible Engineer/Operator</u></b>	A person nominated by a <b>User</b> to be responsible for <b>System</b> control.
<b><u>Responsible Manager</u></b>	A manager who has been duly authorised by a <b>User</b> or <b>NGET</b> to sign <b>Site Responsibility Schedules</b> on behalf of that <b>User</b> or <b>NGET</b> , as the case may be. <p>For <b>Connection Sites</b> in Scotland and <b>Offshore</b> a manager who has been duly authorised by the <b>Relevant Transmission Licensee</b> to sign <b>Site Responsibility Schedules</b> on behalf of that <b>Relevant Transmission Licensee</b>.</p>

**Re-synchronisation**

The bringing of parts of the **System** which have become **Out of Synchronism** with any other **System** back into **Synchronism**, and like terms shall be construed accordingly.

**Safety Co-ordinator**

A person or persons nominated by a **Relevant E&W Transmission Licensee** and each **E&W User** in relation to **Connection Points** on an **E&W Transmission System** and/or by the **Relevant Scottish Transmission Licensee** and each **Scottish User** in relation to **Connection Points** on a **Scottish Transmission System** to be responsible for the co-ordination of **Safety Precautions** at each **Connection Point** when work (which includes testing) is to be carried out on a **System** which necessitates the provision of **Safety Precautions** on **HV Apparatus** (as defined in OC8A.1.6.2 and OC8B.1.7.2), pursuant to **OC8**.

<b><u>Safety From The System</u></b>	That condition which safeguards persons when work is to be carried out on or near a <b>System</b> from the dangers which are inherent in the <b>System</b> .
<b><u>Safety Key</u></b>	A key unique at the <b>Location</b> capable of operating a lock which will cause an <b>Isolating Device</b> and/or <b>Earthing Device</b> to be <b>Locked</b> .
<b><u>Safety Log</u></b>	A chronological record of messages relating to safety co-ordination sent and received by each <b>Safety Co-ordinator</b> under <b>OC8</b> .
<b><u>Safety Precautions</u></b>	<b>Isolation</b> and/or <b>Earthing</b> .
<b><u>Safety Rules</u></b>	The rules of <b>NGET</b> (in England and Wales) and the <b>Relevant Transmission Licensee</b> (in Scotland or <b>Offshore</b> ) or a <b>User</b> that seek to ensure that persons working on <b>Plant</b> and/or <b>Apparatus</b> to which the rules apply are safeguarded from hazards arising from the <b>System</b> .
<b><u>Scottish Offshore Transmission System</u></b>	An <b>Offshore Transmission System</b> with an <b>Interface Point</b> in Scotland.
<b><u>Scottish Offshore Transmission Licensee</u></b>	A person who owns or operates a <b>Scottish Offshore Transmission System</b> pursuant to a <b>Transmission Licence</b> .
<b><u>Scottish Transmission System</u></b>	Collectively <b>SPT's Transmission System</b> and <b>SHETL's Transmission System</b> and any <b>Scottish Offshore Transmission Systems</b>
<b><u>Scottish User</u></b>	A <b>User</b> in Scotland or any <b>Offshore User</b> who owns or operates <b>Plant</b> and/or <b>Apparatus</b> connected to a <b>Scottish Offshore Transmission System</b>
<b><u>Secondary Response</u></b>	The automatic increase in <b>Active Power</b> output of a <b>Genset</b> or, as the case may be, the decrease in <b>Active Power Demand</b> in response to a <b>System Frequency</b> fall. This increase in <b>Active Power</b> output or, as the case may be, the decrease in <b>Active Power Demand</b> must be in accordance with the provisions of the relevant <b>Ancillary Services Agreement</b> which will provide that it will be fully available by 30 seconds from the time of the start of the <b>Frequency</b> fall and be sustainable for at least a further 30 minutes. The interpretation of the <b>Secondary Response</b> to a -0.5 Hz frequency change is shown diagrammatically in Figure CC.A.3.2.
<b><u>Secretary of State</u></b>	Has the same meaning as in the <b>Act</b> .



<b><u>Secured Event</u></b>	Has the meaning set out in the <b>Security and Quality of Supply Standard</b> .
<b><u>Security and Quality of Supply Standard</u></b>	The version of the document entitled 'Security and Quality of Supply Standard' established pursuant to the <b>Transmission Licence</b> in force at the time of entering into the relevant <b>Bilateral Agreement</b> .
<b><u>Setpoint Voltage</u></b>	The value of voltage at the <b>Grid Entry Point</b> , or <b>User System Entry Point</b> if <b>Embedded</b> , on the automatic control system steady state operating characteristic, as a percentage of the nominal voltage, at which the transfer of <b>Reactive Power</b> between a <b>Power Park Module</b> , <b>DC Converter</b> or <b>Non-Synchronous Generating Unit</b> and the <b>Transmission System</b> , or <b>Network Operator's</b> system if <b>Embedded</b> , is zero.
<b><u>Settlement Period</u></b>	A period of 30 minutes ending on the hour and half-hour in each hour during a day.

<b><u>Seven Year Statement</u></b>	A statement, prepared by <b>NGET</b> in accordance with the terms of <b>NGET's Transmission Licence</b> , showing for each of the seven succeeding <b>Financial Years</b> , the opportunities available for connecting to and using the <b>National Electricity Transmission System</b> and indicating those parts of the <b>National Electricity Transmission System</b> most suited to new connections and transport of further quantities of electricity.
<b><u>SF<sub>6</sub> Gas Zone</u></b>	A segregated zone surrounding electrical conductors within a casing containing SF <sub>6</sub> gas.
<b><u>SHETL</u></b>	Scottish Hydro-Electric Transmission Limited
<b><u>Shutdown</u></b>	The condition of a <b>Generating Unit</b> where the generator rotor is at rest or on barring.
<b><u>Significant Incident</u></b>	An <b>Event</b> which either: <ul style="list-style-type: none"> <li>a) was notified by a <b>User</b> to <b>NGET</b> under <b>OC7</b>, and which <b>NGET</b> considers has had or may have had a significant effect on the <b>National Electricity Transmission System</b>, and <b>NGET</b> requires the <b>User</b> to report that <b>Event</b> in writing in accordance with <b>OC10</b> and notifies the <b>User</b> accordingly; or</li> <li>b) was notified by <b>NGET</b> to a <b>User</b> under <b>OC7</b>, and which that <b>User</b> considers has had or may have had a significant effect on that <b>User's System</b>, and that <b>User</b> requires <b>NGET</b> to report that <b>Event</b> in writing in accordance with the provisions of <b>OC10</b> and notifies <b>NGET</b> accordingly.</li> </ul>
<b><u>Simultaneous Tap Change</u></b>	A tap change implemented on the generator step-up transformers of <b>Synchronised Gensets</b> , effected by <b>Generators</b> in response to an instruction from <b>NGET</b> issued simultaneously to the relevant <b>Power Stations</b> . The instruction, preceded by advance notice, must be effected as soon as possible, and in any event within one minute of receipt from <b>NGET</b> of the instruction.
<b><u>Single Line Diagram</u></b>	A schematic representation of a three-phase network in which the three phases are represented by single lines. The diagram shall include (but not necessarily be limited to) busbars, overhead lines, underground cables, power transformers and reactive compensation equipment. It shall also show where <b>Large Power Stations</b> are connected, and the points at which <b>Demand</b> is supplied.
<b><u>Single Point of Connection</u></b>	A single <b>Point of Connection</b> , with no interconnection through the <b>User's System</b> to another <b>Point of Connection</b> .
<b><u>Site Common Drawings</u></b>	Drawings prepared for each <b>Connection Site</b> which incorporate <b>Connection Site</b> layout drawings, electrical layout drawings, common protection/ control drawings and common services drawings.

**Site Responsibility Schedule**

A schedule containing the information and prepared on the basis of the provisions set out in Appendix 1 of the **CC**.

**Slope**

The ratio of the steady state change in voltage, as a percentage of the nominal voltage, to the steady state change in **Reactive Power** output, in per unit of **Reactive Power** capability. For the avoidance of doubt, the value indicates the percentage voltage reduction that will result in a 1 per unit increase in **Reactive Power** generation.

**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 a **Power Station** has a **Registered Capacity** of less than 10 MW; or
  - (d) an **Offshore 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 **National Electricity 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;

**Speeder Motor Setting Range**

The minimum and maximum no-load speeds (expressed as a percentage of rated speed) to which the turbine is capable of being controlled, by the speeder motor or equivalent, when the **Generating Unit** terminals are on open circuit.

**SPT**

SP Transmission Limited

**Standard Planning Data**

The general data required by **NGET** under the **PC**. It is generally also the data which **NGET** requires from a new **User** in an application for a **CUSC Contract**, as reflected in the **PC**.

<b><u>Start Time</u></b>	The time named as such in an instruction issued by <b>NGET</b> pursuant to the <b>BCs</b> .
<b><u>Start-Up</u></b>	The action of bringing a <b>Generating Unit</b> from <b>Shutdown</b> to <b>Synchronous Speed</b> .
<b><u>Statement of Readiness</u></b>	Has the meaning set out in the <b>Bilateral Agreement</b> and/or <b>Construction Agreement</b> .
<b><u>Station Board</u></b>	A switchboard through which electrical power is supplied to the <b>Auxiliaries</b> of a <b>Power Station</b> , and which is supplied by a <b>Station Transformer</b> . It may be interconnected with a <b>Unit Board</b> .
<b><u>Station Transformer</u></b>	A transformer supplying electrical power to the <b>Auxiliaries</b> of <ul style="list-style-type: none"> <li>• a <b>Power Station</b>, which is not directly connected to the <b>Generating Unit</b> terminals (typical voltage ratios being 132/11kV or 275/11kV), or</li> <li>• a <b>DC Converter Station</b>.</li> </ul>
<b><u>STC Committee</u></b>	The committee established under the <b>STC</b> .
<b><u>Steam Unit</u></b>	A <b>Generating Unit</b> whose prime mover converts the heat-energy in steam to mechanical energy.
<b><u>Subtransmission System</u></b>	The part of a <b>User's System</b> which operates at a single transformation below the voltage of the relevant <b>Transmission System</b> .
<b><u>Supergrid Voltage</u></b>	Any voltage greater than 200kV.
<b><u>Supplier</u></b>	(a) A person supplying electricity under an <b>Electricity Supply Licence</b> ; or  (b) A person supplying electricity under exemption under the <b>Act</b> ;  in each case acting in its capacity as a supplier of electricity to <b>Customers</b> in <b>Great Britain</b> .

### **Surplus**

A MW figure relating to a **System Zone** equal to the total **Output Usable** in the **System Zone**:

- a) minus the forecast of **Active Power Demand** in the **System Zone**, and
- b) minus the export limit in the case of an export limited **System Zone**,  
  
or  
  
plus the import limit in the case of an import limited **System Zone**,  
  
and
- c) (only in the case of a **System Zone** comprising the **National Electricity Transmission System**) minus the **Operational Planning Margin**.

For the avoidance of doubt, a **Surplus** of more than zero in an export limited **System Zone** indicates an excess of generation in that **System Zone**; and a **Surplus** of less than zero in an import limited **System Zone** indicates insufficient generation in that **System Zone**.

### **Synchronised**

- a) The condition where an incoming **Generating Unit or Power Park Module or DC Converter or System** is connected to the busbars of another **System** so that the **Frequencies** and phase relationships of that **Generating Unit, Power Park Module, DC Converter or System**, as the case may be, and the **System** to which it is connected are identical, like terms shall be construed accordingly e.g. “**Synchronism**”.
- b) The condition where an importing **BM Unit** is consuming electricity.

### **Synchronising Generation**

The amount of MW (in whole MW) produced at the moment of synchronising.

### **Synchronising Group**

A group of two or more **Gensets**) which require a minimum time interval between their **Synchronising or De-Synchronising** times.

### **Synchronous Compensation**

The operation of rotating synchronous **Apparatus** for the specific purpose of either the generation or absorption of **Reactive Power**.

### **Synchronous Generating Unit**

Any **Onshore Synchronous Generating Unit** or **Offshore Synchronous Generating Unit**.

### **Synchronous Speed**

That speed required by a **Generating Unit** to enable it to be **Synchronised** to a **System**.

<b><u>System</u></b>	Any <b>User System</b> and/or the <b>National Electricity Transmission System</b> , as the case may be.
<b><u>System Ancillary Services</u></b>	Collectively <b>Part 1 System Ancillary Services</b> and <b>Part 2 System Ancillary Services</b> .
<b><u>System Constraint</u></b>	A limitation on the use of a <b>System</b> due to lack of transmission capacity or other <b>System</b> conditions.
<b><u>System Constrained Capacity</u></b>	That portion of <b>Registered Capacity</b> or <b>Registered Import Capacity</b> not available due to a <b>System Constraint</b> .
<b><u>System Constraint Group</u></b>	A part of the <b>National Electricity Transmission System</b> which, because of <b>System Constraints</b> , is subject to limits of <b>Active Power</b> which can flow into or out of (as the case may be) that part.
<b><u>System Fault Dependability Index or Dp</u></b>	<p>A measure of the ability of <b>Protection</b> to initiate successful tripping of circuit-breakers which are associated with a faulty item of <b>Apparatus</b>. It is calculated using the formula:</p> $Dp = 1 - F_1/A$ <p>Where:</p> <p>A = Total number of <b>System</b> faults</p> <p>F<sub>1</sub> = Number of <b>System</b> faults where there was a failure to trip a circuit-breaker.</p>
<b><u>System Margin</u></b>	<p>The margin in any period between</p> <p>(a) the sum of Maximum Export Limits and</p> <p>(b) forecast <b>Demand</b> and the <b>Operating Margin</b>,</p> <p>for that period.</p>
<b><u>System Negative Reserve Active Power Margin or System NRAPM</u></b>	That margin of <b>Active Power</b> sufficient to allow the largest loss of <b>Load</b> at any time.
<b><u>System Operator - Transmission Owner Code or STC</u></b>	Has the meaning set out in <b>NGET's Transmission Licence</b>

<b><u>System Telephony</u></b>	An alternative method by which a <b>User's Responsible Engineer/Operator</b> and <b>NGET Control Engineer(s)</b> speak to one and another for the purposes of control of the <b>Total System</b> in both normal operating conditions and where practicable, emergency operating conditions.
<b><u>System Tests</u></b>	Tests which involve simulating conditions, or the controlled application of irregular, unusual or extreme conditions, on the <b>Total System</b> , or any part of the <b>Total System</b> , but which do not include commissioning or recommissioning tests or any other tests of a minor nature.
<b><u>System to Demand Intertrip Scheme</u></b>	An intertrip scheme which disconnects <b>Demand</b> when a <b>System</b> fault has arisen to prevent abnormal conditions occurring on the <b>System</b> .
<b><u>System to Generator Operational Intertripping</u></b>	A <b>Balancing Service</b> involving the initiation by a <b>System to Generator Operational Intertripping Scheme</b> of automatic tripping of the <b>User's</b> circuit breaker(s) resulting in the tripping of <b>BM Unit(s)</b> or (where relevant) <b>Generating Unit(s)</b> comprised in a <b>BM Unit</b> to prevent abnormal system conditions occurring, such as over voltage, overload, <b>System</b> instability, etc, after the tripping of other circuit-breakers following power <b>System</b> fault(s).
<b><u>System to Generator Operational Intertripping Scheme</u></b>	A <b>System to Generating Unit</b> or <b>System to CCGT Module</b> or <b>System to Power Park Module Intertripping Scheme</b> forming a condition of connection and specified in Appendix F3 of the relevant <b>Bilateral Agreement</b> , being either a <b>Category 1 Intertripping Scheme</b> , <b>Category 2 Intertripping Scheme</b> , <b>Category 3 Intertripping Scheme</b> or <b>Category 4 Intertripping Scheme</b> .
<b><u>System Zone</u></b>	A region of the <b>National Electricity Transmission System</b> within a described boundary or the whole of the <b>National Electricity Transmission System</b> , as further provided for in OC2.2.4, and the term " <b>Zonal</b> " will be construed accordingly.
<b><u>Target Frequency</u></b>	That <b>Frequency</b> determined by <b>NGET</b> , in its reasonable opinion, as the desired operating <b>Frequency</b> of the <b>Total System</b> . This will normally be 50.00Hz plus or minus 0.05Hz, except in exceptional circumstances as determined by <b>NGET</b> , in its reasonable opinion when this may be 49.90 or 50.10Hz. An example of exceptional circumstances may be difficulties caused in operating the <b>System</b> during disputes affecting fuel supplies.
<b><u>Technical Specification</u></b>	In relation to <b>Plant</b> and/or <b>Apparatus</b> , <ul style="list-style-type: none"> <li>a) the relevant <b>European Specification</b>; or</li> <li>b) if there is no relevant <b>European Specification</b>, other relevant standards which are in common use in the European Community.</li> </ul>
<b><u>Test Co-ordinator</u></b>	A person who co-ordinates <b>System Tests</b> .

<b><u>Test Panel</u></b>	A panel, whose composition is detailed in <b>OC12</b> , which is responsible, inter alia, for considering a proposed <b>System Test</b> , and submitting a <b>Proposal Report</b> and a <b>Test Programme</b> .
<b><u>Test Programme</u></b>	A programme submitted by the <b>Test Panel</b> to <b>NGET</b> , the <b>Test Proposer</b> , and each <b>User</b> identified by <b>NGET</b> under OC12.4.2.1, which states the switching sequence and proposed timings of the switching sequence, a list of those staff involved in carrying out the <b>System Test</b> (including those responsible for the site safety) and such other matters as the <b>Test Panel</b> deems appropriate.
<b><u>Test Proposer</u></b>	The person who submits a <b>Proposal Notice</b> .
<b><u>Total Shutdown</u></b>	The situation existing when all generation has ceased and there is no electricity supply from <b>External Interconnections</b> and, therefore, the <b>Total System</b> has shutdown with the result that it is not possible for the <b>Total System</b> to begin to function again without <b>NGET's</b> directions relating to a <b>Black Start</b> .
<b><u>Total System</u></b>	The <b>National Electricity Transmission System</b> and all <b>User Systems</b> in the <b>National Electricity Transmission System Operator Area</b> .
<b><u>Trading Point</u></b>	A commercial and, where so specified in the <b>Grid Code</b> , an operational interface between a <b>User</b> and <b>NGET</b> , which a <b>User</b> has notified to <b>NGET</b> .
<b><u>Transfer Date</u></b>	Such date as may be appointed by the <b>Secretary of State</b> by order under section 65 of the <b>Act</b> .
<b><u>Transmission</u></b>	Means, when used in conjunction with another term relating to equipment or a site, whether defined or not, that the associated term is to be read as being part of or directly associated with the <b>National Electricity Transmission System</b> , and not of or with the <b>User System</b> .
<b><u>Transmission Area</u></b>	Has the meaning set out in the <b>Transmission Licence</b> of a <b>Transmission Licensee</b> .
<b><u>Transmission DC Converter</u></b>	Any <b>Transmission Licensee Apparatus</b> used to convert alternating current electricity to direct current electricity, or vice versa. A <b>Transmission Network DC Converter</b> is a standalone operative configuration at a single site comprising one or more converter bridges, together with one or more converter transformers, converter control equipment, essential protective and switching devices and auxiliaries, if any, used for conversion.
<b><u>Transmission Entry Capacity</u></b>	Has the meaning set out in the <b>CUSC</b> .



**Transmission Interface Circuit**

In **NGET's Transmission Area**, a **Transmission** circuit which connects a **System** operating at a voltage above 132kV to a **System** operating at a voltage of 132kV or below

In **SHETL's Transmission Area** and **SPT's Transmission Area**, a **Transmission** circuit which connects a **System** operating at a voltage of 132kV or above to a **System** operating at a voltage below 132kV.

**Transmission Licence**

A licence granted under Section 6(1)(b) of the **Act**.

**Transmission Licensee**

Any **Onshore Transmission Licensee** or **Offshore Transmission Licensee**

**Transmission Site**

In England and Wales, means a site owned (or occupied pursuant to a lease, licence or other agreement) by **NGET** in which there is a **Connection Point**. For the avoidance of doubt, a site owned by a **User** but occupied by **NGET** as aforesaid, is a **Transmission Site**.

In Scotland and **Offshore**, means a site owned (or occupied pursuant to a lease, licence or other agreement) by a **Relevant Transmission Licensee** in which there is a **Connection Point**. For the avoidance of doubt, a site owned by a **User** but occupied by the **Relevant Transmission Licensee** as aforesaid, is a **Transmission Site**.

**Transmission System**

Has the same meaning as the term "licensee's transmission system" in the **Transmission Licence** of a **Transmission Licensee**.

**Turbine Time Constant**

Determined at **Registered Capacity**, the turbine time constant will be construed in accordance with the principles of the IEEE Committee Report "Dynamic Models for Steam and Hydro Turbines in Power System Studies" published in 1973 which apply to such phrase.

**Two Shifting Limit**

The maximum number of times in any **Operational Day** that a **Genset** may **De-Synchronise**.

**Unbalanced Load**

The situation where the **Load** on each phase is not equal.

**Under-excitation Limiter**

Shall have the meaning ascribed to that term in **IEC 34-16-1:1991** [equivalent to **British Standard BS4999** Section 116.1 : 1992].

**Under Frequency Relay**

An electrical measuring relay intended to operate when its characteristic quantity (**Frequency**) reaches the relay settings by decrease in **Frequency**.

### Unit Board

A switchboard through which electrical power is supplied to the **Auxiliaries** of a **Generating Unit** and which is supplied by a **Unit Transformer**. It may be interconnected with a **Station Board**.

### Unit Transformer

A transformer directly connected to a **Generating Unit's** terminals, and which supplies power to the **Auxiliaries** of a **Generating Unit**. Typical voltage ratios are 23/11kV and 15/6.6Kv.

### Unit Load Controller Response Time Constant

The time constant, expressed in units of seconds, of the power output increase which occurs in the **Secondary Response** timescale in response to a step change in **System Frequency**.

### User

A term utilised in various sections of the **Grid Code** to refer to the persons using the **National Electricity Transmission System**, as more particularly identified in each section of the **Grid Code** concerned. In the **Preface** and the **General Conditions** the term means any person to whom the **Grid Code** applies.

### User Development

In the **PC** means either **User's Plant** and/or **Apparatus** to be connected to the **National Electricity Transmission System**, or a **Modification** relating to a **User's Plant** and/or **Apparatus** already connected to the **National Electricity Transmission System**, or a proposed new connection or **Modification** to the connection within the **User System**.

### User Site

In England and Wales, a site owned (or occupied pursuant to a lease, licence or other agreement) by a **User** in which there is a **Connection Point**. For the avoidance of doubt, a site owned by **NGET** but occupied by a **User** as aforesaid, is a **User Site**.

In Scotland and **Offshore**, a site owned (or occupied pursuant to a lease, licence or other agreement) by a **User** in which there is a **Connection Point**. For the avoidance of doubt, a site owned by a **Relevant Transmission Licensee** but occupied by a **User** as aforesaid, is a **User Site**.

**User System**

Any system owned or operated by a **User** comprising:-

- (a) **Generating Units**; and/or
- (b) Systems consisting (wholly or mainly) of electric lines used for the distribution of electricity from **Grid Supply Points** or **Generating Units** or other entry points to the point of delivery to **Customers**, or other **Users**;

and **Plant** and/or **Apparatus** connecting:-

- (c) The system as described above; or
- (d) **Non-Embedded Customers** equipment;

to the **National Electricity Transmission System** or to the relevant other **User System**, as the case may be.

The **User System** includes any **Remote Transmission Assets** operated by such **User** or other person and any **Plant** and/or **Apparatus** and meters owned or operated by the **User** or other person in connection with the distribution of electricity but does not include any part of the **National Electricity Transmission System**.

**User System Entry Point**

A point at which a **Generating Unit**, a **CCGT Module** or a **CCGT Unit** or a **Power Park Module** or a **DC Converter**, as the case may be, which is **Embedded** connects to the **User System**.

**Water Time Constant**

Bears the meaning ascribed to the term "Water inertia time" in **IEC308**.

**Weekly ACS Conditions**

Means that particular combination of weather elements that gives rise to a level of peak **Demand** within a week, taken to commence on a Monday and end on a Sunday, which has a particular chance of being exceeded as a result of weather variation alone. This particular chance is determined such that the combined probabilities of **Demand** in all weeks of the year exceeding the annual peak **Demand** under **Annual ACS Conditions** is 50%, and in the week of maximum risk the weekly peak **Demand** under **Weekly ACS Conditions** is equal to the annual peak **Demand** under **Annual ACS Conditions**.

**Zonal System Security Requirements**

That generation required, within the boundary circuits defining the **System Zone**, which when added to the secured transfer capability of the boundary circuits exactly matches the **Demand** within the **System Zone**.

A number of the terms listed above are defined in other documents, such as the **Balancing and Settlement Code** and the **Transmission Licence**. Appendix 1 sets out the current definitions from the other documents of those terms so used in the **Grid Code** and defined in other documents for ease of reference, but does not form part of the **Grid Code**.

## 2. Construction of References

In the **Grid Code**:

- (i) a table of contents, a Preface, a Revision section, headings, and the Appendix to this **Glossary and Definitions** are inserted for convenience only and shall be ignored in construing the **Grid Code**;
- (ii) unless the context otherwise requires, all references to a particular paragraph, subparagraph, Appendix or Schedule shall be a reference to that paragraph, subparagraph Appendix or Schedule in or to that part of the **Grid Code** in which the reference is made;
- (iii) unless the context otherwise requires, the singular shall include the plural and vice versa, references to any gender shall include all other genders and references to persons shall include any individual, body corporate, corporation, joint venture, trust, unincorporated association, organisation, firm or partnership and any other entity, in each case whether or not having a separate legal personality;
- (iv) references to the words "include" or "including" are to be construed without limitation to the generality of the preceding words;
- (v) unless there is something in the subject matter or the context which is inconsistent therewith, any reference to an Act of Parliament or any Section of or Schedule to, or other provision of an Act of Parliament shall be construed at the particular time, as including a reference to any modification, extension or re-enactment thereof then in force and to all instruments, orders and regulations then in force and made under or deriving validity from the relevant Act of Parliament;
- (vi) where the **Glossary and Definitions** refers to any word or term which is more particularly defined in a part of the **Grid Code**, the definition in that part of the **Grid Code** will prevail (unless otherwise stated) over the definition in the **Glossary & Definitions** in the event of any inconsistency;
- (vii) a cross-reference to another document or part of the **Grid Code** shall not of itself impose any additional or further or co-existent obligation or confer any additional or further or co-existent right in the part of the text where such cross-reference is contained;
- (viii) nothing in the **Grid Code** is intended to or shall derogate from **NGET's** statutory or licence obligations;
- (ix) a "holding company" means, in relation to any person, a holding company of such person within the meaning of section 736, 736A and 736B of the Companies Act 1985 as substituted by section 144 of the Companies Act 1989 and, if that latter section is not in force at the **Transfer Date**, as if such latter section were in force at such date;
- (x) a "subsidiary" means, in relation to any person, a subsidiary of such person within the meaning of section 736, 736A and 736B of the Companies Act 1985 as substituted by section 144 of the Companies Act 1989 and, if that latter section is not in force at the **Transfer Date**, as if such latter section were in force at such date;
- (xi) references to time are to London time; and

- (xii) (a) Save where (b) below applies, where there is a reference to an item of data being expressed in a whole number of MW, fractions of a MW below 0.5 shall be rounded down to the nearest whole MW and fractions of a MW of 0.5 and above shall be rounded up to the nearest whole MW;
- (b) In the case of the definition of **Registered Capacity**, fractions of a MW below 0.05 shall be rounded down to one decimal place and fractions of a MW of 0.05 and above shall be rounded up to one decimal place.

< End of GD >



# PLANNING CODE

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- (b) **NGET** is entitled to assume that each **BM Unit** (or **Generating Unit**) is available in accordance with the **BM Unit Data** (or the **Generating Unit Data**) and data contained in the **Ancillary Services Agreement** unless and until it is informed of any changes.
- (c) **Frequency** control instructions may be issued in conjunction with, or separate from, a **Bid-Offer Acceptance**.
- (d) The form of and terms to be used by **NGET** in issuing **Ancillary Service** instructions together with their meanings are set out in Appendix 2 in the form of a non-exhaustive list of examples including **Reactive Power** and associated instructions.
- (e) In the case of **Generating Units** that do not form part of a **BM Unit** any change in **Active Power** as a result of, or required to enable, the provision of an **Ancillary Service** will be dealt with as part of that **Ancillary Service Agreement** and/or provisions under the **CUSC**.
- (f) A **System to Generator Operational Intertripping Scheme** will be armed in accordance with BC2.10.2(a)

BC2.8.2 Consistency with **Export and Import Limits, QPNs and Dynamic Parameters**

**Ancillary Service** instructions will be consistent with the **Export and Import Limits, QPNs**, and **Joint BM Unit Data** provided or modified under **BC1** or **BC2** and the **Dynamic Parameters** provided or modified under **BC2**. **Ancillary Service** instructions may also recognise **Other Relevant Data** provided or modified under **BC1** or **BC2**

BC2.8.3 Rejection of **Ancillary Service** instructions

- (a) **Ancillary Service** instructions may only be rejected, by automatic logging device or by telephone, on safety grounds (relating to personnel or plant) or because they are not consistent with the applicable **Export and Import Limits, QPNs, Dynamic Parameters, Joint BM Unit Data, Other Relevant Data** or data contained in the **Ancillary Services Agreement** and a reason must be given immediately for non-acceptance.
- (b) The issue of **Ancillary Service** instructions for **Reactive Power** will be made with due regard to any resulting change in **Active Power** output. The instruction may be rejected if it conflicts with any **Bid-Offer Acceptance** issued in accordance with BC2.7 or with the **Physical Notification**.
- (c) Where **Ancillary Service** instructions relating to **Active Power** and **Reactive Power** are given together, and to achieve the **Reactive Power** output would cause the **BM Unit** to operate outside **Dynamic Parameters** as a result of the **Active Power** instruction being met at the same time, then the timescale of implementation of the **Reactive Power** instruction may be extended to be no longer than the timescale for implementing the **Active Power** instruction but in any case to achieve the Mvar **Ancillary Service** instruction as soon as possible.

#### BC2.8.4 Action Required from **BM Units**

- (a) Each **BM Unit** (or **Generating Unit**) will comply in accordance with BC2.8.1 with all **Ancillary Service** instructions relating to **Reactive Power** properly given by **NGET** within 2 minutes or such longer period as **NGET** may instruct, and all other **Ancillary Service** instructions without delay, unless the **BM Unit** or **Generating Unit** has given notice to **NGET** under the provisions of BC2.8.3 regarding non-acceptance of **Ancillary Service** instructions.
- (b) Each **BM Unit** may deviate from the profile of its **Final Physical Notification Data**, as modified by any **Bid-Offer Acceptances** issued in accordance with BC2.7.1, only as a result of responding to **Frequency** deviations when operating in **Frequency Sensitive Mode** in accordance with the **Ancillary Services Agreement**.
- (c) Each **Generating Unit** that does not form part of a **BM Unit** may deviate from the profile of its **Final Physical Notification Data** where agreed by **NGET** and the **User**, including but not limited to, as a result of providing an **Ancillary Service** in accordance with the **Ancillary Service Agreement**.
- (d) In the event that while carrying out the **Ancillary Service** instructions an unforeseen problem arises caused by safety reasons (relating to personnel or plant), **NGET** must be notified immediately by telephone and this may lead to revision of **BM Unit Data** or **Generating Unit Data** in accordance with BC2.5.3.

#### BC2.8.5 Reactive Despatch Network Restrictions

Where **NGET** has received notification pursuant to the **Grid Code** that a **Reactive Despatch Network Restriction** is in place with respect to any **Embedded Generating Unit**, **Embedded Power Park Module** or **DC Converter** at an **Embedded DC Converter Station**, then **NGET** will not issue any **Reactive Despatch Instruction** with respect to that **Generating Unit**, **Power Park Module** or **DC Converter** until such time as notification is given to **NGET** pursuant to the **Grid Code** that such **Reactive Despatch Network Restriction** is no longer affecting that **Generating Unit**, **Power Park Module** or **DC Converter**.

### BC2.9 EMERGENCY CIRCUMSTANCES

#### BC2.9.1 Emergency Actions

BC2.9.1.1 In certain circumstances (as determined by **NGET** in its reasonable opinion) it will be necessary, in order to preserve the integrity of the **National Electricity Transmission System** and any synchronously connected **External System**, for **NGET** to issue **Emergency Instructions**. In such circumstances, it may be necessary to depart from normal **Balancing Mechanism** operation in accordance with BC2.7 in issuing **Bid-Offer Acceptances**. **BM Participants** must also comply with the requirements of **BC3**.

BC2.9.1.2 Examples of circumstances that may require the issue of **Emergency Instructions** include:-

- (a) **Events** on the **National Electricity Transmission System** or the **System** of another **User**; or
- (b) the need to maintain adequate **System** and **Localised NRAPM** in accordance with BC2.9.4 below; or

- (c) the need to maintain adequate frequency sensitive **Gensets** in accordance with BC2.9.5 below; or
- (d) the need to implement **Demand Control** in accordance with OC6; or
- (e) (i) the need to invoke the **Black Start** process or the **Re-Synchronisation of De-Synchronised Island** process in accordance with OC9; or
  - (ii) the need to request provision of a **Maximum Generation Service**; or
  - (iii) the need to issue an **Emergency Deenergisation Instruction** in circumstances where the condition or manner of operation of any **Transmission Plant** and/or **Apparatus** is such that it may cause damage or injury to any person or to the **National Electricity Transmission System**.

BC2.9.1.3 In the case of **BM Units** and **Generating Units** in **Great Britain**, **Emergency Instructions** will be issued by **NGET** direct to the **User** at the **Control Point** for the **BM Unit** or **Generating Unit** and may require an action or response which is outside its **Other Relevant Data**, **QPNs**, or **Export and Import Limits** submitted under **BC1**, or revised under **BC1** or **BC2**, or **Dynamic Parameters** submitted or revised under **BC2**.

BC2.9.1.4 In the case of a **Network Operator** or an **Externally Interconnected System Operator**, **Emergency Instructions** will be issued to its **Control Centre**.

## BC2.9.2 Implementation of Emergency Instructions

BC2.9.2.1 **Users** will respond to **Emergency Instructions** issued by **NGET** without delay and using all reasonable endeavours to so respond. **Emergency Instructions** may only be rejected by an **User** on safety grounds (relating to personnel or plant) and this must be notified to **NGET** immediately by telephone.

BC2.9.2.2 **Emergency Instructions** will always be prefixed with the words “This is an **Emergency Instruction**” except in the case of:

- (i) **Maximum Generation Service** instructed by electronic data communication facilities where the instruction will be issued in accordance with the provisions of the **Maximum Generation Service Agreement**; and
- (ii) An **Emergency Deenergisation Instruction**, where the **Emergency Deenergisation Instruction** will be pre-fixed with the words ‘This is an **Emergency Deenergisation Instruction**’; and
- (iii) during a **Black Start** any instruction given by **NGET** will (unless **NGET** specifies otherwise) be deemed to be an **Emergency Instruction** need not be pre-fixed with the words ‘This is an **Emergency Instruction**’.

BC2.9.2.3 In all cases under this BC2.9 except BC2.9.1.2 (e) where **NGET** issues an **Emergency Instruction** to a **BM Participant** which is not rejected under BC2.9.2.1, the **Emergency Instruction** shall be treated as a **Bid-Offer Acceptance**. For the avoidance of doubt, any **Emergency Instruction** issued to a **Network Operator** or to an **Externally Interconnected System Operator** or in respect of a **Generating Unit** that does not form part of a **BM Unit**, will not be treated as a **Bid-Offer Acceptance**.

- BC2.9.2.4 In the case of BC2.9.1.2 (e) (ii) where **NGET** issues an **Emergency Instruction** pursuant to a **Maximum Generation Service Agreement** payment will be dealt with in accordance with the **CUSC** and the **Maximum Generation Service Agreement**.
- BC2.9.2.5 In the case of BC2.9.1.2 (e) (iii) where **NGET** issues an **Emergency Deenergisation Instruction** payment will be dealt with in accordance with the **CUSC**, Section 5.
- BC2.9.2.6 In the of BC2.9.1.2 (e) (i) upon receipt of an **Emergency Instruction** by a **Generator** during a **Black Start** the provisions of Section G of the **BSC** relating to compensation shall apply.

### BC2.9.3 Examples of Emergency Instructions

BC2.9.3.1 In the case of a **BM Unit** or a **Generating Unit**, **Emergency Instructions** may include an instruction for the **BM Unit** or the **Generating Unit** to operate in a way that is not consistent with the **Dynamic Parameters**, **QPNs** and/or **Export and Import Limits**.

BC2.9.3.2 In the case of a **Generator**, **Emergency Instructions** may include:

- (a) an instruction to trip one or more **Gensets** (excluding **Operational Intertripping**); or
- (b) an instruction to trip **Mills** or to **Part Load** a **Generating Unit** (as defined in the Glossary and Definitions and not limited by BC2.2); or
- (c) an instruction to **Part Load** a **CCGT Module** or **Power Park Module**; or
- (d) an instruction for the operation of **CCGT Units** within a **CCGT Module** (on the basis of the information contained within the **CCGT Module Matrix**) when emergency circumstances prevail (as determined by **NGET** in **NGET's** reasonable opinion); or
- (e) an instruction to generate outside normal parameters, as allowed for in 4.2 of the **CUSC**; or
- (f) an instruction for the operation of **Generating Units** within a **Cascade Hydro Scheme** (on the basis of the additional information supplied in relation to individual **Generating Units**) when emergency circumstances prevail (as determined by **NGET** in **NGET's** reasonable opinion); or
- (g) an instruction for the operation of a **Power Park Module** (on the basis of the information contained within the **Power Park Module Availability Matrix**) when emergency circumstances prevail (as determined by **NGET** in **NGET's** reasonable opinion).

BC2.9.3.3 Instructions to **Network Operators** relating to the **Operational Day** may include:

- (a) a requirement for **Demand** reduction and disconnection or restoration pursuant to **OC6**;
- (b) an instruction to effect a load transfer between **Grid Supply Points**;
- (c) an instruction to switch in a **System to Demand Intertrip Scheme**;
- (d) an instruction to split a network;
- (e) an instruction to disconnect an item of **Plant** or **Apparatus** from the **System**.

### BC2.9.4 Maintaining adequate System and Localised NRAPM (Negative Reserve Active Power Margin)

BC2.9.4.1 Where **NGET** is unable to satisfy the required **System NRAPM** or **Localised NRAPM** by following the process described in BC1.5.5, **NGET** will issue an

**Emergency Instruction** to exporting **BM Units** for **De-Synchronising** on the basis of **Bid-Offer Data** submitted to **NGET** in accordance with BC1.4.2(d).

- BC2.9.4.2 In the event that **NGET** is unable to differentiate between exporting **BM Units** according to **Bid-Offer Data**, **NGET** will instruct a **BM Participant** to **Shutdown** a specified exporting **BM Unit** for such period based upon the following factors:
- (a) effect on power flows (resulting in the minimisation of transmission losses);
  - (b) reserve capability;
  - (c) **Reactive Power** worth;
  - (d) **Dynamic Parameters**;
  - (e) in the case of **Localised NRAPM**, effectiveness of output reduction in the management of the **System Constraint**.
- BC2.9.4.3 Where **NGET** is still unable to differentiate between exporting **BM Units**, having considered all the foregoing, **NGET** will decide which exporting **BM Unit** to **Shutdown** by the application of a quota for each **BM Participant** in the ratio of each **BM Participant's Physical Notifications**.
- BC2.9.4.4 Other than as provided in BC2.9.4.5 and BC2.9.4.6 below, in determining which exporting **BM Units** to **De-Synchronise** under this BC2.9.4, **NGET** shall not consider in such determination (and accordingly shall not instruct to **De-Synchronise**) any **Generating Unit** (as defined in the Glossary and Definitions and not limited by BC2.2) within an **Existing Gas Cooled Reactor Plant**.
- BC2.9.4.5 **NGET** shall be permitted to instruct a **Generating Unit** (as defined in the Glossary and Definitions and not limited by BC2.2) within an **Existing AGR Plant** to **De-Synchronise** if the relevant **Generating Unit** within the **Existing AGR Plant** has failed to offer to be flexible for the relevant instance at the request of **NGET** within the **Existing AGR Plant Flexibility Limit**.
- BC2.9.4.6 Notwithstanding the provisions of BC2.9.4.5 above, if the level of **System NRAPM** (taken together with **System** constraints) or **Localised NRAPM** is such that it is not possible to avoid instructing a **Generating Unit** (as defined in the Glossary and Definitions and not limited by BC2.2) within an **Existing Magnox Reactor Plant** and/or an **Existing AGR Plant** whether or not it has met requests within the **Existing AGR Flexibility Limit** to **De-Synchronise** **NGET** may, provided the power flow across each **External Interconnection** is either at zero or results in an export of power from the **Total System**, so instruct a **Generating Unit** (as defined in the Glossary and Definitions and not limited by BC2.2) within an **Existing Magnox Reactor Plant** and/or an **Existing AGR Plant** to **De-Synchronise** in the case of **System NRAPM**, in all cases and in the case of **Localised NRAPM**, when the power flow would have a relevant effect.
- BC2.9.4.7 When instructing exporting **BM Units** which form part of an **On-Site Generator Site** to reduce generation under this BC2.9.4, **NGET** will not issue an instruction which would reduce generation below the reasonably anticipated **Demand** of the **On-Site Generator Site**. For the avoidance of doubt, it should be noted that the term "**On-Site Generator Site**" only relates to Trading Units which have fulfilled the Class 1 or Class 2 requirements.

## BC2.9.5 Maintaining adequate Frequency Sensitive Generation

BC2.9.5.1 If, post **Gate Closure**, **NGET** determines, in its reasonable opinion, from the information then available to it (including information relating to **Generating Unit** (as defined in the Glossary and Definitions and not limited by BC2.2) breakdown) that the number of and level of **Primary**, **Secondary** and **High Frequency Response** available from **Gensets** (other than those units within **Existing Gas Cooled Reactor Plant**, which are permitted to operate in **Limited Frequency Sensitive Mode** at all times under BC3.5.3) available to operate in **Frequency Sensitive Mode** is such that it is not possible to avoid **De-Synchronising Existing Gas Cooled Reactor Plant** then provided that:

- (a) there are (or, as the case may be, that **NGET** anticipates, in its reasonable opinion, that at the time that the instruction is to take effect there will be) no other **Gensets** generating and exporting on to the **Total System** which are not operating in **Frequency Sensitive Mode** (or which are operating with only a nominal amount in terms of level and duration) (unless, in **NGET's** reasonable opinion, necessary to assist the relief of **System** constraints or necessary as a result of other **System** conditions); and
- (b) the power flow across each **External Interconnection** is (or, as the case may be, is anticipated to be at the time that the instruction is to take effect) either at zero or result in an export of power from the **Total System**,

then **NGET** may instruct such of the **Existing Gas Cooled Reactor Plant** to **De-Synchronise** as it is, in **NGET's** reasonable opinion, necessary to **De-Synchronise** and for the period for which the **De-Synchronising** is, in **NGET's** reasonable opinion, necessary.

BC2.9.5.2 If in **NGET's** reasonable opinion it is necessary for both the procedure in BC2.9.4 and that set out in BC2.9.5.1 to be followed in any given situation, the procedure in BC2.9.4 will be followed first, and then the procedure set out in BC2.9.5.1. For the avoidance of doubt, nothing in this sub-paragraph shall prevent either procedure from being followed separately and independently of the other.

## BC2.9.6 Emergency Assistance to and from External Systems

- (a) An **Externally Interconnected System Operator** (in its role as operator of the **External System**) may request that **NGET** takes any available action to increase the **Active Energy** transferred into its **External System**, or reduce the **Active Energy** transferred into the **National Electricity Transmission System** by way of emergency assistance if the alternative is to instruct a demand reduction on all or part of its **External System** (or on the system of an **Interconnector User** using its **External System**). Such request must be met by **NGET** providing this does not require a reduction of **Demand** on the **National Electricity Transmission System**, or lead to a reduction in security on the **National Electricity Transmission System**.
- (b) **NGET** may request that an **Externally Interconnected System Operator** takes any available action to increase the **Active Energy** transferred into the **National Electricity Transmission System**, or reduce the **Active Energy** transferred into its **External System** by way of emergency assistance if the alternative is to instruct a **Demand** reduction on all or part of the **National Electricity Transmission System**. Such request must be met by the **Externally Interconnected System Operator** providing this does not require a reduction of **Demand** on its **External System** (or on the system of

**Interconnector Users** using its **External System**), or lead to a reduction in security on such **External System** or system.

BC2.9.7 Unplanned outages of electronic communication and computing facilities

BC2.9.7.1 In the event of an unplanned outage of the electronic data communication facilities or of **NGET**'s associated computing facilities or in the event of a **Planned Maintenance Outage** lasting longer than the planned duration, in relation to a post-**Gate Closure** period **NGET** will, as soon as it is reasonably able to do so, issue a **NGET** Computing System Failure notification by telephone or such other means agreed between **Users** and **NGET** indicating the likely duration of the outage.

BC2.9.7.2 During the period of any such outage, the following provisions will apply:

- (a) **NGET** will issue further **NGET** Computing System Failure notifications by telephone or such other means agreed between **Users** and **NGET** to all **BM Participants** to provide updates on the likely duration of the outage;
- (b) **BM Participants** should operate in relation to any period of time in accordance with the **Physical Notification** prevailing at **Gate Closure** current at the time of the computer system failure in relation to each such period of time. Such operation shall be subject to the provisions of BC2.5.1, which will apply as if set out in this BC2.9.7.2. No further submissions of **BM Unit Data** or **Generating Unit Data** (other than data specified in BC1.4.2(c) (**Export and Import Limits**) and BC1.4.2(e) (**Dynamic Parameters**)) should be attempted. Plant failure or similar problems causing significant deviation from **Physical Notification** should be notified to **NGET** by telephone by the submission of a revision to **Export and Import Limits** in relation to the **BM Unit** or **Generating Unit Data** so affected;
- (c) Revisions to **Export and Import Limits** and to **Dynamic Parameters** should be notified to **NGET** by telephone and will be recorded for subsequent use;
- (d) **NGET** will issue **Bid-Offer Acceptances** by telephone which will be recorded for subsequent use;
- (e) No data will be transferred from **NGET** to the **BMRA** until the communication facilities are re-established.

BC2.9.7.3 **NGET** will advise **BM Participants** of the withdrawal of the **NGET** Computing System Failure notification following the re-establishment of the communication facilities.

BC2.10 OTHER OPERATIONAL INSTRUCTIONS AND NOTIFICATIONS

BC2.10.1 **NGET** may, from time to time, need to issue other instructions or notifications associated with the operation of the **National Electricity Transmission System**.

BC2.10.2 Such instructions or notifications may include:

- (a) Intertrips  
an instruction to arm or disarm an **Operational Intertripping** scheme;



Tap Positions

- (b) a request for a **Genset** step-up transformer tap position (for security assessment);

Tests

- (c) an instruction to carry out tests as required under **OC5**, which may include the issue of an instruction regarding the operation of **CCGT Units** within a **CCGT Module** at a **Large Power Station**;

Future **BM Unit** Requirements

- (d) a reference to any implications for future **BM Unit** requirements and the security of the **National Electricity Transmission System**, including arrangements for change in output to meet post fault security requirements;

- (e) Changes to **Target Frequency**

a notification of a change in **Target Frequency**, which will normally only be 49.95, 50.00, or 50.05Hz but in exceptional circumstances as determined by **NGET** in its reasonable opinion, may be 49.90 or 50.10Hz.

BC2.10.3 Where an instruction or notification under BC2.10.2 (c) or (d) results in a change to the input or output level of the **BM Unit** then **NGET** shall issue a **Bid-Offer Acceptance** or **Emergency Instruction** as appropriate.

BC2.11 LIAISON WITH **GENERATORS** FOR RISK OF TRIP AND **AVR** TESTING

BC2.11.1 A **Generator** at the **Control Point** for any of its **Large Power Stations** may request **NGET's** agreement for one of the **Gensets** at that **Power Station** to be operated under a risk of trip. **NGET's** agreement will be dependent on the risk to the **National Electricity Transmission System** that a trip of the **Genset** would constitute.

BC2.11.2 (a) Each **Generator** at the **Control Point** for any of its **Large Power Stations** will operate its **Synchronised Gensets** (excluding **Power Park Modules**) with:

(i) **AVRs** in constant terminal voltage mode with VAR limiters in service at all times. **AVR** constant **Reactive Power** or **Power Factor** mode should, if installed, be disabled; and

(ii) its generator step-up transformer tap changer selected to manual mode,

unless released from this obligation in respect of a particular **Genset** by **NGET**.

(b) Each **Generator** at the **Control Point** for any of its **Large Power Stations** will operate its **Power Park Modules** with a **Completion Date** before 1<sup>st</sup> January 2006 at unity power factor at the **Grid Entry Point** (or **User System Entry Point** if **Embedded**).

(c) Each **Generator** at the **Control Point** for any of its **Large Power Stations** will operate its **Power Park Modules** with a **Completion Date** on or after 1<sup>st</sup> January 2006 in voltage control mode at the **Grid Entry Point** (or **User System Entry Point** if **Embedded**). Constant **Reactive Power** or **Power Factor** mode should, if installed, be disabled.

- (d) Where a **Power System Stabiliser** is fitted as part of the excitation system or voltage control system of a **Genset**, it requires on-load commissioning which must be witnessed by **NGET**. Only when the performance of the **Power System Stabiliser** has been approved by **NGET** shall it be switched into service by a **Generator** and then it will be kept in service at all times unless otherwise agreed with **NGET**. Further reference is made to this in CC.6.3.8.

BC2.11.3 A **Generator** at the **Control Point** for any of its **Power Stations** may request **NGET's** agreement for one of its **Gensets** at that **Power Station** to be operated with the **AVR** in manual mode, or **Power System Stabiliser** switched out, or **VAR** limiter switched out. **NGET's** agreement will be dependent on the risk that would be imposed on the **National Electricity Transmission System** and any **User System**. Provided that in any event a **Generator** may take such action as is reasonably necessary on safety grounds (relating to personnel or plant) .

## BC2.12 LIAISON WITH EXTERNALLY INTERCONNECTED SYSTEM OPERATORS

### BC2.12.1 Co-ordination role of Externally Interconnected System Operators

- (a) The **Externally Interconnected System Operator** will act as the **Control Point** for **Bid-Offer Acceptances** on behalf of **Interconnector Users** and will co-ordinate instructions relating to **Ancillary Services** and **Emergency Instructions** on behalf of **Interconnector Users** using its **External System** in respect of each **Interconnector User's BM Units**.
- (b) **NGET** will issue **Bid-Offer Acceptances** and instructions for **Ancillary Services** relating to **Interconnector Users' BM Units** to each **Externally Interconnected System Operator** in respect of each **Interconnector User** using its **External System**.
- (c) If, as a result of a reduction in the capability (in MW) of the **External Interconnection**, the total of the **Physical Notifications** and **Bid-Offer Acceptances** issued for the relevant period using that **External Interconnection**, as stated in the **BM Unit Data** exceeds the reduced capability (in MW) of the respective **External Interconnection** in that period then **NGET** shall notify the **Externally Interconnected System Operator** accordingly. The **Externally Interconnected System Operator** should seek a revision of **Export and Import Limits** from one or more of its **Interconnector Users** for the remainder of the **Balancing Mechanism** period during which **Physical Notifications** cannot be revised.

## Appendix 1 – Form of Bid-Offer Acceptances

- BC2.A.1.1 This Appendix describes the forms of **Bid-Offer Acceptances**. As described in BC2.6.1 **Bid-Offer Acceptances** are normally given by an automatic logging device, but in the event of failure of the logging device, **Bid-Offer Acceptances** will be given by telephone.
- BC2.A.1.2 For each **BM Unit** the **Bid-Offer Acceptance** will consist of a series of MW figures and associated times.
- BC2.A.1.3 The **Bid-Offer Acceptances** relating to **CCGT Modules** will assume that the **CCGT Units** within the **CCGT Module** will operate in accordance with the **CCGT Module Matrix**, as required by **BC1**. The **Bid-Offer Acceptances** relating to **Cascade Hydro Schemes** will assume that the **Generating Unit** forming part of the **Cascade Hydro Scheme** will operate, where submitted, in accordance with the **Cascade Hydro Scheme Matrix** submitted under **BC1**.

### BC2.A.1.4 BID-OFFER ACCEPTANCES GIVEN BY AUTOMATIC LOGGING DEVICE.

- (a) The complete form of the **Bid-Offer Acceptance** is given in the EDL Message Interface Specification which can be made available to **Users** on request.
- (b) **Bid-Offer Acceptances** will normally follow the form:
- (i) **BM Unit Name**
  - (ii) Instruction Reference Number
  - (iii) Time of instruction
  - (iv) Type of instruction
  - (v) **BM Unit Bid-Offer Acceptance** number
  - (vi) Number of MW/Time points making up instruction (minimum 2, maximum 5)
  - (vii) MW value and Time value for each point identified in (vi)

The times required in the instruction are input and displayed in London time, but communicated electronically in GMT.

### BC2.A.1.5 BID-OFFER ACCEPTANCES GIVEN BY TELEPHONE

- (a) All run-up/run-down rates will be assumed to be constant and consistent with **Dynamic Parameters**. Each **Bid-Offer Acceptance** will, wherever possible, be kept simple, drawing as necessary from the following forms and BC2.7
- (b) **Bid-Offer Acceptances** given by telephone will normally follow the form:
- (i) an exchange of operator names;
  - (ii) **BM Unit Name**;
  - (iii) Time of instruction;
  - (iv) Type of instruction;
  - (v) Number of MW/Time points making up instruction (minimum 2, maximum 5)
  - (vi) MW value and Time value for each point identified in (v)

The times required in the instruction are expressed in London time.

For example, for a BM Unit ABCD-1 acceptance logged with a start time at 1400 hours and with a FPN at 300MW:

“BM Unit ABCD-1 Bid-Offer Acceptance timed at 1400 hours. Acceptance consists of 4 MW/Time points as follows:

300MW at 1400 hours  
400MW at 1415 hours  
400MW at 1450 hours  
300MW at 1500 hours”

BC2.A.1.6 **SUBMISSION OF BID-OFFER ACCEPTANCE DATA TO THE BMRA**

The relevant information contained in **Bid-Offer Acceptances** issued by **NGET** will be converted into “from” and “to” MW levels and times before they are submitted to the **BMRA** by **NGET**.

## Appendix 2 - Type and Form of Ancillary Service Instructions

BC2.A.2.1 This part of the Appendix consists of a non-exhaustive list of the forms and types of instruction for a **Genset** to provide **System Ancillary Services**. There may be other types of **Commercial Ancillary Services** and these will be covered in the relevant **Ancillary Services Agreement**. In respect of the provision of **Ancillary Services** by **Generating Units** the forms and types of instruction will be in the form of this Appendix 2 unless amended in the **Ancillary Services Agreement**.

As described in CC.8, **System Ancillary Services** consist of Part 1 and Part 2 **System Ancillary Services**.

Part 1 System Ancillary Services comprise:

- (a) **Reactive Power** supplied other than by means of synchronous or static compensators. This is required to ensure that a satisfactory **System** voltage profile is maintained and that sufficient **Reactive Power** reserves are maintained under normal and fault conditions. **Ancillary Service** instructions in relation to **Reactive Power** may include:
  - (i) Mvar Output
  - (ii) Target Voltage Levels
  - (iii) Tap Changes
  - (iv) Maximum Mvar Output ('maximum excitation')
  - (v) Maximum Mvar Absorption ('minimum excitation')
- (b) **Frequency** Control by means of **Frequency** sensitive generation. **Gensets** may be required to move to or from **Frequency Sensitive Mode** in the combinations agreed in the relevant **Ancillary Services Agreement**. They will be specifically requested to operate so as to provide **Primary Response** and/or **Secondary Response** and/or **High Frequency Response**.

Part 2 System Ancillary Services comprise:

- (c) **Frequency** Control by means of **Fast Start**.
- (d) **Black Start Capability**
- (e) **System to Generator Operational Intertripping**

BC2.A.2.2 As **Ancillary Service** instructions are not part of **Bid-Offer Acceptances** they do not need to be closed instructions and can cover any period of time, not just limited to the period of the **Balancing Mechanism**.

BC2.A.2.3 As described in BC2.6.1 **Ancillary Service** instructions are normally given by automatic logging device, but in the absence of, or in the event of failure of the logging device, instructions will be given by telephone.

BC2.A.2.4 INSTRUCTIONS GIVEN BY AUTOMATIC LOGGING DEVICE.

- (a) The complete form of the **Ancillary Service** instruction is given in the EDL Message Interface Specification which is available to **Users** on request from **NGET**.

(b) **Ancillary Service** instructions for **Frequency** Control will normally follow the form:

- (i) **BM Unit** Name
- (ii) Instruction Reference Number
- (iii) Time of instruction
- (iv) Type of instruction (REAS)
- (v) Reason Code
- (vi) Start Time

(c) **Ancillary Service** instructions for **Reactive Power** will normally follow the form:

- (i) **BM Unit** Name
- (ii) Instruction Reference Number
- (iii) Time of instruction
- (iv) Type of instruction (MVAR, VOLT or TAPP)
- (v) Target Value
- (vi) Target Time

The times required in the instruction are input and displayed in London time, but communicated electronically in GMT.

#### BC2.A.2.5 INSTRUCTIONS GIVEN BY TELEPHONE

(a) **Ancillary Service** instructions for **Frequency** Control will normally follow the form:

- (i) an exchange of operator names;
- (ii) **BM Unit** Name;
- (iii) Time of instruction;
- (iv) Type of instruction;
- (v) Start Time.

The times required in the instruction are expressed in London time.

For example, for **BM Unit** ABCD-1 instructed at 1400 hours to provide Primary and **High Frequency** response starting at 1415 hours:

“**BM Unit** ABCD-1 message timed at 1400 hours. Unit to **Primary and High Frequency Response** at 1415 hours”

(b) **Ancillary Service** instructions for **Reactive Power** will normally follow the form:

- (i) an exchange of operator names;
- (ii) **BM Unit** Name;
- (iii) Time of instruction;
- (iv) Type of instruction (MVAR, VOLT, SETPOINT, **SLOPE** or TAPP)
- (v) Target Value
- (vi) Target Time.

The times required in the instruction are expressed as London time.

For example, for **BM Unit** ABCD-1 instructed at 1400 hours to provide 100Mvar by 1415 hours:

“**BM Unit ABCD-1** message timed at 1400 hours. MVAR instruction. Unit to plus 100 Mvar target time 1415 hours.”

BC2.A.2.6 **Reactive Power**

As described in BC2.A.2.4 and BC2.A.2.5 instructions for **Ancillary Services** relating to **Reactive Power** may consist of any of several specific types of instruction. The following table describes these instructions in more detail:

Instruction Name	Description	Type of Instruction
<u>Mvar Output</u>	<p>The individual Mvar output from the <b>Genset</b> onto the <b>National Electricity Transmission System</b> at the <b>Grid Entry Point</b> (or onto the <b>User System</b> at the <b>User System Entry Point</b> in the case of <b>Embedded Power Stations</b>), namely on the higher voltage side of the generator step-up transformer. In relation to each <b>Genset</b>, where there is no HV indication, <b>NGET</b> and the <b>Generator</b> will discuss and agree equivalent Mvar levels for the corresponding LV indication.</p> <p>Where a <b>Genset</b> is instructed to a specific Mvar output, the <b>Generator</b> must achieve that output within a tolerance of +/-25 Mvar (for <b>Gensets</b> in England and Wales) or the lesser of +/-5% of rated output or 25Mvar (for <b>Gensets</b> in Scotland) (or such other figure as may be agreed with <b>NGET</b>) by tap changing on the generator step-up transformer, unless agreed otherwise. Once this has been achieved, the <b>Generator</b> will not tap again without prior consultation with and the agreement of <b>NGET</b>, on the basis that Mvar output will be allowed to vary with <b>System</b> conditions.</p>	MVAR
<u>Target Voltage Levels</u>	<p>Target voltage levels to be achieved by the <b>Genset</b> on the <b>National Electricity Transmission System</b> at the <b>Grid Entry Point</b> (or on the <b>User System</b> at the <b>User System Entry Point</b> in the case of <b>Embedded Power Stations</b>, namely on the higher voltage side of the generator step-up transformer. Where a <b>Genset</b> is instructed to a specific target voltage, the <b>Generator</b> must achieve that target within a tolerance of <math>\pm 1</math> kV (or such other figure as may be agreed with <b>NGET</b>) by tap changing on the generator step-up transformer, unless agreed otherwise with <b>NGET</b>. In relation to each <b>Genset</b>, where there is no HV indication, <b>NGET</b> and the <b>Generator</b> will discuss and agree equivalent voltage levels for the corresponding LV indication.</p> <p>Under normal operating conditions, once this target voltage level has been achieved the <b>Generator</b> will not tap again without prior consultation with, and with the agreement of, <b>NGET</b>.</p> <p>However, under certain circumstances the <b>Generator</b> may be instructed to maintain a target voltage until otherwise instructed and this will be achieved by tap changing on the generator step-up transformer without reference to <b>NGET</b>.</p>	VOLT

Instruction Name	Description	Type of Instruction
<u>Setpoint Voltage</u>	<p>Where a <b>Non-Synchronous Generating Unit, DC Converter</b> or <b>Power Park Module</b> is instructed to a specific <b>Setpoint Voltage</b>, the <b>Generator</b> must achieve that <b>Setpoint Voltage</b> within a tolerance of <math>\pm 0.25\%</math> (or such other figure as may be agreed with <b>NGET</b>).</p> <p>The <b>Generator</b> must maintain the specified <b>Setpoint Voltage</b> target until an alternative target is received from <b>NGET</b>.</p>	SETPOINT
<u>Slope</u>	<p>Where a <b>Non-Synchronous Generating Unit, DC Converter</b> or <b>Power Park Module</b> is instructed to a specific <b>Slope</b>, the <b>Generator</b> must achieve that <b>Slope</b> within a tolerance of <math>\pm 0.5\%</math> (or such other figure as may be agreed with <b>NGET</b>).</p> <p>The <b>Generator</b> must maintain the specified <b>Slope</b> target until an alternative target is received from <b>NGET</b>.</p> <p>The <b>Generator</b> will not be required to implement a new <b>Slope</b> setting in a time of less than 1 week from the time of the instruction.</p>	SLOPE
<u>Tap Changes</u>	<p>Details of the required generator step-up transformer tap changes in relation to a <b>Genset</b>. The instruction for tap changes may be a <b>Simultaneous Tap Change</b> instruction, whereby the tap change must be effected by the <b>Generator</b> in response to an instruction from <b>NGET</b> issued simultaneously to relevant <b>Power Stations</b>. The instruction, which is normally preceded by advance notice, must be effected as soon as possible, and in any event within one minute of receipt from <b>NGET</b> of the instruction.</p> <p>For a <b>Simultaneous Tap Change</b>, change <b>Genset</b> generator step-up transformer tap position by one [two] taps to raise or lower (as relevant) <b>System</b> voltage, to be executed at time of instruction.</p>	TAPP
Maximum Mvar Output ("maximum excitation")	Under certain conditions, such as low <b>System</b> voltage, an instruction to maximum Mvar output at instructed MW output ("maximum excitation") may be given, and a <b>Generator</b> should take appropriate actions to maximise Mvar output unless constrained by plant operational limits or safety grounds (relating to personnel or plant).	
<u>Maximum Mvar Absorption ("minimum excitation")</u>	Under certain conditions, such as high <b>System</b> voltage, an instruction to maximum Mvar absorption at instructed MW output ("minimum excitation") may be given, and a <b>Generator</b> should take appropriate actions to maximise Mvar absorption unless constrained by plant operational limits or safety grounds (relating to personnel or plant).	

BC2.A.2.7 In addition, the following provisions will apply to **Reactive Power** instructions:

- (a) In circumstances where **NGET** issues new instructions in relation to more than one **BM Unit** at the same **Power Station** at the same time tapping will be carried out by the **Generator** one tap at a time either alternately between (or in sequential order, if more than two), or at the same time on, each **BM Unit**.



- (b) Where the instructions require more than two taps per **BM Unit** and that means that the instructions cannot be achieved within 2 minutes of the instruction time (or such longer period at **NGET** may have instructed), the instructions must each be achieved with the minimum of delay after the expiry of that period.
- (c) It should be noted that should **System** conditions require, **NGET** may need to instruct maximum Mvar output to be achieved as soon as possible, but (subject to the provisions of paragraph (BC2.A.2.7(b) above) in any event no later than 2 minutes after the instruction is issued.
- (d) An **Ancillary Service** instruction relating to **Reactive Power** may be given in respect of **CCGT Units** within a **CCGT Module** at a **Power Station** where running arrangements and/or **System** conditions require, in both cases where exceptional circumstances apply and connection arrangements permit.
- (e) In relation to Mvar matters, Mvar generation/output is an export onto the **System** and is referred to as "lagging Mvar", and Mvar absorption is an import from the **System** and is referred to as "leading Mvar".
- (f) It should be noted that the excitation control system constant **Reactive Power** output control mode or constant power factor output control mode will always be disabled, unless agreed otherwise with **NGET**.

## Appendix 3 – Submission of Revised Mvar Capability

BC2.A.3.1 For the purpose of submitting revised Mvar data the following terms shall apply:

Full Output	In the case of a <b>Synchronous Generating Unit</b> (as defined in the Glossary and Definitions and not limited by BC2.2) is the MW output measured at the generator stator terminals representing the LV equivalent of the <b>Registered Capacity</b> at the <b>Grid Entry Point</b> , and in the case of a <b>Non-Synchronous Generating Unit</b> (excluding <b>Power Park Units</b> ), <b>DC Converter</b> or <b>Power Park Module</b> is the <b>Registered Capacity</b> at the <b>Grid Entry Point</b>
Minimum Output	In the case of a <b>Synchronous Generating Unit</b> (as defined in the Glossary and Definitions and not limited by BC2.2 ) is the MW output measured at the generator stator terminals representing the LV equivalent of the <b>Minimum Generation</b> at the <b>Grid Entry Point</b> , and in the case of a <b>Non-Synchronous Generating Unit</b> (excluding <b>Power Park Units</b> ), <b>DC Converter</b> or <b>Power Park Module</b> is the <b>Minimum Generation</b> at the <b>Grid Entry Point</b>

BC2.A.3.2 The following provisions apply to faxed submission of revised Mvar data:

- (a) The fax must be transmitted to **NGET** (to the relevant location in accordance with GC6) and must contain all the sections from the relevant part of Annexure 1 and from either Annexure 2 or 3 (as applicable) but with only the data changes set out. The "notification time" must be completed to refer to the time of transmission, where the time is expressed as London time.
- (b) Upon receipt of the fax, **NGET** will acknowledge receipt by sending a fax back to the **User**. The acknowledgement will either state that the fax has been received and is legible or will state that it (or part of it) is not legible and will request re-transmission of the whole (or part) of the fax.
- (c) Upon receipt of the acknowledging fax the **User** will, if requested, re-transmit the whole or the relevant part of the fax.
- (d) The provisions of paragraphs (b) and (c) then apply to that re-transmitted fax.

APPENDIX 3 - ANNEXURE 1



Company name **REVISED Mvar DATA**

TO: **NGET** Transmission Control Centre

Fax telephone No.

Number of pages inc. header:.....

Sent By : .....

Return Acknowledgement Fax to .....

For Retransmission or Clarification ring.....

---

Acknowledged by **NGET**: (Signature)

.....

Acknowledgement time and date .....

Legibility of FAX :

Acceptable


Unacceptable  
(List pages if appropriate)

( Resend FAX )

APPENDIX 3 - ANNEXURE 2

To: **NGET** Transmission Control Centre

From : [Company Name & Location]

**REVISED Mvar DATA – GENERATING UNITS EXCLUDING POWER PART UNITS AND DC CONVERTERS**

NOTIFICATION TIME:

HRS MINS DD MM YY ./ /
---------------------------

GENERATING UNIT* /POWER PARK MODULE DC CONVERTER	
--	--

Start Time/Date (if not effective immediately)

**REACTIVE POWER CAPABILITY AT SYNCHRONOUS GENERATING UNIT STATOR TERMINAL**  
(at rated terminal volts)

	MW	LEAD (Mvar)	LAG (Mvar)
<b>AT RATED MW</b>			
AT FULL OUTPUT (MW)			
AT MINIMUM OUTPUT (MW)			

**GENERATING UNIT STEP-UP TRANSFORMER DATA, WHERE APPLICABLE**

TAP CHANGE RANGE (+%,-%)	TAP NUMBER RANGE

**OPTIONAL INFORMATION** (for Ancillary Services use only) -  
**REACTIVE POWER CAPABILITY AT COMMERCIAL BOUNDARY** (at rated stator terminal and nominal system volts)

	LEAD (Mvar)	LAG (Mvar)
<b>AT RATED MW</b>		

Predicted End Time/Date (to be confirmed by redeclaration)

Redeclaration made by (Signature) \_\_\_\_\_

**Generating Unit** has the meaning given in the Glossary and Definitions and is not limited by BC2.2.

\* For a CCGT, the redeclaration is for an individual CCGT unit and not the entire module.

APPENDIX 3 - ANNEXURE 3

To: **NGET** Transmission Control Centre

From : [Company Name & Location]

**REVISED Mvar DATA – POWER PARK UNITS AND DC CONVERTERS**

HRS MINS DD MM YY ./ /
---------------------------

NOTIFICATION TIME:

POWER PARK MODULE/ DC CONVERTER	
------------------------------------	--

Start Time/Date (if not effective immediately)

**REACTIVE POWER CAPABILITY AT:**

- **GRID ENTRY POINT (ENGLAND AND WALES); OR**
- **HV SIDE OF RELEVANT TRANSFORMER (SCOTLAND); OR**
- **USER SYSTEM ENTRY POINT (IF EMBEDDED) OF THE POWER PARK MODULE; OR**
- **DC CONVERTER OR THE AGGREGATED CAPABILITY OF THE POWER PARK UNITS AT THE POWER PARK UNIT TERMINALS**

	MW	LEAD (Mvar)	LAG (Mvar)
AT RATED MW			
AT 50% OF RATED MW			
AT 20% OF RATED MW			
BELOW 20% OF RATED MW			
AT 0% OF RATED MW			

Confirm voltage to which these figures relate

**POWER PARK MODULE OR DC CONVERTER STEP-UP TRANSFORMER DATA, WHERE APPLICABLE**

TAP CHANGE RANGE (+%,-%)	TAP NUMBER RANGE

Predicted End Time/Date (to be confirmed by redeclaration)

Redeclaration made by (Signature) \_\_\_\_\_

## Appendix 4 – Submission of availability of **Frequency Sensitive Mode**

- BC2.A.4.1. For the purpose of submitting availability of **Frequency Sensitive Mode**, this process only relates to the provision of response under the **Frequency Sensitive Mode** and does not cover the provision of response under the **Limited Frequency Sensitive Mode**.
- BC2.A.4.2. The following provisions apply to the faxed submission of the **Frequency Sensitive Mode availability**;
- (a) The fax must be transmitted to **NGET** (to the relevant location in accordance with GC6) and must contain all the sections relevant to Appendix 4 - Annexure1 but with only the data changes set out. The “notification time” must be completed to refer to the time and date of transmission, where the time is expressed in London time.
  - (b) Upon receipt of the fax, **NGET** will acknowledge receipt by sending a fax back to the **User**. This acknowledging fax should be in the format of Appendix 4 – Annexure 1. The acknowledgement will either state that the fax has been received and is legible or will state that it (or part of it) is not legible and will request re-transmission of the whole (or part) of the fax.
  - (c) Upon receipt of the acknowledging fax the **User** will, if requested re-transmit the whole or the relevant part of the fax.
  - (d) The provisions of paragraph (b) and (c) then apply to the re-transmitted fax.
- BC2.A.4.3 The **User** shall ensure the availability of operating in the **Frequency Sensitive Mode** is restored as soon as reasonably practicable and will notify **NGET** using the format of Appendix 4 – Annexure 1. In the event of a sustained unavailability of **Frequency Sensitive Mode** **NGET** may seek to confirm compliance with the relevant requirements in the **CCs** through the process in **OC5**.

Appendix 4 – Annexure 1

To: **NGET** Transmission Control Centre  
From: [Company Name and Location]

**Submission of availability of Frequency Sensitive Mode**

Notification Time 

HRS:MIN DD/MM/YY
__:__ __/__/__

<b>GENERATING UNIT *</b>	
--------------------------	--

Start Time / Date (if not effective immediately)

The above unit is unavailable / available to operate in **Frequency Sensitive Mode**.

**Limited Frequency Sensitive Mode** must be maintained in accordance with BC3.7.2.

Please provided brief description of reason for unavailability of **Frequency Sensitive Mode** (e.g. Testing, technical problem)

<p><b>If declaring Unavailability</b> Predicted End Time / Date (to be confirmed by re-declaration):</p>
--

Re-declaration made by (signature) \_\_\_\_\_

- For a CCGT the re-declaration is for an individual **CCGT Unit** and not the entire module

Receipt Acknowledgement from **NGET**

Legible (tick box)		Illegible (tick box)	
Explanation:			
Time:			
Date:			
Signature:			

< End of BC2 >

**BALANCING CODE NO.3**  
**FREQUENCY CONTROL PROCESS**

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(This contents page does not form part of the Grid Code)

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PC.A.3 **GENERATING UNIT AND DC CONVERTER DATA**

PC.A.3.1 Introduction

Directly Connected

PC.A.3.1.1 Each **Generator** and **DC Converter Station** owner with an existing, or proposed, **Power Station** or **DC Converter Station** directly connected, or to be directly connected, to the **National Electricity Transmission System**, shall provide **NGET** with data relating to that **Power Station** or **DC Converter Station**, both current and forecast, as specified in PC.A.3.2 to PC.A.3.4.

Embedded

PC.A.3.1.2 (a) Each **Generator** and **DC Converter Station** owner in respect of its existing, and/or proposed, **Embedded Large Power Stations** and/or **Embedded DC Converter Stations** and/or its **Embedded Medium Power Stations** subject to a **Bilateral Agreement** and each **Network Operator** in respect of its **Embedded Medium Power Stations** not subject to a **Bilateral Agreement** and/or **Embedded DC Converter Stations** not subject to a **Bilateral Agreement** within such **Network Operator's System** in each case connected to the **Subtransmission System**, shall provide **NGET** with data relating to that **Power Station** or **DC Converter Station**, both current and forecast, as specified in PC.A.3.2 to PC.A.3.4.

(b) No data need be supplied in relation to any **Small Power Station** or any **Medium Power Station** or installations of direct current converters which do not form a **DC Converter Station**, connected at a voltage level below the voltage level of the **Subtransmission System** except:-

(i) in connection with an application for, or under, a **CUSC Contract**, or

(ii) unless specifically requested by **NGET** under PC.A.3.1.4.

PC.A.3.1.3 (a) Each **Network Operator** shall provide **NGET** with the data specified in PC.A.3.2.2(c)(i) and (ii) and PC.A.3.2.2(i).

(b) **Network Operators** need not submit planning data in respect of an **Embedded Small Power Station** unless required to do so under PC.A.1.2(b) or unless specifically requested under PC.A.3.1.4 below, in which case they will supply such data.

PC.A.3.1.4 (a) PC.A.4.2.4(b) and PC.A.4.3.2(a) explain that the forecast **Demand** submitted by each **Network Operator** must be net of the output of all **Small Power Stations** and **Medium Power Stations** and **Customer Generating Plant** and all installations of direct current converters which do not form a **DC Converter Station**, **Embedded** within that **Network Operator's System**. The **Network Operator** must inform **NGET** of the number of such **Embedded Power Stations** and such **Embedded** installations of direct current converters (including the number of **Generating Units** or **Power**

**Park Modules or DC Converters**) together with their summated capacity.

- (b) On receipt of this data, the **Network Operator** or **Generator** (if the data relates to **Power Stations** referred to in PC.A.3.1.2) may be further required, at **NGET's** reasonable discretion, to provide details of **Embedded Small Power Stations** and **Embedded Medium Power Stations** and **Customer Generating Plant** and **Embedded** installations of direct current converters which do not form a **DC Converter Station**, both current and forecast, as specified in PC.A.3.2 to PC.A.3.4. Such requirement would arise where **NGET** reasonably considers that the collective effect of a number of such **Embedded Power Stations** and **Customer Generating Plants** and **Embedded** installations of direct current converters may have a significant system effect on the **National Electricity Transmission System**.

#### Busbar Arrangements

PC.A.3.1.5 Where **Generating Units**, which term includes **CCGT Units** and **Power Park Modules**, and **DC Converters**, are connected to the **National Electricity Transmission System** via a busbar arrangement which is or is expected to be operated in separate sections, the section of busbar to which each **Generating Unit, DC Converter** or **Power Park Module** is connected is to be identified in the submission.

PC.A.3.2 Output Data

PC.A.3.2.1 (a) Large Power Stations and Gensets

Data items PC.A.3.2.2 (a), (b), (c), (d), (e), (f) and (h) are required with respect to each **Large Power Station** and each **Generating Unit** and **Power Park Module** of each **Large Power Station** and for each **Genset** (although (a) is not required for **CCGT Units** and (b), (d) and (e) are not normally required for **CCGT Units** and (a), (b), (c), (d), (e), (f) and (h) are not normally required for **Power Park Units**).

(b) Embedded Small Power Stations and Embedded Medium Power Stations

Data item PC.A.3.2.2 (a) is required with respect to each **Embedded Small Power Station** and **Embedded Medium Power Station** and each **Generating Unit** and **Power Park Module** of each **Embedded Small Power Station** and **Embedded Medium Power Station** (although (a) is not required for **CCGT Units** or **Power Park Units**). In addition, data item PC.A.3.2.2(c)(ii) is required with respect to each **Embedded Medium Power Station**.

(c) CCGT Units/Modules

(i) Data item PC.A.3.2.2 (g) is required with respect to each **CCGT Unit**;

- (ii) data item PC.A.3.2.2 (a) is required with respect to each **CCGT Module**; and
- (iii) data items PC.A.3.2.2 (b), (c), (d) and (e) are required with respect to each **CCGT Module** unless **NGET** informs the relevant **User** in advance of the submission that it needs the data items with respect to each **CCGT Unit** for particular studies, in which case it must be supplied on a **CCGT Unit** basis.

Where any definition utilised or referred to in relation to any of the data items does not reflect **CCGT Units**, such definition shall be deemed to relate to **CCGT Units** for the purposes of these data items. Any **Schedule** in the DRC which refers to these data items shall be interpreted to incorporate the **CCGT Unit** basis where appropriate;

(d) **Cascade Hydro Schemes**

Data item PC.A.3.2.2(i) is required with respect to each **Cascade Hydro Scheme**.

(e) **Power Park Units/Modules**

Data items PC.A.3.2.2 (j) is required with respect to each **Power Park Module**.

(f) **DC Converters**

Data items PC.A.3.2.2 (a), (b), (c), (d) (e) (f) (h) and (i) are required with respect to each **DC Converter Station** and each **DC Converter** in each **DC Converter Station**. For installations of direct current converters which do not form a **DC Converter Station** only data item PC.A.3.2.2.(a) is required.

PC.A.3.2.2

Items (a), (b), (d), (e), (f), (g), (h), (i), (j) and (k) are to be supplied by each **Generator**, **DC Converter Station** owner or **Network Operator** (as the case may be) in accordance with PC.A.3.1.1, PC.A.3.1.2, PC.A.3.1.3 and PC.A.3.1.4. Item (c) is to be supplied by each **Network Operator** in all cases:-

- (a) **Registered Capacity** (MW);
- (b) **Output Usable** (MW) on a monthly basis;
- (c)
  - (i) **System Constrained Capacity** (MW) ie. any constraint placed on the capacity of the **Embedded Generating Unit**, **Embedded Power Park Module**, an **Offshore Transmission System** at an **Interface Point** or **DC Converter** at an **Embedded DC Converter Station** due to the **Network Operator's System** in which it is embedded. Where **Generating Units** (which term includes **CCGT**

**Units), Power Park Modules, Offshore Transmission Systems** at an **Interface Point** or **DC Converters** are connected to a **Network Operator's User System** via a busbar arrangement which is or is expected to be operated in separate sections, details of busbar running arrangements and connected circuits at the substation to which the **Embedded Generating Unit, Embedded Power Park Module, Offshore Transmission System** at an **Interface Point** or **Embedded DC Converter** is connected sufficient for **NGET** to determine where the **MW** generated by each **Generating Unit, Power Park Module** or **DC Converter** at that **Power Station** or **DC Converter Station** or **Offshore Transmission System** at an **Interface Point** would appear onto the **National Electricity Transmission System**;

- (ii) any **Reactive Despatch Network Restrictions**;
- (d) **Minimum Generation (MW)**;
- (e) **MW** obtainable from **Generating Units, Power Park Modules** or **DC Converters** at a **DC Converter Station** in excess of **Registered Capacity**;
- (f) **Generator Performance Chart**:
  - (i) at the **Onshore Synchronous Generating Unit** stator terminals
  - (ii) at the electrical point of connection to the **Offshore Transmission System** for an **Offshore Synchronous Generating Unit**.
  - (ii) at the electrical point of connection to the **National Electricity Transmission System** (or **User System** if **Embedded**) for a **Non Synchronous Generating Unit** (excluding a **Power Park Unit**), **Power Park Module** and **DC Converter** at a **DC Converter Station**;

Where a **Reactive Despatch Network Restriction** applies, its existence and details should be highlighted on the **Generator Performance Chart**, in sufficient detail for **NGET** to determine the nature of the restriction.

- (g) a list of the **CCGT Units** within a **CCGT Module**, identifying each **CCGT Unit**, and the **CCGT Module** of which it forms part, unambiguously. In the case of a **Range CCGT Module**, details of the possible configurations should also be submitted, together:-
  - (i) (in the case of a **Range CCGT Module** connected to the **National Electricity Transmission System**) with details of the single **Grid Entry Point** (there can only be one) at which power is provided from the **Range CCGT Module**;
  - (ii) (in the case of an **Embedded Range CCGT Module**) with details of the single **User System Entry Point** (there can only be one) at which power is provided from the **Range CCGT Module**;

Provided that, nothing in this sub-paragraph (g) shall prevent the busbar at the relevant point being operated in separate sections;

- (h) expected running regime(s) at each **Power Station** or **DC Converter Station** and type of **Generating Unit**, eg. **Steam Unit**, **Gas Turbine Unit**, **Combined Cycle Gas Turbine Unit**, **Power Park Module**, **Novel Units** (specify by type), etc;
- (i) a list of **Power Stations** and **Generating Units** within a **Cascade Hydro Scheme**, identifying each **Generating Unit** and **Power Station** and the **Cascade Hydro Scheme** of which each form part unambiguously. In addition:
  - (i) details of the **Grid Entry Point** at which **Active Power** is provided, or if **Embedded** the **Grid Supply Point(s)** within which the **Generating Unit** is connected;
  - (ii) where the **Active Power** output of a **Generating Unit** is split between more than one **Grid Supply Points** the percentage that would appear under normal and outage conditions at each **Grid Supply Point**.
- (j) The following additional items are only applicable to **DC Converters** at **DC Converter Stations**.
  - Registered Import Capacity** (MW);
  - Import Usable** (MW) on a monthly basis;
  - Minimum Import Capacity** (MW);
  - MW that may be absorbed by a **DC Converter** in excess of **Registered Import Capacity** and the duration for which this is available;
- (k) the number and types of the **Power Park Units** within a **Power Park Module**, identifying each **Power Park Unit**, and the **Power Park Module** of which it forms part, unambiguously. In the case of a **Power Station** directly connected to the **National Electricity Transmission System** with multiple **Power Park Modules** where **Power Park Units** can be selected to run in different **Power Park Modules**, details of the possible configurations should also be submitted. In addition for **Offshore Power Park Modules**, the number of **Offshore Power Park Strings** that are aggregated into one **Offshore Power Park Module** should also be submitted.

#### PC.A.3.2.3

Notwithstanding any other provision of this PC, the **CCGT Units** within a **CCGT Module**, details of which are required under paragraph (g) of PC.A.3.2.2, can only be amended in accordance with the following provisions:-

- (a) if the **CCGT Module** is a **Normal CCGT Module**, the **CCGT Units** within that **CCGT Module** can only be amended such that the **CCGT**

**Module** comprises different **CCGT Units** if **NGET** gives its prior consent in writing. Notice of the wish to amend the **CCGT Units** within such a **CCGT Module** must be given at least 6 months before it is wished for the amendment to take effect;

- (b) if the **CCGT Module** is a **Range CCGT Module**, the **CCGT Units** within that **CCGT Module** and the **Grid Entry Point** at which the power is provided can only be amended as described in BC1.A1.6.4.

PC.A.3.2.4

Notwithstanding any other provision of this **PC**, the **Power Park Units** within a **Power Park Module**, details of which are required under paragraph (j) of PC.A.3.2.2, can only be amended in accordance with the following provisions:-

- (a) if the **Power Park Units** within that **Power Park Module** can only be amended such that the **Power Park Module** comprises different **Power Park Units** due to repair/replacement of individual **Power Park Units** if **NGET** gives its prior consent in writing. Notice of the wish to amend a **Power Park Unit** within such a **Power Park Module** must be given at least 4 weeks before it is wished for the amendment to take effect;
- (b) if the **Power Park Units** within that **Power Park Module** can be selected to run in different **Power Park Modules** as an alternative operational running arrangement the **Power Park Units** within the **Power Park Module** and the **Grid Entry Point** at which the power is provided can only be amended as described in BC1.A.1.7.4.

PC.A.3.3.

Rated Parameters Data

PC.A.3.3.1

The following information is required to facilitate an early assessment, by **NGET**, of the need for more detailed studies;

- (a) for all **Generating Units**(excluding **Power Park Units**) and **Power Park Modules**:

Rated MVA  
**Rated MW**;

- (b) for each **Synchronous Generating Unit**:

Short circuit ratio  
Direct axis transient reactance;  
Inertia constant (for whole machine), MWsecs/MVA;

- (c) for each **Synchronous Generating Unit** step-up transformer:

Rated MVA  
Positive sequence reactance (at max, min and nominal tap);

- (d) for each **DC Converter** at a **DC Converter Station** or **DC Converter** connecting a **Power Park Module**

**DC Converter** type (e.g. current/voltage sourced)  
**Rated MW** per pole for import and export

Number of poles and pole arrangement  
Rated DC voltage/pole (kV)  
Return path arrangement  
Remote AC connection arrangement

- (e) for each type of **Power Park Unit** in a **Power Park Module** not connected to the **Total System** by a **DC Converter**:

Rated MVA  
**Rated MW**  
Rated terminal voltage  
Inertia constant, (MWsec/MVA)

Additionally, for **Power Park Units** that are squirrel-cage or doubly-fed induction generators driven by wind turbines:

Stator reactance.  
Magnetising reactance.  
Rotor resistance (at rated running)  
Rotor reactance (at rated running)  
The generator rotor speed range (minimum and maximum speeds in RPM) (for doubly-fed induction generators only)  
Converter MVA rating (for doubly-fed induction generators only)

For a **Power Park Unit** consisting of a synchronous machine in combination with a back-to-back **DC Converter**, or for a **Power Park Unit** not driven by a wind turbine, the data to be supplied shall be agreed with **NGET** in accordance with PC.A.7.

This information should only be given in the data supplied in accordance with PC.4.4 and PC.4.5.

PC.A.3.4 General **Generating Unit Power Park Module** and **DC Converter** Data

PC.A.3.4.1 The point of connection to the **National Electricity Transmission System** or the **Total System**, if other than to the **National Electricity Transmission System**, in terms of geographical and electrical location and system voltage is also required.

- PC.A.3.4.2 (a) Type of **Generating Unit** (ie **Synchronous Generating Unit**, **Non-synchronous Generating Unit** , **DC Converter** or **Power Park Module**).
- (b) In the case of a **Synchronous Generating Unit** details of the **Exciter** category, for example whether it is a rotating **Exciter** or a static **Exciter** or in the case of a **Non-Synchronous Generating Unit** the voltage control system.
- (c) Whether a **Power System Stabiliser** is fitted.

PC.A.4	<b><u>DEMAND AND ACTIVE ENERGY DATA</u></b>
PC.A.4.1	<u>Introduction</u>
PC.A.4.1.1	Each <b>User</b> directly connected to the <b>National Electricity Transmission System</b> with <b>Demand</b> shall provide <b>NGET</b> with the <b>Demand</b> data, historic, current and forecast, as specified in PC.A.4.2 and PC.A.4.3. Paragraphs PC.A.4.1.2 and PC.A.4.1.3 apply equally to <b>Active Energy</b> requirements as to <b>Demand</b> unless the context otherwise requires.
PC.A.4.1.2	Data will need to be supplied by: <ul style="list-style-type: none"> <li>(a) each <b>Network Operator</b>, in relation to <b>Demand</b> and <b>Active Energy</b> requirements on its <b>User System</b>;</li> <li>(b) each <b>Non-Embedded Customer</b> (including <b>Pumped Storage Generators</b> with respect to Pumping <b>Demand</b>) in relation to its <b>Demand</b> and <b>Active Energy</b> requirements.</li> <li>(c) each <b>DC Converter Station</b> owner, in relation to <b>Demand</b> and <b>Active Energy</b> transferred (imported) to its <b>DC Converter Station</b>.</li> </ul> <p><b>Demand</b> of <b>Power Stations</b> directly connected to the <b>National Electricity Transmission System</b> is to be supplied by the <b>Generator</b> under PC.A.5.2.</p>
PC.A.4.1.3	References in this <b>PC</b> to data being supplied on a half hourly basis refer to it being supplied for each period of 30 minutes ending on the hour or half-hour in each hour.
PC.A.4.1.4	<b><u>Access Periods and Access Groups</u></b>
PC.A.4.1.4.1	Each <b>Connection Point</b> must belong to one, and only one, <b>Access Group</b> .
PC.A.4.1.4.2	Each <b>Transmission Interface Circuit</b> must have an <b>Access Period</b> .
PC.A.4.1.4.3	The <b>Access Period</b> shall <ul style="list-style-type: none"> <li>(a) normally be a minimum of 8 continuous weeks and can occur in any one of three maintenance years during the period from calendar week 13 to calendar week 43 (inclusive) in each year; or,</li> <li>(b) exceptionally and provided that agreement is reached between <b>NGET</b> and the relevant <b>User(s)</b>, such agreement to be sought in accordance with PC.7, the <b>Access Period</b> may be of a period not less than 4 continuous weeks and can occur in any one of three maintenance years during the period from calendar week 10 to calendar week 43 (inclusive) in each year.</li> </ul>
PC.A.4.1.4.4	<b>NGET</b> shall submit in writing no later than calendar week 6 in each year: <ul style="list-style-type: none"> <li>(a) the calendar weeks defining the proposed start and finish of each <b>Access Period</b> for each <b>Transmission Interface Circuit</b>.; and</li> <li>(b) the <b>Connection Points</b> in each <b>Access Group</b>.</li> </ul> <p>The submission by <b>NGET</b> under PC.A.4.1.4.4 (a) above shall commence in 2010 and shall then continue each year thereafter. The submission by <b>NGET</b> under PC.A.4.1.4.4 (b) shall commence in 2009 shall then continue each year thereafter.</p>



< End of OC1 >

## OPERATING CODE NO.2

### OPERATIONAL PLANNING AND DATA PROVISION

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## OPERATING CODE NO.2

### OPERATIONAL PLANNING AND DATA PROVISION

#### OC2.1 INTRODUCTION

OC2.1.1 **Operating Code No. 2 ("OC2")** is concerned with:

- (a) the co-ordination of the release of **Synchronous Generating Units** and **Power Park Modules**, the **National Electricity Transmission System** and **Network Operators' Systems** for construction, repair and maintenance;
- (b) provision by **NGET** of the **Surpluses** both for the **National Electricity Transmission System** and **System Zones**;
- (c) the provision by **Generators** of **Generation Planning Parameters** for **Gensets**, including **CCGT Module Planning Matrices** and **Power Park Module Planning Matrices**, to **NGET** for planning purposes only; and
- (d) the agreement for release of **Existing Gas Cooled Reactor Plant** for outages in certain circumstances.

OC2.1.2 (a) **Operational Planning** involves planning, through various timescales, the matching of generation output with forecast **National Electricity Transmission System Demand** together with a reserve of generation to provide a margin, taking into account outages of certain **Generating Units**, **Power Park Modules** and **DC Converters**, and of parts of the **National Electricity Transmission System** and of parts of **Network Operators' Systems** which is carried out to achieve, so far as possible, the standards of security set out in **NGET's Transmission Licence**, each **Relevant Transmission Licensee's Transmission Licence** or **Electricity Distribution Licence** as the case may be.

- (b) In general terms there is an "envelope of opportunity" for the release of **Synchronous Generating Units** and **Power Park Modules** and for the release of parts of the **National Electricity Transmission System** and parts of the **Network Operator's User Systems** for outages. The envelope is defined by the difference between the total generation output expected from **Large Power Stations**, **Medium Power Stations** and **Demand**, the operational planning margin and taking into account **External Interconnections**.

OC2.1.3 In this **OC2** for the purpose of **Generator** outage co-ordination Year 0 means the current calendar year at any time, Year 1 means the next calendar year at any time, Year 2 means the calendar year after Year 1, etc. For the purpose of **Transmission** outage planning Year 0 means the current **Financial Year** at any time, Year 1 means the next **Financial Year** at any time, Year 2 means the **Financial Year** after Year 1, etc. References to 'weeks' in **OC2** are to calendar weeks as defined in ISO 8601.

OC2.1.4 References in **OC2** to a **Generator's** "best estimate" shall be that **Generator's** best estimate acting as a reasonable and prudent **Generator** in all the circumstances.

OC2.1.5 References to **NGET** planning the **National Electricity Transmission System** outage programme on the basis of the **Final Generation Outage Programme**,

are to **NGET** planning against the **Final Generation Outage Programme** current at the time it so plans.

OC2.1.6 Where in **OC2** data is required to be submitted or information is to be given on a particular day, that data does not need to be submitted and that information does not need to be given on that day if it is not a **Business Day** or it falls within a holiday period (the occurrence and length of which shall be determined by **NGET**, in its reasonable discretion, and notified to **Users**). Instead, that data shall be submitted and/or that information shall be given on such other **Business Day** as **NGET** shall, in its reasonable discretion, determine. However, **NGET** may determine that that data and/or information need not be submitted or given at all, in which case it shall notify each **User** as appropriate.

OC2.1.7 In Scotland, it may be possible with the agreement of **NGET** to reduce the administrative burden for **Users** in producing planning information where either the output or demand is small.

## OC2.2 OBJECTIVE

OC2.2.1 (a) The objective of **OC2** is to seek to enable **NGET** to harmonise outages of **Synchronous Generating Units** and **Power Park Modules** in order that such outages are co-ordinated (taking account of **Embedded Medium Power Stations**) between **Generators** and **Network Operators**, and that such outages are co-ordinated taking into account **National Electricity Transmission System** outages and other **System** outages, so far as possible to minimise the number and effect of constraints on the **National Electricity Transmission System** or any other **System**.

(b) In the case of **Network Operator' User Systems** directly connected to the **National Electricity Transmission System** this means in particular that there will also need to be harmonisation of outages of **Embedded Synchronous Generating Units** and **Embedded Power Park Modules**, and **National Electricity Transmission System** outages, with **Network Operators** in respect of their outages on those **Systems**.

OC2.2.2 The objective of **OC2** is also to enable the provision by **NGET** of the **Surpluses** both for the **National Electricity Transmission System** and **System Zones**.

OC2.2.3 A further objective of **OC2** is to provide for the agreement for outages for **Existing Gas Cooled Reactor Plant** in certain circumstances and to enable a process to be followed in order to provide for that.

OC2.2.4 The boundaries of the **System Zones** will be determined by **NGET** from time to time taking into account the disposition of **Generators' Power Stations** within the **System Zones**. The location of the boundaries will be made available to all **Users**. Any **User** may request that **NGET** reviews any of the **System Zonal** boundaries if that **User** considers that the current boundaries are not appropriate, giving the reasons for their concerns. On receipt of such a request **NGET** will review the boundaries if, in **NGET's** reasonable opinion, such a review is justified.

## OC2.3 SCOPE

OC2.3.1 **OC2** applies to **NGET** and to **Users** which in **OC2** means:-

- (a) **Generators**, only in respect of their **Large Power Stations** or their **Power Stations** which are directly connected to **National Electricity Transmission System** (and the term **Generator** in this **OC2** shall be construed accordingly);
- (b) **Network Operators**; and
- (c) **Non-Embedded Customers**; and
- (d) **DC Converter Station** owners.

OC.2.3.2 **NGET** may provide to the **Relevant Transmission Licensees** any data which has been submitted to **NGET** by any **Users** in respect of **Relevant Units** pursuant to the following paragraphs of the **OC2**.

- OC2.4.1.2.1 (a)
- OC2.4.1.2.1 (e)
- OC2.4.1.2.1 (j)
- OC2.4.1.2.2 (a)
- OC2.4.1.2.2 (i)
- OC2.4.1.3.2 (a)
- OC2.4.1.3.2 (b)
- OC2.4.1.3.3
- OC2.4.2.1 (a)

## OC2.4 PROCEDURE

### OC2.4.1 Co-ordination of Outages

OC2.4.1.1 Under **OC2** the interaction between **NGET** and **Users** will be as follows:

- (a) Each **Generator** and **NGET** In respect of outages of **Synchronous generating Units** and **Power Park Modules** and in respect of outages of other **Plant** and/or **Apparatus** directly connected to the **National Electricity Transmission System**;
- (b) **NGET** and each **Generator** in respect of **National Electricity Transmission System** outages relevant to each **Generator** (other than in respect of **Embedded Small Power Stations** or **Embedded Medium Power Stations**);
- (c) **NGET** and each **Network Operator** in respect of outages of all **Embedded Large Power Stations** and in respect of outages of other **Plant** and/or **Apparatus** relating to such **Embedded Large Power Stations**;

- (d) **NGET and each Network Operator and each Non-Embedded Customer** in respect of **National Electricity Transmission System** outages relevant to the particular **Network Operator** or **Non-Embedded Customers**;
- (e) Each **Network Operator** and each **Non-Embedded Customer** and **NGET** in respect of **User System** outages relevant to **NGET**; and in respect of **Network Operators** only, outages of the **Network Operator's User System** that may impact upon an **Offshore Transmission System** connected to that **Network Operator's User System**.

OC2.4.1.2 PLANNING OF SYNCHRONOUS GENERATING UNIT AND POWER PARK MODULE OUTAGES

OC2.4.1.2.1 Operational Planning Phase - Planning for Calendar Years 3 to 5 inclusive – Weekly Resolution

In each calendar year:

- (a) By the end of week 2

Each **Generator** will provide **NGET** in writing with:

- (i) a provisional **Synchronous Generating Unit** and **Power Park Module** outage programme (covering all non-**Embedded Power Stations** and **Embedded Large Power Stations**) for Year 3 to Year 5 (inclusive) specifying the **Synchronous Generating Unit** and/or **Power Park Module** and MW concerned, duration of proposed outages, the preferred date for each outage and where there is a possibility of flexibility, the earliest start date and latest finishing date; and
  - (ii) a best estimate weekly **Output Usable** forecast of all its **Gensets** for Year 3 to Year 5.
- (b) Between the end of week 2 and the end of week 12

**NGET** will be:

- (i) calculating total winter peak generating capacity assumed to be available to the **Total System** (taking into account the import capacity which may be available from **External Interconnections**);
- (ii) calculating the total winter peak generating capacity expected from **Large Power Stations**, taking into account **Demand** forecasts and details of proposed use of **Demand Control** received under **OC1**, and an operational planning margin set by **NGET** (the "**Operational Planning Margin**");

- (iii) calculating the weekly peak generating capacity expected from **Large Power Stations** taking into account demand forecasts and details of proposed use of **Demand Control** received under **OC1**, and the **Operational Planning Margin** and **Zonal System Security Requirements**. The total weekly peak MW needed to be available is the "weekly total MW required".

The calculation under (iii) will effectively define the envelope of opportunity for outages of **Synchronous Generating Units** and **Power Park Modules**.

During this period, **NGET** may, as appropriate, contact each **Generator** who has supplied information to seek clarification on points.

(c) By the end of week 12

**NGET** will:

- (i) having taken into account the information notified to it by **Generators** and taking into account:-
  - (1) **National Electricity Transmission System** constraints and outages,
  - (2) **Network Operator System** constraints and outages, known to **NGET**, and
  - (3) the **Output Usable** required, in its view, to meet weekly total MW requirements,

provide each **Generator** in writing with any suggested amendments to the provisional outage programme supplied by the **Generator** which **NGET** believes necessary, and will advise **Generators** with **Large Power Stations** of the **Surpluses** both for the **National Electricity Transmission System** and **System Zones** and potential export limitations, on a weekly basis, which would occur without such amendments;

- (ii) provide each **Network Operator** in writing with potential outages of **Synchronous Generating Units** and/or **Power park Modules** which may, in the reasonable opinion of **NGET** and the **Network Operator**, affect the integrity of that **Network Operator's User System** provided that, in such circumstances **NGET** has notified the **Generator** concerned at least 48 hours beforehand of its intention to do so (including identifying the **Synchronous Generating Unit** and/or **Power Park Module** concerned).

(d) By the end of week 14

- (i) Where a **Generator** or a **Network Operator** is unhappy with the suggested amendments to its provisional outage programme (in the case of a **Generator**) or such potential outages (in the case of a **Network Operator**) it may contact **NGET** to explain its concerns and **NGET** and that **Generator** or **Network Operator** will then discuss the problem and seek to resolve it.

(ii) The possible resolution of the problem may require **NGET** or a **User** to contact other **Generators** and **Network Operators**, and joint meetings of all parties may, if any **User** feels it would be helpful, be convened by **NGET**. The need for further discussions, be they on the telephone or at meetings, can only be determined at the time.

(e) By the end of week 25

Each **Generator** will provide **NGET** in writing with an updated provisional **Synchronous Generating Unit** and **Power Park Module** outage programme covering both **Embedded** and non-**Embedded Large Power Stations** together with the best estimate weekly **Output Usable** forecasts for each **Genset**, in all cases for Year 3 to Year 5 (inclusive). The updated provisional **Synchronous Generating Unit** and **Power Park Module** outage programme will contain the MW concerned, duration of proposed outages, the preferred date for each outage and, where applicable, earliest start date and latest finishing date, together with an update of the **Output Usable** estimate supplied under (a)(ii) above.

(f) Between the end of week 25 and the end of week 28

**NGET** will be considering the updated provisional **Synchronous Generating Unit** and **Power Park Module** outage programme, together with the best estimate weekly **Output Usable** forecasts supplied to it by **Generators** under (e) and their **Registered Capacity** and will be analysing **Operational Planning Margins** for the period.

(g) By the end of week 28

**NGET** will:

(i) provide each **Generator** in writing with details of any suggested revisions considered by **NGET** as being necessary to the updated provisional **Synchronous Generating Unit** and **Power Park Module** outage programme supplied to **NGET** under (e) and will advise **Generators** with **Large Power Stations** of the **Surpluses** for the **National Electricity Transmission System** and **System Zones** and potential export limitations on a weekly basis which would occur without such revisions; and

(ii) provide each **Network Operator** in writing with the update of potential outages of **Synchronous Generating Units** and/or **Power Park Modules** which, in the reasonable opinion of **NGET** and the **Network Operator**, affect the integrity of that **Network Operator's User System**.

(h) By the end of week 31

Where a **Generator** or a **Network Operator** is unhappy with the revisions suggested to the updated provisional **Synchronous Generating Unit** and **Power Park Module** outage programme (in the case of a **Generator**) or such update of potential outages (in the case of a **Network Operator**) under (g) it may contact **NGET** to explain its concerns and the provisions set out in (d) above will apply to that process.



- (i) By the end of week 42

**NGET** will:

- (1) provide each **Generator** in writing with details of suggested revisions considered by **NGET** as being necessary to the updated provisional **Synchronous Generating Unit** and **Power Park Module** outage programme supplied to **NGET** and will advise **Generators** with **Large Power Stations** of the **Surpluses** for the **National Electricity Transmission System** and **System Zones** and potential export limitations, on a weekly basis which would occur without such revisions;
- (2) provide each **Network Operator** in writing with the update of potential outages of **Synchronous Generating Units** and/or **Power Park Modules** which may, in the reasonable opinion of **NGET** and the **Network Operator**, affect the integrity of that **Network Operator's User System** provided that, in such circumstances **NGET** has notified the **Generator** concerned at least 48 hours beforehand of its intention to do so (including identifying the **Synchronous Generating Units** and/or **Power Park Modules** concerned).

- (j) By the end of week 45

**NGET** will seek to agree a **Final Generation Outage Programme** for Year 3 to Year 5. If agreement cannot be reached on all aspects, **NGET** and each **Generator** will record their agreement on as many aspects as have been agreed and **NGET** will advise each **Generator** with **Large Power Stations** and each **Network Operator**, of the **Surpluses** for the **National Electricity Transmission System** and **System Zones** on a weekly basis which would occur in relation to those aspects not agreed. It is accepted that agreement of the **Final Generation Outage Programme** is not a commitment on **Generators** or **NGET** to abide by it, but **NGET** will be planning the **National Electricity Transmission System** outage programme on the basis of the **Final Generation Outage Programme** and if in the event the **Generator's** outages differ from those contained in the **Final Generation Outage Programme**, or in any way conflict with the **National Electricity Transmission System** outage programme, **NGET** need not alter the **National Electricity Transmission System** outage programme.

OC2.4.1.2.2 **Operational Planning Phase - Planning for Calendar Year 1 and Calendar Year 2 – Weekly Resolution**

The basis for **Operational Planning** for Year 1 and Year 2 will be the **Final Generation Outage Programmes** agreed for Years 2 and 3:

In each calendar year:

- (a) By the end of week 10

Each **Generator** will provide **NGET** in writing with its previously agreed **Final Generation Outage Programme** updated and best estimate weekly **Output Usable** forecasts for each **Genset** for weeks 1-52 of Years 1 and 2.

(b) Between the end of week 10 and the end of week 12

**NGET** will be considering the updated proposed **Synchronous Generating Unit** and **Power Park Module** outage programme together with the estimate of **Output Usable** supplied by **Generators** under (a) and will be analysing **Operational Planning Margins** for the period. Taking these into account together with **National Electricity Transmission System** constraints and outages and **Network Operator User System** constraints and outages known to **NGET**, **NGET** will assess whether the estimates of **Output Usable** supplied by **Generators** are sufficient to meet forecast **National Electricity Transmission System Demand** plus the **Operational Planning Margin**.

(c) By the end of week 12

**NGET** will:

- (i) notify each **Generator** in writing whether the **Output Usable** estimates are adequate for weeks 1-52 of Years 1 and 2, together with suggested changes to its **Final Generation Outage Programme** where necessary and will advise each **Generator** with **Large Power Stations** of the **Surpluses** both for the **National Electricity Transmission System** and **System Zones** and potential export limitations, on a weekly resolution which would occur without such changes;
- (ii) provide each **Network Operator** in writing with weekly **Output Usable** estimates of **Generators** for weeks 1-52 of Years 1 and 2, and updated details of potential outages of **Synchronous Generating Units** and/or **Power Park Modules** which may, in the reasonable opinion of **NGET** and the **Network Operator**, affect the integrity of that **Network Operator's User System** provided that, in such circumstances, **NGET** has notified the **Generator** concerned at least 48 hours beforehand of its intention to do so (including identifying the affected **Gensets** or **Synchronous Generating Units** and/or **Power Park Modules**, as appropriate).

(d) By the end of week 14

Where a **Generator** or a **Network Operator** is unhappy with any suggested changes to its **Final Generation Outage Programme** (in the case of a **Generator**) or such update of potential outages (in the case of a **Network Operator**), equivalent provisions to those set out in OC2.4.1.2.1(d) will apply.

(e) By the end of week 34

Each **Generator** will provide **NGET** in writing with revised best estimate weekly **Output Usable** forecasts for each **Genset** for weeks 1-52 of Years 1 and 2.

(f) Between the end of week 34 and the end of week 39

**NGET** will be analysing the revised estimates of **Output Usable** supplied by **Generators** under (e) and will be analysing **Operational Planning Margins** for the period. Taking these into account together with **National**

**Electricity Transmission System** constraints and outages and **Network Operator User System** constraints and outages known to **NGET**, **NGET** will assess whether the estimates of **Output Usable** supplied by **Generators** are sufficient to meet forecast **National Electricity Transmission System Demand** plus the **Operational Planning Margin**.

(g) By the end of week 39

**NGET** will:

- (i) notify each **Generator** in writing whether it accepts the **Output Usable** estimates for weeks 1-52 of Years 1 and 2, and of any suggested changes to its **Final Generation Outage Programme** where necessary and will advise **Generators** with **Large Power Stations** of the **Surpluses** both for the **National Electricity Transmission System** and **System Zones** and potential export limitations on a weekly basis which would occur without such changes;
- (ii) provide each **Network Operator** in writing with **Output Usable** estimates of **Generators** for weeks 1-52 of Years 1 and 2, and updated details of potential outages of **Synchronous Generating Units** and/or **Power Park Modules** which may, in the reasonable opinion of **NGET** and the **Network Operator**, affect the integrity of that **Network Operator's User System** provided that, in such circumstances, **NGET** has notified the **Generator** concerned at least 48 hours beforehand of its intention to do so (including identifying the affected **Gensets** or **Synchronous Generating Units** and/or **Power Park Modules**, as appropriate).

(h) By the end of week 46

Where a **Generator** or a **Network Operator**, is unhappy with any suggested changes to its **Final Generation Outage Programme** (in the case of a **Generator**) or such update of potential outages (in the case of a **Network Operator**), equivalent provisions to those set out in OC2.4.1.2.1(d) will apply.

(i) By the end of week 48

**NGET** will seek to agree the revised **Final Generation Outage Programme** for Year 1 and Year 2. If agreement cannot be reached on all aspects, **NGET** and each **Generator** will record their agreement on as many aspects as have been agreed and **NGET** will advise each **Generator** with **Large Power Stations** and each **Network Operator**, of **Generating Plant Demand Margins** for national and zonal groups, on a weekly basis, which would occur in relation to those aspects not agreed. It is accepted that agreement of the **Final Generation Outage Programme** is not a commitment on **Generators** or **NGET** to abide by it, but **NGET** will be planning the **National Electricity Transmission System** outage programme on the basis of the **Final Generation Outage Programme** and if, in the event, a **Generator's** outages differ from those contained in the **Final Generation Outage Programme**, or in any way conflict with the **National Electricity Transmission System** outage programme, **NGET** need not alter the **National Electricity Transmission System** outage programme.

#### OC2.4.1.2.3 Planning for Calendar Year 0 – Weekly Resolution

The basis for **Operational Planning** for Year 0 will be the revised **Final Generation Outage Programme** agreed for Year 1:

In each week:

(a) By 1600 hours each Wednesday – Weekly Resolution

Each **Generator** will provide **NGET** in writing with an update of the **Final Generation Outage Programme** and a best estimate weekly **Output Usable** forecast for each of its **Gensets** from the 2nd week ahead to the 52nd week ahead.

(b) Between 1600 hours Wednesday and 1600 hours Friday

**NGET** will be analysing the revised estimates of **Output Usable** supplied by **Generators** under (a) and will be analysing **Operational Planning Margins** for the period. Taking into account **National Electricity Transmission System** constraints and outages and **Network Operator User System** constraints and outages known to **NGET**, **NGET** will assess whether the estimates of **Output Usable** supplied by **Generators** are sufficient to meet forecast **National Electricity Transmission System Demand** plus the **Operational Planning Margin**.

(c) By 1600 hours each Friday

**NGET** will:

(i) notify each **Generator** with **Large Power Stations** and **Network Operator**, in writing if it considers the **Output Usable** forecasts will give **Surpluses** and potential export limitations both for the **National Electricity Transmission System** and **System Zones** from the 2<sup>nd</sup> week ahead to the 52nd week ahead;

(ii) provide each **Network Operator**, in writing with weekly **Output Usable** estimates of **Gensets** from the 2<sup>nd</sup> week ahead to the 52nd week ahead and updated outages of **Synchronous Generating Units** and/or **Power Park Modules** which may, in the reasonable opinion of **NGET** and the **Network Operator**, affect the integrity of that **Network Operator's User System** and in such circumstances, **NGET** shall notify the **Generator** concerned within 48 hours of so providing (including identifying the affected **Gensets** or **Synchronous Generating Units** and/or **Power Park Modules**, as appropriate), from the 2<sup>nd</sup> week ahead to the 52nd week ahead.

OC2.4.1.2.4 Programming Phase – 2-49 Days Ahead – Daily Resolution

(a) By 1200 hours each Friday

**NGET** will notify in writing each **Generator** with **Large Power Stations** and **Network Operator** if it considers the **Output Usable** forecasts will give MW shortfalls both nationally and for constrained groups for the period 2-7 weeks ahead.

(b) By 1100 hours each Business Day

Each **Generator** shall provide **NGET** in writing with the best estimate of daily **Output Usable** for each **Genset** for the period from and including day 2 ahead to day 14 ahead, including the forecast return to service date for any such **Generating Unit** or **Power Park Module** subject to **Planned Outage** or breakdown.

(c) By 1100 hours each Wednesday

For the period 2 to 49 days ahead, every Wednesday by 11:00 hours, each **Generator** shall provide **NGET** in writing best estimate daily **Output Usable** forecasts for each **Genset**, and changes (start and finish dates) to **Planned Outage** or to the return to service times of each **Synchronous Generating Unit** and/or **Power Park Module** which is subject to breakdown.

(d) Between 1100 hours and 1600 hours each **Business Day**

**NGET** will be analysing the revised estimates of **Output Usable** supplied by **Generators** under (b) and will be analysing **Operational Planning Margins** for the period 2-14 days ahead. Taking into account **National Electricity Transmission System** constraints and outages and **Network Operator User System** constraints and outages known to **NGET**, **NGET** will assess whether the estimates of **Output Usable** are sufficient to meet forecast **National Electricity Transmission System Demand** plus the **Operational Planning Margin**.

(e) By 1600 hours each **Business Day**

(i) **NGET** will notify in writing each **Generator** with **Large Power Stations** and each **Network Operator**, of the **Surpluses** both for the **National Electricity Transmission System** and **System Zones** and potential export limitations, for the period from and including day 2 ahead to day 14 ahead which it considers the **Output Usable** forecasts will give. The time of 1600 hours can only be met in respect of any **Generator** or **Network Operator** if all the information from all **Generators** was made available to **NGET** by 1100 hours and if a suitable electronic data transmission facility is in place between **NGET** and the **Generator** or the **Network Operator**, as the case may be, and if it is fully operational. In the event that any of these conditions is not met, or if it is necessary to revert to a manual system for analysing the information supplied and otherwise to be considered, **NGET** reserve the right to extend the timescale for issue of the information required under this sub-paragraph to each, or the relevant, **Generator** and/or **Network Operator** (as the case may be) provided that such information will in any event be issued by 1800 hours.

(ii) **NGET** will provide each **Network Operator**, where it has an effect on that **User**, in writing with **Output Usable** estimates of **Gensets** from and including day 2 ahead to day 14 ahead and updated outages of **Synchronous Generating Units** and/or **Power Park Modules** which are either in its **User System** or which may, in the reasonable opinion of **NGET** and the **Network Operator**, affect the integrity of that **Network Operator's User System** and in such circumstances, **NGET** shall notify the **Generator** concerned within 48 hours of so providing (including identifying the affected **Gensets** or **Synchronous Generating Units** and/or **Power Park Modules**, as appropriate), for the period from and including day 2 ahead to day 14 ahead.

OC2.4.1.3 Planning of **National Electricity Transmission System** Outages

OC2.4.1.3.1 **Operational Planning Phase - Planning for Financial Years 2 to 5 inclusive ahead**

**NGET** shall plan **National Electricity Transmission System** outages required in Years 2 to 5 inclusive required as a result of construction or refurbishment works. This contrasts with the planning of **National Electricity Transmission System** outages required in Years 0 and 1 ahead, when **NGET** also takes into account **National Electricity Transmission System** outages required as a result of maintenance.

**Users** should bear in mind that **NGET** will be planning the **National Electricity Transmission System** outage programme on the basis of the previous year's **Final Generation Outage Programme** and if in the event a **Generator's** or **Network Operator's** outages differ from those contained in the **Final Generation Outage Programme**, or in the case of **Network Operators**, those known to **NGET**, or in any way conflict with the **National Electricity Transmission System** outage programme, **NGET** need not alter the **National Electricity Transmission System** outage programme.

OC2.4.1.3.2 In each calendar year:

(a) By the end of week 8

Each **Network Operator** will notify **NGET** in writing of details of proposed outages in Years 2-5 ahead in its **User System** which may affect the performance of the **Total System** (which includes but is not limited to outages of **User System Apparatus** at **Grid Supply Points** and outages which constrain the output of **Synchronous generating Units** and/or **Power Park Modules Embedded** within that **User System**).

Each **Network Operator** will notify **NGET** in writing of details of proposed outages in Years 2-5 ahead in its **User System** which may affect the declared values of **Maximum Export Capacity** and/or **Maximum Import Capacity** for each **Interface Point** within its **User System** together with the **Network Operator's** revised best estimate of the **Maximum Export Capacity** and/or **Maximum Import Capacity** during such outages. **Network Operators** will also notify **NGET** of any automatic and/or manual post fault actions that it intends to utilise or plans to utilise during such outages.

(b) By the end of week 13

Each **Generator** will inform **NGET** in writing of proposed outages in Years 2 - 5 ahead of **Generator** owned **Apparatus** (eg. busbar selectors) other than **Synchronous Generating Units** and/or **Power Park Modules**, at each **Grid Entry Point**.

**NGET** will provide to each **Network Operator** and to each **Generator** a copy of the information given to **NGET** under paragraph (a) above (other than the information given by that **Network Operator**). In relation to a **Network Operator**, the data must only be used by that **User** in operating that **Network Operator's User System** and must not be used for any

other purpose or passed on to, or used by, any other business of that **User** or to, or by, any person within any other such business or elsewhere.

(c) By the end of week 28

**NGET** will provide each **Network Operator** in writing with details of proposed outages in Years 2-5 ahead which may, in **NGET's** reasonable judgement, affect the performance of that **Network Operator's User System**.

(d) By the end of week 30

Where **NGET** or a **Network Operator** is unhappy with the proposed outages notified to it under (a), (b) or (c) above, as the case may be, equivalent provisions to those set out in OC2.4.1.2.1 (d) will apply.

(e) By the end of week 34

**NGET** will draw up a draft **National Electricity Transmission System** outage plan covering the period Years 2 to 5 ahead and **NGET** will notify each **Generator** and **Network Operator** in writing of those aspects of the plan which may operationally affect such **Generator** (other than those aspects which may operationally affect **Embedded Small Power Stations** or **Embedded Medium Power Stations**) or **Network Operator**. **NGET** will also indicate where a need may exist to issue other operational instructions or notifications (including but not limited to the requirement for the arming of an **Operational Intertripping** scheme) or **Emergency Instructions to Users** in accordance with **BC2** to allow the security of the **National Electricity Transmission System** to be maintained within the **Licence Standards**.

OC2.4.1.3.3 **Operational Planning Phase - Planning for Financial Year 1 ahead**

Each calendar year **NGET** shall update the draft **National Electricity Transmission System** outage plan prepared under OC2.4.1.3.2 above and shall in addition take into account outages required as a result of maintenance work.

In each calendar year:

(a) By the end of week 13

**Generators** and **Non-Embedded Customers** will inform **NGET** in writing of proposed outages for Year 1 of **Generator** owned **Apparatus** at each **Grid Entry Point** (e.g. busbar selectors) other than **Synchronous Generating Units** and/or **Power Park Modules** or **Non-Embedded Customer** owned **Apparatus**, as the case may be, at each **Grid Supply Point**.

(b) By the end of week 28

**NGET** will provide each **Network Operator** and each **Non-Embedded Customer** in writing with details of proposed outages in Year 1 ahead which may, in **NGET's** reasonable judgement, affect the performance of its **User System** or the **Non-Embedded Customer Apparatus** at the **Grid Supply Point**.

(c) By the end of week 32

Each **Network Operator** will notify **NGET** in writing with details of proposed outages in Year 1 in its **User System** which may affect the performance of the **Total System** (which includes but is not limited to outages of **User System Apparatus** at **Grid Supply Points** and outages which constrain the output of **Synchronous Generating Units** and/or **Power Park Modules Embedded** within that **User System**).

Each **Network Operator** will notify **NGET** in writing of details of proposed outages in Year 1 in its **User System** which may affect the declared values of **Maximum Export Capacity** and/or **Maximum Import Capacity** for each **Interface Point** within its **User System** together with the **Network Operator's** revised best estimate of the **Maximum Export Capacity** and/or **Maximum Import Capacity** during such outages. **Network Operators** will also notify **NGET** of any automatic and/or manual post fault actions that it intends to utilise or plans to utilise during such outages.

Each **Network Operator** will also notify **NGET** in writing of any revisions to **Interface Point Target Voltage/Power Factor** data submitted pursuant to PC.A.2.5.4.2.

(d) Between the end of week 32 and the end of week 34

**NGET** will draw up a revised **National Electricity Transmission System** outage plan (which for the avoidance of doubt includes **Transmission Apparatus** at the **Connection Points**).

(e) By the end of week 34

**NGET** will notify each **Generator** and **Network Operator**, in writing, of those aspects of the **National Electricity Transmission System** outage programme which may, in **NGET's** reasonable opinion, operationally affect that **Generator** (other than those aspects which may operationally affect **Embedded Small Power Stations** or **Embedded Medium Power Stations**) or **Network Operator** including in particular proposed start dates and end dates of relevant **National Electricity Transmission System** outages.

**NGET** will provide to each **Network Operator** and to each **Generator** a copy of the information given to **NGET** under paragraph (c) above (other than the information given by that **Network Operator**). In relation to a **Network Operator**, the data must only be used by that **User** in operating that **Network Operator's User System** and must not be used for any other purpose or passed on to, or used by, any other business of that **User** or to, or by, any person within any other such business or elsewhere.

(f) By the end of week 36

Where a **Generator** or **Network Operator** is unhappy with the proposed aspects notified to it under (e) above, equivalent provisions to those set out in OC2.4.1.2.1 (d) will apply.



- (g) Between the end of week 34 and 49

**NGET** will draw up a final **National Electricity Transmission System** outage plan covering Year 1.

- (h) By the end of week 49

(i) **NGET** will complete the final **National Electricity Transmission System** outage plan for Year 1. The plan for Year 1 becomes the final plan for Year 0 when by expiry of time Year 1 becomes Year 0.

(ii) **NGET** will notify each **Generator** and each **Network Operator** in writing of those aspects of the plan which may operationally affect such **Generator** (other than those aspects which may operationally affect **Embedded Small Power Stations** or **Embedded Medium Power Stations**) or **Network Operator** including in particular proposed start dates and end dates of relevant **National Electricity Transmission System** outages. **NGET** will also indicate where a need may exist to issue other operational instructions or notifications (including but not limited to the requirement for the arming of an **Operational Intertripping** scheme) or **Emergency Instructions** to **Users** in accordance with **BC2** to allow the security of the **National Electricity Transmission System** to be maintained within the **Licence Standards**. **NGET** will also inform each relevant **Non-Embedded Customer** of the aspects of the plan which may affect it.

(iii) In addition, in relation to the final **National Electricity Transmission System** outage plan for Year 1, **NGET** will provide to each **Generator** a copy of the final **National Electricity Transmission System** outage plan for that year. OC2.4.1.3.4 contains provisions whereby updates of the final **National Electricity Transmission System** outage plan are provided. The plan and the updates will be provided in writing. It should be noted that the final **National Electricity Transmission System** outage plan for Year 1 and the updates will not give a complete understanding of how the **National Electricity Transmission System** will operate in real time, where the **National Electricity Transmission System** operation may be affected by other factors which may not be known at the time of the plan and the updates. Therefore, **Users** should place no reliance on the plan or the updates showing a set of conditions which will actually arise in real time.

- (i) Information Release or Exchange

This paragraph (i) contains alternative requirements on **NGET**, paragraph (z) being an alternative to a combination of paragraphs (x) and (y). Paragraph (z) will only apply in relation to a particular **User** if **NGET** and that **User** agree that it should apply, in which case paragraphs (x) and (y) will not apply. In the absence of any relevant agreement between **NGET** and the **User**, **NGET** will only be required to comply with paragraphs (x) and (y).

Information Release to each **Network Operator** and **Non-Embedded Customer**

Between the end of Week 34 and 49 **NGET** will upon written request:

- (x) for radial systems, provide each **Network Operator** and **Non Embedded Customer** with data to allow the calculation by the **Network Operator**, and each **Non Embedded Customer**, of symmetrical and asymmetrical fault levels; and
- (y) for interconnected **Systems**, provide to each **Network Operator** an equivalent network, sufficient to allow the identification of symmetrical and asymmetrical fault levels, and power flows across interconnecting **User Systems** directly connected to the **National Electricity Transmission System**; or

System Data Exchange

- (z) as part of a process to facilitate understanding of the operation of the **Total System**,
  - (1) **NGET** will make available to each **Network Operator**, the **National Electricity Transmission System Study Network Data Files** covering Year 1 which are of relevance to that **User's System**;
  - (2) where **NGET** and a **User** have agreed to the use of data links between them, the making available will be by way of allowing the **User** access to take a copy of the **National Electricity Transmission System Study Network Data Files** once during that period. The **User** may, having taken that copy, refer to the copy as often as it wishes. Such access will be in a manner agreed by **NGET** and may be subject to separate agreements governing the manner of access. In the absence of agreement, the copy of the **National Electricity Transmission System Study Network Data Files** will be given to the **User** on a disc, or in hard copy, as determined by **NGET**;
  - (3) the data contained in the **National Electricity Transmission System Study Network Data Files** represents **NGET's** view of operating conditions although the actual conditions may be different;
  - (4) **NGET** will notify each **Network Operator**, as soon as reasonably practicable after it has updated the **National Electricity Transmission System Study Network Data Files** covering Year 1 that it has done so, when this update falls before the next annual update under this OC2.4.1.3.3(i). **NGET** will then make available to each **Network Operator** who has received an earlier version (and in respect of whom the agreement still exists), the updated **National Electricity Transmission System Study Network Files** covering the balance of Years 1 and 2 which remain given the passage of time, and which are of relevance to that **User's System**. The provisions of paragraphs (2) and (3) above shall apply to the making available of these updates;
  - (5) the data from the **National Electricity Transmission System Study Network Data Files** received by each **Network Operator**

must only be used by that **User** in operating that **Network Operator's User System** and must not be used for any other purpose or passed on to, or used by, any other business of that **User** or to, or by, any person within any other such business or elsewhere.

OC2.4.1.3.4 **Operational Planning Phase - Planning in Financial Year 0 down to the Programming Phase (and in the case of load transfer capability, also during the Programming Phase)**

- (a) The **National Electricity Transmission System** outage plan for Year 1 issued under OC2.4.1.3.3 shall become the plan for Year 0 when by expiry of time Year 1 becomes Year 0.
- (b) Each **Generator** or **Network Operator** or **Non-Embedded Customer** may at any time during Year 0 request **NGET** in writing for changes to the outages requested by them under OC2.4.1.3.3. In relation to that part of Year 0, excluding the period 1-7 weeks from the date of request, **NGET** shall determine whether the changes are possible and shall notify the **Generator, Network Operator** or **Non-Embedded Customer** in question whether this is the case as soon as possible, and in any event within 14 days of the date of receipt by **NGET** of the written request in question.

Where **NGET** determines that any change so requested is possible and notifies the relevant **User** accordingly, **NGET** will provide to each **Network Operator** and each **Generator** a copy of the request to which **NGET** has agreed which relates to outages on **Systems of Network Operators** (other than any request made by that **Network Operator**). The information must only be used by that **Network Operator** in operating that **Network Operator's User System** and must not be used for any other purpose or passed on to, or used by, any other business of that **User** or to, or by, any person within any other such business or elsewhere.

- (c) During Year 0 (including the **Programming Phase**) each **Network Operator** shall at **NGET's** request make available to **NGET** such details of automatic and manual load transfer capability of:
  - (i) 12MW or more (averaged over any half hour) for England and Wales
  - (ii) 10MW or more (averaged over any half hour) for Scotland

between **Grid Supply Points**.

During Year 0 (including the **Programming Phase**) each **Network Operator** shall notify **NGET** of any revisions to the information provided pursuant to OC2.4.1.3.3 (c) for **Interface Points** as soon as reasonably practicable after the **Network Operator** becomes aware of the need to make such revisions.

- (d) When necessary during Year 0, **NGET** will notify each **Generator** and **Network Operator** and each **Non-Embedded Customer**, in writing of those aspects of the **National Electricity Transmission System** outage programme in the period from the 8th week ahead to the 52nd week ahead, which may, in **NGET's** reasonable opinion, operationally affect that **Generator** (other than those aspects which may operationally affect **Embedded Small Power Stations** or **Embedded Medium Power Stations**) or **Network Operator** or **Non-Embedded Customer** including

in particular proposed start dates and end dates of relevant **National Electricity Transmission System** outages.

**NGET** will also notify changes to information supplied by **NGET** pursuant to OC2.4.1.3.3(i)(x) and (y) except where in relation to a **User** information was supplied pursuant to OC2.4.1.3.3(i)(z). In that case:-

- (i) **NGET** will, by way of update of the information supplied by it pursuant to OC2.4.1.3.3(i)(z), make available at the first time in Year 0 that it updates the **National Electricity Transmission System Study Network Data Files** in respect of Year 0 (such update being an update on what was shown in respect of Year 1 which has then become Year 0) to each **Network Operator** who has received an earlier version under OC2.4.1.3.3(i)(z) (and in respect of whom the agreement still exists), the **National Electricity Transmission System Study Network Data Files** covering Year 0 which are of relevance to that **User's System**.
- (ii) **NGET** will notify each relevant **Network Operator**, as soon as reasonably practicable after it has updated the **National Electricity Transmission System Study Network Data Files** covering Year 0, that it has done so. **NGET** will then make available to each such **Network Operator**, the updated **National Electricity Transmission System Study Network Data Files** covering the balance of Year 0 which remains given the passage of time, and which are of relevance to that **User's System**.
- (iii) The provisions of OC2.4.1.3.3(i)(z)(2), (3) and (5) shall apply to the provision of data under this part of OC2.4.1.3.4(d) as if set out in full.

**NGET** will also indicate where a need may exist to issue other operational instructions or notifications (including but not limited to the requirement for the arming of an **Operational Intertripping** scheme) or **Emergency Instructions to Users** in accordance with **BC2** to allow the security of the **National Electricity Transmission System** to be maintained within the **Licence Standards**.

- (e) In addition, by the end of each month during Year 0, **NGET** will provide to each **Generator** a notice containing any revisions to the final **National Electricity Transmission System** outage plan for Year 1, provided to the **Generator** under OC2.4.1.3.3 or previously under this provision, whichever is the more recent.

#### OC2.4.1.3.5 Programming Phase

- (a) By 1600 hours each Thursday
  - (i) **NGET** shall continue to update a preliminary **National Electricity Transmission System** outage programme for the eighth week ahead, a provisional **National Electricity Transmission System** outage programme for the next week ahead and a final day ahead **National Electricity Transmission System** outage programme for the following day.
  - (ii) **NGET** will notify each **Generator** and **Network Operator** and each **Non-Embedded Customer**, in writing of those aspects of the

preliminary **National Electricity Transmission System** outage programme which may operationally affect each **Generator** (other than those aspects which may operationally affect **Embedded Small Power Stations** or **Embedded Medium Power Stations**) or **Network Operator** and each **Non-Embedded Customer** including in particular proposed start dates and end dates of relevant **National Electricity Transmission System** outages.

**NGET** will also notify changes to information supplied by **NGET** pursuant to OC2.4.1.3.3(i)(x) and (y) except where in relation to a **User** information was supplied pursuant to OC2.4.1.3.3(i)(z). In that case:-

1. **NGET** will, by way of update of the information supplied by it pursuant to OC2.4.1.3.3(i)(z), make available the **National Electricity Transmission System Study Network Data Files** for the next week ahead and
2. **NGET** will notify each relevant **Network Operator**, as soon as reasonably practicable after it has updated the **National Electricity Transmission System Study Network Data Files** covering the next week ahead that it has done so, and
3. The provisions of OC2.4.1.3.3(i)(z)(2), (3) and (5) shall apply to the provision of data under this part of OC2.4.1.3.5(a)(ii) as if set out in full.

**NGET** may make available the **National Electricity Transmission System Study Network Data Files** for the next week ahead where **NGET** and a particular **User** agree, and in such case the provisions of OC2.4.1.1.3.3(i)(x) and (y) and the provisions of OC2.4.1.3.4(d) and OC2.4.1.3.5(a) which relate to OC2.4.1.1.3.3(i)(x) and (y) shall not apply. In such case the provisions of this OC2.4.1.3.5(a)(ii)2 and 3 shall apply to the provision of the data under this part of OC2.4.1.3.5(a)(ii) as if set out in full.

**NGET** will also indicate where a need may exist to arm an **Operational Intertripping** scheme, emergency switching, emergency **Demand** management or other measures including the issuing of other operational instructions or notifications or **Emergency Instructions to Users** in accordance with **BC2** to allow the security of the **National Electricity Transmission System** to be maintained within the **Licence Standards**.

- (b) By 1000 hours each Friday

**Generators** and **Network Operators** will discuss with **NGET** and confirm in writing to **NGET**, acceptance or otherwise of the requirements detailed under OC2.4.1.3.5.

**Network Operators** shall confirm for the following week:

- (i) the details of any outages of its **User System** that will restrict the **Maximum Export Capacity** and/or **Maximum Import Capacity** at any **Interface Points** within its **User System** for the following week; and

- (ii) any changes to the previously declared values of the **Interface Point Target Voltage/Power Factor**.
- (c) By 1600 hours each Friday
- (i) **NGET** shall finalise the preliminary **National Electricity Transmission System** outage programme up to the seventh week ahead. **NGET** will endeavour to give as much notice as possible to a **Generator** with nuclear **Large Power Stations** which may be operationally affected by an outage which is to be included in such programme.
  - (ii) **NGET** shall finalise the provisional **National Electricity Transmission System** outage programme for the next week ahead.
  - (iii) **NGET** shall finalise the **National Electricity Transmission System** outage programme for the weekend through to the next normal working day.
  - (iv) In each case **NGET** will indicate the factors set out in (a)(ii) above (other than those aspects which may operationally affect **Embedded Small Power Stations** or **Embedded Medium Power Stations**) to the relevant **Generators** and **Network Operators** and **Non-Embedded Customers**.
  - (v) Where a **Generator** with nuclear **Large Power Stations** which may be operationally affected by the preliminary **National Electricity Transmission System** outage programme referred to in (i) above (acting as a reasonable operator) is concerned on grounds relating to safety about the effect which an outage within such outage programme might have on one or more of its nuclear **Large Power Stations**, it may contact **NGET** to explain its concerns and discuss whether there is an alternative way of taking that outage (having regard to technical feasibility). If there is such an alternative way, but **NGET** refuses to adopt that alternative way in taking that outage, that **Generator** may involve the **Disputes Resolution Procedure** to decide on the way the outage should be taken. If there is no such alternative way, then **NGET** may take the outage despite that **Generator's** concerns.
- (d) By 1600 hours each Monday, Tuesday, Wednesday and Thursday
- (i) **NGET** shall prepare a final **National Electricity Transmission System** outage programme for the following day.
  - (ii) **NGET** shall notify each **Generator** and **Network Operator** and **Non-Embedded Customer** in writing of the factors set out in (a)(ii) above (other than those aspects which may operationally affect **Embedded Small Power Stations** or **Embedded Medium Power Stations**).

## OC2.4.2 DATA REQUIREMENTS

OC2.4.2.1 When a **Statement of Readiness** under the **Bilateral Agreement** and/or **Construction Agreement** is submitted, and thereafter in calendar week 24 in each calendar year,

- (a) each **Generator** shall (subject to OC2.4.2.1(k)) in respect of each of its:-
- (i) **Gensets** (in the case of the **Generation Planning Parameters**); and
  - (ii) **CCGT Units** within each of its **CCGT Modules** at a **Large Power Station** (in the case of the **Generator Performance Chart**)
- submit to **NGET** in writing the **Generation Planning Parameters** and the **Generator Performance Chart**.
- (b) Each shall meet the requirements of CC.6.3.2 and shall reasonably reflect the true operating characteristics of the **Genset**.
- (c) They shall be applied (unless revised under this **OC2** or (in the case of the **Generator Performance Chart** only) **BC1** in relation to **Other Relevant Data**) from the **Completion Date**, in the case of the ones submitted with the **Statement of Readiness**, and in the case of the ones submitted in calendar week 24, from the beginning of week 25 onwards.
- (d) They shall be in the format indicated in Appendix 1 for these charts and as set out in Appendix 2 for the **Generation Planning Parameters**.
- (e) Any changes to the **Generator Performance Chart** or **Generation Planning Parameters** should be notified to **NGET** promptly.
- (f) **Generators** should note that amendments to the composition of the **CCGT Module** or **Power Park Module** at **Large Power Stations** may only be made in accordance with the principles set out in PC.A.3.2.3 or PC.A.3.2.4 respectively. If in accordance with PC.A.3.2.3 or PC.A.3.2.4 an amendment is made, any consequential changes to the **Generation Planning Parameters** should be notified to **NGET** promptly.
- (g) **The Generator Performance Chart** must be as described below and demonstrate the limitation on reactive capability of the **System** voltage at 3% above nominal. It must also include any limitations on output due to the prime mover (both maximum and minimum), **Generating Unit** step up transformer or **User System**.
- (i) For a **Synchronous Generating Unit** on a **Generating Unit** specific basis at the **Generating Unit** Stator Terminals. It must include details of the **Generating Unit** transformer parameters.
  - (ii) For a **Non-Synchronous Generating Unit** (excluding a **Power Park Unit**) on a **Generating Unit** specific basis at the **Grid Entry Point** (or **User System Entry Point** if Embedded).
  - (iii) For a **Power Park Module**, on a **Power Park Module** specific basis at the **Grid Entry Point** (or **User System Entry Point** if Embedded).
  - (iv) For a **DC Converter** on a **DC Converter** specific basis at the **Grid Entry Point** (or **User System Entry Point** if Embedded).

- (h) For each **CCGT Unit**, and any other **Generating Unit** or **Power Park Module** whose performance varies significantly with ambient temperature, the **Generator Performance Chart** shall show curves for at least two values of ambient temperature so that **NGET** can assess the variation in performance over all likely ambient temperatures by a process of linear interpolation or extrapolation. One of these curves shall be for the ambient temperature at which the **Generating Unit's** output, or **CCGT Module** at a **Large Power Station** output or **Power Park Module's** output, as appropriate, equals its **Registered Capacity**.
- (i) The **Generation Planning Parameters** supplied under OC2.4.2.1 shall be used by **NGET** for operational planning purposes only and not in connection with the operation of the **Balancing Mechanism** (subject as otherwise permitted in the **BCs**).
- (j) Each **Generator** shall in respect of each of its **CCGT Modules** at **Large Power Stations** submit to **NGET** in writing a **CCGT Module Planning Matrix**. It shall be prepared on a best estimate basis relating to how it is anticipated the **CCGT Module** will be running and which shall reasonably reflect the true operating characteristics of the **CCGT Module**. It will be applied (unless revised under this OC2) from the **Completion Date**, in the case of the one submitted with the **Statement of Readiness**, and in the case of the one submitted in calendar week 24, from the beginning of week 31 onwards. It must show the combination of **CCGT Units** which would be running in relation to any given MW output, in the format indicated in Appendix 3.

Any changes must be notified to **NGET** promptly. **Generators** should note that amendments to the composition of the **CCGT Module** at **Large Power Stations** may only be made in accordance with the principles set out in PC.A.3.2.3. If in accordance with PC.A.3.2.3 an amendment is made, an updated **CCGT Module Planning Matrix** must be immediately submitted to **NGET** in accordance with this OC2.4.2.1(b).

The **CCGT Module Planning Matrix** will be used by **NGET** for operational planning purposes only and not in connection with the operation of the **Balancing Mechanism**.

- (k) Each **Generator** shall in respect of each of its **Cascade Hydro Schemes** also submit the **Generation Planning Parameters** detailed at OC2.A.2.6 to OC2.A.2.10 for each **Cascade Hydro Scheme**. Such parameters need not also be submitted for the individual **Gensets** within such **Cascade Hydro Scheme**.
- (l) Each **Generator** shall in respect of each of its **Power Park Modules** at **Large Power Stations** submit to **NGET** in writing a **Power Park Module Planning Matrix**. It shall be prepared on a best estimate basis relating to how it is anticipated the **Power Park Module** will be running and which shall reasonably reflect the operating characteristics of the **Power Park Module**. It will be applied (unless revised under this OC2) from the **Completion Date**, in the case of the one submitted with the **Statement of Readiness**, and in the case of the one submitted in calendar week 24, from the beginning of week 31 onwards. It must show the number of each type of **Power Park Unit** in the **Power Park Module** typically expected to be available to generate, in the format indicated in Appendix 4. The **Power Park Module Planning Matrix** shall be accompanied by a graph showing



the variation in MW output with **Intermittent Power Source** (e.g. MW vs wind speed) for the **Power Park Module**. The graph shall indicate the typical value of the **Intermittent Power Source** for the **Power Park Module**.

Any changes must be notified to **NGET** promptly. **Generators** should note that amendments to the composition of the **Power Park Module** at **Large Power Stations** may only be made in accordance with the principles set out in PC.A.3.2.4. If in accordance with PC.A.3.2.4 an amendment is made, an updated **Power Park Module Planning Matrix** must be immediately submitted to **NGET** in accordance with this OC2.4.2.1(a).

The **Power Park Module Planning Matrix** will be used by **NGET** for operational planning purposes only and not in connection with the operation of the **Balancing Mechanism**.

OC2.4.2.2 Each **Network Operator** shall by 1000 hrs on the day falling seven days before each **Operational Day** inform **NGET** in writing of any changes to the circuit details called for in PC.A.2.2.1 which it is anticipated will apply on that **Operational Day** (under **BC1** revisions can be made to this data).

OC2.4.3 **NEGATIVE RESERVE ACTIVE POWER MARGINS**

OC2.4.3.1 In each calendar year, by the end of week 39 **NGET** will, taking into account the **Final Generation Outage Programme** and forecast of **Output Usable** supplied by each **Generator**, issue a notice in writing to:-

- (a) all **Generators** with **Large Power Stations** listing any period in which there is likely to be an unsatisfactory **System NRAPM**; and
- (b) all **Generators** with **Large Power Stations** which may, in **NGET's** reasonable opinion be affected, listing any period in which there is likely to be an unsatisfactory **Localised NRAPM**, together with the identity of the relevant **System Constraint Group** or **Groups**,

within the next calendar year, together with the margin. **NGET** and each **Generator** will take these into account in seeking to co-ordinate outages for that period.

OC2.4.3.2 (a) By 0900 hours each **Business Day**

Each **Generator** shall provide **NGET** in writing with a best estimate of **Genset** inflexibility on a daily basis for the period 2 to 14 days ahead (inclusive).

(b) By 1600 hours each **Wednesday**

Each **Generator** shall provide **NGET** in writing with a best estimate of **Genset** inflexibility on a weekly basis for the period 2 to 7 weeks ahead (inclusive).

(c) Between 1600 hours each **Wednesday** and 1200 hours each **Friday**

(i) If **NGET**, taking into account the estimates supplied by **Generators** under (b) above, and forecast **Demand** for the period, foresees that:-

- (1) the level of the **System NRAPM** for any period within the period 2 to 7 weeks ahead (inclusive) is too low, it will issue a notice in writing to all **Generators** and **Network Operators** listing any periods and levels of **System NRAPM** within that period; and/or
- (2) having also taken into account the appropriate limit on transfers to and from a **System Constraint Group**, the level of **Localised NRAPM** for any period within the period 2 to 7 weeks ahead (inclusive) is too low for a particular **System Constraint Group**, it will issue a notice in writing to all **Generators** and **Network Operators** which may, in **NGET's** reasonable opinion be affected by that **Localised NRAPM**, listing any periods and levels of **Localised NRAPM** within that period. A separate notice will be given in respect of each affected **System Constraint Group**.

## Outages Adjustments

- (ii) **NGET** will then contact **Generators** in respect of their **Large Power Stations** to discuss outages as set out in the following paragraphs of this OC2.4.3.2.
- (iii) **NGET** will contact all **Generators** in the case of low **System NRAPM** and will contact **Generators** in relation to relevant **Large Power Stations** in the case of low **Localised NRAPM**. **NGET** will raise with each **Generator** the problems it is anticipating due to the low **System NRAPM** or **Localised NRAPM** and will discuss:-
  - (1) whether any change is possible to the estimate of **Genset** inflexibility given under (b) above; and
  - (2) whether **Genset** outages can be taken to coincide with the periods of low **System NRAPM** or **Localised NRAPM** (as the case may be).

In relation to **Generators** with nuclear **Large Power Stations** the discussions on outages can include the issue of whether outages can be taken for re-fuelling purposes to coincide with the relevant low **System NRAPM** and/or **Localised NRAPM** periods.

- (iv) If agreement is reached with a **Generator** (which unlike the remainder of **OC2** will constitute a binding agreement), then such **Generator** will take such outage, as agreed with **NGET**, and **NGET** will issue a revised notice in writing to the **Generators** and **Network Operators** to which it sent notices under (i) above, reflecting the changes brought about to the periods and levels of **System NRAPM** and/or **Localised NRAPM** by the agreements with **Generators**.
- (d) By 1600 hours each day
- (i) If **NGET**, taking into account the estimates supplied under (a) above, and forecast **Demand** for the period, foresees that:-
    - (1) the level of **System NRAPM** for any period within the period of 2 to 14 days ahead (inclusive) is too low, it will issue a notice in writing to all **Generators** and **Network Operators** listing the periods and levels of **System NRAPM** within those periods; and/or
    - (2) having also taken into account the appropriate limit on transfers to and from a **System Constraint Group**, the level of **Localised NRAPM** for any period within the period of 2 to 14 days ahead (inclusive) is too low for a particular **System Constraint Group**, it will issue a notice in writing to all **Generators** and **Network Operators** which may, in **NGET's** reasonable opinion be affected by that **Localised NRAPM**, listing any periods and levels of **Localised NRAPM** within that period. A separate notice will be given in respect of each affected **System Constraint Group**.
  - (ii) **NGET** will contact all **Generators** in respect of their **Large Power Stations** (or in the case of **Localised NRAPM**, all **Generators** which

may, in **NGET's** reasonable opinion be affected, in respect of their relevant **Large Power Stations**) to discuss whether any change is possible to the estimate of **Genset** inflexibility given under (a) above and to consider **Large Power Station** outages to coincide with the periods of low **System NRAPM** and/or **Localised NRAPM** (as the case may be).

- (e) If on the day prior to a **Operational Day**, it is apparent from the **BM Unit Data** submitted by **Users** under **BC1** that **System NRAPM** and/or **Localised NRAPM** (as the case may be) is, in **NGET's** reasonable opinion, too low, then in accordance with the procedures and requirements set out in BC1.5.5 **NGET** may contact **Users** to discuss whether changes to **Physical Notifications** are possible, and if they are, will reflect those in the operational plans for the next following **Operational Day** or will, in accordance with BC2.9.4 instruct **Generators** to **De-Synchronise** a specified **Genset** for such period. In determining which **Genset** to so instruct, **BC2** provides that **NGET** will not (other than as referred to below) consider in such determination (and accordingly shall not instruct to **De-Synchronise**) any **Genset** within an **Existing Gas Cooled Reactor Plant**. **BC2** further provides that:-
- (i) **NGET** is permitted to instruct to **De-Synchronise** any **Gensets** within an **Existing AGR Plant** if those **Gensets** within an **Existing AGR Plant** have failed to offer to be flexible for the relevant instance at the request of **NGET** provided the request is within the **Existing AGR Plant Flexibility Limit**.
  - (ii) **NGET** will only instruct to **De-Synchronise** any **Gensets** within an **Existing Magnox Reactor Plant** or within an **Existing AGR Plant** (other than under (i) above) if the level of **System NRAPM** (taken together with **System** constraints) and/or **Localised NRAPM** is such that it is not possible to avoid **De-Synchronising** such **Generating Unit**, and provided the power flow across each **External Interconnection** is either at zero or results in an export of power from the **Total System**. This proviso applies in all cases in the case of **System NRAPM** and in the case of **Localised NRAPM**, only when the power flow would have a relevant effect.

#### OC2.4.4 FREQUENCY SENSITIVE OPERATION

By 1600 hours each Wednesday

- OC2.4.4.1 Using such information as **NGET** shall consider relevant including, if appropriate, forecast **Demand**, any estimates provided by **Generators** of **Genset** inflexibility and anticipated plant mix relating to operation in **Frequency Sensitive Mode**, **NGET** shall determine for the period 2 to 7 weeks ahead (inclusive) whether it is possible that there will be insufficient **Gensets** (other than those **Gensets** within **Existing Gas Cooled Reactor Plant** which are permitted to operate in **Limited Frequency Sensitive Mode** at all times under BC3.5.3) to operate in **Frequency Sensitive Mode** for all or any part of that period.

- OC2.4.4.2 BC3.5.3 explains that **NGET** permits **Existing Gas Cooled Reactor Plant** other than **Frequency Sensitive AGR Units** to operate in a **Limited Frequency Sensitive Mode** at all times.

OC2.4.4.3 If **NGET** foresees that there will be an insufficiency in **Gensets** operating in a **Frequency Sensitive Mode**, it will contact **Generators** in order to seek to agree (as soon as reasonably practicable) that all or some of the **Gensets** (the MW amount being determined by **NGET** but the **Gensets** involved being determined by the **Generator**) will take outages to coincide with such period as **NGET** shall specify to enable replacement by other **Gensets** which can operate in a **Frequency Sensitive Mode**. If agreement is reached (which unlike the remainder of OC2 will constitute a binding agreement) then such **Generator** will take such outage as agreed with **NGET**. If agreement is not reached, then the provisions of BC2.9.5 may apply.

OC2.4.5 If in **NGET's** reasonable opinion it is necessary for both the procedure set out in OC2.4.3 (relating to **System NRAPM** and **Localised NRAPM**) and in OC2.4.4 (relating to operation in **Frequency Sensitive Mode**) to be followed in any given situation, the procedure set out in OC2.4.3 will be followed first, and then the procedure set out in OC2.4.4. For the avoidance of doubt, nothing in this paragraph shall prevent either procedure from being followed separately and independently of the other.

#### OC2.4.6 **OPERATING MARGIN DATA REQUIREMENTS**

##### OC2.4.6.1 **Modifications to relay settings**

'Relay settings' in this OC2.4.6.1 refers to the settings of **Low Frequency Relays** in respect of **Gensets** that are available for start from standby by **Low Frequency Relay** initiation with **Fast Start Capability** agreed pursuant to the **Bilateral Agreement**.

##### **By 1600 hours each Wednesday**

A change in relay settings will be sent by **NGET** no later than 1600 hours on a Wednesday to apply from 1000 hours on the Monday following. The settings allocated to particular **Large Power Stations** may be interchanged between 49.70Hz and 49.60Hz (or such other **System Frequencies** as **NGET** may have specified) provided the overall capacity at each setting and **System** requirements can, in **NGET's** view, be met.

##### **Between 1600 hours each Wednesday and 1200 hours each Friday**

If a **Generator** wishes to discuss or interchange settings it should contact **NGET** by 1200 hours on the Friday prior to the Monday on which it would like to institute the changes to seek **NGET's** agreement. If **NGET** agrees, **NGET** will then send confirmation of the agreed new settings.

##### **By 1500 hours each Friday**

If any alterations to relay settings have been agreed, then the updated version of the current relay settings will be sent to affected **Users** by 1500 hours on the Friday prior to the Monday on which the changes will take effect. Once accepted, each **Generator** (if that **Large Power Station** is not subject to forced outage or **Planned Outage**) will abide by the terms of its latest relay settings.

In addition, **NGET** will take account of any **Large Power Station** unavailability (as notified under OC2.4.1.2 submissions) in its total **Operating Reserve** policy.

**NGET** may from time to time, for confirmation purposes only, issue the latest version of the current relay settings to each affected **Generator**

#### OC2.4.6.2

#### **Operating Margins**

By 1600 hours each Wednesday

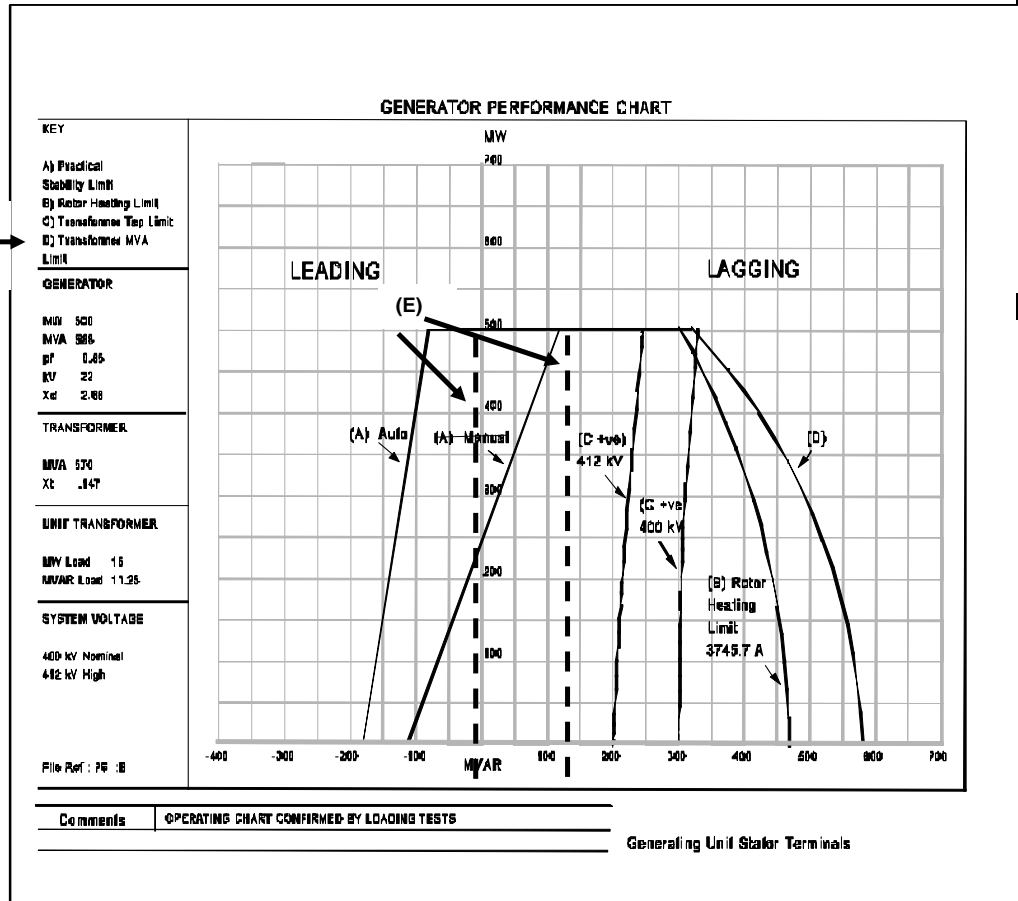
No later than 1600 hours on a Wednesday, **NGET** will provide an indication of the level of **Operating Reserve** to be utilised by **NGET** in connection with the operation of the **Balancing Mechanism** in the week beginning with the **Operational Day** commencing during the subsequent Monday, which level shall be purely indicative.

This **Operating Margin** indication will also note the possible level of **Operating Reserve** (if any) which may be provided by **Interconnector Users** in the week beginning with the **Operational Day** commencing during the subsequent Monday.

This **Operating Margin** indication will also note the possible level of **High Frequency Response** to be utilised by **NGET** in connection with the operation of the **Balancing Mechanism** in the week beginning with the **Operational Day** commencing during the subsequent Monday, which level shall be purely indicative.

## OC2 APPENDIX 1

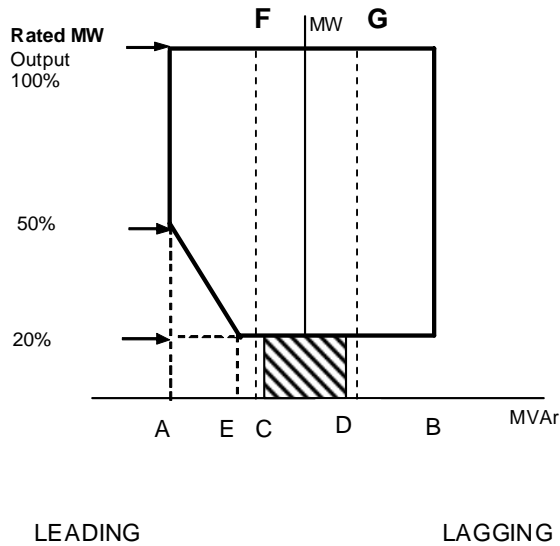
**(E) User System** →




Where a **Reactive Despatch Network Restriction** is in place which requires following of local voltage conditions, alternatively to (E), please check this box.



**POWER PARK MODULE PERFORMANCE CHART  
AT THE CONNECTION POINT OR USER'S SYSTEM ENTRY POINT**



- Point A is equivalent (in MVAR) to: 0.95 leading **Power Factor** at **Rated MW** output
- Point B is equivalent (in MVAR) to: 0.95 lagging **Power Factor** at **Rated MW** output
- Point C is equivalent (in MVAR) to: -5% of **Rated MW** output
- Point D is equivalent (in MVAR) to: +5% of **Rated MW** output
- Point E is equivalent (in MVAR) to: -12% of **Rated MW** output
- Line F is equivalent (in MVAR) to: Leading **Power Factor Reactive Despatch Network Restriction**
- Line G is equivalent (in MVAR) to: Lagging **Power Factor Reactive Despatch Network Restriction**

Where a **Reactive Despatch Network Restriction** is in place which requires following of local voltage conditions, alternatively to Line F and G, please check this box.

## OC2 APPENDIX 2

### OC2.A.2 Generation Planning Parameters

The following parameters are required in respect of each **Genset**.

#### OC2.A.2.1 Regime Unavailability

Where applicable the following information must be recorded for each **Genset**.

- Earliest synchronising time:  
Monday  
Tuesday to Friday  
Saturday to Sunday
- Latest de-synchronising time:  
Monday to Thursday  
Friday  
Saturday to Sunday

#### OC2.A.2.2 Synchronising Intervals

- (a) The **Synchronising** interval between **Gensets** in a **Synchronising Group** assuming all **Gensets** have been **Shutdown** for 48 hours;
- (b) The **Synchronising Group** within the **Power Station** to which each **Genset** should be allocated.

#### OC2.A.2.3 De-Synchronising Interval

A fixed value **De-Synchronising** interval between **Gensets** within a **Synchronising Group**.

#### OC2.A.2.4 Synchronising Generation

The amount of MW produced at the moment of **Synchronising** assuming the **Genset** has been **Shutdown** for 48 hours.

#### OC2.A.2.5 Minimum Non-zero time (MNZT)

The minimum period on-load between **Synchronising** and **De-Synchronising** assuming the **Genset** has been **Shutdown** for 48 hours.

#### OC2.A.2.6 Run-Up rates

A run-up characteristic consisting of up to three stages from **Synchronising Generation** to **Output Usable** with up to two intervening break points assuming the **Genset** has been **Shutdown** for 48 hours.

#### OC2.A.2.7 Run-down rates

A run down characteristic consisting of up to three stages from **Output Usable** to **De-Synchronising** with breakpoints at up to two intermediate load levels.

OC2.A.2.8 Notice to Deviate from Zero (NDZ)

The period of time normally required to **Synchronise** a **Genset** following instruction from **NGET** assuming the **Genset** has been **Shutdown** for 48 hours.

OC2.A.2.9 Minimum Zero time (MZT)

The minimum interval between **De-Synchronising** and **Synchronising** a **Genset**.

OC2.A.2.10 Two Shifting Limit

The maximum number of times that a **Genset** may **De-Synchronise** per **Operational Day**.

OC2.A.2.11 Gas Turbine Units loading parameters

- Loading rate for fast starting
- Loading rate for slow starting

**OC2 APPENDIX 3**

**CCGT Module Planning Matrix example form**

<b>CCGT MODULE</b>	<b>CCGT GENERATING UNITS AVAILABLE</b>								
	1st GT	2nd GT	3rd GT	4th GT	5th GT	6th GT	1st ST	2nd ST	3rd ST
<b>OUTPUT USABLE</b>	<b>OUTPUT USABLE</b>								
<b>MW</b>	150	150	150				100		
0MW to 150MW	/								
151MW to 250MW	/						/		
251MW to 300MW	/	/							
301MW to 400MW	/	/					/		
401MW to 450MW	/	/	/						
451MW to 550MW	/	/	/				/		

**OC2 APPENDIX 4**

**Power Park Module Planning Matrix example form**

<b>POWER PARK UNITS AVAILABLE</b>	<b>POWER PARK UNITS</b>			
	Type A	Type B	Type C	Type D
Description (Make / Model)				
Number of units				

The **Power Park Module Planning Matrix** may have as many columns as are required to provide information on the different make and model for each type of **Power Park Unit** in a **Power Park Module**. The description is required to assist identification of the **Power Park Units** within the **Power Park Module** and correlation with data provided under the **Planning Code**.

< End of OC2 >



The following information is required from each **Network Operator** and from each **Non-Embedded Customer**. The data should be provided in calendar week 24 each year (although **Network Operators** may delay the submission until calendar week 28).

**Connection Point:**

<b>Connection Point Demand</b> at the time of - (select each one in turn) (Provide data for each Access Period associated with the Connection Point)	a) maximum <b>Demand</b> b) peak <b>National Electricity Transmission System Demand</b> (specified by <b>NGET</b> ) c) minimum <b>National Electricity Transmission System Demand</b> (specified by <b>NGET</b> ) d) maximum <b>Demand</b> during <b>Access Period</b> e) specified by either <b>NGET</b> or a <b>User</b>
Name of <b>Transmission Interface Circuit</b> out of service during <b>Access Period</b> (if reqd).	<b>PC.A.4.1.4.2</b>

DATA DESCRIPTION (CUSC Contract □ & CUSC Application Form ■)	Outturn	Outturn Weather Corrected	F.Yr 1	F.Yr 2	F.Yr 3	F.Yr 4	F.Yr 5	F.Yr 6	F.Yr 7	F.Yr 8	DATA CAT
Date of a), b), c), d) or e) as denoted above.											<b>PC.A.4.3.3</b>
Time of a), b), c), d) or e) as denoted above.											<b>PC.A.4.3.3</b>
<b>Connection Point Demand</b> (MW)											<b>PC.A.4.3.1</b>
<b>Connection Point Demand</b> (MVA <sub>r</sub> )											<b>PC.A.4.3.1</b>
Deduction made at <b>Connection Point</b> for <b>Small Power Stations, Medium Power Stations</b> and <b>Customer Generating Plant</b> (MW)											<b>PC.A.4.3.2(a)</b>
Reference to valid <b>Single Line Diagram</b>											<b>PC.A.4.3.5</b>
Reference to node and branch data.											<b>PC.A.2.2</b>

Note: The following data block can be repeated for each post fault network revision that may impact on the Transmission System.

Reference to post-fault revision of <b>Single Line Diagram</b>											<b>PC.A.4.5</b>
Reference to post-fault revision of the node and branch data associated with the <b>Single Line Diagram</b>											<b>PC.A.4.5</b>
Reference to the description of the actions and timescales involved in effecting the post-fault actions (e.g. auto-switching, manual, teleswitching, overload protection operation etc)											<b>PC.A.4.5</b>

<b>Access Group:</b>	
----------------------	--

Note: The following data block to be repeated for each **Connection Point** with the **Access Group**.

Name of associated <b>Connection Point</b> within the same <b>Access Group</b> :											<b>PC.A.4.3.1</b>
<b>Demand</b> at associated <b>Connection Point</b> (MW)											<b>PC.A.4.3.1</b>
<b>Demand</b> at associated <b>Connection Point</b> (MVA <sub>r</sub> )											<b>PC.A.4.3.1</b>
Deduction made at associated <b>Connection Point</b> for <b>Small Power Stations, Medium Power Stations</b> and <b>Customer Generating Plant</b> (MW)											<b>PC.A.4.3.2(a)</b>

Embedded Generation Data											
Connection Point:											
DATA DESCRIPTION	Outturn	Outturn Weather Corrected	F.Yr 1	F.Yr 2	F.Yr 3	F.Yr 4	F.Yr 5	F.Yr 6	F.Yr 7	F.Yr 8	DATA CAT
<b>Small Power Station, Medium Power Station and Customer Generation Summary</b>	For each <b>Connection Point</b> where there are <b>Embedded Small Power Stations, Medium Power Stations</b> or <b>Customer Generating Stations</b> the following information is required:										
No. of <b>Small Power Stations, Medium Power Stations</b> or <b>Customer Power Stations</b>											PC.A.3.1.4(a)
Number of <b>Generating Units</b> within these stations											PC.A.3.1.4(a)
Summated Capacity of all these <b>Generating Units</b>											PC.A.3.1.4(a)
Where the <b>Network Operator's System</b> places a constraint on the capacity of an <b>Embedded Large Power Station</b>											
<b>Station Name</b>											PC.A.3.2.2(c)
<b>Generating Unit</b>											PC.A.3.2.2(c)
<b>System Constrained Capacity</b>											PC.A.3.2.2(c)(i)
<b>Reactive Despatch Network Restriction</b>											PC.A.3.2.2(c)(ii)

Where the <b>Network Operator's System</b> places a constraint on the capacity of an <b>Offshore Transmission System</b> at an <b>Interface Point</b>											
<b>Offshore Transmission System Name</b>											PC.A.3.2.2(c)
<b>Interface Point Name</b>											PC.A.3.2.2(c)
<b>Maximum Export Capacity</b>											PC.A.3.2.2(c)
<b>Maximum Import Capacity</b>											PC.A.3.2.2(c)

NOTES:

- 'F.Yr.' means '**Financial Year**'. F.Yr. 1 refers to the current financial year.
- All **Demand** data should be net of the output (as reasonably considered appropriate by the **User**) of all **Embedded Small Power Stations, Medium Power Stations** and **Customer Generating Plant**. Generation and / or Auxiliary demand of **Embedded Large Power Stations** should not be included in the demand data submitted by the **User**. **Users** should refer to the **PC** for a full definition of the **Demand** to be included.
- Peak **Demand** should relate to each **Connection Point** individually and should give the maximum demand that in the **User's** opinion could reasonably be imposed on the **National Electricity Transmission System**. **Users** my submit the **Demand** data at each node on the **Single Line Diagram** instead of at a **Connection Point** as long the user reasonably believe such data relates to the peak (or minimum) at the **Connection Point**.

In deriving **Demand** any deduction made by the **User** (as detailed in note 2 above) to allow for **Embedded Small Power Stations, Medium Power Stations** and **Customer Generating Plant** is to be specifically stated as indicated on the Schedule.



4. **NGET** may at its discretion require details of any **Embedded Small Power Stations** or **Embedded Medium Power Stations** whose output can be expected to vary in a random manner (eg. wind power) or according to some other pattern (eg. tidal power)
5. Where more than 95% of the total **Demand** at a **Connection Point** is taken by synchronous motors, values of the **Power Factor** at maximum and minimum continuous excitation may be given instead. **Power Factor** data should allow for series reactive losses on the **User's System** but exclude reactive compensation network susceptance specified separately in Schedule 5.
6. Where a **Reactive Despatch Network Restriction** is in place which requires the generator to maintain a target voltage set point this should be stated as an alternative to the size of the **Reactive Despatch Network Restriction**.

**DEMAND CONTROL**

The following information is required from each **Network Operator** and where indicated with an asterisk from **Externally Interconnected System Operators** and/or **Interconnector Users** and a **Pumped Storage Generator**. Where indicated with a double asterisk, the information is only required from **Suppliers**.

DATA DESCRIPTION	UNITS		UPDATE TIME	
<b><u>Demand Control</u></b>				
<b>Demand</b> met or to be relieved by <b>Demand Control</b> (averaging at the <b>Demand Control Notification Level</b> or more over a half hour) at each <b>Connection Point</b> .				
<b>Demand Control</b> at time of <b>National Electricity Transmission System</b> weekly peak demand				
Amount	MW	)F.yrs 0 to 5	Week 24	<b>OC1</b>
Duration	Min	)		
For each half hour	MW	Wks 2-8 ahead	1000 Mon	<b>OC1</b>
For each half hour	MW	Days 2-12 ahead	1200 Wed	<b>OC1</b>
For each half hour	MW	Previous calendar day	0600 daily	<b>OC1</b>
<b>**Customer Demand Management</b> (at the <b>Customer Demand Management Notification Level</b> or more at the <b>Connection Point</b> )				
For each half hour	MW	Any time in Control Phase		<b>OC1</b>
For each half hour	MW	Remainder of period	When changes occur to previous plan	<b>OC1</b>
For each half hour	MW	Previous calendar day	0600 daily	<b>OC1</b>
<b>**In Scotland, Load Management Blocks</b> For each block of 5MW or more, for each half hour				
	MW	For the next day	11:00	<b>OC1</b>

of such **Scottish Users** with effect from 11:00 hours on the day prior to **Go-Live**

- (b) Notwithstanding (a) above, **Scottish Users** may submit data for **Go-Live** 3 days in advance of **Go-Live** on the basis set out in the **Data Validation, Consistency and Defaulting Rules** which shall apply to **Scottish Users** and **NGET** in respect of such **Scottish Users** on that basis and for such purpose.
- (c) The **Operational Day** for the purposes of any submissions by **Scottish Users** prior to **Go-Live** under a) and b) above for the day of **Go-Live** shall be 00:00 hours on **Go Live** to 05:00 hours on the following day.
- (d) The provisions of **BC2** shall apply to and be complied with by **Scottish Users** and by **NGET** in respect of such **Scottish Users** with effect from 23:00 hours on the day prior to **Go-Live**.
- (e) The provisions of **OC7.4.8** shall apply to and be complied with by **Scottish Users** and by **NGET** in respect of such **Scottish Users** with effect from 11:00 hours on the day prior to **Go-Live**.
- (f) In order to facilitate cut-over, **Scottish Users** acknowledge and agree that **NGET** will exchange data submitted by such **Scottish Users** under **BC1** prior to Go-Live with the Scottish system operators to the extent necessary to enable the cut-over.
- (g) Except in the case of **Reactive Power**, **Scottish Users** should only provide **Ancillary Services** from **Go-Live** where they have been instructed to do so by **NGET**. In the case of **Reactive Power**, at **Go-Live** a **Scottish Users** Mvar output will be deemed to be the level instructed by **NGET** under **BC2**, following this **Scottish Users** should operate in accordance with **BC2.A.2.6** on the basis that Mvar output will be allowed to vary with system conditions.

< End of GC >

## **REVISIONS**

(This section does not form part of the Grid Code)

NGET's Transmission Licence sets out the way in which changes to the Grid Code are to be made and reference is also made to NGET's obligations under the General Conditions.

All pages re-issued have the revision number and date of the revision on the lower right hand corner of the page. The changes to the text since the previous page issue are indicated by a vertical line to the right hand side of the text. Where repagination or repositioning of the text on other pages has been found necessary but the text itself has remained unchanged the re-issued pages have only the revision number and date of the revision included.

The Grid Code was introduced in March 1990 and this first issue was revised 31 times. In March 2001 the New Electricity Trading Arrangements were introduced and Issue 2 of the Grid Code was introduced which was revised 16 times. At British Electricity Trading and Transmission Arrangements (BETTA) Go-Active Issue 3 of the Grid Code was introduced and subsequently revised 35 times. At Offshore Go-active Issue 4 of the Grid Code was introduced.

The following 'index to revisions' provides a checklist to the pages and sections of the Grid Code changed by each revision to Issue 4 of the Grid Code.

All inquiries in relation to revisions to the Grid Code, including revisions to Issues 1, 2, 3 and 4, should be addressed to the Grid Code development team at the address given at the front of the Grid Code.

Revision 1Effective Date: 10<sup>th</sup> February 2010

<b>CODE</b>	<b>PAGE</b>	<b>CLAUSE</b>
CC.A.5	80	CC.A.5.1.1 (b) replaced
CC.A.5	81	CC.A.5.3.2 added
CC.A.5	81-82	CC.A.5.5.1 amended
OC.6	8	OC6.6.1 amended
DRC	51	Schedule 12 table amended
DRC	51	Schedule 12A table added

Revision 2Effective Date: 22<sup>nd</sup> March 2010

<b>CODE</b>	<b>PAGE</b>	<b>CLAUSE</b>
G & D	8	Definition for "Commercial Boundary" added
G & D	40	Definitions for "Reactive Despatch Instruction" and "Reactive Despatch Network Restriction" added
BC2	14	Clause BC2.8.5 added
BC2	30	Clause B2.A.3.2(a) Amended
BC2	32	Annex 2 Amended
BC2	33	Annex 3 Added
PC.A.3	30	Clause PC.A.3.1.3 Amended
PC.A.3	31	Clause PC.A.3.2.1(b) Amended
PC.A.3	32	Clause PC.A.3.2.2(c) Amended
PC.A.3	33	Clause PC.A.3.2.2(f) Amended
OC2	31 & 32	Appendix 1 and 2 amended
DRC	48	Schedule 11 amended