

OPERATING CODE NO.2 Redraft

(OC2)

OPERATIONAL PLANNING AND DATA PROVISION

Terms in bold are defined terms and are contained in “Grid Code New Definitions”. Where a defined term is not contained within “Grid Code New Definitions”, its meaning and interpretation shall be taken from “Grid Code Glossary and Definitions”. In the case of any identically named defined terms the definition in “Grid Code New Definitions” supersedes the interpretation and meaning of the term in “Grid Code Glossary and Definitions”.

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

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OC2.1 Introduction

OC2.1.1 The objectives of OC2 are:

- a) The co-ordination of outages of the **NETS** and **Plant** and **Users'** equipment.
- b) To enable **The Company**:
 - i. to publish the **NETS Surplus**.
 - ii. to establish the level of **System NRAPM**.
 - iii. to plan the deployment of **Frequency Sensitive Mode**.
 - iv. to establish **Operating Margin** parameters
- c) to ensure **The Company** has the means necessary to restore the **System** following a **Total System Shutdown** or **Partial System Shutdown**

OC2.1.2 **Operational Planning** considers:

- a) the matching of generation with forecast **NETS Demand** in order to maintain reserve of generation to provide a margin,
- b) outages on the **NETS** together with **Users' Plant and Apparatus** over various timescales as described below.

OC2.1.3 **Restoration Contractors** should separately identify data which is provided in respect of **Plant** and **Apparatus** for which they have **Restoration Contracts**. **Restoration Contractors** with **Embedded Plant** and **Apparatus** need only provide data to the relevant **Network Operator** should they be required to do so by the **Distribution Code**, i.e., there is no need to provide the identical data to **The Company**.

OC2.1.4 In OC2, year 0 means the current calendar year, year 1 the next calendar year etc. References to weeks are to calendar weeks as defined in ISO 8601.

OC2.1.5 References in OC2 to a **Generator's** and **Interconnector Owner's best estimate** shall mean that **Generator's** or **Interconnector Owner's best estimate** acting as a reasonable and prudent operator.

OC2.1.6 Where in OC2 there is a requirement to submit data or provide information on a particular day that falls on a non-**Business Day**, that data or information must be submitted by the next **Business Day** unless otherwise agreed in advance with **The Company**.

OC2.2 SCOPE

OC2.2.1 OC2 applies to **The Company** and to the following **Users**:

- a. **Generators** and/or **Interconnector Owner** in respect of their generating **Plant** which is directly connected to the **NETS** and to any generating **Plant** in **Embedded Large Power Stations**.
- b. **Network Operators**.
- c. **Non-Embedded Customers**.
- d. For the purposes of OC2 only **Restoration Contractors** who are party to a **Local Joint Restoration Zone Plan** are included within the definition of **Generators**.

OC2.3 PROCEDURE¹

OC2.3.1 Co-ordination of Outages

OC2.3.1.1 OC2 makes provision for information exchange between the following parties:

- | | |
|--|--|
| a) Each Generator and/or Interconnector Owner and The Company | In respect of outages of generating Plant and other Apparatus directly connected to the NETS . |
| b) The Company and each Generator and/or Interconnector Owner | In respect of NETS outages relevant to Generators and/or Interconnector Owner . |
| c) The Company and each Network Operator | In respect of outages of all Embedded Large Power Stations . |
| d) The Company and each Network Operator and each Non-Embedded Customer | In respect of NETS outages relevant to that Network Operator or Non-Embedded Customer . |
| e) Each Network Operator and each Non-Embedded Customer and The Company | In respect of outages on the User's System relevant to The Company .
For Network Operators only, outages of the Network Operator's System that it may have an impact on: <ul style="list-style-type: none"> • an Offshore Transmission System connected to that Network Operator's System. • that Network Operator's ability to operate a Local Joint Restoration Plan or Distribution Restoration Zone Plan |

OC2.3.1.2 Data Provision of **Output Useable** of generating **Plant** and External Interconnector Circuits, and the publication of **Surplus**.

OC2.3.1.2.1 If a **Generator** and/or **Interconnector Owner**:

- a) experiences any unplanned change to the availability of generating **Plant**; or
- b) makes a plan which would affect the availability of generating **Plant** resulting in a change of level in the **Output Useable** of that plant to a level below or above its previously notified availability,
- c) experiences any unplanned change to the availability of their **Plant** and **Apparatus** or makes a future plan which would affect the availability of their **Plant** and **Apparatus**, to contribute to a **Local Joint Restoration Plan** for which the **Generator** and/or **Interconnector Owner** is a **Restoration Contractor**.

and which is expected to last one **Settlement Period** or longer and up to three years ahead, the **Generator** and/or **Interconnector Owner** shall provide The Company with the best estimate of the revised **Output Useable**.

OC2.3.1.2.2 **Generators** and/or **Interconnector Owners** shall provide the revised data within 24 hours of the unplanned unavailability occurring, or of the change in planned availability. For multi-shaft generating **Plant** the individual shaft availability levels must also be provided at

¹ For the purpose of OC2 only, the term **Output Useable** shall include the terms **Interconnector Export Capacity** and **Interconnector Import Capacity** where the term **Output Useable** is being applied to an External Interconnection.

the same time. For those **Generators and/or Interconnector Owners** subject to the “Retained EU Law (Commission Regulation (EU) 543/2013 the revised data must be provided within 1 hour.² of planning the availability change.

OC2.3.1.2.3 **Network Operators** who have a **Distribution Restoration Zone** in place, shall notify **The Company** whenever an outage of a **Restoration Contractor’s Plant** or **Apparatus** which contributes to a **Distribution Restoration Zone Plan** is unavailable or a circuit forming part of that **Distribution Restoration Zone Plan** is unavailable making the operation of that **Distribution Restoration Zone Plan** unviable.

OC2.3.1.2.4 At a regular time interval, at least once per day 1600 hours) and no more frequently than every hour

The Company will:

i Having taken into account the information notified to it by **Generators and Interconnector Owners** via the process defined in OC2.3.1.4 provide each **Generator and Interconnector Owner** with any suggested amendments to the provisional **Output Useable** supplied (originally under PC.A.3 which **The Company** believes necessary and will advise **Generators and Interconnector Owners** of the **Surpluses** for the **NETS** and potential export limitations, which would occur without such amendments

ii. calculate and submit to **BMRA**:

1. total generating **Output useable** from **Generating Units** assumed to be available to the **Total System** (national **Output Useable**).
2. generating **Output useable** by fuel type from **Generating Units** assumed to be available to the **Total System** (**Output useable** by fuel type).
3. generating **Output Useable** by individual **Generating Units** assumed to be available to the **Total System and forecast Demand (National Margin)**
4. the difference between **Output Useable** assumed to be available to the **Total System** and forecast **Demand (National Margin)**).
5. total generating **Surplus** assumed to be available to the **Total System (National Surplus)**.

with daily resolution, for at least the peak **Demand** of each day for the period 2 days ahead to 14 days ahead, and

with weekly resolution, for at least peak **Demand** of each week for the period 2 weeks ahead up to 3 years ahead.

The calculation will effectively define the envelope of opportunity for outages of generating **Plant at Large Power Stations** irrespective of whether they are directly connected or **Embedded** directly connected to the **NETS** and those that are **Embedded**.

The Company may, as appropriate, contact each **Generator and Interconnector Owner** to seek clarification on outages and suggest amendments.

OC2.3.1.2.5 Where a **Generator and/or Interconnector Owner** is concerned with the suggested amendments to its proposed outage programme by **The Company**, or a **Network Operator** is concerned about such potential outages it may contact **The Company** to explain its concerns and **The Company**, and that relevant **User** will then discuss the problem to resolve it.

² In the case of an External Interconnection Circuit, the details of the individual pole-capacity levels that have been summed to produce the **Output Useable** should also be defined within 24 hours.

- OC2.3.1.2.6 Where joint meetings with **The Company** and/or multiple **Users** are required to resolve issues in OC2.3.1.2.5 above, **The Company** will convene these.
- OC2.3.1.2.7 Each **Generator** will provide **The Company** with updated **Output Useable** if the **Generator's** previous submissions have changed as a result of OC2.3.1.2 for both **Embedded** and non-**Embedded** generating **Plant**.
- OC2.3.1.2.8 **The Company** will then consider the updated **Output Useable** and take this into account in the next calculation and submission to **BMRA**.
- OC2.3.1.2.9 **The Company** retains the right to contact **Generators** with **Large Power Stations** and **Network Operators** in reference to planned outages of their assets in timescales beyond the European requirements (3 years) up to the 5 year ahead period to assist in the operational planning of **NETS** outages.

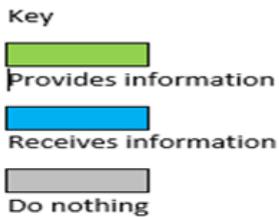
OC2.3.1.3 Planning of National Electricity Transmission System Outages

OC2.3.1.3.1 Operational Planning Phase - Planning for Financial Years 2 to 5 inclusive ahead

The Company shall take into account **NETS** outages required as a result of maintenance, construction or refurbishment works

The Company will be planning the **NETS** outage programme on the basis of the previous year's **Final Generation Outage Programme**. In the event that a **Generator's and/or Interconnector Owners** or **Network Operator's** outages differ from those contained in the **Final Generation Outage Programme**, or in the case of **Network Operators**, they differ from those known to **The Company**, or in any way conflict with the **NETS** outage programme, **The Company** is not obliged to alter the **NETS** outage programme. **Users** should bear this in mind.

- OC2.3.1.3.2 The outage planning process is undertaken from Year 5 to Year 0 with each iteration making the plan more certain. The timescales within which a **User** will provide the required information to the company is tabulated below. For the purposes of OC2, the User may identify their obligations in the relevant clauses using the matrix in figures. 1,3,7,9,14, and 16 below.



	Week				
Party	By the end of Week 8	By the end of Week 13	By the end of Week 28	By the end of Week 30	By the end of Week 34
Generator and/or Interconnector Owner	Do nothing	Provides information	Receives information	Do nothing	Receives information
The Company	Receives information	Receives information	Provides information	Provides information	Provides information
Non-Embedded Customer	Do nothing	Do nothing	Do nothing	Do nothing	Do nothing
Network Operator	Provides information	Receives information	Receives information	Receives information	Receives information

Figure 1 Requirements by USERS under OC2.3.1.3.1 Operational Planning phase – Planning for Financial Years 2 to 5 inclusive ahead.

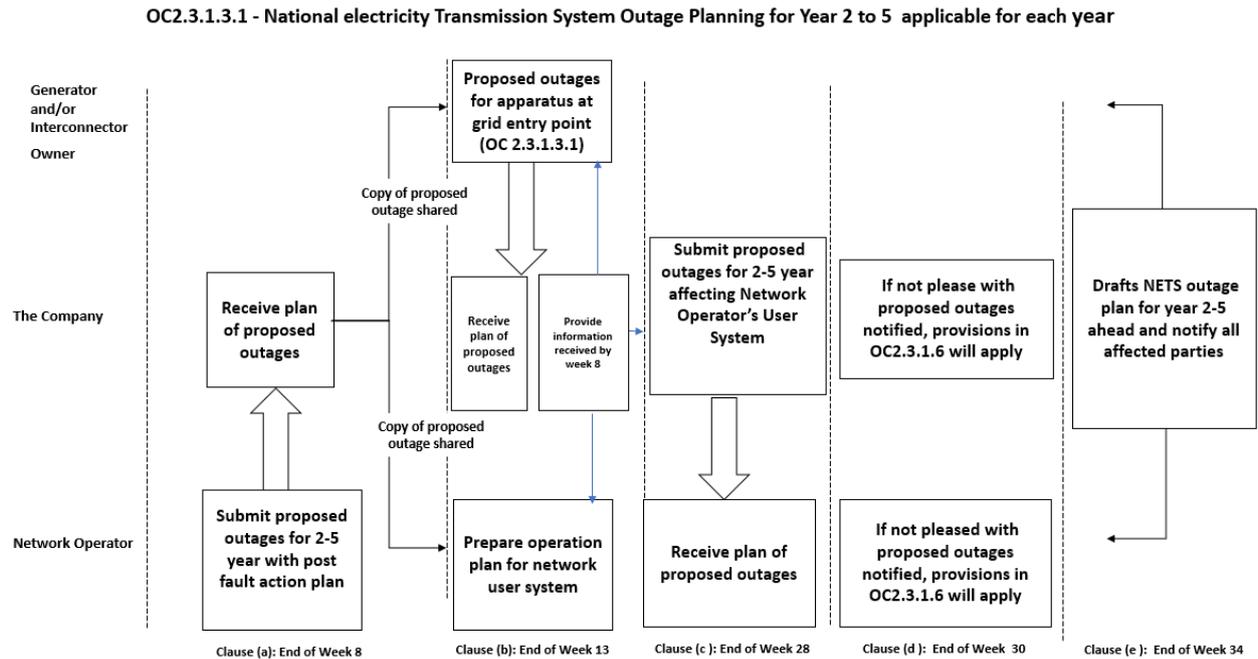


Figure 2 Summary of obligations from end of week 8 to end of week 34

In each calendar year:

a. By the end of week 8

Where the below (i, ii and iii) affect the performance of the **Total System** (which includes but is not limited to outages of **User System Apparatus at Grid Supply Points**), each **Network Operator** will provide to **The Company**:

- i All proposed outage information in Years 2-5 ahead in its **System** that may affect the declared values of **Maximum Export Capacity** and/or **Maximum Import Capacity** for each **Interface Point** together with the **Network Operator's** revised best estimate of the **Maximum Export Capability** and/or **Maximum Import Capability** during such outages.
- ii Any automatic and/or manual post fault actions that it intends to use or plans to use during such outages.
- iii any outages of its **Plant** and **Apparatus** that may affect the ability to activate and/or operate a **Distributed Restoration Zone Plan**

b. By the end of week 13

- i. Each **Generator** will inform **The Company** of proposed outages of **Generator-owned Apparatus** in Years 2 - 5 ahead (ie, substation **Apparatus etc**, not generating **Plant**), at each Grid Entry Point.

ii. **The Company** will provide to each **Network Operator** and to each **Generator and to each Interconnector Owner** a copy of the information given to **The Company** under paragraph (a) above (other than the information given by that **Network Operator**)³.

c. By the end of week 28

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

d. By the end of week 30

Where **The Company** or a **Network Operator** has concerns 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 OC2.3.1.6 will apply.

e. By the end of week 34

The **Company** will draw up a draft **NETS** outage plan covering the period Years 2 to 5 ahead and, notify in writing each **User** of those aspects of the plan which may affect that **User**. **The Company** will also indicate where a need may exist to issue other relevant operational instructions or notifications to **Users** in accordance with BC2 to retain the necessary security of the **NETS**.

OC2.3.1.4 Operational Planning Phase - Planning for Financial Year 1 ahead

Each calendar year, **The Company** shall update the draft **NETS** outage plan prepared under OC2 3.1.3 and shall in addition take into account outages required as a result of maintenance or refurbishment work.

	Week							
Party	By the end of week 13	By the end of week 28	By the end of week 32	Between the end of week 32 and the end of week 34	By the end of week 34	By the end of week 36	Between the end of week 34 and the end of week 49	By the end of week 49
Generator and /or Interconnector Owner								
The Company								
Non-Embedded Customer								
Network Operator								

Figure 3 OC2.3.1.4 Operational Planning Phase – Planning for Financial Year 1 ahead

³ In relation to a Network Operator, the data must only be used by that User in planning and 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.

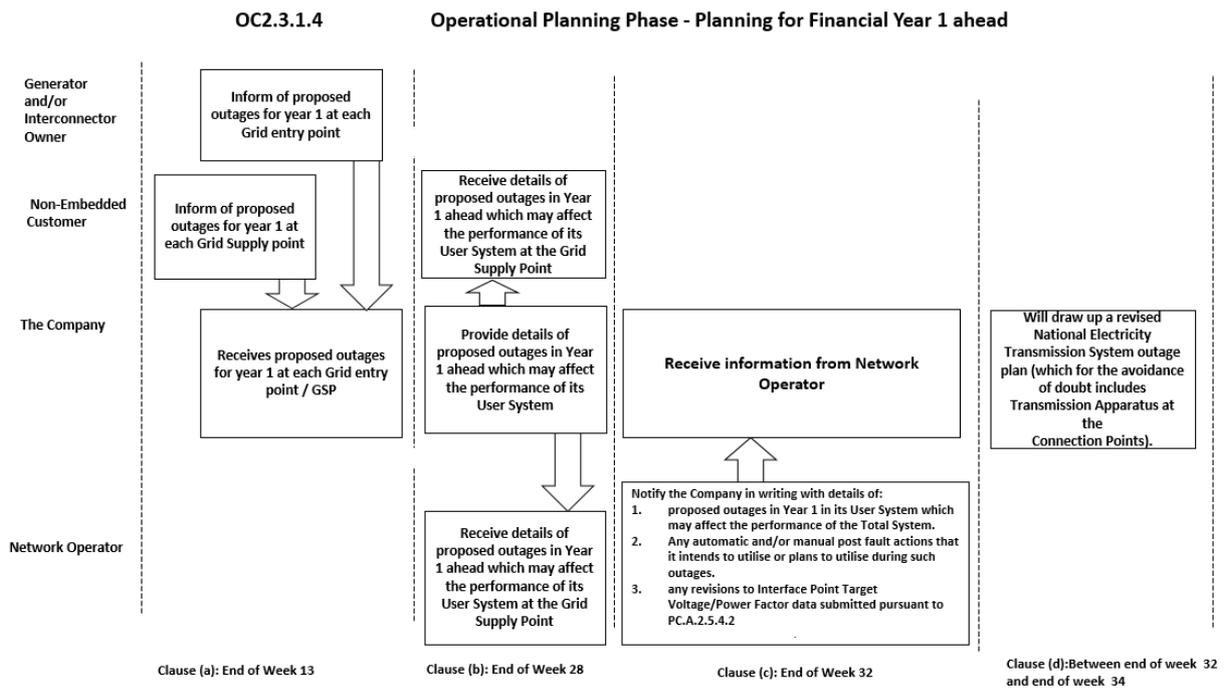


Figure 4 Summary of obligations in Operational Planning Phase from end of week 13 to end of week 34

In each calendar year:

a. By the end of week 13

Generators and **Non-Embedded Customers** will inform **The Company** of proposed outages for Year 1 of their **User owned Apparatus** at each **Grid Entry Point** and at each **Grid Supply Point** (ie, substation **Apparatus** etc, not generating **Plant**).

b. By the end of week 28

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

c. By the end of week 32

Each **Network Operator** will notify **The Company** in writing with details of:

- i. proposed outages in Year 1 in its **System** which may affect the performance of the **Total System**
- ii. In relation to **Embedded Transmission Systems** proposed outages in Year 1 in its **System** which may affect the declared values of **Maximum Export Capability** and/or **Maximum Import Capability** for each **Interface Point** within its **System** together with the **Network Operator's** revised best estimate of the **Maximum Export Capability** and/or **Maximum Import Capability** during such outages
- iii. any automatic and/or manual post fault actions that it intends to use or plans to use during such outages
- iv. any revisions to **Interface Point Target Voltage/Power Factor** data submitted pursuant to PC.A.2.5.4.2.
- v. any outages of its **Plant** and **Apparatus** that **Transmission Systems** may affect the ability to activate and/or operate a **Distributed Restoration Zone Plan**

d. Between the end of week 32 and the end of week 34

The Company will draw up a revised **NETS** outage plan, which will include **Transmission Apparatus at Connection Points**.

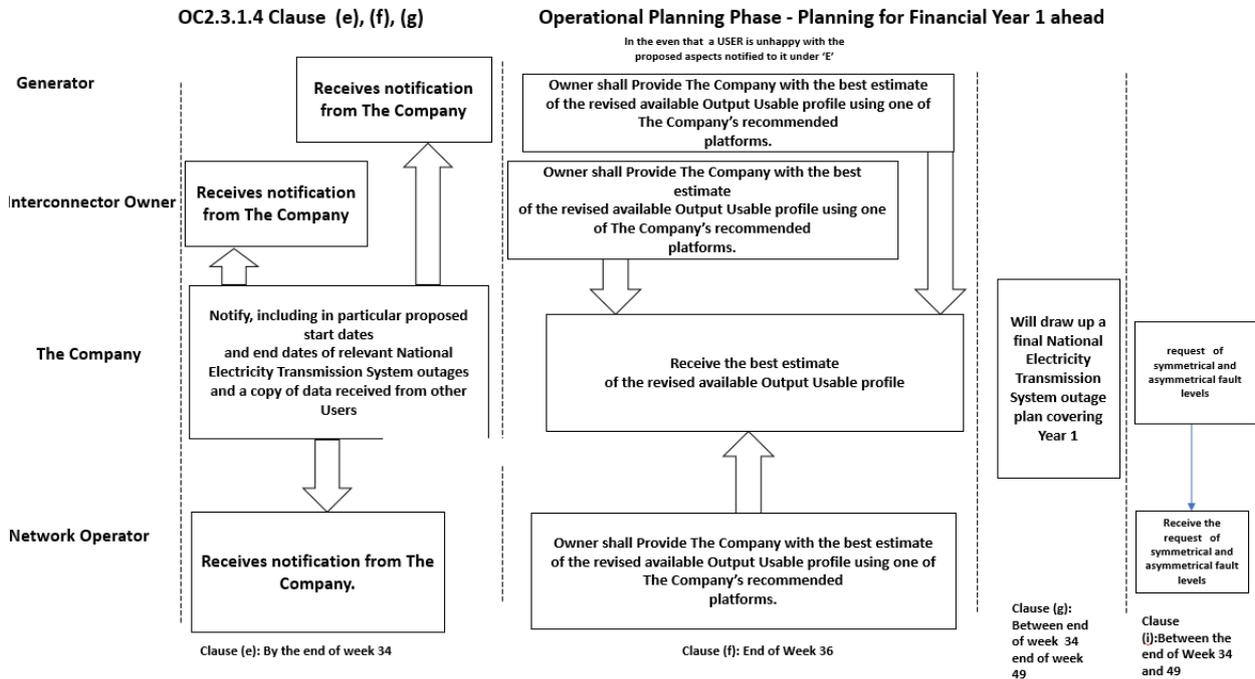


Figure 5 Summary of obligations in Operational Planning Phase from end of week 34 to end of week 49

e. By the end of week 34

The Company will:

- i. Notify in writing each **User** of those aspects of the **NETS** outage programme which may operationally affect that **User** and in particular, proposed start dates and end dates of relevant **NETS** outages.

Provide to each **User** in writing a copy of the information given to **The Company** under paragraph (c) above⁴ (other than the information given by that **Network Operator**).

f. By the end of week 36

Where a **User** has concerns with the proposed aspects notified to it under (e) above, equivalent provisions to those set out in OC2.3.1.2.6 will apply.

g. Between the end of week 34 and 49

The Company will draw up a final **NETS** outage plan covering Year 1.

h. By the end of week 49

⁴ In relation to a Network Operator, the data must only be used by that User in planning and 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

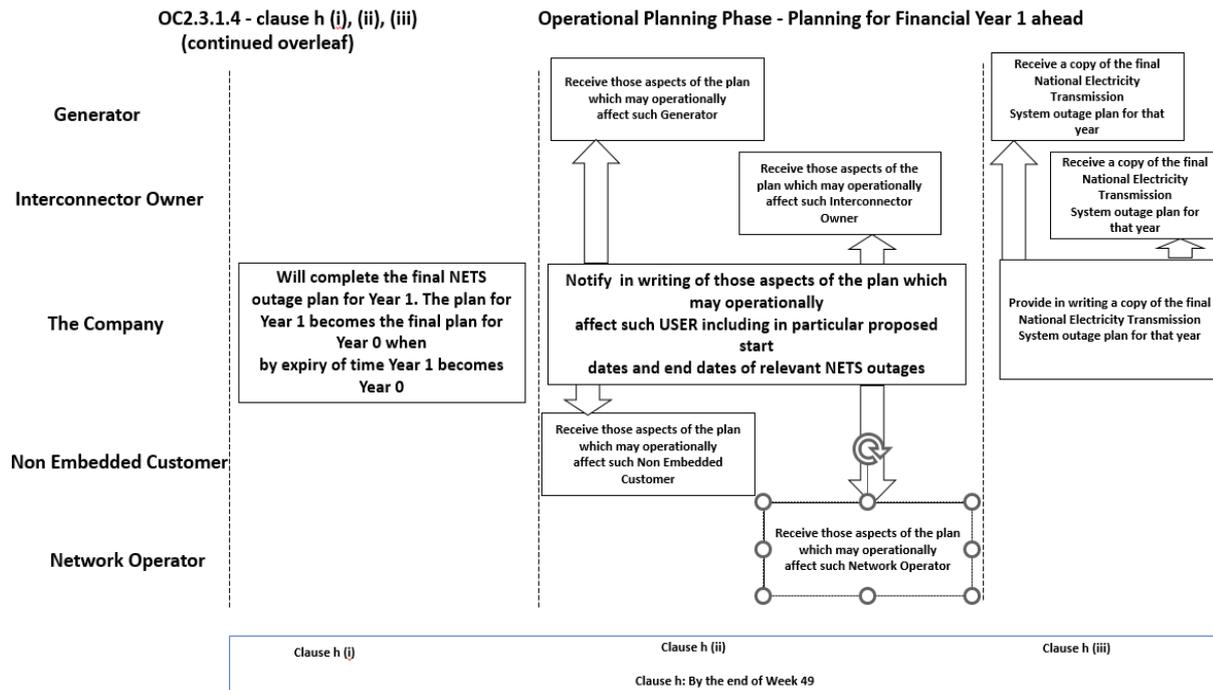


Figure 6 Summary of obligations in Operational Planning Phase by the end of week 49

- (i) **The Company** will complete the final **NETS** 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) **The Company** will notify each **User** of those aspects of the plan:
 - Which may operationally affect such **User** including in particular proposed start dates and end dates of relevant **NETS** outages
 - where a need may exist to issue other operational instructions or notifications (for example 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 **NETS** to be necessarily maintained.
- (iii) In addition, **The Company** will provide to each **Generator** a copy of the final **NETS** outage plan for that year. OC2.3.2.3 contains provisions whereby updates of the final **NETS** outage plan are provided. Note that the final **NETS** outage plan for Year 1 and the updates will not give a complete understanding of how the **NETS** will operate in real time, as the **NETS** 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 **The Company**, paragraph (c) being an alternative to a combination of paragraphs (a) and (b). Paragraph (c) will only apply in relation to a particular **User** if **The Company** and that **User** agree that it should comprise an alternative to paragraphs (a) and (b). Absent any such agreement **The Company** will only be required to comply with paragraphs (a) and (b).

Information Release to Each Network Operator And Non-Embedded Customer

Between the end of Week 34 and the end of week 49 **The Company** will upon written request:

- (a) 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
- (b) 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 **NETS**; or

System Data Exchange

- (c) as part of a process to facilitate understanding of the operation of the **Total System**,
 1. **The Company** will make available to each **Network Operator**, the **NETS Study Network Data Files** covering Year 1 which are of relevance to that **User's System**.
 2. where **The Company** and a **User** have agreed to the use of data links between them, the **User** may take a copy of the **NETS Study Network Data Files** once during that period. The **User** may refer to that as often as it wishes. The access will be in a manner agreed by **The Company** and may be subject to separate agreements. In the absence of agreement, the copy of the **NETS Study Network Data Files** will be given to the **User** in hard copy or by other appropriate agreed means.
 3. the data contained in the **NETS Study Network Data Files** represents **The Company's** view of operating conditions although the actual conditions may be different.⁵
 4. **The Company** will notify each **Network Operator**, as soon as reasonably practicable after it has updated the **NETS Study Network Data Files** covering Year 1 that it has done so, when this update falls before the next annual update under this OC2.3.1.4(j). **The Company** will then make available to each **Network Operator** who has received an earlier version, the updated **NETS 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.

OC2.3.1.5 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)

⁵ the data from the **NETS Study Network Data Files** received by each **Network Operator** must only be used by that **User** in planning and 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. This also applies in the case of OC2.3.1.4 (e)

	Year 0		
Party	Anytime but not less than 8 weeks from requested change	14 days from date of request	Where necessary 8-52 weeks ahead
Generator and/or Interconnector Owner			
The Company			
Non-Embedded Customer			
Network Operator			

Figure 7 Operational Planning Phase - Planning in Financial Year 0 Down to The NETS Programming Phase

(a) The NETS outage plan for Year 1 issued under OC2 3.1.4 shall become the plan for Year 0 when by expiry of time Year 1 becomes Year 0.

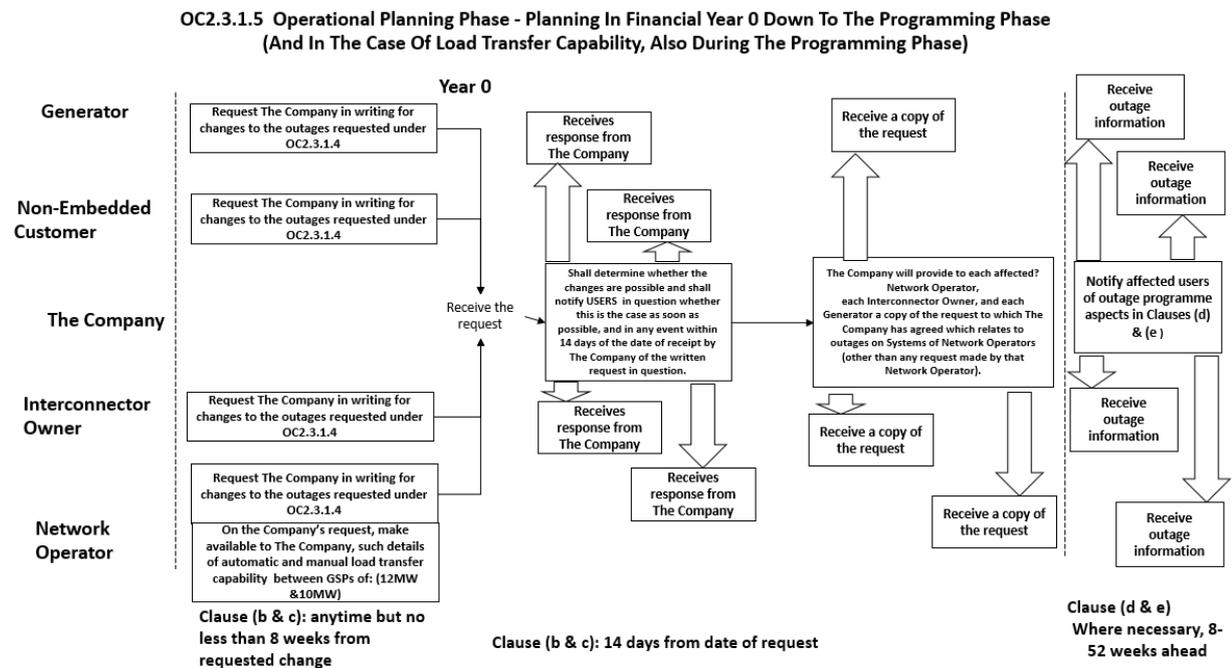


Figure 8 Summary of obligations in Operational Planning Phase Year 0

Each **User** may at any time during Year 0, request **The Company** for changes to the outages requested by them under OC2.3.1.4. In relation to that part of Year 0, excluding the period 1-7 weeks from the date of request, **The Company** shall determine whether the changes are possible and shall notify the User in question whether this is the case as soon as possible, and in any event within 14 days of the date of receipt by **The Company** of the request.

Where **The Company** determines that the requested change is possible and notifies the relevant **User** accordingly, **The Company** will provide to each **User** a copy of the request to which **The Company** has agreed which relates to outages on **Systems of Network Operators**

- (c) During Year 0 (including the **Programming Phase**) each **Network Operator** shall at **The Company's** request make available to **The Company**, 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 **The Company** of any revisions to the information provided pursuant to OC2.3.1.4 (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, **The Company** will notify each **User**, in writing of those aspects of the **NETS** outage programme in the period from the 8th week ahead to the 52nd week ahead, which may, in **The Company's** reasonable opinion, operationally affect that **User** including the proposed start dates and end dates of relevant **NETS** outages.

The Company will also notify changes to information supplied by **The Company** pursuant to OC2.3.2.1.4(i)(a) and (b) except where in relation to a **User** information was supplied pursuant to OC2.3.1.4. (i)(c). In this latter case: -

- (i) **The Company** will, by way of update of the information supplied by it pursuant to OC2.3.1.4(i)(c), make available at the first time in Year 0 that it updates the **NETS Study Network Data Files** in respect of Year 0 to each **Network Operator** who has received an earlier version of the of the **NETS Study Network Data Files** covering Year 0 which are of relevance to that **Network Operator's System**.
- (ii) **The Company** will notify each relevant **Network Operator**, as soon as reasonably practicable after it has updated the **NETS Study Network Data Files** covering Year 0, that it has done so. **The Company** will then make available the updated **NETS Study Network Data Files** covering the remaining balance of Year 0.
- (iii) The provisions of OC2.3.1.4. (i)(c)(2), (3) and (5) shall also apply to the provision of data under this part of OC2.3.2.3. (d).

The Company will also indicate where a need may exist to issue other operational instructions or notifications (for example the requirement for the arming of an **Operational Intertripping** scheme) or **Emergency Instructions** to **Users** in accordance with **BC2** to allow the necessary security of the **NETS** to be maintained except in the case of a **Total Shutdown** or **Partial Shutdown** as provided for in OC9 4.3.

- (e) In addition, by the end of each month during Year 0, **The Company** will provide to each **Generator** a notice containing any revisions to the final **NETS** outage plan for Year 1.

OC2.3.1.6 Programming Phase

	Programming Phase
Party	By 1600 hours each Thursday
Generator and/ or Interconnector Owner	
The Company	
Non-embedded Customer	
Network Operator	

Figure 9 Programming Phase

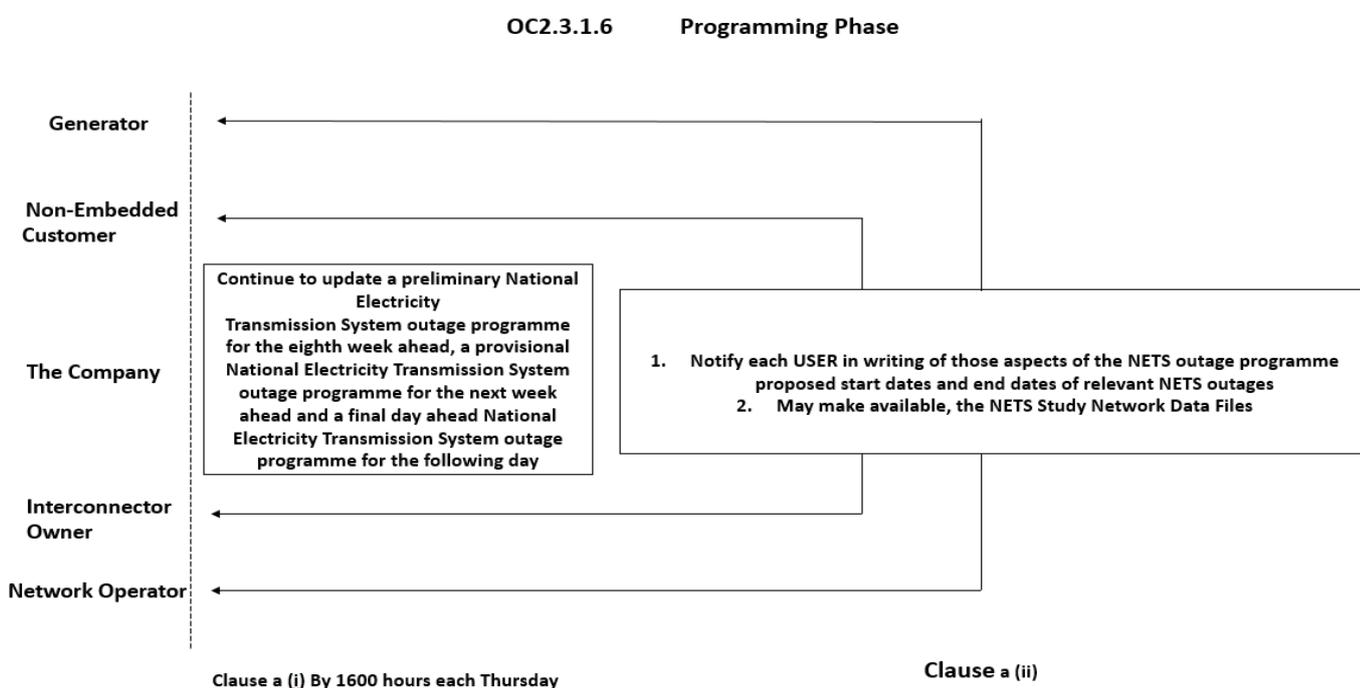


Figure 10 Summary of obligations in the Programming Phase by 1600 hours each Thursday

By 1600 hours each Thursday

- (i) **The Company** shall continue to update a preliminary **NETS** outage programme for the eighth week ahead, a provisional **NETS** outage programme for the next week ahead and a final day ahead **NETS** outage programme for the following day.
- (ii) **The Company** will notify each **User**, in writing of those aspects of the preliminary **NETS** outage programme which may operationally affect each **User** including the proposed start dates and end dates of relevant **NETS** outages.

The Company will also notify changes to information supplied by **The Company** pursuant to OC2.3.1.4(a) and (b) except where in relation to a **User** information was supplied pursuant to OC2.3.1.4. (i)(c). In that latter case:

- 1) **The Company** will, by way of update of the information supplied by it pursuant to OC2.3.1.4(i)(c), make available the **NETS Study Network Data Files** for the next week ahead.
- 2) **The Company** will notify each relevant **Network Operator**, as soon as reasonably practicable after it has updated the **NETS Study Network Data Files** covering the next week ahead that it has done so, and
- 3) The provisions of OC2.3.1.4(c)(2), (3) and (5) shall apply to the provision of data under this part of OC2.3.2.1.6. (a)(ii) as if set out in full.

The Company may make available, the **NETS Study Network Data Files** for the next week ahead where **The Company** and a particular **User** agree.

The Company 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 necessary security of the **NETS** to be maintained.

(b) By 1000 hours each Friday

Users will discuss with **The Company** and confirm to **The Company** acceptance or otherwise of the requirements detailed under OC2.3.1.6(a) above.

In respect of **Embedded Transmission Systems Network Operators** shall confirm for the following week:

- (i) the details of any outages of its System that will restrict the **Maximum Export Capability** and/or **Maximum Import Capability** at any **Interface Points** within its **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) **The Company** shall finalise the preliminary **NETS** outage programme up to the seventh week ahead. **The Company** will 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) **The Company** shall finalise the provisional **NETS** outage programme for the next week ahead.
- (iii) **The Company** shall finalise the **NETS** outage programme for the weekend through to the next normal working day.
- (iv) In each case, **The Company** will indicate the factors set out in (a)(ii) above to the relevant **Users**.
- (v) Where a **Generator** with nuclear **Large Power Stations** which may be operationally affected by the preliminary **NETS** outage programme referred to in (i) above is concerned on safety grounds 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 **The Company** to explain its concerns and discuss whether there is an alternative way of taking that outage. If there is such an alternative way, but **The Company** 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 **The Company** may take the outage despite that **Generator's** concerns.

(d) By 1600 hours each Monday, Tuesday, Wednesday and Thursday

- (i) **The Company** shall prepare a final **NETS** outage programme for the following day.
- (ii) **The Company** shall notify each **User** of the factors set out in (a)(ii) above.

OC2.3.2 Data Requirements

OC2.3.2.1 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 OC2.3.2.1(j)) in respect of each of its: -:
Generating Units submit to **The Company** in writing the **Generation Planning Parameters** and the **Generator Performance Charts**⁶ as set out in Schedule 2 of the Data Registration Code.
- (b) The **Generation Planning Parameters** and the **Generator Performance Chart(s)** shall reasonably reflect the true operating characteristics of the **Generating Unit** and shall demonstrate that the **Generating Unit** meets the **Reactive Power Plant** performance requirements of CC.6.3.2 or ECC.6.3.2 (as applicable).
- (c) The **Generation Planning Parameters** and the **Generator Performance Chart(s)** 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) **Generator Performance Chart(s)** shall be in the format indicated in **PCxxx** and the **Generation Planning Parameters** shall be as set out in Appendix 1.
- (e) Any changes to the **Generator Performance Chart** or **Generation Planning Parameters** should be notified to **The Company** as soon as they are aware of the issue and are able to notify **The Company** through the necessary communication channels.
- (f) **Generators** should note that amendments to the composition of the **Power Generating Module, 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 as applicable. 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 **The Company** promptly. If in accordance with PC.A.3.2.3 an amendment is made, an updated CCGT Module Planning Matrix or Synchronous Power Generating Module Planning Matrix must be immediately submitted to **The Company** in accordance with this OC2.3.2.1(b).
- (g) **The Generator Performance Chart** must be as described in paragraphs (i) – (v) 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**).

⁶ **Generator** Performance Charts can be found in Planning Conditions (moved following OC2 redraft)

- (iii) For a **Synchronous Generating Unit** within a **Synchronous Power Generating Module**, both the **Power-Generating Module Performance Chart** and **Synchronous Generating Unit Performance Chart** should be provided.
- (h) For each **Generating Unit** whose performance varies significantly with ambient temperature, the **Generator Performance Chart** (including the **Synchronous Generating Unit Performance Chart** in the case of **Synchronous Power Generating Modules**) shall show curves for at least two values of ambient temperature so that **The Company** 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 equals its **Registered Capacity**.
- (i) The **Generation Planning Parameters** supplied under OC2.33.2.1 shall be used by **The Company** for operational planning purposes only and not in connection with the operation of the **Balancing Mechanism** (subject as otherwise permitted in the **BC**).

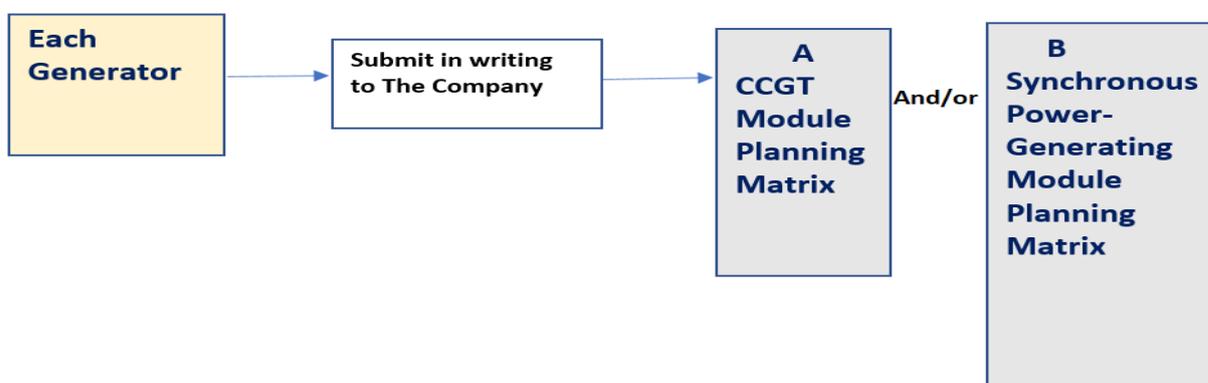


Figure 11

- (j) Each **Generator** shall in respect of each of its **Synchronous Power Generating Modules** at **Large Power Stations** submit to **The Company** in writing a **Synchronous Power-Generating Module Planning Matrix** and/or a **CCGT Module Planning Matrix**. It shall be prepared on a best estimate basis relating to how it is anticipated the **Power-Generating Module** or **CCGT Module** will be running and shall reasonably reflect the true operating characteristics of the **Power-Generating Module** or **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** or **Synchronous Power Generating Units** which would be running in relation to any given MW output in the format indicated in Appendix 3 of OC2.
- ⁷ Each **Generator** submission:
- (i) Shall be prepared on a best estimate basis relating to how it is anticipated the **Synchronous Power-Generating Module** will be running and shall reasonably reflect the true operating characteristics of the **Power-Generating Module**.

⁷ including those which are part of a Synchronous Power Generating Module

- (ii) Will be applied (unless revised under this OC2) from the **Completion Date**, in the case of the one submitted with the **Statement of Readiness**,
- (iii) Must show the combination of **Synchronous Power Generating Units** which would be running in relation to any given MW output in the case of the one submitted in calendar week 24, from the beginning of week 31 onwards.

The **CCGT Module Planning Matrix** or **Synchronous Power-Generating Module Planning Matrix** will be used by **The Company** 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 **The Company** in writing a **Power Park Module Planning Matrix**.

Each **Generator** submission shall:

OC2.3.2.1(k)

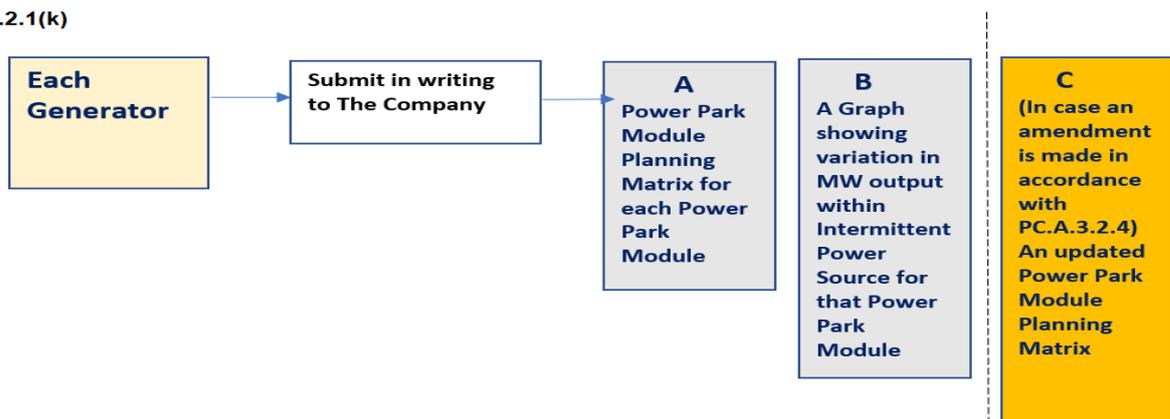


Figure 12

- (i) 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** and the **Balancing Mechanism Unit** of which it forms part
- (ii) 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
- (iii) Show the number of each type of **Power Park Unit** in the **Power Park Module** typically expected to be available to generate and the **BM Unit** of which it forms part, in the format indicated in Appendix 3 of OC2.
- (iv) Be prompt (in case of any changes) and 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

(v) Be used by **The Company** for operational planning purposes only and not in connection with the operation of the **Balancing Mechanism**.

(m) For each **Synchronous Generating Unit** where the **Generator** intends to adjust the **Generating Unit** terminal voltage in response to a MVAR output instruction or a Level target voltage level instruction in accordance with BC2.A.2.6 the **Generator Performance Chart** including the **Synchronous Generating Unit Performance Chart** shall show curves corresponding to the **Generating Unit** terminal voltage being controlled to its rated value and to its maximum value.

OC2.3.2.2 Each **Network Operator** shall by 1000 hrs on the day falling seven days before each **Operational Day** inform **The Company** 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). This requirement includes those circuits associated with a **Distributed Restoration Zone Plan**

OC2.3.2.3 Under **Retained EU Law** (Commission Regulation (EU) 543/2013), **Users** are required to submit certain data to the **Data Publisher** for publication. **The Company** is required to facilitate the collection, verification and processing of data from **Users** for onward transmission to the data publisher.

Each **Generator** and each **Non-Embedded Customer** connected to or using the **NETS** shall provide **The Company** with such information as required by and set out in **DRC** Schedule 6 (**Users' outage data EU Transparency Availability Data**) in the timescales detailed therein..

OC2.3.3 Negative Reserve Active Power Margins

OC2.3.3.1 At a regular time interval, at least once each day (by 1600 hours) and no more frequently than every hour **The Company** will, taking into account the **Generation Outage Programme** and forecast of **Output Useable** supplied by each **Generator** a defined in OC2.3.1.2.1 and forecast **Demand** for the minimum **Demand** period, calculate and publish:

- (1) the level of the **System NRAPM** each day within the period 2 to 14 days ahead (inclusive) and for each week the level of risk of **System NRAPM** within the 2-52 week ahead period; and
- (2) the level of the **Localised NRAPM** (currently for the main constraint between England and Scotland only) for each day within the period 2 to 14 days ahead (inclusive) having taken into account the appropriate limit on transfers to and from the **System Constraint Group** and for each week the level of risk of **Localised NRAPM** within the 2-52 week ahead period.

OC2.3.3.2 Outages Adjustments

- (a) Where necessary **The Company** will contact **Generators** to discuss outages as set out in the following paragraphs of this OC2.3.3.2.
- (b) **The Company** will contact all **Generators** in the case of low **System NRAPM** or low **Localised NRAPM**. **The Company** 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 generating **Plant** inflexibility; and

- (2) whether generating **Plant** or **External Interconnection** outages can be taken to coincide with the periods of low **System NRAPM** or **Localised NRAPM**.

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

- (c) If agreement is reached with a **Generator**, then the **Generator** may take such outage, as agreed with **The Company**, and the **Generator** will update its **Output Useable** via the data provision process defined in OC23.1.2.1. **The Company** will process the updated data which will then be included in the next published update of the **System NRAPM** and/or **Localised NRAPM**.
- (d) If on the day prior to an **Operational Day**, it is apparent from the **BM Unit Data** submitted by **Users** under **BC1** that **System NRAPM** and/or **Localised NRAPM**, is too low, then in accordance with the procedures and requirements set out in BC1.5.5 **The Company** 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** specific generating **Plant** for such period. In determining which generating **Plant** to instruct, **BC2** provides that **The Company** will not other than as provided for below instruct to **De-Synchronise** any generating **Plant** within an **Existing Gas Cooled Reactor Plant**.

BC2 further provides that: -

- (i) **The Company** is permitted to instruct to **De-Synchronise** any generating **Plant** within an **Existing AGR Plant** if that generating **Plant** within an **Existing AGR Plant** has failed to offer to be flexible for the relevant instance at the request of **The Company** provided the request is within the **Existing AGR Plant Flexibility Limit**.
- (ii) **The Company** will only instruct any generating **Plant** within an **Existing Magnox Reactor Plant** or within an **Existing AGR Plant** (other than under (i) above) to **De-Synchronise** 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 **Plant**, 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 provision applies in all cases in the case of **System NRAPM**, only when the power flow would have a relevant effect.

to operate in **Frequency Sensitive Mode** for all or any part of that period.

OC2.3.4.2

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

OC2.3.4.3

If **The Company** foresees that there will be an insufficiency in generating **Plant** 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 generating **Plant** (the MW amount being determined by **The Company** but the specific generating **Plant** involved being determined by the **Generator**) will take outages to coincide with such period as **The Company** shall specify to enable replacement by other generating **Plant** which can operate in a **Frequency Sensitive Mode**. If agreement is reached (which unlike the remainder of **OC2** will constitute a binding agreement) then the **Generator** will take such outage as agreed with **The Company**. If agreement is not reached, then the provisions of BC2.9.5 will apply.

OC2.3.5 Operating Margin Data Requirements

Party	By 1600 hours each Wednesday	Between 1600 hours each Wednesday and 1200 hours each Friday	By 1500 hours each Friday
Generator			
The Company			

Figure 15 For Gensets that are available for start from standby by Low Frequency Relay initiation with Fast Start Capability agreed pursuant to the Bilateral Agreement

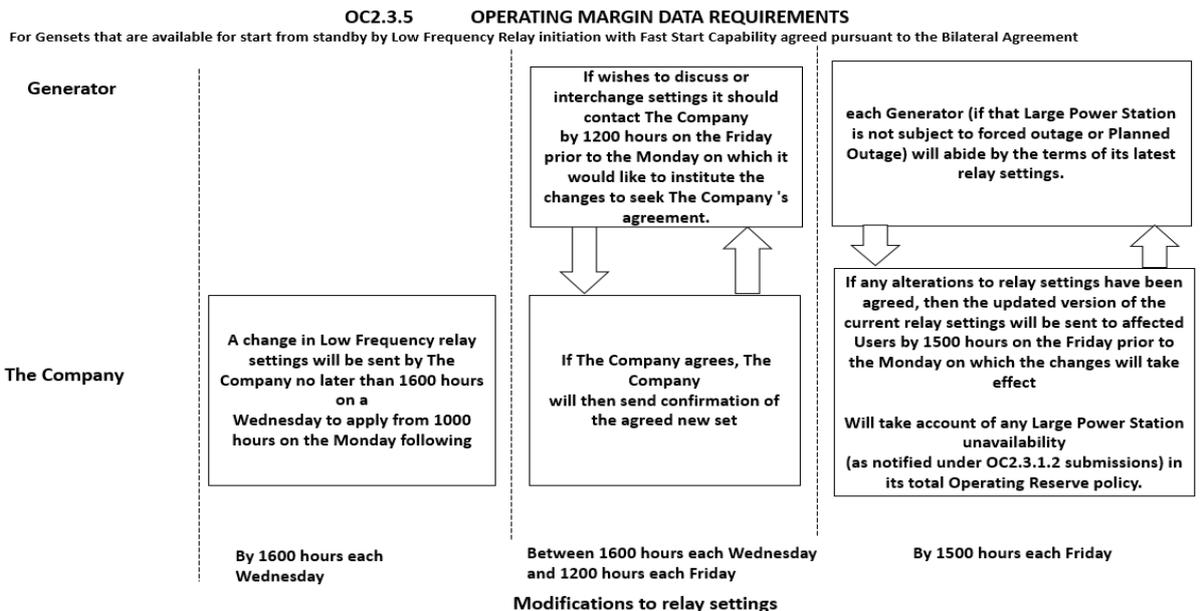


Figure 16 Summary of obligations under Operating Margin Data Requirements

OC2.3.5.1 Modifications to Low Frequency Relay settings for Fast Start from standby

'Relay settings' in this OC2.3.5.1 refers to the settings of **Low Frequency Relays** in respect of generating **Plant** that is available for start from standby by **Low Frequency Relay** initiation with **Fast Start Capability** agreed in the relevant **Bilateral Agreement**.

By 1600 hours each Wednesday

A change in relay settings will be sent by **The Company** 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 **The Company** may have specified) provided the overall capacity at each setting and **System** requirements can, in **The Company'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 **The Company** by 1200 hours on the Friday prior to the Monday on which it would like to institute the changes to seek **The Company's** agreement. If **The Company** agrees, **The Company** 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, **The Company** will take account of any **Large Power Station** unavailability (as notified under OC2.4.1.2 submissions) in its total **Operating Reserve** policy.

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

OC2.3.5.2 Operational Planning Margin Requirements (OPMR)

At a regular time interval, at least once each day (by 1600 hours) and no more frequently than every hour

The Company will provide its best estimate of the level of **Operating Reserve** to be utilised by **The Company** in connection with the operation of the **Balancing Mechanism** covering a 2-14 day ahead period (with a daily peak demand resolution) and the 2—52-week resolution (with a weekly resolution focusing on the peak demand of the week). This level shall be purely indicative.

This **Operational Planning Margin** requirements indication will also note the possible level of **High Frequency Response** to be utilised by **The Company** 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.

OC2.3.6 In the event that:

- a) a **Non-Embedded Customer** experiences the planned unavailability of its **Apparatus** resulting in the reduction of **Demand** of 100MW or more, or a change to the planned unavailability of its **Apparatus** resulting in a change in **Demand** of 100MW or more, for one **Settlement Period** or longer or
- b) a **Non-Embedded Customer** experiences a change in the actual availability of its **Apparatus** resulting in a change in **Demand** of 100MW or greater; or

- c) a **Generator** experiences a planned unavailability of a **Generating Unit** resulting in a change of 100MW or more in the **Output Useable** of the associated **Power-Generating Module** below its previously notified availability, which is expected to last one **Settlement Period** or longer and up to three years ahead: or
- d) a **Generator** experiences a change of 100MW or more in the **Maximum Export Limit** of any generating **Plant** which is expected to last one **Settlement Period** or longer. or
- e) a **Generator** experiences a planned unavailability resulting in a change of 100MW or more in its aggregated **Output Useable** below its previously notified availability for a **Power Station** with a **Registered Capacity** of 200MW or more and which is expected to last one **Settlement Period** or longer and up to three years ahead, save where data has been provided pursuant to OC.2.3.6(c) above; or
- f) a **Generator** experiences a change of 100MW or more in the aggregated **Maximum Export Limit** of a **Power Station** with a **Registered Capacity** of 200MW or more, which is expected to last one **Settlement Period** or longer, save where data has been provided pursuant to OC.2.3.6(d) above.

such **Non-Embedded Customer** or **Generator** shall provide **The Company** with the **EU Transparency Availability Data** in accordance with **DRC** Schedule 6 (Users' Outage Data) using **MODIS** and, with reference to points OC2.33.6(a) to (f), **Retained EU Law** (Commission Regulation (EU)543/2013) articles 7.1(a), 7.1(b), 15.1(a), 15.1(b), 15.1(c) and 15.1(d).

OC2.3.7

The Company will for each day publish the actual largest secured loss of generation (ie, the loss of generation against which, as a requirement of the Licence Standards, the **NETS** must be secured) or loss of import from **External Interconnections** for each settlement period on **The Company's** website.

OC2 APPENDIX 1– GENERATION PLANNING PARAMETERS

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 **Generating Units** in a **Synchronising Group** assuming all **Generating Units** have been **Shutdown** for 48 hours.

(b) The **Synchronising Group** within the **Power Station** to which each **Generating Units** 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 **Generating Unit** 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 **Generating Unit** 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 Useable** with up to two intervening break points assuming the **Generating Unit** 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 Useable** 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 **Generating Unit** following instruction from **The Company** assuming the **Generating Unit** has been **Shutdown** for 48 hours.

OC2.A.2.9 Minimum Zero time (MZT)

The minimum interval between **De-Synchronising** and **Synchronising** a **Generating Unit**.

OC2.A.2.10 Not used.

OC2.A.2.11 Gas Turbine Units loading parameters

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

OC2 APPENDIX 2 – PLANNING MATRIX FOR GENERATING UNITS

Planning Matrix Example Form

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

OC2 APPENDIX 3 – POWER PARK MODULE PLANNING MATRIXPower Park Module Planning Matrix Example Form

BM Unit Name				
Power Park Module [unique identifier]				
POWER PARK UNIT AVAILABILITY	POWER PARK UNITS			
	Type A	Type B	Type C	Type D
Description (Make/Model)				
Number of units				
Power Park Module [unique identifier]				
POWER PARK UNIT AVAILABILITY	POWER PARK UNITS			
	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** and as many rows as are required to provide information on the **Power Park Modules** within each **BM Unit**. 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 OPERATING CODE NO. 2 >

[Proposed Re-Definitions \(for purposes of Operating Code No.2\)](#)