



**GRID CODE
CONSULTATION DOCUMENT
and REPORT TO THE AUTHORITY**

**OC2 'Phase 2 – Short Term' Proposals
Provision of Outage Data by Generators at
Generating Unit Level**

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

Consultation Ref	H/05
Issue	1
Date of Issue	7 November 2005
Responses required by	9 December 2005
Prepared by	National Grid

1 DOCUMENT LOCATION

National Grid website:

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

2 DISTRIBUTION

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

A. INTRODUCTION

1. Paragraph 2 of Condition C14 of the Transmission Licence granted to the National Grid Electricity Transmission plc ("National Grid") provides that National Grid shall, in consultation with authorised electricity operators liable to be materially affected thereby, periodically review the Grid Code and its implementation. That paragraph also requires National Grid, following such review, to send to the Authority:-
 - (a) a report on the outcome of such review;
 - (b) any proposed revisions to the Grid Code as National Grid (having regard to the outcome of such review) reasonably thinks fit for the achievement of the objectives set out in sub-paragraph (b) of Condition C14 of the Transmission Licence; and
 - (c) any written representations or objections from authorised electricity operators (including any proposals by such operators for revisions to the Grid Code not accepted by National Grid in the course of the review) arising during the consultation process and subsequently maintained.
2. This Consultation is concerned with proposed changes to Grid Code OC2 for outage data to be submitted at Generating Unit level. The proposed changes were originally included as one element in Consultation B/05 but the Authority rejected this element of the proposals in its direction letter to National Grid. One of the reasons for rejecting this element of the proposal was the potential impact of the proposed legal text on non-synchronous Generating Units etc. At the Grid Code Review Panel meeting on 22 September 2005 National Grid indicated its intention to progress a modified version of the proposals via a new industry consultation.
3. The report will also be made publicly available on National Grid's website.
4. The revisions to the Grid Code proposed by National Grid and sent to the Authority require approval by that body and will, if approved, come into force on such date (or dates) of which you will be notified by National Grid, in accordance with the Authority's approval.
5. Comments should be sent to National Grid by **9 December 2005** as detailed below in section C. The comments will be reviewed, responded to and included in A summary in Section C.
6. Unless otherwise marked as confidential any responses including those containing objections to the proposals which are maintained will be published on our website.

B. DESCRIPTION OF THE PROPOSED AMENDMENTS AND THEIR EFFECTS

7 Background

- 7.1 In May 2004, National Grid initiated the Consultation process for 'phase 1' proposals on improving the information flows between Users and National Grid. These proposals were outlined in the Consultation paper G/04¹ and were

¹ Consultation Paper G/04 Proposed changes to Operating Codes OC1 and OC2 (date of issue: 23 July 2004)

implemented on 11 October 2004. National Grid believes that these proposals have successfully delivered the desired improvements by providing additional clarity and consistency in the information flows.

- 7.2 G/04 also summarised 'phase 2' proposals which required further development before they could be considered for implementation. A Working Group was set up at the September 2004 GCRP to develop 'phase 2' proposals.
- 7.3 The OC/OC2 Working Group has debated a range of proposals which include the 'phase 2' proposals. Consultation B/05 (Phase 2 – Short term Proposals) arose out of those discussions and included a proposal to require outage data to be submitted on a Generating Unit basis rather than on a Genset basis.
- 7.4 The Grid Code currently requires outage data at a Genset level. Consequently, National Grid receives the Generator outage data at both Generating Unit and BM Unit levels. The majority of the data received by National Grid already corresponds to the Generating Units, however this proposal would result in around 23% of BM Units (based on England & Wales generation only) having to provide further information when compared to current practice. National Grid believes that, for the reasons outlined below, all outage data should be provided at the Generating Unit level.

Fault level analysis

- National Grid analyses fault levels in order to ensure optimal system configuration. If all the Generating Units within a CCGT Module had the same fault profiles, the outage information at a BM Unit level would be less critical although indication that a unit was to be desynchronised would be required. However, the Generating Units within a CCGT do not necessarily have an equal effect on the site fault levels and National Grid therefore requires outage information on individual Generating Units within a CCGT.

Voltage stability analysis

- Voltage stability analysis forms a key input into National Grid's assessment of system security and system requirements for reactive power. The voltage stability depends on the reactive capability of Generating Units which do not necessarily have the same characteristics within a CCGT module. In fact, only 6% of the CCGT modules have equal reactive capacity across the Generating Units. Therefore, the outage data is required at the Generating Unit level for accurate assessment of reactive power requirements.

System stability analysis

- System stability analysis forms a key input to National Grid's assessment of system security and system requirements for reduction in generation. The outage data is required at the Generating Unit level for accurate assessment of these requirements due to the differing stability characteristics of some units.

Other reasons

- The number of modular type generators is increasing and this trend will increase the need for outage data requirements at the Generating Unit level.
 - As generators age, the characteristics of Generating Units tend to diverge due to different fault rates, maintenance cycle etc.
- 7.4 Where the outage data is not provided at the Generating Unit level, National Grid has to use its engineering judgement to determine the expected unit profiles which can lead to inefficient operation or increased security risk.
- 7.5 The original proposal in B/05 intended to improve the granularity of outage data by taking into account the practical implications of the proposed change, particularly the additional effort that may be required to provide the outage data at the Generating Unit level. Consequently, the proposal did not envisage the provision of this data at the Generating Unit level for the windfarms. However, the existing definition of Generating Unit includes Power Park Units which would have imposed a requirement on windfarms to submit data for all turbines within the farm even though National Grid would have only required data on a whole farm aggregated basis.
- 7.6 On 13 September the Authority published its decision on the proposed B/05 changes. This decision rejected the Generating Unit Outage data element on the grounds that Consultation B/05 did not adequately consider the impact of the proposed Grid Code changes on Generators required to provide OC2 data in respect of Power Park Modules.
- 7.7 This consultation therefore proposes that the term Generating Unit, as used in the OC2 text, is modified to read ...'Synchronous Generating Unit and Power Park Module'. Synchronous Generating Unit is a defined term in the Grid Code and does not include windfarms. This would mean that all conventional plant would be required to submit data on a Generating Unit basis but non Synchronous Generating Units (i.e. windfarms) would submit data on a whole farm basis (Power Park Module).
8. Impact of Proposed Changes on the Grid Code

8.1 Operating Code OC2

The proposed changes to this part of the Grid Code are as follows:

- Replacement of references to Gensets with 'Synchronous Generating Unit and Power Park Module' for provisions related to outages (throughout OC2)

The proposed changes are indicated in the change marked version of OC2 in Appendix 1.

C. RESPONSES

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

10. Address for formal responses:-

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

Emailed to: Mark.Duffield@uk.ngrid.com

APPENDIX 1

PROPOSED CHANGES TO OC2 (Based on Issue 3 Revision 12)

OPERATIONAL PLANNING AND DATA PROVISION

Amend OC2 provisions as follows:

OC2.1 INTRODUCTION

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

- (a) the co-ordination of the release of **Gensets Synchronous Generating Units and Power Park Modules**, the **GB Transmission System** and **Network Operators' Systems** for construction, repair and maintenance;
- (b) provision by **NGET** of the **Surpluses** both for the **GB 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 **GB 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 **GB 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 **Gensets Synchronous Generating Units and Power Park Modules** and for the release of parts of the **GB 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 **GB 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 **Gensets Synchronous Generating Units and Power Park Modules** in order that such outages are co-ordinated (taking account of **Medium Power Stations**) between **Generators** and **Network Operators**, and that such outages are co-ordinated taking into account **GB Transmission System** outages and other **System** outages, so far as possible to minimise the number and effect of constraints on the **GB Transmission System** or any other **System**.
- (b) In the case of **Network Operator' User Systems** directly connected to the **GB Transmission System** this means in particular that there will also need to be harmonisation of outages of **Embedded Gensets Synchronous Generating Units and Embedded Power Park Modules**, and **GB Transmission System** outages, with **Network Operators** in respect of their outages on those **Systems**.

In the event that the Authority approves the Grid Code changes proposed in Consultation D/05 prior to a decision to approve the changes proposed in this consultation paper, OC2.2.1 would read as follows:

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**~~Gensets~~ 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 **GB Transmission System** outages and other **System** outages, so far as possible to minimise the number and effect of constraints on the **GB Transmission System** or any other **System**.
- (b) In the case of **Network Operator' User Systems** directly connected to the **GB 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**~~Gensets~~, and **GB Transmission System** outages, with **Network Operators** in respect of their outages on those **Systems**.
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OC2.2.2 The objective of **OC2** is also to enable the provision by **NGET** of the **Surpluses** both for the **GB 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**, other than those which only have **Embedded Small Power Stations** or **Embedded Medium Power Stations**, (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.

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 Gensets <u>Synchronous Generating Units and Power Park Modules</u> and in respect of outages of other Plant and/or Apparatus directly connected to the GB Transmission System ; |
| (b) NGET and each Generator | in respect of GB 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 GB 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 . |

In the event that the Authority approves the Grid Code changes proposed in Consultation D/05 prior to a decision to approve the changes proposed in this consultation paper, OC2.4.1.1 would read as follows:

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 <u>Synchronous Generating Units and Power Park Modules</u> and in respect of outages of other Plant and/or Apparatus directly connected to the GB Transmission System ; |
| (b) NGET and each Generator | in respect of GB 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 Embedded Medium 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 GB 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 . |

OC2.4.1.2 **PLANNING OF ~~GENSETS~~ 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 **GensetSynchronous 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 **GensetSynchronous Generating Unit and 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 **GensetsSynchronous 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) **GB 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 **GB 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 **GensetsSynchronous Generating Units and 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 **GensetSynchronous Generating Unit and 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 **GensetSynchronous 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 **GensetSynchronous 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 **GensetSynchronous 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 **Genset 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 **GB 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 **Gensets Synchronous Generating Units and 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 **Genset 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 **Genset 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 **GB 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 **Gensets Synchronous Generating Units and 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 **Gensets Synchronous Generating Units and 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 **GB 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 **GB 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 **GB Transmission System** outage programme, **NGET** need not alter the **GB 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 **Genset 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 **GB 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 **GB 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 **GB 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, in each case relating to **Gensets**~~ **Synchronous Generating Units and 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 Power Park Modules**, as appropriate concerned).

- (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 **GB 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 **GB 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 **GB 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, in each case relating to~~ **Gensets Synchronous Generating Units and 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 Power Park Modules, as appropriate** concerned).

(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 **GB 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 **GB Transmission System** outage programme, **NGET** need not alter the **GB 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 **GB 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 **GB 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 **GB Transmission System** and **System Zones** from the 2nd week ahead to the 52nd week ahead;
- (ii) provide each **Network Operator**, in writing with weekly **Output Usable** estimates of **Gensets** from the 2nd week ahead to the 52nd week ahead and updated outages of, each relating to **Gensets Synchronous Generating Units and 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 Power Park Modules**, as appropriate concerned), from the 2nd 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 **Genset Synchronous Generating Unit and 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 **GB 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 **GB 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 **GB 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, each relating to Gensets Synchronous Generating Units and Power Park Modules Generating Units 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 Power Park Modules, as appropriate), for the period from and including day 2 ahead to day 14 ahead.

OC2.4.1.3 Planning of GB Transmission System OutagesOC2.4.1.3.1 Operational Planning Phase - Planning for Financial Years 2 to 5 inclusive ahead

NGET shall plan **GB 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 **GB Transmission System** outages required in Years 0 and 1 ahead, when **NGET** also takes into account **GB Transmission System** outages required as a result of maintenance.

Users should bear in mind that **NGET** will be planning the **GB 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 **GB Transmission System** outage programme, **NGET** need not alter the **GB 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 **GensetsSynchronous Generating Units and Power Park Modules Embedded** within that **User System**).

(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 **GensetsSynchronous Generating Units and 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 **GB 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 **GB 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 **GB 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 **Gensets**[Synchronous Generating Units and 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 **Gensets**[Synchronous Generating Units and Power Park Modules](#) **Embedded** within that **User System**).

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

NGET will draw up a revised **GB 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 **GB 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 **GB 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 **GB Transmission System** outage plan covering Year 1.

(h) By the end of week 49

(i) **NGET** will complete the final **GB 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 **GB 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 **GB 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 **GB Transmission System** outage plan for Year 1, **NGET** will provide to each **Generator** a copy of the

final **GB Transmission System** outage plan for that year. OC2.4.1.3.4 contains provisions whereby updates of the final **GB Transmission System** outage plan are provided. The plan and the updates will be provided in writing. It should be noted that the final **GB Transmission System** outage plan for Year 1 and the updates will not give a complete understanding of how the **GB Transmission System** will operate in real time, where the **GB 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 **GB 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 **GB 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 **GB 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 **GB 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 **GB Transmission Study Network Data Files** represents **NGET's** view of indicative operating conditions only and should be used for technical analysis only on the basis that it only represents a view and that operating conditions may be different in the event;
- (4) **NGET** will notify each **Network Operator**, as soon as reasonably practicable after it has updated the **GB 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 **GB 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 **GB 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.

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< End of proposed changes to OC2 >