INTRODUCTION

1. The **Grid Code** is designed to permit the development, maintenance and operation of an efficient, co-ordinated and economical **Northern Ireland (NI) System**, to facilitate the **Transmission System** being made available to persons authorised to supply or generate electricity and in conjunction with the arrangements in place in the Republic of Ireland generally to facilitate competition in the generation and supply of electricity on the Island of Ireland and is conceived as a statement of what is optimal (particularly from a technical point of view) for all **Users** and the **Transmission System Operator (TSO)** itself in relation to the planning, operation and use of the **NI System**. It seeks to avoid any undue discrimination between **Users** and categories of **Users**.

2. The **TSO** has a number of licence conditions designed to achieve the objectives of the **Single Electricity Market (SEM)**. To comply with these conditions, the **TSO** is obliged to act in conjunction with the **Other TSO**. In addition, the **TSO** must also have in place and comply with new arrangements between the **TSO** and the **Transmission Owner (TO)**. The detailed arrangements are set out in two documents:

   (a) The **System Operator Agreement (SOA)** between the **TSO** and the **Other TSO**; and

   (b) The **Transmission Interface Agreement (TIA)** between the **TSO** and the **TO**.

3. Where a **Licence Condition**, or one of the above agreements, requires the **TSO** to assist, co-operate with or provide information to either the **Other TSO** or the **TO** then it is obliged to do so. This is likely to entail the exchange of data, some of which may have been received from **Users**. The occasions where this may be necessary are identified in the relevant sections of the **Grid Code**.

4. The Operating procedures and principles governing the **TSO's** relationship with all **Users** of the **NI System**, be they **Generators**, **Suppliers, Interconnector Users, Interconnector Owners, Generator Aggregators, Demand Side Unit Aggregators, Dispatchable Demand Customers** or **Large Demand Customers** are set out in the **Grid Code**. The **Grid Code** specifies day-to-day procedures for both planning and operational purposes and covers both normal and exceptional circumstances.

5. The **Grid Code** is divided into the following sections:-

   (a) a Planning Code which provides generally for the supply of certain information by **Users** in order that the planning and development of the **NI System** may be undertaken;

   (b) Connection Conditions which specify the minimum technical, design and certain operational criteria which must be complied with by **Users** connected to or seeking connection with the **NI System**;

   (c) an Operating Code which is split into a number of sections and deals with:-

(i) **Demand** forecasting (OC1);

(ii) the co-ordination of the **Outage** planning process in respect of **Generating Units** and **Power Station Equipment** and **Outages** of equipment on the **NI System** for construction, repair and maintenance (OC2);

(iii) the specification of different types of reserve, which make up the **Operating Margin** (OC3);

(iv) different methods of reducing **Demand** (OC4);

(v) the reporting of scheduled and planned actions and unexpected occurrences such as faults between the **TSO** and **Users** (OC5);

(vi) the co-ordination, establishment and maintenance of **Isolation** and **Earthing** in order that work and/or testing can be carried out safely (OC6);

(vii) certain aspects of contingency planning (OC7);

(viii) the provision of written reports on occurrences such as faults in certain circumstances (OC8);

(ix) the procedures for determining the number and nomenclature of **Plant** and **Apparatus** at **Connection Sites** (OC9);

(x) the procedures for the establishment of **System Tests** (OC10); and

(xi) **Testing**, **Monitoring** and **Investigations** in relation to **User's Plant and Apparatus** (OC11);

(d) a **Scheduling and Dispatch Code** which is split into three sections and deals with:-

(i) **Scheduling** generally and the preparation of an **Indicative Operations Schedule** indicating which units may be instructed the following day (SDC1);

(ii) the issue of **Dispatch Instructions** (SDC2); and

(iii) the procedures and requirements in relation to **Frequency Control** (SCD3);

(e) a **Data Registration Code** which sets out a unified listing of all data required by the **TSO** from **Users**, and by **Users** from the **TSO**, under the **Grid Code**;

(f) General Conditions which are intended to ensure, so far as possible, that the various sections of the **Grid Code** work together and work in practice and

which include provisions relating to the establishment of a **Grid Code Review Panel** and other provisions of a general nature; and

(g) a **Metering Code** which is split into a number of sections, which deal in particular with:-

(i) the basic requirements for metering (MC);

(ii) specific requirements of the interim metering scheme for a generating tariff metering (Sub-Code No 1);

(iii) the specific requirements for the new metering scheme (Sub-Codes No 2.1-2.4)

(iv) the specific requirements for generation operational metering (Sub-Code No 3);

(v) procedures for the maintenance, testing, inspection and sealing of metering (Agreed Procedures No 1 and No 2);

(vi) reconciliation procedures for metering (Agreed Procedures No 3 and No 4);

(vii) procedures for estimating settlement values in lieu of normal data collection methods (Agreed Procedures No 5 and No 6); and

(viii) communication protocols (Agreed Procedure No 7).

6. This Introduction is provided to **Users** and to prospective **Users** for information only and does not constitute part of the **Grid Code**.

GENERAL CONDITIONS

GC.1 INTRODUCTION

The **General Conditions** contain provisions which are of general application to all sections of the **Grid Code**. Their objective is to ensure, to the extent possible, that the various sections of the **Grid Code** work together and work in practice for the benefit of all **Users**.

GC.2 SCOPE

GC2.1 The **General Conditions** apply to the **TSO**, the **TO** and to all **Users** which, in these **General Conditions**, means all persons (other than the **TSO** and the **TO**) to whom any individual section of the **Grid Code** applies.

GC2.2 Any references in the **Grid Code** to the **TSO** having or exercising a right or obligation in relation to the **NI System** should (unless expressly stated otherwise) be read as the **TSO** having or exercising a right or obligation in relation to the **Transmission System**

GC2.3 Any references in this **Grid Code** to a **User** having or exercising a right or obligation in relation to the **NI System** should (unless expressly stated otherwise) be read as the **User** having or exercising a right or obligation in relation to the **Transmission System** only.

GC.3 ASSISTANCE IN IMPLEMENTATION

GC.3.1 The **TSO Licence** imposes a duty upon the **TSO** to implement the **Grid Code** and it is accepted by the **TSO** and all **Users** that the **Grid Code** must, therefore, be capable of being enforced by the **TSO**. In certain cases the **TSO** may need access across boundaries, services and facilities from **Users** or to issue instructions to **Users** in order to be able to implement and enforce the **Grid Code**. It is hoped that these cases would be exceptional and it is not, therefore, possible to envisage precisely or comprehensively what the **TSO** might reasonably require in order to put it in a position to be able to carry out its duty to implement and enforce the **Grid Code**, in these cases.

GC.3.2 Accordingly, all **Users** are required not only to abide both by the letter and the spirit of the **Grid Code**, but also to provide the **TSO** with such rights of access, services and facilities and to comply with such instructions as it may reasonably require to implement and enforce the **Grid Code**.

GC3.3 As the **TO** is also a party to certain sections of the **Grid Code** (CC10.2, CC10.3 and OC6), the **TO** may also in certain cases need access across boundaries, services and facilities from **Users** in order to be able to carry out its rights and obligations under these sections of the **Grid Code** (for example, to isolate or disconnect **Plant** or **Apparatus**). Accordingly, all **Users** are required to provide the **TO** with such rights of access, services and facilities and to comply with such instructions as it may reasonably require to carry out its obligations under the **Grid Code**.

GC.4 UNFORESEEN CIRCUMSTANCES

If circumstances arise which the provisions of the **Grid Code** have not foreseen, the **TSO** shall, to the extent reasonably practicable in the circumstances, consult promptly and in good faith all affected **Users** in an effort to reach agreement as to what action should be taken. If agreement between the **TSO** and such **Users** cannot be reached in the time available, the **TSO** shall determine what is to be done. Whenever the **TSO** makes a determination, it shall do so having regard, wherever possible, to the views expressed by **Users** and, in any event, to what is reasonable in all the circumstances. Each **User** shall comply with all instructions given to it by the **TSO** following such a determination provided that the instructions are consistent with the then current technical parameters of the relevant **User's System** registered under the **Grid Code**. The **TSO** shall, as soon as reasonably practicable following the occurrence of unforeseen circumstances, notify all relevant details thereof to the **Panel** for consideration in accordance with GC.6.2(e).

GC.5 HIERARCHY

GC.5.1 In the event of any conflict between the provisions of any direction of the **Secretary of State** on the one hand and any provisions of the **Grid Code** on the other, the provisions of such direction shall prevail (provided that such direction or ruling is binding upon the person to whom it is addressed), and neither the **TSO** nor any **User** shall be liable for failing to comply with the conflicting provision of the **Grid Code**.

GC.5.2 In the event of any conflict between the provisions of the **Grid Code** unless otherwise specified and any contract, agreement or arrangement between the **TSO** and a **User**, the provisions of the **Grid Code** shall prevail unless the **Grid Code** expressly provides otherwise.

GC.6 THE **GRID CODE** REVIEW PANEL

GC.6.1 The **TSO** shall establish and maintain the **Panel**, which shall be a standing body carrying out the functions referred to in paragraph GC.6.2.

GC.6.2 The **Panel** shall, with regard to all sections of the **Grid Code** which are not **Sections under Common Governance**:

(a) keep the **Grid Code** and its working under review;

(b) review all suggestions for amendments to the **Grid Code** which the **Authority** or any **User** or the **TO** (in respect of data items to be submitted under the Planning Code, PC Appendix A, the Connection Conditions CC4, CC5, CC6, CC7, safety related matters in CC9 and CC10, CC Schedule 1, CC Schedule 2, CC Appendix 1, CC Appendix 2 and OC6) may submit to the **TSO** for consideration by the **Panel** from time to time;

(c) determine recommendations for amendments to the **Grid Code** which the **TSO** or the **Panel** feels are necessary or desirable and the reasons for the recommendations;

(d) issue guidance in relation to the **Grid Code** and its implementation, performance and interpretation upon the reasonable request of any **User**; and

(e) consider what changes are necessary to the **Grid Code** arising out of any unforeseen circumstances referred to it by the **TSO** under GC.4.

GC.6.3 The **Panel** shall consist of the following persons, each of whom shall have the right to vote:-

(a) a chairman appointed by the **TSO**;

(b) 3 persons representing the **TSO**;

(c) 4 persons representing **Generators**;

(d) 4 persons representing **Suppliers**;

(e) a person representing the **Interconnector Owner**;

(f) a person representing the **TO** provided that such person shall only have a right to vote on matters related to the list of data items in GC6.2 which the **TO** is allowed to submit suggestions for amendment;

(g) a person representing the **DNO**;

(h) a person appointed by, and representing, the **Authority**; and

(i) a person appointed by the **TSO** to keep the Panel aware of renewable energy sources and their impact on the **NI System**,

each of whom shall be appointed pursuant to the rules issued pursuant to GC.6.4.

GC.6.4 The **Panel** shall establish and comply at all times with its own rules and procedures relating to the conduct of its business, which shall be approved by the **Authority**.

GC.6.5 The **TSO** shall submit all proposed amendments to the **Grid Code** (regardless of which party proposes such amendment) to the **Panel** for discussion prior to fulfilling any obligations under its **Licence** in relation to wider consultation.

GC.7 JOINT GRID CODE REVIEW PANEL

GC7.1 The **TSO** and the **Other TSO** shall jointly establish, with the approval of the **Authority** and the **Other Authority**, a **Joint Grid Code Review Panel** which shall be a standing body carrying out the functions referred to in GC7.2.

GC7.2 The **Joint Grid Code Review Panel** shall:

(a) keep the **Sections under Common Governance** and their working under review;

(b) review all suggestions for amendments to the **Sections under Common Governance** which the **Authority**, the **Other Authority** or any **User** may submit to the **TSO** or the **Other TSO** for consideration by the **Joint Grid Code Review Panel** from time to time;

(c) determine recommendations for amendments to the **Sections under Common Governance** which the **TSO**, the **Other TSO** or the **Joint Grid Code Review Panel** feels are necessary or desirable and the reasons for the recommendations; and

(d) consider what changes are necessary to the **Sections under Common Governance** arising out of any unforeseen circumstances referred to it by the **TSO** under GC.4 or the **Other TSO** pursuant to the **Other Grid Code**.

GC7.3 The **Joint Grid Code Review Panel** shall consist of the **Panel** established by the **TSO** pursuant to GC6.1 but excluding the person representing the **TO** and the panel established by the **Other TSO** pursuant to the **Other Grid Code**.

GC.7.4 The **Joint Grid Code Review Panel** shall establish and comply at all times with its own rules and procedures relating to the conduct of its business, which shall be approved by the **Authority** and the **Other Authority**.

GC.7.5 The **TSO** and the **Other TSO** shall submit all proposed amendments to the **Sections under Common Governance** (regardless of which party proposes such amendment) to the **Joint Grid Code Review Panel** for discussion prior to fulfilling any obligations under their respective **Licence** in relation to wider consultation. Following the determination of a recommendation at a **Joint Grid Code Review Panel** meeting, the **TSO** shall ensure that it fulfils its **Licence** obligation in relation to wider consultation.

GC.7.6 The **TSO** shall, in conjunction with the **Other TSO**, issue guidance in relation to the **Sections under Common Governance** and their implementation, performance and interpretation upon the reasonable request of any **User.** If a **User** requires further clarification on the interpretation of the **Sections under Common Governance**, the User may request that it be raised for discussion at the next **Joint Grid Code Review Panel** meeting.

GC.8 COMMUNICATION BETWEEN THE **TSO** AND **USERS**

GC.8.1 Unless otherwise specified in the **Grid Code**, all instructions given by the **TSO** and communications (other than those relating to the submission of data and notices) between the **TSO** and **Users** (other than **Generators**) shall take place between the **TSO System** Operations Manager and the relevant **User's Responsible Engineer/Operator** or such other person as **TSO** or the **User** (as the case may be) may from time to time notify to the other for such purposes.

GC.8.2 Unless otherwise specified in the **Grid Code**, all instructions given by the **TSO** and communications (other than those relating to the submission of data and notices) between the **TSO** and a **Generator** shall take place between the **TSO System** Operations Manager and the **Generator's Power Station** Manager or such other person as the **TSO** or the **Generator** (as the case may be) may from time to time notify to the other for such purposes.

GC.8.3 Unless otherwise specified in the **Grid Code**, all instructions given by the **TSO** and communications (other than relating to the submission of data and notices which shall be submitted pursuant to GC.9.1) between the **TSO** and **Users** will be by means of telephone with a facility to record messages permanently.

GC.8.4 Where instructions or communications are given under the **Grid Code** by means of a communications system with a facility to record (by whatever means) messages permanently, such recording shall be accepted by the **TSO** and **Users** as evidence of those instructions or communications.

GC.9 DATA AND NOTICES

GC.9.1 Data and notices to be submitted to the **TSO** under the **Grid Code** (other than data which is the subject of a specific requirement of the **Grid Code** as to the manner of its delivery) shall be delivered in writing either by hand or sent by registered first class pre-paid post, or by telex or facsimile transmission.

GC.9.2 Data delivered pursuant to paragraph GC.9.1 shall:-

(a) in the case of data to be submitted by a **User** prior to the connection of its **Plant** and/or **Apparatus** to the **NI System**, in relation to that **Plant** and/or **Apparatus**, be addressed to the Network Planning Manager at the address notified by the **TSO** to the **User** following receipt of an application for connection to the **NI System**, or to such other department within the **TSO** or address as the **TSO** may notify to the **User** from time to time; and

(b) in the case of data to be submitted by a **User** in respect of **Plant** and/or **Apparatus** connected to the **NI System**, be addressed to the **TSO** System Operations Manager at the address notified by the **TSO** to the **User** prior to connection to the **NI System**, or to such other department within the **TSO** or address as the **TSO** may notify to the **User** from time to time.

GC.9.3 Notices submitted to **Users** shall be addressed to such person as may be notified in writing to the **TSO** from time to time by the relevant **User** at its address(es) notified by the **User** to the **TSO** in writing from time to time for submission of data and service of notices under the **Grid Code** (or failing which to the registered or principal office of the **User**).

GC.9.4 All data items, where relevant, will be referenced to nominal voltage and **Frequency** unless otherwise stated.

GC.10 OWNERSHIP OF **PLANT** AND/OR **APPARATUS**

References in the **Grid Code** to **Plant** and/or **Apparatus** of a **User** include **Plant** and/or **Apparatus** used by a **User** under any agreement with a third party.

GC.11 EMERGENCY SITUATIONS

Users should note that the provisions of the **Grid Code** may be suspended in whole or in part pursuant to any directions given and/or orders made by the Secretary of State under Article 58 of the **Order**.

GC.12 ILLEGALITY AND PARTIAL INVALIDITY

GC.12.1 If any provision of the **Grid Code** should become or be declared unlawful or partially invalid for any reason, the validity of all remaining provisions of the **Grid Code** shall not be affected.

GC.12.2 If part of a provision of the **Grid Code** is invalid or unlawful but the rest of such provision would remain valid if part of the wording were deleted, the provision shall apply with such modifications as may be necessary to make it valid and effective but without affecting the meaning or validity of any other provision of the **Grid Code**.

GC.13 CONTRACTUAL COMMITMENTS

GC.13.1 Where appropriate, in relation to OC2.6.2(c)(iii), OC2.6.3(c)(iii) and OC2.6.3(f)(iii) a **Generator** with **PPA CDGUs** may refuse to accept a request under either of those provisions but only where, in the **Generator's** reasonable opinion there is a significant risk that to do so would result in:-

(1) damage or deterioration to **Plant** and/or **Apparatus**; and/or
(2) costs, expenses or losses;

in either case for which the **Generator** reasonably considers there to be no or an insufficient contractual commitment by **NIE Energy** to compensate the **Generator**. The **Generator** shall provide the **TSO** with such evidence as is reasonable in relation to the above.

GC.13.2 Where appropriate, in relation to OC2.6.2(c)(ii), OC2.6.3(c)(ii) and OC2.6.3(f)(ii), a **Generator** with **PPA CDGUs** may refuse to comply with the **TSO's** request to approach the relevant authorities for an extension of time but only where, in the **Generator's** reasonable opinion, there is a significant risk that the terms (if any) on which the relevant authority will grant an extension would result in damage or deterioration to **Plant** and/or **Apparatus** and/or costs, expenses or losses for which the **Generator** reasonably considers there to be no or an insufficient contractual commitment by **NIE Energy** to compensate the **Generator**.

GC.13.3 Where appropriate, in relation to OC2.6.7.4, notwithstanding OC2.6.7.4(b), a **Generator** with **PPA CDGUs** shall not be required to defer or continue to defer the **Outage** where (aa) there would, in the **Generator's** reasonable opinion, be an imminent risk of injury to

persons or material damage to property (including the **CDGU**) or (bb) in the **Generator's** reasonable opinion there is a significant risk that to do so would result in:-

(1) damage or deterioration to **Plant** and/or **Apparatus**; and/or
(2) costs, expenses or losses;

in either case for which, in the **Generator's** reasonable opinion, there is no or an insufficient contractual commitment by **NIE Energy** to compensate the **Generator**. The **Generator** shall provide the **TSO** with such evidence as is reasonable in relation to the above.

GC.13.4 Where appropriate, in relation to OC7.4.6.6, a **Generator** with **PPA CDGUs** shall not be obliged to comply with the **TSO's** instructions relating to a **Black-Start** where these are outside the **Technical Parameters** of the relevant **CDGU** if:-

(a) in the **Generator's** reasonable opinion there is an imminent risk of injury to persons or material damage to property (including the **CDGU**); or

(b) there is, in the **Generator's** reasonable opinion, a significant risk that to comply with such instruction would result in damage or deterioration to **Plant** and/or **Apparatus** and/or costs, expenses or losses, in either case for which the **Generator** reasonably considers there to be no or an insufficient contractual commitment by **NIE Energy** to compensate the **Generator**.

The **Generator** shall provide the **TSO** with such evidence as is reasonable in relation to the above.

GC13.5 Where appropriate, in relation to SDC2.4.2.9, a **Generator** with **PPA CDGUs** may refuse to comply or continue to comply with instructions referred to in SDC2.4.2.9 but only:-

(a) in order to avoid, in the **Generator's** reasonable opinion, an imminent risk of injury to persons or material damage to property (including the **CDGU**); or

(b) where in the **Generator's** reasonable opinion there is a significant risk that to comply with such instruction would result in damage or deterioration to **Plant** and/or **Apparatus** and/or costs, expenses or losses, in either case for which the **Generator** reasonably considers there to be no or an insufficient contractual commitment by **NIE Energy** to compensate the **Generator**.

PLANNING CODE

PC1 INTRODUCTION

PC1.1 The Planning Code (the "PC") specifies the requirements for the supply of information by persons connected or persons seeking new or modified connection to the **Northern Ireland (NI) System** and/or use of the **All Island Transmission Networks** in order to enable the planning and development of the **NI System** and, where required the co-ordinated planning and development of both the **NI System** and the **Other Transmission System** together with the **Other TSO**. It also specifies the technical and design criteria and procedures to be applied in the planning and development of the **NI System** and to be taken account of by the **TO** and other persons connected or seeking connection to the **NI System** in the planning and development of their own **Plant** and **Systems**.

PC1.2 A requirement for reinforcement or extension of the **NI System** may arise for a number of reasons including, but not limited to:-

(a) a development on a **User's System** connected to the **NI System**;

(b) the introduction of a new, or a modification relating to an existing, **Connection Point** between a **User's System** and the **NI System**;

(c) changing requirements for electricity transmission facilities due to changes in factors such as **Demand, Generation**, technology reliability requirements and/or environmental requirements;

(d) transient or steady-state stability considerations;

(e) the aggregate effect of **Customer** developments;

(f) a development affecting or modification to the **Other Transmission System**;

(g) the cumulative effect of any combination of the above.

PC1.3 Accordingly, the reinforcement or extension of the **NI System** may involve work:-

(a) at the **Connection Point** between a **User's System** and the **NI System**;

(b) on distribution or transmission lines or substations or other facilities which join the **Connection Point** to the remainder of the **NI System**;

(c) at or between points on the **NI System** near to or remote from a **Connection Point**; and

(d) on distribution or transmission lines or substations or other facilities on the NI System as a result of a development affecting or modification to the **Other Transmission System.**

PC1.4 Since **System** developments must be planned with sufficient lead time to allow any necessary consents to be obtained and any necessary detailed engineering design/construction work to be completed:

(a) the **PC** and the relevant **Connection Agreement** and/or **Use of System Agreement** impose appropriate timescales on the exchange of information between the **TSO** and **Users** subject to all parties having regard, where appropriate, to the confidentiality of such information. Additionally, the

transmission interface arrangements between the **TSO** and **TO** and the system operator agreement between the **TSO** and the **Other TSO** require information to be passed on and exchanged between the **TSO** and the **TO** and between the **TSO** and the **Other TSO** subject to all parties having regard, where appropriate, to the confidentiality of such information.

PC2 OBJECTIVES

PC2.1 The objectives of the **PC** are to:-

(a) provide for the supply of information required by the **TSO** from **Users** in order to enable the **TSO** to procure that the development (including reinforcement and extension) of the **NI System** is planned;

(b) provide for the supply of information required by the **TSO** from **Users** in order to enable the **TSO** to participate in the co-ordinated planning and development of both the **NI System** and the **Other Transmission System** where required;

(c) reflect the **Licence** requirements for the supply of information by the **TSO** to **Users** in order to facilitate the identification and evaluation of available **NI System** capacity;

(d) set out the requirements for the supply of information in respect of any proposed development on a **User's System** which may impact on the performance of the **NI System** or the **Other Transmission System**; and

(e) specify the technical and design criteria and procedures which the **TSO** will ensure are applied in the planning and development of the **NI System** and which are to be taken into account by **Users** in the planning and development of their own **Systems**.

In addition, it briefly reflects the **Licence** provisions relating to the entering into, and modification, of connection and use of system agreements.

PC3 SCOPE

PC3.1 The **PC** applies to the **TSO** and to **Users**, which in the **PC** means:-

(a) **Generators;**

(b) **Suppliers;**

(c) **Large Demand Customers**;

(d) **Aggregators**,

(e) **Interconnector Owners**; and

(f) the **DNO**.

PC3.2 Persons whose prospective activities would place them in any of the above categories of **User** will, either pursuant to a **Licence** or as a result of the application procedure for a **Connection Agreement** and/or **Use of System Agreement**, become bound by the **PC** prior to their generating, supplying or consuming, as the case may be, and references to the various categories (or to the general category) of **User** should,

therefore, be taken as referring to them in that prospective role as well as to **Users** actually connected.

PC4 PLANNING CRITERIA - **NI SYSTEM**

PC4.1 The **TSO** shall ensure that the relevant **Licence Standards** are applied in the planning and development of the **NI System** and these shall be taken into account by **Users** in the planning and development of their own plant and **Systems**.

PC5 **STATEMENT ON SYSTEM CAPACITY**

PC5.1 Development of the **NI System**

PC5.1.1 By way of information for **Users**, and generally without imposing any other or further obligation to that contained in the **TSO's Licence**, the following section sets out a brief description of the position regarding the provision by the **TSO** to **Users** of **Statements on System Capacity**.

PC5.1.2 One of the means by which **Users** and intending **Users** are able to assess available **NI System** capacity are the **Statements on System Capacity**, prepared by the **TSO** and the **DNO** under their respective **Licences**, showing future circuit capacity (and present circuit capacity in the case of one of the two types of statement), forecast power flows and loading on the **NI System** and fault levels for each network node covered by the statement. The two types of statement which must be produced are:-

(i) a **Transmission System Statement** in respect of the **Transmission System**, which the **TSO** is required to produce under the **TSO Licence**, to cover each of the seven succeeding financial years, to be revised at least once per year; and

(ii) a **Distribution System Statement** in respect of part or parts of the **Distribution System**, which the **DNO** is required to produce under the **TO Licence,** to cover present and future circuit capacity, to be produced upon request by any person.

PC5.2 **Statements of System Capacity**

PC5.2.1 A copy of the **Transmission System Statement** will, unless the **TSO** is relieved of the obligation by the **Authority** pursuant to the **TSO Licence**, be given or sent to any person who requests a copy of such statement. The **TSO** may make a charge for supplying such copy reflecting its reasonable costs of providing the statement which shall not exceed the maximum amount specified in directions issued by the **Authority** for the purpose from time to time.

PC5.2.2 A **Distribution System Statement** will, unless the **DNO** is relieved of its obligation by the **Authority** pursuant to the **TO Licence**, be prepared if requested by any person and the **DNO** will, subject to PC 5.2.3 and PC 5.2.4 give or send such statement to the person making the request. Where a **User** requested a **Distribution System Statement** the **User** must provide sufficient information to the **DNO** to enable the statement to be made, including, but not limited to, the relevant **Standard Planning Data**. The statement shall, in addition to those matters set out in PC 5.1.2 include:

(a) such further information as shall be reasonably necessary to enable the person requesting it to identify and evaluate the opportunities available when connecting to and making use of the part or parts of the **Distribution System** specified in the request; and

(b) if so required, a commentary prepared by the **TSO** indicating its view as to the suitability of the part or parts of the **Distribution System** specified in the request for new connections and transport of further quantities of electricity.

PC5.2.3 The **DNO** may within 10 days after receipt of the request for a **Distribution System Statement** provide the requester with an estimate of its reasonable costs in the preparation of the statement and the provision of the statement under PC 5.2.2 shall be conditional upon the person requesting the statement agreeing to pay the charge (or such other amount as the **Authority** may direct). The statement shall be given or sent within 28 days (or, where the **Authority** so approves, such longer period as the **DNO** may reasonably request, having regard to the nature and complexity of the request) of the later of the date of receipt of the request or the date on which the **DNO** receives agreement from the requester to pay the charge estimated or the date on which the amount is determined by the **Authority**. Where no charge is to be levied, the statement shall be given or sent within 28 days of the receipt of the request.

PC5.2.4 The **TSO** may, with the prior consent of the **Authority**, omit from the **Transmission System Statement** any details as to circuit capacity, power flows, loading or other information, disclosure of which would, in the view of the **Authority**, seriously and prejudicially affect the commercial interests of the **TSO** or any third party or which would place the **TSO** in breach of any confidentiality conditions of the **Licence**, or any **Connection Agreement** and/or **Use of System Agreement**, any other agreement or code to which it is a party and any other matters provided for in the **TSO Licence**.

PC6 PLANNING DATA REQUIREMENTS FROM **USERS**

PC6.1 Requirement to provide Planning Data

PC6.1.1 **Users** must provide sufficient planning data annually as set out below, or as reasonably requested by the **TSO** from time to time, to enable the **TSO** to comply with the requirements under its **Licence** (including in relation to the interface arrangements with the **TO** and the **Other TSO**) and under the **Grid Code**. In the case of an **Interconnector Owner**, this obligation will be discharged by complying with the provisions of PCA3.4.3.

PC6.1.2 Planning data submissions must be in respect of each of the seven succeeding calendar years (other than in the case of **Registered Project Planning Data** which will reflect the current position).

PC6.1.3 Planning data submissions must be:-

(a) provided by a **User** (and by proposed **Users** applying for a **Connection Agreement** and/or **Use of System Agreement**) in connection with applications for new or modified arrangements for connection or use of system;

(b) provided by a **User** who has requested a **Statement of System Capacity**, as referred to in PC5.2;

(c) provided by a **User** at the time that it notifies the **TSO** of any significant changes to its **System** or operating regime; and

(d) provided by the categories of **Users** specified in PC6.3.3 on a routine annual basis by the end of calendar week 9 of each year or such other annual date as the **TSO** may, upon not less than 6 months' notice, notify to such **Users** in writing.

In the case of submissions under paragraphs (a), (b) and (c), the submission must be in respect of the remainder of the current year as well as in respect of the seven succeeding calendar years.

PC6.1.4 In the case of submission on a routine annual basis, where from the date of one annual submission to another there is no change in the data (or some of the data) to be submitted, instead of re-submitting the data a **User** may submit a written statement that there has been no change from the data (or the relevant data) submitted the previous time.

PC6.1.5 In the case of submissions under PC6.1.3(a) and (c), the notification must include the time and date at which the change became, or is expected to become, effective. Notice must be given as soon as practicably possible in advance to enable the **TSO** to implement properly any necessary system modification. In the event of unplanned changes in a **User's System** or operating regime the **User** shall notify the **TSO** as soon as is practicably possible to ensure that any contingency measures, which the **TSO** considers necessary, can be implemented by the **TSO**.

PC6.2 Manner of provision by **Users**

PC6.2.1 All data to be supplied by **Users** to the **TSO** pursuant to this **PC** shall reflect the best possible estimate or measurement available to the **User** in the circumstances, shall be supplied in writing by the date specified for the purpose of the **PC** or, where no date is so specified, in a prompt and timely manner. The **TSO** shall be entitled to require any **User** to submit further information in the event that it considers any data supplied to it by such **User** to be unclear or incomplete.

PC6.2.2 Failure by a **User** to comply with its obligation under PC 6.2.1 may result in the **NI System,** and, in certain circumstances, the **Other Transmission System,** being planned in accordance with incorrect data and/or a delay in the offer of terms being made to the **User** by the **TSO** for connection and/or use of system.

PC6.3 Data to be provided

PC6.3.1 The planning data required under the **PC** from **Users** is allocated to one of two categories:-

(a) **Standard Planning Data**; or

(b) **Detailed Planning Data**.

PC6.3.2 Listings of **Standard Planning Data**, required in every case and **Detailed Planning Data**, required in certain cases, are set out in the Appendix to this **PC**. In either case, the data must be supplied in the format set out in the **Data Registration Code**.

PC6.3.3 In relation to the submission of data on a routine annual basis, **Standard Planning Data** in every case, and **Detailed Planning Data** if required by the **TSO**, by reasonable notice in advance of the submission ("reasonableness" being judged in this context by reference to the amount of time which it may take to collate the required data), shall (unless there has been no change from the data submitted the previous time, in which case the provisions of PC6.1.4 shall apply) be submitted to the **TSO** annually by **Users** in the following categories:-

(a) in respect of all transmission connected **Power Stations** and in respect of distribution connected **Power Stations** which have a **Registered Capacity** of 10 **MW** and above;

(b) **Suppliers**; and

(c) **Large Demand Customers**.

PC6.3.4 **Standard Planning Data** in every case, and **Detailed Planning Data** if requested by the **TSO**, shall be provided by a **User** who has requested a **Statement of System Capacity** as referred to in PC5.2.

PC6.3.5 **Standard Planning Data** shall be provided by **Users** at the time that they notify the **TSO** of any significant changes to their **System** or operating regime. **Detailed Planning Data** shall be provided by **Users** in these circumstances if required by the **TSO**.

PC6.3.6 PC7 deals with what is required pursuant to the **Grid Code** for applications for new or modified arrangements for connection to the **NI System** or use of the **All Island Transmission Networks**.

PC6.4 Status of Planning Data

For **Planning Code** purposes, planning data supplied by **Users** is allocated to one of four status levels which provide a progression related to degrees of confidentiality, commitment and validation, as follows:-

PC6.4.1 **Initial Data**

The following information shall be published on the **TSO** website:

(i) **User's** name (legal and project name);

(ii) **User's** contact details;

(iii) **User's** date of completed application;

(iv) Status of application, for example in progress or issued;

(v) Specific location, including grid co-ordinates; and

(vi) The capacity applied for the project; and

(vii) Interacting group where applicable.

PC6.4.2 **Preliminary Project Planning Data**

(a) Data supplied by a **User** in conjunction with an application for connection to the **NI System** and/or use of the **All Island Transmission Networks** shall be considered as **Preliminary Project Planning Data** until such time as a binding **Connection Agreement** and/or **Use of System Agreement** is established between the **TSO** and the **User**.

(b) Subject to PC6.4.2(c), this data shall not be disclosed by the **TSO** unless and until it becomes **Committed Project Planning Data** and/or **Registered Project Planning Data** whereupon the following applicable disclosure provisions of this PC6.4 will apply, except where it needs to be disclosed to the **TO** to enable the preparation of a connection or use of system offer or in relation to planning or development of the **NI System**.

(c) The **TSO** may disclose **Preliminary Project Planning Data** to the **Other TSO** for the purposes of consideration of developments and consideration of other system development matters such as for example system reinforcement upgrading on the **Other Transmission System**.

Preliminary Project Planning Data will normally contain only **Standard Planning Data**, unless **Detailed Planning Data** is specifically requested by the **TSO** to permit more detailed **System** or **Other Transmission System** studies.

PC6.4.3 **Committed Project Planning Data**

When the offer for a **Connection Agreement** and/or **Use of System Agreement** is accepted, the data relating to the **User's** development submitted as **Preliminary Project Planning Data** and data required or received subsequently by the **TSO** under this PC shall have the status of **Committed Project Planning Data**. This data together with other data held by the **TSO** or the **TO** relating to the **NI System** (and in certain circumstances, the **Other Transmission System**) shall form the background against which new applications from **Users** shall be considered and against which planning of the **NI System** and, where required for the purposes of the **Single Electricity Market**, the participation of the **TSO** in the co-ordinated planning and development of both the **NI System** and the **Other Transmission System** in conjunction with the **Other TSO**, shall be undertaken. Accordingly, **Committed Project Planning Data** may be disclosed by the **TSO** to the extent that the **TSO:-**

(a) needs to disclose it in **Statements of System Capacity** and in any further information which the **TSO** is required to provide together with **Statements of System Capacity**;

(b) needs to disclose it when considering and/or advising on applications (or possible applications) of **Users**, including disclosure of it or data from it both orally and in writing, to other **Users** making an application (or considering or discussing a possible application) which is, in the **TSO's** view, relevant to that application or possible application;

(c) needs to disclose it to the **TO** for the purposes of planning and/or development of the **NI System** and/or, to the **Other TSO** for the purposes of consideration of developments and consideration of other system development matters such as for example system reinforcement upgrading on the **Other Transmission System**;

(d) needs to disclose it for operational purposes; or

(e) is obliged under the terms of an interconnection agreement with an **Externally Interconnected Party** to disclose it to such party as part of information on the **NI System.**

Committed Project Planning Data may contain both **Standard Planning Data** and **Detailed Planning Data**.

PC6.4.4 **Registered Project Planning Data**

The **Connection Conditions** require that, before an agreed connection to the **NI System** may be physically established, any estimated values contained within the **Committed Project Planning Data** shall be replaced, where practicable, by validated actual values and as appropriate by updated forecasts for future data items such as **Demand**. Data provided at this stage is termed **Registered Project Planning Data**.

Registered Project Planning Data may contain both **Standard Planning** and **Detailed Planning Data**.

PC6.4.5 **Registered Project Planning Data**, together with other data held by the **TSO** or the **TO** relating to the **NI System** (and, in certain circumstances the **Other Transmission**

System), will form the background against which new applications by any **User** will be considered and against which planning of the **NI System** will be undertaken. Accordingly, **Registered Project Planning Data** may be disclosed by the **TSO** to the extent that the **TSO:-**

(a) needs to disclose it in the preparation of **Statements of System Capacity** and in any further information which the **TSO** is required to provide together with the **Statement of System Capacity**;

(b) needs to disclose it when considering and/or advising on applications (or possible applications) of **Users**, including disclosure of it or data from it both orally and in writing, to other **Users** making an application (or considering or discussing a possible application) which is, in the **TSO's** view, relevant to that application or possible application;

(c) needs to disclose it to the **TO** for the purposes of planning and/or development of the **NI System** and/or, to the **Other TSO** for the purposes of consideration of developments and consideration of other system development matters such as for example system reinforcement upgrading on the **Other Transmission System**;

(d) needs to disclose it for operational purposes; or

(e) is obliged under the terms of an interconnection agreement with an **Externally Interconnected Party** to disclose it to such party as part of information on the **NI System.**

PC6.4.6 For the avoidance of doubt, the **TSO** may of course use the data supplied for the purposes referred to in this **PC**, in complying with the requirements of its **Licence** and for operational purposes and nothing herein shall limit the **TSO**'s rights to disclose information pursuant to any provisions relating to confidentiality in any **Connection Agreement** or **Use of System Agreement** or in the **TSO Licence**.

PC7 PROCEDURES FOR APPLICATIONS FOR CONNECTION AND **USE OF SYSTEM AGREEMENTS**

PC7.1 Application Procedure for New **Connection** and/or **Use of System Agreements**

Any person seeking to establish new or modified **Connection** and/or **Use of System Agreements** pursuant to the **TSO Licence** must make application on the standard application form which is available from the **TSO** on request. The application shall include:-

(a) a description of the **Plant** and/or **Apparatus** to be connected to the **NI System** or, as the case may be, of the modification relating to the **User's Plant** and/or **Apparatus** already connected to the **NI System** each of which shall be termed a **"Development"** in this PC (which shall be deemed to be "**Standard Planning Data**");

(b) the relevant **Standard Planning Data** as listed in Part 1 of the Appendix; and

(c) the desired completion date of the proposed **Development**.

PC7.2 Offer of Terms

PC7.2.1 (a) The **TSO** shall, in accordance with its **Licence**, offer terms upon which it is prepared to enter into an agreement with the applicant for establishment of

the proposed new or modified **Connection Agreement** and/or **Use of System Agreement.**

(b) The offer will be made as soon as is practicable after receipt of the application containing all such information as the **TSO** may reasonably require for the purposes of formulating an offer and (save where the **Authority** consents to a longer period) in any event not more than 28 days in the case of an application for use of system only or not more than 3 months in the case of an application for a connection.

(c) In respect of the **Transmission System**, the offer shall specify, and the terms shall take account of, any works required for the extension or reinforcement of the **Transmission System,** and/or the **Other Transmission System**, necessitated by the applicant's proposed activities and for the obtaining of any consents necessary for such purposes.

(d) In respect of the **Distribution System**, the offer shall specify, and the terms shall take account of, any works required for the extension or reinforcement of the **Distribution System** necessitated by the applicant's proposed activities and for the obtaining of any consents necessary for such purposes. For the avoidance of doubt, an offer to connect and use the **Distribution System** shall be prepared and sent to a **User** by the **DNO**.

(e) Where the offer is in respect of a modified connection, the terms shall take account of any further requirements contained in the relevant **Connection Agreement**.

PC7.2.2 Any offer made by the **TSO** in accordance with PC7.2.1 shall remain valid for 90 days or for such period as the **TSO** may agree with the applicant and, unless accepted before the expiry of such period, shall lapse thereafter. During the period of its validity the offer shall at all times be conditional upon the continuing availability of the necessary capacity within the **NI System** and within the **Other Transmission System.**

PC7.2.3 A **User** must, within 28 days after acceptance of an offer made by the **TSO** in accordance with PC7.2.1 (or such longer period as the **TSO** may reasonably agree in a particular case), supply (to the extent not already supplied) to the **TSO** the relevant **Detailed Planning Data** as listed in Part 2 of the Appendix.

PC7.3 Right to Reject an Application

The **TSO** shall be entitled to reject an application for connection to the **NI System** and/or use of the **All Island Transmission Networks**:

(a) if to do so would be likely to involve the **TSO** in a breach of its duties under the **Order**, or of any regulations (whether made under the **Order** or other enactment) relating to safety or standards applicable to the **TSO Business**, or any **Licence** conditions, or the **Grid Code**; or

(b) if the person making the application does not undertake to be bound, insofar as applicable, by the terms of the **Grid Code**.

PC7.4 **Connection/Use of System Agreements**

A **Connection Agreement** and/or **Use of System Agreement** (or the offer for a **Connection Agreement** and/or **Use of System Agreement**) will include, as appropriate, within its terms and conditions:-

(a) a condition requiring both parties to comply with the **Grid Code**;

(b) details of **Connection** and/or **Use of System Charges**;

(c) details of any capital related payments arising from necessary reinforcement or extension of the **NI System** or the **Other Transmission System**;

(d) a **Site Responsibility Schedule**, detailing the divisions of responsibility at **Connection Sites** in relation to ownership, control, operation and maintenance of **Plant** and **Apparatus** and to safety of persons; and

(e) a condition requiring the **User** to supply **Detailed Planning Data** pertaining to the **User Development** as listed in Part II of the Appendix to this **Planning Code** (to the extent not already supplied) within 28 days of acceptance of the offer (or such longer period as the **TSO** may agree in a particular case).

Condition 26 of the **TSO Licence** provides that if, after a period which in the **Authority's** opinion is a reasonable period for the purpose, the **TSO** has failed to enter into a **Connection Agreement** and/or **Use of System Agreement** pursuant to a request made pursuant to the **TSO Licence**, either party may apply to the **Authority** to settle any terms of the agreement which are in dispute.

PC7.5 Applications for Modifications

Any **User** seeking to establish modified arrangements for connection to the **NI System** and/or use of the **All Island Transmission Networks** must, in addition to the provisions set out above, apply to the **TSO** in accordance with the procedure set out in the relevant **Connection Agreement** and/or **Use of System Agreement**.

PC8 OFFERS CONDITIONAL ON CONSENTS AND STATUTORY OBLIGATIONS

PC8.1 An offer by the **TSO** to a **User** for connection to the **NI System** and/or use of the **All Island Transmission Networks** may be conditional upon the obtaining of or compliance with any necessary consents, approvals, permissions, wayleaves, or other external requirements (whether of a statutory, contractual or other nature).

PC8.2 A **User** whose **Development** requires the **TSO, TO** and/or **Other TSO** to obtain any of the consents, approvals, permissions and wayleaves or to comply with any other requirements referred to in PC8.1 shall:-

(a) provide any necessary assistance, supporting information or evidence; and

(b) ensure attendance by such witness as the **TSO** may reasonably request.

PC8.3 If any planning or other consent or approval is granted, but is conditional upon a change in the design arrangements originally offered by the **TSO** (e.g. undergrounding), then the **TSO** shall make a revised offer to the **User**, including revised terms and timing. This revised offer shall form the basis of any **Connection Agreement** and/or **Use of System Agreement**. The provisions of PC7.2.2 shall apply to such revised offer.

PC8.4 The **Connection Agreement** and/or **Use of System Agreement** will deal with the consequences if any necessary consent is not granted.

APPENDIX A

PLANNING DATA REQUIREMENTS

PC.A1. INTRODUCTION

PC.A1.1 This Appendix specifies the **Standard** and **Detailed Planning Data** to be submitted to the **TSO** by **Users** pursuant to PC5 and PC6.

PART 1

PC.A2 **STANDARD PLANNING DATA**

PC.A2.1 **CONNECTION SITE** AND **USER SYSTEM** DATA

PC.A2.1.1 General

All **Users** shall provide the **TSO** with the details as specified in sub sections A2.1.2 and A2.1.3 relating to their **User System**.

PC.A2.1.2 **User System** Layout

Single line diagrams of existing and proposed arrangements of main connections and primary distribution systems showing equipment ratings and if available numbering and nomenclature.

PC.A2.1.3 Short Circuit Infeed

(a) The maximum 3-phase short circuit current infeed into the **NI System**.

(b) The minimum zero sequence impedance of the **User System** at the point of connection with the **NI System**.

PC.A2.2 **DEMAND** DATA

PC.A2.2.1 General

(a) All **Users** with **Demand** shall provide the **TSO** with the **Demand** data, both current and forecast, as specified in subsections PC.A2.2.2 to PC.A2.2.3.

(b) All forecast maximum **Demand** levels submitted to the **TSO** by **Users** shall be on the basis of **ACS Conditions**.

(c) So that the **TSO** is able to estimate the diversified total **Demand** at various times throughout the year each **User** shall provide such additional forecast **Demand** data as the **TSO** may reasonably request ("reasonableness" being judged in this context by reference to the level of forecast **Demand** data which may be required in order to estimate the diversified total **Demand** at various times throughout the year).

PC.A2.2.2 **Demand** (**Active** and **Reactive Power**) Data Requirements

(a) Forecast peak day **Demand** profile (**Active** and **Reactive**) and monthly peak **Demand** variations net of the output profile of all **Independent Generating Plant** in time marked half hours throughout the day.

(b) Type and electrical loading of equipment to be connected:-
  (i) number and size of motors;
  (ii) types of drive and control arrangements; and
  (iii) other large items of equipment.

(c) The sensitivity of the **Demand** to any variations in voltage and **Frequency** on the **NI System**.

(d) The maximum harmonic content which the **User** would expect its **Demand** to impose on the **NI System**.

(e) The average and maximum phase unbalance which the **User** would expect its **Demand** to impose on the **NI System**.

PC.A2.2.3 Fluctuating **Loads** > 5 MVA

(a) Details of the cyclic variation of **Demand** (**Active Power** and **Reactive Power**).

(b) The rates of change of **Demand** (**Active Power** and **Reactive Power**) both increasing and decreasing.

(c) The shortest repetitive time interval between fluctuations in **Demand** (**Active Power** and **Reactive Power**).

(d) The magnitude of the largest step changes in **Demand** (**Active Power** and **Reactive Power**), both increasing and decreasing.

(e) Maximum energy demanded per half hour by the fluctuating load cycle.

(f) Steady state residual **Demand** (**Active Power**) occurring between **Demand** fluctuations.

PC.A2.2.4 **User's** Abnormal **Loads**

Details should be provided on any individual **Loads** which have characteristics differing from the normal typical range of **Loads** in the domestic, commercial or industrial fields. In particular, details on arc furnaces, rolling mills, traction installations etc which are liable to cause flicker problems.

PC.A2.3 **GENERATING UNIT** AND **POWER STATION** DATA

PC.A2.3.1 General

All **Generating Unit** and **Power Station** data submitted to the **TSO** shall be in the form of:-

(a) one set of **Generating Unit** and **Power Station** data where it is connected to the **NI System** via a busbar arrangement which is not normally operated in a split configuration; and

(b) separate sets of **Generating Unit** and **Power Station** data where they are connected to the **NI System** via a busbar arrangement which is, or is expected to be, operated in a split configuration.

PC.A2.3.2 **Power Station** Data Requirements

(a) Point of connection to the **NI System** in terms of geographical and electrical location and system voltage.

(b) Capacity of **Power Station** (being an aggregate of all **Generating Units** in the **Power Station**) in **MW** sent out for **Registered Capacity, Minimum Generation** (which in the case of **WFPSs** shall be assumed to be zero unless a different value is notified by the **User**) and, where relevant, **Maximum Generation**.

(c) In the case of **Controllable WFPSs** or **Dispatchable WFPSs**, a diagram that shows for the **Controllable WFPS** or **Dispatchable WFPS** wind speed and direction against electrical output in MW, in "rose" format**.**

(d) Maximum auxiliary **Demand** (**Active Power** and **Reactive Power**).

(e) Where **Generating Units** form part of a **User's System**, the output from these units is to be taken into account by the **User** in his **Demand** profile submissions to the **TSO**. In such cases the **User** must inform the **TSO** of the number of such **Generating Units** together with their total capacity. On receipt of such data the **User** may be further required, at the **TSO's** discretion, to provide details of the **Generating Units** together with their energy output profile.

(f) Operating regime of **Generating Units** not subject to **Central Despatch** (e.g. continuous, intermittent, peak-lopping).

PC.A2.3.3 **Generating Unit** Data Requirements

In relation to **Generating Units** other than the wind turbines comprised within a **WFPS**:

(a) Prime mover type;

(b) **Generating Unit** type;

(c) **Generating Unit** rating and terminal voltage (MVA & kV);

(d) **Generating Unit** rated power factor;

(e) **Registered Capacity** sent out (**MW**);

(f) **Maximum Generation** and **Minimum Generation** capability sent out (MW sent out);

(g) **Reactive Power** capability (both leading and lagging) at the lower voltage terminals of the **Generator Transformers** for **Maximum Generation**, normal full **Load** and normal minimum **Load**;

(h) Maximum auxiliary demand in **MW** and **MVAr**;

(i) Inertia constant (**MW** sec/MVA);

(j) Short circuit ratio;

(k) Direct axis transient reactance;

(l) Direct axis sub-transient time constant;

(m) **Generator Transformer** rated MVA, positive sequence reactance, and tap change range;

(n) **Sustained Load Diagram**; and

(o) a list of the **CCGT Modules** in the **CCGT Installation**, identifying each **CCGT Module**, and the **CCGT Installation** of which it forms part unambiguously, together with any other information which may be relevant in relation to the **CCGT Modules** and **CCGT Installations** and their operation.

In relation to the wind turbines comprised within a **WFPS**, such data equivalent to that listed in PC.A2.3.3(a) to PC.A2.3.3(n) as the **TSO** shall reasonably require.

PCA2.3.4 **CCGT Installation Matrix**

(a) A **CCGT Installation Matrix** in respect of its **CCGT Installations**. It must be prepared on a best estimate basis relating to how it is anticipated the **CCGT Installation** will be running and reasonably reflect the true operating characteristics of the **CCGT Installation**. It will be applied (unless revised under this PC) for planning purposes and in the SDCs in relation to the **CCGT Installation**. It must show the combination of **CCGT Modules** which would be running in relation to any given **Output**, in the format indicated in Appendix B. In the case of a **PPA CCGT Installation** it must reflect the requirements of the relevant **Generating Unit Agreement**.

(b) Any changes must be notified to the **TSO** promptly. **Generators** should note that amendments to the composition of the **CCGT Installation** may only be made in accordance with the principles set out in PC.A2.3.5 below. If in accordance with PC.A2.3.5 an amendment is made, an updated **CCGT Installation Matrix** must be immediately submitted to the **TSO** in accordance with this PCA2.3.4.

(c) The **CCGT Installation Matrix** submitted under the PC will be used by the **TSO** for planning purposes and will also be used by the **TSO** in connection with **Scheduling** and **Despatch** under the SDCs**,** as a look up table determining which **CCGT Modules** will be operating at any given MW **Despatch** level subject to any updated information on the individual **Availability** of **CCGT Modules** submitted by a **Generator** to the **TSO** in an **Availability Notice** under SDC1.

PC.A2.3.5 Notwithstanding any other provision of this PC, the **CCGT Modules** within a **CCGT Installation**, details of which are required under PC.A2.3.3 and PC.A2.3.4, can only be amended such that the **CCGT Installation** comprises different **CCGT Modules** if the **TSO** gives its prior consent in writing. Notice of the wish to amend the **CCGT Modules** within the **CCGT Installation** must be given at least 12 months (or less with agreement of the **TSO**) before it is wished for the amendments to take effect and be permitted under any other contractual and operational arrangement with the **TSO**.

PART 2

PC.A3 **DETAILED PLANNING DATA**

PC.A3.1 **CONNECTION SITE** AND **USER SYSTEM** DATA

PC.A3.1.1 General

All **Users** shall provide the **TSO** with the details as specified in sub sections PC.A3.1.2 to PC.A3.1.11 (which comprises both **Standard** and **Detailed Planning Data**).

PC.A3.1.2 **User System** Layout

Single line diagrams of existing and proposed arrangements of main connections and primary distribution systems including:-

(a) Busbar layouts

(b) Electrical circuitry (ie. lines, cables, transformers, switchgear etc)

(c) Phasing arrangements

(d) Earthing arrangements

(e) Switching facilities and interlocking arrangements

(f) Operating voltages

(g) Numbering and nomenclature

PC.A3.1.3 Reactive Compensation Equipment

For all independently switched reactive compensation equipment on the **User's System** at 11kV and above, other than power factor correction equipment associated directly with the **User's Plant** and **Apparatus**, the following information is required:

(a) Type of equipment (e.g. fixed or variable);

(b) Capacitive and/or inductive rating or its operating range in **MVAr**;

(c) Details of any automatic control logic to enable operating characteristics to be determined;

(d) The point of connection to the **User's System** in terms of electrical location and voltage.

PC.A3.1.4 Short Circuit Infeed to the **NI System**

Each **User** is required to provide the total short circuit infeeds calculated in accordance with good industry practice into the **NI System** from its **User System** at the **Connection Point** as follows:

(a) the maximum 3-phase short circuit infeed including infeeds from any **Generating Units** forming part of the **User's System**;

(b) the additional maximum 3-phase short circuit infeed from induction motors on the **User's System**; and

(c) the minimum zero sequence impedance of the **User's System**.

PC.A3.1.5 Lumped System Susceptance

Details of equivalent lumped network susceptance of the **User's System** at normal **Frequency** at the **Connection Point**. This should include any shunt reactors which are an integrated part of a cable system and which are not normally in or out of service independent of the cable (i.e. they are regarded as part of the cable). It should not include:-

(a) independent reactive compensation plant on the **User's System**; or

(b) any susceptance of the **User's System** inherent in the **Active** and **Reactive Power Demand** data given under subsection PC.A3.2**.**

PC.A3.1.6 Interconnection Impedance

For **User** interconnections that operate in parallel with the **NI System** an equivalent single impedance (resistance, reactance and shunt susceptance) of the parallel **User System**. If the impedance is, in the reasonable opinion of the **TSO**, low then more detailed information on the equivalent or active part of the parallel **User System** may be requested.

PC.A3.1.7 **Demand** Transfer Capability

Where the same **Demand** may be supplied from alternative points of supply, the proportion of **Demand** normally fed from each supply point and the arrangements (manual or automatic) for transfer under planned/fault **Outage** conditions shall be provided. Where the same **Demand** is supplied from different **User** supply points, then this information should be provided to all parties.

PC.A3.1.8 **System** Data

Each **User** with an existing or proposed **User System** connected at **High Voltage** shall provide the following details relating to that **High Voltage System**:-

(a) Circuit parameters (for all circuits):
Rated voltage (kV)
Operating voltage (kV)
Positive phase sequence reactance
Positive phase sequence resistance
Positive phase sequence susceptance
Zero phase sequence reactance
Zero phase sequence resistance
Zero Phase sequence susceptance

(b) Interconnecting transformers between the **User's High Voltage** system and the **User's** primary voltage system:
Rated MVA
Voltage ratio
Winding arrangement
Positive sequence reactance
(max, min and nominal tap)
Positive sequence resistance
(max, min and nominal tap)
Zero sequence reactance
Tap changer range

Tap change step size
Tap changer type: on **Load** or off circuit

(c) Switchgear including circuit breakers, switch disconnecters and isolators on all circuits connected to the **Connection Point** including those at **Power Stations**:

Rated voltage (kV)	
Operating voltage (kV)	
Rated short-circuit breaking current,	3-phase (kA)
Rated short-circuit breaking current,	1-phase (kA)
Rated load-breaking current,	3-phase (kA)
Rated load-breaking current,	1-phase (kA)
Rated short-circuit making current,	3-phase (kA)
Rated short circuit making current,	1-phase (kA)

PC.A3.1.9 **Protection** Data

The information essential to the **TSO** relates only to **Protection** which can trip or intertrip or close any **Connection Point** circuit breaker or any circuit breaker on the **NI System**. The following information is required:-

(a) a full description, including estimated settings, for all relays and protection systems installed or to be installed on the **User's System**;

(b) a full description of any auto-reclose facilities installed or to be installed on the **User's System**, including type and time delays;

(c) a full description, including estimated settings, for all relays and **Protection** systems installed or to be installed on the **Generating Unit**, **Generator Transformer**, station transformer and their associated connections;

(d) for **Generating Units** having (or intended to have) a circuit breaker on the circuit leading to the **Generator Terminals**, at the same voltage, clearance times for electrical faults within the **Generating Unit** zone;

(e) the most probable fault clearance time for electrical faults on the **User's System**.

PC.A3.1.10 Earthing Arrangements

Full details of the means of permanently connecting the **User System** to earth including impedance values.

PC.A3.1.11 Transient Overvoltage Assessment Data

When undertaking insulation co-ordination studies the **TSO** will need to conduct transient overvoltage assessments. When requested by the **TSO** each **User** is required to submit estimates of the surge impedance parameters present and forecast of its **User System** with respect to the **Connection Point** and to give details of the calculations carried out. The **TSO** may further request information on physical dimensions of electrical equipment and details of the specification of **Apparatus** directly connected to the **Connection Point** and its means of **Protection**.

PC.A3.2 **DEMAND** DATA

PC.A3.2.1 General

(a) All **Users** with **Demand** shall provide the **TSO** with the **Demand** data both current and forecast as specified in sub sections PC.A3.2.2 to PC.A3.2.3.

(b) All forecast maximum **Demand** levels submitted to the **TSO** by **Users** shall be on the basis of **ACS Conditions**.

(c) So that the **TSO** is able to estimate the diversified total **Demand** at various times throughout the year, each **User** shall provide such additional forecast **Demand** data as the **TSO** may reasonably request.

PC.A3.2.2 **User's System Demand** (**Active** and **Reactive Power**)

Forecast daily **Demand** profiles net of the output profile of all **Independent Generating Plant** directly connected to the **User's System** in time marked half hours throughout the day as follows:-

(a) peak day on the **User's System**;

(b) day of peak **NI Demand** (**Active Power**); and

(c) day of minimum **NI Demand** (**Active Power**).

PC.A3.2.3 **User Customer Demand Management** Data

The potential reduction in **Demand** available from the **User** in **MW** and **MVAr**, the notice required to put such reduction into effect, the maximum acceptable duration of the reduction in hours and the permissible number of reductions per annum.

PC.A3.3 **GENERATING UNIT** AND **POWER STATION** DATA

PC.A3.3.1 General

All **Generators** with **Power Stations** which have a **Registered Capacity** of 2**MW** and above shall provide the **TSO** with the details as specified in sub sections PC.A3.3.2 to PC.A3.3.10.

PC.A3.3.2 Auxiliary **Demand**

(a) The normal **Generating Unit**-supplied auxiliary **Load** is required for each **Generating Unit** at rated **MW** output.

(b) The **Power Station** auxiliary **Load**, if any, additional to the **Generating Unit** - supplied auxiliary **Load**, where the **Power Station** auxiliary **Load** is supplied from the **NI System**, is required for each **Power Station**.

PC.A3.3.3 **Generating Unit** Parameters

(a) Rated terminal voltage (kV);

(b) Rated MVA;

(c) Rated **MW**;

(d) **Minimum Generation** (**MW**);

(e) Short circuit ratio;

(f) Direct axis synchronous reactance;

(g) Direct axis transient reactance;

(h) Direct axis sub-transient reactance;

(i) Direct axis transient time constant;

(j) Direct axis sub-transient time constant;

(k) Quadrature axis synchronous reactance;

(l) Quadrature axis transient reactance;

(m) Quadrature axis sub-transient reactance;

(n) Quadrature axis transient time constant;

(o) Quadrature axis sub-transient time constant;

(p) Stator time constant;

(q) Stator resistance;

(r) Stator leakage reactance;

(s) Turbogenerator inertia constant (**MW**sec/MVA**)**, or, for wind turbines comprised within a **WFPS**, **Plant** inertia constant (**MW**sec/MVA);

(t) Other than for wind turbines comprised within a **WFPS**, rated **field current** ; and

(u) Other than for wind turbines comprised within a **WFPS**, field current (amps) open circuit saturation curve for voltages at the **Generator Terminals** ranged from 50% to 120% of rated value in 10% steps as derived from appropriate manufacturers' test certificates.

PC.A3.3.4 Parameters for **Generating Unit** Step-Up Transformers

(a) Rated MVA

(b) Voltage ratio

(c) Positive sequence reactance
(at max, min, & nominal tap)

(d) Positive sequence resistance
(at max, min, & nominal tap)

(e) Zero phase sequence reactance

(f) Tap changer range

(g) Tap changer step size

(h) Tap changer type: on **Load** or off circuit

PC.A3.3.5 **Power Station** Transformer Parameters

(a) Rated MVA

(b) Voltage ratio

(c) Zero sequence reactance as seen from the higher voltage side

PC.A3.3.6 Excitation Control System Parameters (not for **WFPSs**)

(a) DC gain of excitation loop

(b) Rated field voltage

(c) Maximum field voltage

(d) Minimum field voltage

(e) Maximum rate of change of field voltage (rising)

(f) Maximum rate of change of field voltage (falling)

(g) Details of excitation loop described in block diagram form showing transfer functions of individual elements

(h) Dynamic characteristics of over-excitation limiter

(i) Dynamic characteristics of under-excitation limiter

PC.A3.3.7 Governor Parameters (for Reheat **Steam Turbine Units**)

(a) HP governor average gain **MW**/Hz

(b) Speeder motor setting range

(c) HP governor valve time constant

(d) HP governor valve opening limits

(e) HP governor valve rate limits

(f) Reheater time constant (Active energy stored in reheater)

(g) IP governor average gain **MW**/Hz

(h) IP governor setting range

(i) IP governor valve time constant

(j) IP governor valve opening limits

(k) IP governor valve rate limits

(l) Details of acceleration sensitive elements in HP & IP governor loop

(m) A governor block diagram showing transfer functions of individual elements

PC.A3.3.8 Governor parameters (for Non-Reheat **Steam Turbine Units** and **Gas Turbine Units**)

(a) Governor average gain

(b) Speeder motor setting range

(c) Time constant of steam or fuel governor valve

(d) Governor valve opening limits

(e) Governor valve rate limits

(f) Time constant of turbine

(g) Governor block diagram

PC.A3.3.9 Governor parameters (for **WFPSs**)

(a) Wind turbine torque/speed controller(s) (if any)

(b) Wind turbine blade angle controller(s) (if any)

(c) Wind turbine power limitation function(s) (if any)

PC.A3.3.10 Plant Flexibility Performance

(a) Rate of **Loading** following weekend shutdown (**Generating Unit** and **Power Station**)

(b) Rate of **Loading** following an overnight shutdown (**Generating Unit** and **Power Station**)

(c) Block **Load** following **Synchronising**, or, in the case of **WFPSs**, generating whilst connected to the **NI System**.

(d) Rate of **Deloading** from normal rated **MW**

(e) Regulating range

(f) **Load** rejection capability while still **Synchronised**, or, in the case of **WFPSs,** while still connected to the **NI System** and generating, and able to supply **Load**.

PC.A3.4 ADDITIONAL / ALTERNATIVE DATA

PC.A3.4.1 General

Notwithstanding the **Standard Planning Data** and **Detailed Planning Data** set out in this Appendix; the **TSO** may reasonably require additional data from **Users** to represent correctly the performance of **Plant** and **Apparatus** on the **NI System** where the present data submissions would, in the **TSO's** reasonable opinion, prove insufficient for the purpose of producing meaningful system studies for the relevant parties.

PC.A3.4.2 **Aggregators**

Aggregators shall, upon request by the **TSO**, provide to the **TSO** any **Connection Site** and **User System** data which the **TSO** may reasonably deem necessary.

PC.A3.4.3 **Interconnector Owners**

Interconnector Owners shall submit to the TSO **Planning Data** of the nature required from other **Users** under the **Planning Code**. This obligation shall be satisfied as at 1 November 2007 by the **Planning Data** already submitted as at that date by the **Interconnector Owner**. This PC.A3.4.3 will be superseded once the **Planning Code** has been updated to include specific data requirements from **Interconnector Owners**.

APPENDIX B

CCGT Installation Matrix example form

CCGT INSTALLATION	CCGT MODULES AVAILABLE		
	1st GT	2nd GT	1st ST
	UNIT MW CAPACITY		
MW OUTPUT	165	165	170
68 MW to 165 MW	✓		
166 MW to 250 MW	✓		✓
251 MW to 500 MW	✓	✓	✓

Please insert MW ranges and tick the boxes to indicate which units are synchronised to deliver each MW range, as shown in the example above.

CONNECTION CONDITIONS

CC1 INTRODUCTION

CC1.1 (a) The **Connection Conditions** specify the technical, design and certain operational criteria which must be complied with by **Users** whose **Plant** and **Apparatus** is connected to, or who are seeking a connection to**,** the **Northern Ireland (NI) System**.

(b) They also set out the procedures by which the **Transmission System Operator (TSO)** shall seek to ensure compliance with these criteria as a pre requisite to granting approval for the connection of a **User's Plant** and **Apparatus**.

(c) **Users** are defined for the purpose of these **Connection Conditions** in CC3.

CC1.2 Procedures by which the **TSO** and **Users** may conclude a **Connection Agreement** are reflected in the **Planning Code**. Each **Connection Agreement** shall require **Users** to comply with the terms of the **Grid Code** and the **TSO** will not grant approval to connect the **User's** installation to the **NI System** unless and until it is satisfied that the criteria laid down by the **Connection Conditions** have, subject to any derogations issued by the **Authority**, been met. The **TSO**'s grant of approval to connect a **User**'s installation to the **NI System** shall also be subject to the provisions of paragraph 6 of Condition 25 of the **TSO Licence** as amended from time to time.

CC1.3 The provisions of the **Connection Conditions** shall apply to all connections to the **NI System**:-

(a) existing at 31 March 1992; and

(b) established or modified thereafter.

CC1.4 The **Connection Conditions** are structured such that certain provisions are dealt with in the Schedules to these **Connection Conditions**, with separate schedules for different types of **Plant**.

CC2 OBJECTIVES

CC2.1 The **Connection Conditions** are designed to ensure that:-

(a) no new or modified connection will impose unacceptable effects on the **NI System,** on any **User System** or on the **Other Transmission System** nor will it be subject itself to unacceptable effects by its connection to the **NI System**; and

(b) the basic rules for connection treat all **Users** of an equivalent category in a non-discriminatory fashion, in accordance with the **TSO's** statutory and **Licence** obligations.

CC3 SCOPE

CC3.1 The **Connection Conditions** apply to the **TSO** and to **Users** which, in the **Connection Conditions**, means:-

(a) **Generators**;
(b) **Large Demand Customers**;
(c) **Interconnector Owners**;
(d) **Aggregators**; and
(e) the **DNO**.

CC3.2 Persons whose prospective activities would place them in any of the above categories of **User** will, either pursuant to a **Licence** or as a result of the application procedures for a **Connection Agreement**, become bound by the CC prior to their generating or consuming, as the case may be, and references to the various categories (or to the general category) of **User** should, therefore, be taken as referring to them in that prospective role as well as to **Users** actually connected.

CC4 CONNECTION PRINCIPLES

CC4.1 The design of connections between the **NI System** and **Users' Systems** shall be in accordance with the **Licence Standards**.

CC4.2 The **TSO** will determine the point, including the voltage, at which each **User** may be connected to the **NI System**.

CC4.3 The **User's Plant** and **Apparatus** shall comply with the principles outlined in Regulation 28 of the Electricity Supply Regulations (N.I.) 1991 and Regulations 4-12 and 15 of the Electricity at Work Regulations (N.I.) 1991 or any amendments to or re-statements of those provisions.

CC5 SUPPLY STANDARDS

CC5.1 The **Frequency**, voltage and harmonic design criteria of the **NI System** are set out in CC5.3 to CC5.5.

CC5.2 Each **User** shall ensure that its **Plant** and **Apparatus** at **Connection Points** is capable of operating under any variation in the **System Frequency** and voltage as set out in CC5.3 to CC5.5.

CC5.3 **Frequency** Variations

CC5.3.1 The **Frequency** of the **NI System** shall be nominally 50 Hz and shall normally be controlled within the limits of 49.5 Hz to 50.5 Hz and in accordance with the Electricity Supply Regulations (N.I.) 1991.

CC5.3.2 In exceptional circumstances, **System Frequency** could rise to 52 Hz or fall to 47 Hz but sustained operation outside the range specified in the Electricity Supply

Regulations (N.I.) 1991 is not envisaged. **Users** should take these factors into account in the design of **Plant** and **Apparatus**.

CC5.4 Voltage Variations

CC5.4.1 The voltage variation on the **Transmission System** shall comply with the Electricity Supply Regulations (N.I.) 1991, that is, will normally remain within the limits ± 10% of the nominal value or as otherwise agreed.

CC5.4.2 The voltage variation to **Customers** connected to the **Distribution System** shall comply with the Electricity Supply Regulations (N.I.) 1991, that is, will normally remain within ± 6% of the nominal value or as otherwise agreed.

CC5.4.3 The design criteria in respect of voltage fluctuations and unbalance shall be in accordance with the **Licence Standards**.

CC5.4.4 Under fault and circuit switching conditions the rated **Frequency** component of voltage may fall or rise transiently. The fall and rise in voltage will be affected by the method of **Earthing** of the respective system voltage neutral point.

CC5.4.5 Each connection to the **NI System** must not adversely affect the method of voltage control employed by the **TSO.** Information on the voltage regulation and control arrangements will be made available by the **TSO** on request by the **User**.

CC5.5 Harmonic Content

The design criteria in respect of harmonic distortion shall be in accordance with the **Licence Standards**.

CC5.6 Phase Unbalance

The design criteria in respect of phase unbalance shall be in accordance with the **Licence Standards**.

CC6 TECHNICAL CRITERIA:-

CC6.1 **Plant** and **Apparatus** at the **Connection Point**

At the **Connection Point**, all **Users' Plant** and **Apparatus** shall meet the following technical design and operational criteria. Detailed information relating to a particular connection will, where indicated below, be made available by the **TSO** on request by the **User**.

CC6.2 **Plant** and **Apparatus**

CC6.2.1 (a) The **TSO** shall ensure in respect of the **TO's** equipment, and **Users** shall ensure in respect of their own equipment, that subject as provided in (b) below, the principles of design, manufacture, installation and testing of overhead lines, underground cables and other **Plant** and **Apparatus** designed after 31 March 1992 shall conform to (and such equipment shall comply with) all applicable statutory

obligations and the applicable requirements of the following standards, each as current at the date of design of such **Plant** and **Apparatus**, which shall apply (to the extent of any inconsistency) in the following order of precedence:-

(i) relevant European Technical and Quality Assurance Standards or European Specification;

(ii) relevant IEC Publications or other international standards; and

(iii) relevant British Standards or other equivalent national standard.

(b) In the case of **Plant** or **Apparatus**:-

(i) designed prior to 31 March 1992 and in use or awaiting re-use at such date (or about to be used at such date); and

(ii) designed after 31 March 1992 and subsequently re-used;

the applicable standards under (a) above shall be those which were current at the date when the **Plant** or **Apparatus** was originally designed, provided that the **TSO** reasonably considers the **Plant** and/or **Apparatus** to be fit for its purpose having full regard to the respective obligations of the **TSO** and the relevant **User**, and otherwise shall be those current at the date of re-use.

CC6.2.2 The short circuit rating and insulation level of a **User's Plant** and **Apparatus** at the relevant **Connection Point** shall not be less than that specified in the relevant **Connection Agreement**.

CC6.2.3 Each of the **TSO** and a **User** shall ensure that the specification of their respective **Plant** and **Apparatus** at the **Connection Point** shall be such as to permit operation within the applicable **Local Safety Instructions**.

CC6.3 Metering

CC6.3.1 The requirements to be met by each **User** in respect of metering equipment are set out in the **Metering Code**.

CC6.4 **Protection**

CC6.4.1 All **User Systems** and the **NI System** must incorporate **Protection** in accordance with the requirements of the Electricity Supply Regulations (N.I.) 1991 as amended or re-stated.

CC6.4.2 The basic requirement in all cases is that **Users'** arrangements for **Protection** at the **Connection Point**, including types of equipment and **Protection** settings must be compatible with standard practices on the **NI System** from time to time, whilst maintaining necessary discrimination and coordination. Relevant details of the application of these requirements to a particular connection will be made available to the **User** upon request pursuant to CC6.1.

In particular:-

(a) maximum fault clearance times (from fault inception to arc extinction) must be within the limits established by the **TSO** in accordance with the **Protection** and equipment short circuit rating policy adopted by the **TSO** from time to time for the **NI System**;

(b) auto reclosing or sequential switching features may be in use on the **NI System**. The **TSO** will on request provide details of the auto-reclose or sequential switching features;

(c) the **Protection** arrangements on some parts of the **NI System** may cause disconnection of, or low voltages on, one or more phases only of a three phase supply for certain types of fault. **Users** should make provision to safeguard their equipment from the effects of such events; and

(d) in the case of a three phase and neutral supply system, a fault disconnecting the neutral can lead to higher than normal voltage appearing on one or more phases.

CC6.4.3 During the course of an application for a **Connection Agreement** the **TSO** shall specify the **Protection** standards applicable to the **NI System** and agree with the **User** (or, in the event that agreement cannot be reached, the **TSO** will determine acting reasonably) any conditions for compatibility with the **TSO Protection** arrangements which shall be complied with by the **User**.

In particular:-

(a) in order to ensure satisfactory operation of the **TO System, Protection** systems, operating times, discrimination and sensitivity at the **Connection Point** shall be agreed between the **TSO** and the **User** (or, in the event that agreement cannot be reached, shall be determined by the **TSO**) and may be reviewed from time to time by the **TSO**. If, as a consequence of such review, the **TSO** identifies a requirement for some variation to such **Protection** arrangements, the relevant provisions of the **Connection Agreement** shall apply;

(b) in order to cover a circuit breaker or equipment having a similar function failing to operate correctly to interrupt fault current on a **High Voltage System**, back-up **Protection** by operation of other circuit breakers or equipment having a similar function must normally be provided by the **User**. The **TSO** will inform the **User** if it is not required. If the back-up circuit breaker is owned by the **TO**, it may be equipped with **Protection** that is limited to that required to provide excess **Energy Protection** to the **NI System**; and

(c) unless the **TSO** specifies otherwise, it is not acceptable for **Users** to limit the fault current infeed to the **NI System** by the use of **Protection** and associated equipment if the failure of the **Protection** and associated equipment to operate as intended in the occurrence of a fault could cause equipment owned by the **TO** to operate outside its short-circuit rating.

Certain provisions on working on certain **Protection** equipment are included in CC9.

CC6.5 **Intertripping**

In all circumstances where the **Isolation** of faults or **System** abnormalities is dependent upon the operation of both the **TO's** and the **User's** circuit breakers, **Intertripping** facilities shall be provided. These **Intertripping** facilities shall be in accordance with the requirements of the relevant **Connection Agreement**.

CC6.6 Automatic Reclosure

Where automatic reclosure of the **TO** circuit breakers is required following faults on the **User's System**, automatic switching equipment shall be provided in accordance with the requirements of the relevant **Connection Agreement**.

CC6.7 Voltage Fluctuations and Unbalance and Harmonic Distortion

The design criteria to be applied to **Users' Loads** connected to the **NI System** to limit voltage fluctuations and unbalance and harmonic distortion will be notified to the **User** in the course of an application for connection to the **NI System** and will be in accordance with the **Licence Standards**. In the event that a **User** causes any such limits to be breached, the **TSO** shall be entitled to require the **User** to take such steps as the **TSO** reasonably considers to be necessary in order to prevent such breach from continuing and the **User** shall comply with the **TSO's** instructions without delay.

CC6.8 Neutral **Earthing**

CC6.8.1 The specification of a **User's Apparatus** shall meet the voltages which will be imposed on the **Apparatus** as a result of the method of **Earthing** of the **NI System** as specified in the relevant **Connection Agreement**.

CC6.8.2 The higher voltage windings of each transformer of a **User** connected to the **Transmission System** shall be star connected with the star point earthed. If the earth electrode system to which the **User's** star point is earthed is not independent from the earth electrode system of any **Substation** owned by the **TO**, it shall be connected to the earth electrode system of that **Substation**.

The higher voltage windings of each transformer of a **User** connected to the **Distribution System** shall have no earth connection during any period while it is so connected to the **Distribution System**.

CC6.8.3 The **Earthing** of a **User's Apparatus** at the **Connection Point** must be in accordance with current **TO** practice which will be notified to the **User**, initially, during the course of an application for connection to the **NI System**. In the event that the **TO** wishes to change its current practice, the **TSO** will notify the **User** as soon as reasonably practicable in advance of the change and any modifications which such change will require to be undertaken on the **User's System** will be implemented in accordance with the modifications procedure set down in the **User's Connection Agreement**, if it is applicable.

CC6.8.4 **Users** shall take all reasonable precautions in relation to a particular **Connection Point** to limit the occurrence and effects of circulatory currents in respect of neutral points of any interconnected system (e.g. where there is more than one source of **Energy**).

CC6.9 **Automatic Load Shedding Devices**

A **User** may be required by the **Connection Agreement** to be subject to arrangements for **Automatic Load Shedding** at selected **Connection Points**. One of the purposes of these facilities is to improve the overall security of supply by providing some measure of **Demand** relief to assist in preventing **NI System** collapse under emergency conditions involving low **System Frequency**. OC4 contains a section dealing with **Automatic Load Shedding**. The setting levels and demand block sizes for the relevant supply points shall be determined by the **TSO** and specified in the relevant **Connection Agreement**. Technical requirements relating to **Low Frequency Relays** are given in Appendix 3.

CC6.10 Superimposed Signals

Where a **User** proposes to use mains borne signalling equipment to superimpose signals on the **NI System**, the prior written agreement of the **TSO** is required (which agreement will not be unreasonably withheld).

CC7 TECHNICAL CRITERIA:

Technical Criteria for **WFPSs** and **Generating Units** other than those comprised within **WFPSs**

CC7.1 The Schedules to these **Connection Conditions** contain certain technical requirements for **Users**, divided into type of **Plant** or **User** connection. Schedule 1 sets out technical criteria that **Generators** must comply with in respect of their **CCGT Modules**, **Steam Turbine Units** and **Gas Turbine Units**. Schedule 2 sets out technical criteria that **Generators** must comply with in respect of their **WFPSs.**

CC7.2 The detail of such technical criteria for **WFPSs** is in some cases as specified by the **TSO** from time to time in the **WFPS Settings Schedule** published on the SONI website (or such other place or by such other means as may be notified to the **Generator** from time to time), for the reasons set out in the introduction to the **WFPS Settings Schedule**. The version of the **WFPS Settings Schedule** at any time current is therefore deemed to form part of the **Grid Code Connection Conditions**. Changes to the **WFPS Settings Schedule** shall be the subject of consultation undertaken by the **TSO** except to the extent that those changes do not alter the setting for a technical criterion specified in the **WFPS Settings Schedule** so that it ceases to be within the range prescribed for that criterion in the **Grid Code Connection Conditions**.

CC7.3 Both CC8 and the **WFPS Settings Schedule** set out technical criteria in relation to communications, control and telemetry that **Generators** must comply with in respect of their **WFPSs**. In the event of any inconsistency between the provisions of CC8 and the current version of the **WFPS Settings Schedule**, the provisions of the current version of the **WFPS Settings Schedule** shall prevail.

CC8 TECHNICAL CRITERIA:-

CC8.1 Communications Equipment

Where required by the **TSO** in order to ensure control of the **NI System**, communications between **Users** and the **TSO** shall be established in accordance with the relevant **Connection Agreement**.

CC8.2 Primary Speech Facility

CC8.2.1 Equipment shall be provided for connection to the Corporate Control Telephone Network notified by the **TSO** and the Corporate Telephone Network notified by the **TSO** by means of which routine and emergency control telephone calls may be established between each **User** and the **TSO**. Provision of this equipment shall be in accordance with the relevant **Connection Agreement**.

CC8.2.2 Connection to the Corporate Telephone Network notified by the **TSO** and any circuit or circuits required to connect the **User** with the point of connection shall be provided in accordance with the relevant **Connection Agreement**.

CC8.2.3 The **User** shall furnish the **TSO** with all relevant information associated with its connection to the Corporate Telephone Network notified by the **TSO** to enable the **TSO** to meet its obligations under the "Temporary Licence For The Electricity Association Member Companies To Run Certain Telecommunications Systems", issued by the Department of Trade and Industry and/or any other applicable requirements.

CC8.2.4 All equipment the **TSO** requires to be connected to the Corporate Control Telephone Network notified by the **TSO** shall be provided and maintained by the **TSO** at its own cost.

CC8.2.5 All equipment connected to the Corporate Telephone Network notified by the **TSO** shall be maintained by a Registered Maintainer as defined by Statutory Regulations administered by the British Standards Institute on behalf of the DTI.

CC8.3 Facsimile Machine

Each **Generator** with a **CDGU** or a **CCGT Installation** shall provide and maintain in full working order a facsimile machine at each **Power Station** Control Centre and each will notify the **TSO** of the telephone number. The **TSO** shall provide and maintain in full working order a facsimile machine at Castlereagh House Grid Control Centre and will notify each **Generator** of the number.

CC8.4 Telemetry

(a) In addition to the requirements of the **MC**, each **User** shall provide such voltage, current, **Frequency**, **Active** and **Reactive Power** measurements and status points and alarms and controls at the **TSO** telemetry outstation interface (if any) as required and specified by the **TSO** in the relevant **Connection Agreement**. The **TSO** shall provide, install and maintain the telemetry outstation. Each **User** shall be responsible for providing a secure AC power supply to the telemetry outstation.

(b) If it is agreed between the **TSO** and a **User** that the **TSO** will telecontrol the **User's** switchgear on the **User's Site**, the **TSO** shall install the necessary telecontrol facilities. It shall be the responsibility of the **User** to provide the necessary control interface for the switchgear of the **User** which is to be controlled.

CC8.5 **Control Facility**

CC8.5.1 The **User's** contact locations and personnel shall be notified by the **User** to the **TSO** prior to connection and thereafter updated as appropriate.

CC.8.5.2 A **User** in relation to a **CDGU,** a **Dispatchable WFPS**, a **Demand Side Unit, Aggregated Generating Units** and/or an **Interconnector** is required to provide a continually manned **Control Facility**. For the avoidance of doubt, the **Control Facility** for **Aggregated Generating Units** and **Aggregated Demand Sites** is to be provided by the relevant **Aggregator**.

CC.8.5.3 The **Control Facility** shall be staffed by a **Responsible Operator**(s) who shall respond to communications from the **TSO** without undue delay (except where otherwise provided for by agreement between the **User** and the **TSO**, such agreement not to be unreasonably withheld) and are of suitable experience and training and are authorised to perform the following functions:

(a) to accept and execute **Dispatch Instructions**;
(b) to receive and acknowledge receipt of requests, for amongst other matters, operation outside the Declared values of **Availability**, **System Support Service** capability, or operation of the **CDGU**, **Dispatchable WFPS**, **Demand Side Unit**, **Aggregated Generating Units** and/or **Interconnector** during **System Emergency Conditions**.

CC.8.5.4 At any point in time, a single person shall be designated by the **User** and notified to the **TSO** as the **Responsible Manager**. The **Responsible Manager** shall be responsible for dealing with the **TSO** on matters relating to the **Grid Code**. In the event that the **Responsible Manager** is not a person on duty at the **Control Facility**, then the **Responsible Manager** must be capable of being contacted from the **Control Facility** at all times, and in the event that the **TSO** issues a request to the **Control Facility** requiring the **Responsible Manager** to contact the **TSO Control Centre**, the **Responsible Manager** shall comply with the request without undue delay and in any case within 15 minutes of the request. For the avoidance of doubt, in the case of an **Interconnector**, the **Interconnector Owner** is the **Responsible Manager**.

CC8.5.5 The **Responsible Manager** shall be authorised by the **User** to perform the following functions on behalf of the **CDGU**, **Dispatchable WFPS**, **Demand Side Unit**, **Aggregated Generating Units** and/or **Interconnector**:

(a) to make **Declarations** for the **CDGU**, **Dispatchable WFPS**, **Demand Side Unit**, **Aggregated Generating Units** and/or **Interconnector**;

(b) to communicate with respect to issues regarding **Outages** of the **CDGU**, **Dispatchable WFPS**, **Demand Side Unit**, **Aggregated Generating Units** and/or **Interconnector.**

CC8.5.6 The **User** may, from time to time, notify a replacement contact location and personnel which meets the foregoing requirements.

CC8.6 Electronic Interface Facilities

Users shall ensure that accommodation is provided for **Electronic Interface** facilities.

CC8.7 Telecontrol Connection Standards

All communication connections between each **User** and the **TSO** shall conform to:

(a) appropriate CCITT standards and other standards required by licensed public telephone operators; and/or

(b) appropriate standards for radio systems as required by the Radiocommunications Agency from time to time.

In respect of (b) above, each **User** shall, except to the extent that an alternative means of communication has been agreed with the **TSO** in a **Connection Agreement**, provide where required by the **TSO** facilities on which a small radio aerial can be mounted and shall obtain where necessary any planning permissions required therefor.

CC8.8 **Plant** and **System Monitoring**

Operational Metering shall be installed in accordance with MC3.7 and Sub-Code 3 of the MC.

CC9 SITE RELATED CONDITIONS

CC9.1 Ownership, Control, Operation & Maintenance at the **Connection Point**

CC9.1.1 The ownership boundary between the **NI System** and a **User's System** shall be agreed between the **User** and the **TSO**. For supplies at **Low Voltage** the general rule is that the ownership boundary will be at the **User's** terminals of the **TO** owned metering equipment. For **High Voltage** supplies and busbar connected supplies at **Low Voltage**, the ownership boundary will be subject to specific agreement between the **TSO** and the **User** in each case.

CC9.1.2 In the absence of a separate written agreement between the parties to the contrary, construction, commissioning, control, operation and maintenance responsibilities follow ownership.

CC9.1.3 For connections to the **NI System** for which a **Connection Agreement** is required and those covered by **regulation** 26 and **parts** 1 and 2 of **schedule** 3 of the Electricity Supply Regulations (N.I.) 1991, as amended or re-stated from time to time, a **Site Responsibility Schedule** shall be prepared by the **TSO** (reflecting the details agreed

between the **TSO** and the **User**) in respect of each **Connection Site** pursuant to the relevant **Connection Agreement** and signed by both parties (by way of confirmation of its accuracy), detailing the division of responsibilities at interface sites in respect of ownership, control, operation, maintenance and safety. The format, principles and basic procedure to be used in the preparation of **Site Responsibility Schedules** are set down in Appendix 1.

CC9.1.4 An **Ownership Diagram** shall be included in the above **Site Responsibility Schedule**. The diagram shall show all **HV Apparatus** and the connections to all external circuits and shall incorporate numbering, nomenclature and labelling as set out in OC9. A guide to the types of **HV Apparatus** to be shown in the **Ownership Diagram** is shown in Appendix 2 together with the principles to be followed in the preparation of the diagram and the preferred graphical symbols to be used.

CC9.1.5 A copy of the **Site Responsibility Schedule** and any **Ownership Diagrams** shall be retained by the **TSO** and by the **User**.

CC9.1.6 The **User** shall notify the **TSO** of any changes at or relating to the **Connection Site** which may affect the **Site Responsibility Schedule** or **Ownership Diagrams** and the **TSO** shall carry out any necessary updating and the principles set out in CC9.1.3 shall apply to such updating.

CC9.2 Access to Sites

The provisions relating to access to **TO Sites** by **Users** and to **User's Sites** by members or representatives of the **TSO** or the **TO** shall be set out in the relevant **Connection Agreement** and/or **Lease**.

CC9.3 Work on **Protection** at **Connection Points**

No busbar **Protection**, mesh corner **Protection**, circuit breaker fail **Protection**, AC or DC wiring (other than power supplies or DC tripping associated with a **Generating Unit**) shall be worked upon or altered by or on behalf of a **User** unless the **TSO** has been given a reasonable opportunity to arrange for a **TSO** or **TO** representative to attend. The **TSO** or **TO** shall not work upon or alter any **Generating Unit Protection** unless it has given the **Generator** a reasonable opportunity for a representative of the **Generator** to attend.

CC9.4 Standard of Maintenance

CC9.4.1 (a) It is a requirement that all **User's Plant** and **Apparatus** on **TO Sites** is maintained adequately for the purpose for which it is intended and to ensure that it does not pose a threat to the safety of any of **TO's Plant**, **Apparatus** or personnel on the **TO Site**.

(b) The TSO shall ensure that all of the **NI System Plant** and **Apparatus** on **Users' Sites** is maintained adequately for the purpose for which it is intended and to ensure that it does not pose a threat to the safety of any **User's Plant, Apparatus** or personnel on the **User's Site**.

(c) The **TSO** or the **User** (as the case may be) will have the right to inspect the test results and maintenance records relating to such **Plant** and **Apparatus** at any time.

CC9.5 Responsibility for Safety

CC9.5.1 The **Site Responsibility Schedule** referred to in CC9.1.3 shall detail the demarcation of responsibility for safety of persons carrying out work or testing at **Connection Sites** and on circuits which cross a **Connection Site** at any point.

CC9.5.2 More detailed information on procedures and responsibilities involved in the provision of **Safety Precautions** is set out in OC6.

CC10 APPROVAL TO CONNECT

CC10.1 Readiness to Connect

CC10.1.1 A **User** whose development is under construction in accordance with the relevant **Connection Agreement** and who wishes to establish connection with the **NI System** shall apply to the **TSO** by submitting a standard connection card or otherwise in writing, stating readiness to connect and giving the following:-

(a) confirmation that the **User's** installation complies with the principles outlined in Regulation 28 of the Electricity Supply Regulations (N.I.) 1991 and Regulations 4-12 and 15 of the Electricity at Work Regulations (N.I.) 1991 (or as amended or re-stated);

(b) where relevant, updated **Planning Code** data based on actual values; and

(c) a proposed connection date.

CC10.1.2 The **TSO** may require a **User** to provide in addition to its written application to the **TSO** for connection in accordance with CC10.1.1, a report, prepared by such person as the **TSO** may reasonably consider to be competent to issue the same, certifying to the **TSO** that all matters required by CC5 have been considered and that CC6 to CC8 inclusive have been complied with by the **User** and incorporating:-

(a) type test reports and test certificates produced by Nationally Accredited Laboratories (or other equivalent testing organisations) showing that the **Plant** and **Apparatus** specified in the **Connection Conditions** meets the criteria specified;

(b) copies of the manufacturer's test certificates relating to **Plant** and **Apparatus** referred to in the **Connection Conditions**, including measurements of positive and zero sequence impedance of **Apparatus** which will contribute to the fault current at the **Connection Point**;

(c) details of **Protection** arrangements and settings under CC6.4;

(d) a certificate declaring the maximum short circuit current in amperes which the **User's System** would contribute to a three-phase short circuit at the **Connection**

Point, and the minimum zero sequence impedance of the **User's System** at the **Connection Point** and taking into account the contributions of any **Generating Unit** or **Power Station** motors and transformers; and

(e) confirmation that design conforms with the standards referred to in CC6.

CC10.1.3 A **User** shall, in all cases, supply the following information to the **TSO** together with its notification under CC10.1.1:-

(a) a list of persons proposed to be appointed by the **User** to undertake, and to be responsible for, the application and removal of **Safety Precautions** on those parts of the **User's System** which are directly connected to the **NI System**;

(b) a list of persons appointed by the **User** to undertake operational duties on the **User's System** and to issue and receive operational messages and instructions in relation to the **User's System**;

(c) a list of names and telephone numbers of responsible management representatives in accordance with OC7;

(d) site common drawings as specified in the **Connection Agreement**;

(e) a single line diagram of the **User's Apparatus** showing all items to which these **Connection Conditions** apply; and

(f) information to enable the **TSO** to prepare a **Site Responsibility Schedule**.

CC10.1.4 In order that the **TSO** may verify that the requirements of these **Connection Conditions** can be met, the **User** shall provide a proposed commissioning programme, giving at least six weeks (or such longer period as the **TSO** may reasonably consider to be appropriate in the circumstances) notice of the proposed connection date, and detailing all proposed site testing of main and ancillary equipment, together with the names of the organisations which are to carry out such testing and the proposed timetable for such testing. The required period of notice will be notified to the **User** by the **TSO** during the course of an application for connection. The **TSO** will consider the proposed commissioning programme and, as soon as reasonably practicable, will notify the **User**:-

(a) that it approves the programme, in which case the **TSO** and the **User** shall take all reasonable steps to ensure that the **Commissioning/Acceptance Testing** is undertaken in accordance with the commissioning programme (subject to **NI System** conditions); or

(b) that it considers that the **Commissioning/Acceptance Testing** proposed in the programme may involve the application of irregular, unusual or extreme conditions and which may have a material effect on the **NI System**, beyond the **User's System** and that such testing therefore falls within the scope of OC10, **"System Tests"**, in which event the proposed commissioning programme shall be treated as a **Proposal Notice** submitted under OC10.4.1 and the relevant provisions of OC10 shall apply to the proposed testing; or

(c) that it requires the proposed commissioning programme to be amended in which event the **User** and the **TSO** shall endeavour to agree an appropriate amendment to the commissioning programme, failing which the programme will be as determined by the **TSO** acting reasonably and, in either case, the **TSO** and the **User** shall take all reasonable steps to ensure that the **Commissioning/Acceptance Testing** is undertaken in accordance with the commissioning programme as amended; or

(d) that it rejects the proposed commissioning programme and the reasons for such rejection in which event, subject to the resolution of any dispute in accordance with the relevant **Connection Agreement**, the proposed **Commissioning/Acceptance Testing** shall not take place but the **User** shall be entitled to submit a revised commissioning programme for the **TSO 's** consideration.

CC10.1.5 The **TSO** shall be entitled to witness site testing of equipment whose performance can reasonably be regarded as affecting the integrity of the **NI System**. The **User** shall provide the **TSO** with certified results of all such tests and the **TSO** may withhold agreement to energise the **User's Equipment** where test results establish that the **Connection Conditions** have not been complied with.

CC10.1.6 Where in advance of the proposed connection date, a **Generator** requires connection to the **NI System** for the purpose of testing, the **Generator** will be required to satisfy the **TSO** of the following:-

(a) compliance with those requirements of the **Connection Conditions** and **Connection Agreement** necessary to give assurance that it is safe to connect; and

(b) where applicable, provision of a commissioning programme in accordance with CC10.1.4.

CC10.2 Confirmation of Approval to Connect

CC10.2.1 Within 30 days of notification by a **User** pursuant to CC10.1.1 the **TSO** shall (except where it has rejected the **User's** application in accordance with CC10.1.4(d)) inform the **User** whether or not the requirements of CC10.1 and the other requirements of the **Connection Conditions** are satisfied and the making of the connection is approved subject to satisfactory results of those tests (including **Commissioning/Acceptance Tests**) which cannot be performed prior to energisation of the **User's Plant** and **Apparatus**. Where approval is withheld, reasons shall be stated by the **TSO**.

CC10.2.2 Where the notification given by the **TSO** pursuant to CC10.2.1 is in the affirmative, the **TSO** will in addition supply to the **User** the following information:-

(a) a list of persons proposed to be appointed by the **TO** to undertake, and to be responsible for, the application and removal of **Safety Precautions** in relation to the **Connection Site**;

(b) a list of persons appointed by the **TSO** to undertake operational duties on the **NI System** and to issue and receive operational messages and instructions in relation to the **User's System**; and

(c) a list of names and telephone numbers of responsible management representatives in accordance with OC7.

CC10.2.3 When indicating agreement to the energising of a connection, the **TSO** shall, to the extent not previously determined in a commissioning programme, specify the contents and sequence of the energising programme and associated testing. In either case, the **TSO** shall be entitled to postpone or suspend the programme where, due to circumstances which could not reasonably have been foreseen by the **TSO**, continuation of the programme would impose an unacceptable level of risk to the integrity of the **NI System**.

CC10.3 Approval of Staff

CC10.3.1 At the same time that the **User** submits to the **TSO** the list of information pursuant to CC10.1.3 it shall submit to the **TSO** a list of staff which will be used to implement **Safety Precautions**. The **TSO** may on behalf of the **TO** ask the **User** questions to clarify the suitability of persons named on the list.

CC10.3.2 At the same time that the **TSO** submits to the **User** the list of information pursuant to CC10.2.2 it shall submit to the **User** on behalf of the **TO** a list of **TO** staff which will be used to implement **Safety Precautions**. The **User** may ask the **TSO** questions to clarify the suitability of persons named on the list.

CC10.3.3 Each of the **TSO** and each **User** have the right to object to the inclusion of particular members of staff on the other's list, on technical grounds, and in the event of objection which is accepted by the other, that member of staff will not be used to implement **Safety Precautions**.

CC10.3.4 A party must accept an objection to the extent it is reasonable to do so. In the event of a disagreement, the Disputes Resolution Procedure in the relevant **Connection Agreement** will be used.

CC10.3.5 As part of the approval process, each party may (upon reasonable notice and at reasonable times) interview members of staff on the other's list or the parties may agree to hold joint interviews.

CC10.3.6 If the list of the **TSO** or a **User**, as the case may be, changes, the relevant party must notify the other without delay and the relevant provisions of this CC10.3 shall apply to any new names included as part of that change.

CC10.3.7 Neither the **TSO**, **TO** nor any **User** shall have any liability to the other by reason of or arising from their approval under this CC10.3 of the other's list of staff entitled to implement **Safety Precautions**.

CC11 **AGGREGATORS**

CC11.1 Each **Aggregator** shall give to the **TSO** such information in relation to **Connection Conditions** related issues from time to time that the **TSO** may reasonably deem necessary.

CC12 FUEL SECURITY CODE

CC12.1 Each **Generator** agrees to comply with the **Fuel Security Code** to the extent that it is expressed to apply to it and with any instructions from the **TSO** pursuant to the **Fuel Security Code**, including in relation to **CDGUs**, with **Dispatch Instructions** issued by the **TSO**

CONNECTION CONDITIONS SCHEDULE 1

TECHNICAL CRITERIA FOR GENERATING UNITS OTHER THAN THOSE COMPRISED WITHIN WFPSs

CC.S1.1 Applicability of Technical Design and Operational Criteria

(a) In this Schedule 1 all references to **Generating Units** shall be read and construed as references only to **CCGT Modules**, **Steam Turbine Units** and/or **Gas Turbine Units**. Such references shall not be read or construed as references to **Generating Units** that form part of a **WFPS**.

(b) At the **Connection Point** all **Generating Units** with an **Output** of 5 **MW** or more shall, in addition to the requirements of CC6, meet the following technical design and operational criteria. This Schedule 1 contains more detailed requirements for **Generating Units** than those set out in CC6 and is intended to be complementary to CC6. However, in the event of any conflict between the requirements of CC6 and the requirements of this Schedule 1, the provisions of this Schedule 1 shall prevail. Detailed information relating to a particular connection will, where indicated below, be made available by the **TSO** on request by the **Generator**.

(c) **Generating Units** with an **Output** of 5 **MW** or more shall, as a minimum requirement, and in addition to the requirements of CC6, comply with the requirements of Engineering Recommendation G59 (NI), "Recommendations for the Connection of Private **Generating Plant** to Northern Ireland Electricity's Distribution Systems" and with all other relevant Engineering Recommendations and relevant regulations and the particular requirements of the **TSO** which will take account of the conditions prevailing on the **NI System** at the **Connection Point** at the relevant time. The **TSO** will notify its particular requirements to the **Generator** during the course of the **Generator's** application for connection to the **NI System**.

CC.S1.2 **Generating Unit** Connections

Each connection between a **Generating Unit** and the **NI System** unless specified otherwise in the **Connection Agreement** must be controlled by a circuit breaker capable of interrupting the maximum short circuit current at the point of connection. The short circuit current design values at a **Connection Point** will be set out in the **Connection Agreement**.

CC.S1.3 **Generating Plant** Performance Requirements

CC.S1.3.1 For **Generating Units** not subject to **Central Despatch** the electrical parameters required to be achieved at the **Generator Terminals** shall be specified by the **TSO** in the **Connection Agreement** or in a **Request for Proposal**, as the case may be.

CC.S1.3.2 For **CDGUs** and for **CCGT Installations** (in relation to the **CCGT Modules** therein) the **Reactive Power** capability shall as a minimum be:-

(i) rated power factor (lagging) = 0.8;

(ii) rated power factor (leading) = 0.95; and

(iii) short circuit ratio not less than 0.5.

CC.S1.3.3 For **CDGUs** and **CCGT Installations** the minimum connected impedance applicable to the generator and **Generator Transformer** will be specified in the **Connection Agreement**. The **TSO** 's requirements for the impedances will reflect the needs of the **NI System** from the fault level and stability points of view.

CC.S1.3.4 A **Generating Unit** must be capable of continuously supplying its **Registered Capacity** at a stable **Output** within the **System Frequency** range 49.5 Hz to 50.5 Hz. Within the **Frequency** range 49.5 Hz to 50.5 Hz there must be no reduction in **Output** whilst **Frequency** is falling. Any decrease in **Output** whilst **Frequency** is falling to a level below **Registered Capacity** occurring in the **Frequency** range 49.5 Hz to 47 Hz must not be more than pro rata with any decrease below nominal **Frequency**.

CC.S1.3.5 The **Output** should not be affected by voltage changes in the normal operating range specified in CC5.4.

CC.S1.3.6 A **Generating Unit** must be capable of remaining **Synchronised** to the **NI System** at an **Output** which is no greater than the lower of 80 **MW** or 40% of maximum continuous rating.

CC.S1.3.7 **Start-Up** and Ramp Rates

(a) A **Generating Unit** must be capable of **Start-Up**:-

(i) from cold within 14 hours;
(ii) from warm within 5 hours;
(iii) from hot within 3 hours.

The block **Load** on synchronising must be no greater than 40 **MW**.

(b) A **Generating Unit** which is in a hot condition must be capable of ramping up from part-load pursuant to a **Despatch** instruction at a rate of at least 3% of MCR per minute.

(c) A **Generating Unit** must be capable of de-loading at a rate of at least 3% of MCR per minute.

CC.S1.4 **Black Start Capability**

(a) The **NI System** is equipped with a **Black Start Capability** (to be utilised in accordance with OC7) achieved by incorporating such a capability at a number of strategically located **Power Station**s.

(b) Each **Connection Agreement** relating to a **Power Station** containing **CDGUs** or **CCGT Installations** will reflect whether any of such **CDGUs** or **CCGT Installations** has a restart capability without connection to an external power

supply (i.e. power which has not been generated at the **Power Station**). Such **Generating Plant** will be specified as a **Black Start Station** in the **Connection Agreement**.

(c) In order to ensure that the **NI System** continues to have a **Black Start Capability**, the **TSO** will require, as a condition of an offer of connection or as a term of the **Request for Proposal**, certain new **Generating Plants** to be **Black Start Stations** and **Users** must, in relation to such new **Generating Plant**, ensure that it has a **Black Start Capability**.

CC.S1.5 **Generating Unit** Control Arrangements

CC.S1.5.1 Each **Generating Unit** must be capable, in accordance with CC.S1.5.2 and CC.S1.5.3, of contributing appropriately, as reasonably specified by the **TSO**, to **Frequency** and voltage control by continuous modulation of **Active Power** and **Reactive Power** supplied to the **NI System**.

CC.S1.5.2 Each **Generating Unit** with a **Registered Capacity** of 5 **MW** or more must be fitted with a fast acting proportional turbine speed governor to provide **Frequency Control** under normal operational conditions as specified by the **TSO** in the relevant **Connection Agreement**. Where a **Generating Unit** or **Power Station** becomes isolated from the rest of the **NI System** but is still supplying **Customers**, the speed governor must also be able to contribute to controlling **NI System Frequency** to below 52 Hz. As stated in CC5.3.2, the **NI System Frequency** could rise to 52 Hz or fall to 47 Hz. For steam turbine **Generating Units** the governor must be designed and operated to the relevant requirements of BS132. For gas turbine **Generating Units** the governor must be capable of operating with a nominal droop characteristic of 4%.

CC.S1.5.3 The **TSO** may specify in the relevant **Connection Agreement** that a continuously acting fast response automatic excitation control system is required to control the generator voltage without instability over the entire operating range of the **Generating Unit** or **Power Station**. This will be dependent on the size and type of **Generating Unit** or **Power Station** and the part of the **NI System** to which it is connected.

CC.S1.5.4 The **TSO** may specify the requirement for tap changing facilities on the **Generator Transformer**s for all **Generating Units**. The tapping range and the step sizes will then be specified in the respective **Connection Agreements**.

CC.S1.5.5 The **TSO** may specify in the relevant **Connection Agreement** that a **Generating Unit** must be fitted with a **Unit Load Controller**. Where so specified, the **Generator** must ensure that the **Unit Load Controller** is in operation at all times and in accordance with the settings for **Frequency** trigger and reset point, time delay and droop as specified in the relevant **Connection Agreement** or such other settings as the **TSO** may notify to the **Generator** in writing on not less than two **Business Days'** notice, unless directed otherwise by the **TSO**.

CC.S1.6 Coordination with Existing **Protection**

CC.S1.6.1 Each **Generator** must meet, in relation to each of its **Generating Units**, the target clearance times for fault current interchange with the **NI System** in order to reduce to a

minimum the impact on the **NI System** of faults on circuits owned by **Generator**s. The target clearance times are measured from fault current inception to arc extinction and will be specified by the **TSO** to meet the requirements of the relevant part of the **NI System**. A **Generator** may obtain relevant details specific to its **Generating Units** pursuant to CC.S1.1. The **TSO** shall ensure that (subject to any necessary discrimination) the same target fault clearance times can be achieved by its own **Plant** and **Apparatus** at each **Connection Point**.

CC.S1.6.2 Unless otherwise agreed, the fault clearance times specified in the **Connection Agreement** shall not be faster than:-

(a) 100 ms at 275 kV; and

(b) 120 ms at 110 kV and below;

but, if otherwise agreed, nothing in this CC.S1.6.2 shall prevent a **Generating Unit** or the **TO's Plant** and **Apparatus** at the **Connection Point** from having faster clearance times (subject to necessary discrimination being maintained). The times specified in the **Connection Agreement** will reflect the **TSO 's** view of the requirements of the **NI System,** and the **User's System**, for the expected life time of the **Protection** (for example, 15 years). The probability that the fault clearance times stated in the **Connection Agreement** will be exceeded by any given fault must be less than 2%.

CC.S1.6.3 To cover for failure of the above **Protection** systems to meet the above fault clearance times, back up **Protection** shall be provided by the **Generator**. The back up **Protection** shall be required to discriminate with other **Protections** fitted on the **NI System**. Relevant details will be made available to a **Generator** upon request pursuant to CC.S1.1.

CC.S1.6.4 For **Generating Units** connected to the **Transmission System** the **Connection Agreement** will specify the **Protection** to be fitted which may include:-

(a) circuit breaker fail **Protection**; and/or

(b) loss of excitation **Protection**; and/or

(c) pole slipping **Protection**.

CC.S1.6.5 The setting of any **Protection** controlling a circuit breaker or the operating values of any automatic switching device at any **Connection Point** shall have been agreed between the **TSO** and the **User** during the course of the application for a **Connection Agreement**. The settings and operating values will only be changed if both the **TSO** and the **User** agree provided that neither the **TSO** nor the **User** shall unreasonably withhold their consent.

CC.S1.6.6 If in the opinion of the **TSO** following an overall review of **NI System Protection** requirements improvements to any **Generating Unit Protection** scheme are necessary, the relevant provisions of the **Connection Agreement** shall be followed.

CC.S1.6.7 The **Generating Unit Protection** must co-ordinate with any auto reclose policy specified by the **TSO**.

CC.S1.7 Negative Phase Sequence Loadings

Generating Units shall be capable of withstanding, without tripping, a negative phase sequence loading incurred by clearance of a close-up phase-to-phase fault by **System** back-up **Protection** which will be within the **Apparatus** short time rating. The **TSO** will inform the **Generator** of the expected negative phase sequence loadings during the course of an application for a **Connection Agreement**.

CC.S1.8 Neutral **Earthing**

CC.S1.8.1 The winding configuration and method of **Earthing** of **Generating Units** and associated **Generator Transformer**s shall be agreed with the **TSO** or, if agreement cannot be reached, determined by the **TSO**.

CC.S1.9 **Automatic Load Shedding Devices**

CC.S1.9.1 There is an expectation that **Generating Units** will continue to operate outside statutory **Frequency** limits. However, it is likely that this could mean connection within an **Automatic Load Shedding** zone as detailed in OC4. Consequently, **Users** shall ensure that **Protection** on **Generating Units** shall have settings to co-ordinate with the settings on the **Automatic Load Shedding** equipment as detailed by the **TSO** on request by the **User**.

CC.S1.9.2 (a) Each **Generating Unit** shall be capable of satisfactory operation at any **Frequency** within the range of 47 Hz to 52 Hz unless the **TSO** has agreed to the use of any **Frequency** level relays which will trip the **Generating Unit** within this **Frequency** range.

(b) Where **Generating Units** are equipped with rate-of-change-of-**Frequency** relays or other devices which measure and operate in relation to a rate-of-change-of **Frequency** (e.g. a governor) the procedure in CC.S1.9.2(c) below will be followed to ensure satisfactory operation of the **Generating Units**.

(c) (i) At a reasonable time prior to a **Generating Unit** being connected to the **NI System**, and prior to any relevant modification to a **Generating Unit** or any relevant **Power Station Equipment**, the **Generator** shall contact the **TSO** with details of the proposed rate-of-change-of-**Frequency** setting.

(ii) The **TSO** shall, within a reasonable period and in any case no more than 28 days, discuss with the **Generator** whether the proposed settings are satisfactory. The agreed settings shall be specified in the **Connection Agreement**.

(iii) In relation to any **Generator** which has agreed the settings with the **TSO** under these provisions, the **TSO** shall notify that **Generator** of any change

of which it is aware in the expected rate-of-change-of-**Frequency** on the **NI System** which may require new settings to be agreed.

CC.S1.9.3 Each **Generator** shall be responsible for protecting the **Generating Units** owned or operated by it against the risk of damage which might result from any **Frequency** excursion outside the range 52 Hz to 47 Hz and for deciding whether or not to interrupt the connection between its **Plant** and/or **Apparatus** and the **NI System** in the event of such a **Frequency** excursion.

CC.S1.9.4 Certain Open Cycle Gas-Turbine Units will be required to have a **Fast-start Capability**. These **Generating Units** may be used for **Operating Margin** and their start up may be initiated by Frequency-level relays with settings normally in the range of 49.5 Hz to 50 Hz.

CONNECTION CONDITIONS SCHEDULE 2

TECHNICAL CRITERIA FOR WFPSs

CC.S2.1 Applicability of Technical Design and Operational Criteria

(a) In this Schedule 2 all references to **Generating Units** shall be read and construed as references only to **Generating Units** that form part of a **WFPS**. It shall not be deemed to refer to **CCGT Modules**, **Steam Turbine Units** and/or **Gas Turbine Units**.

(b) In this Schedule 2 unless otherwise specified all references to measurements shall be deemed to be applicable at the **Connection Point** of the **WFPS**.

(c) This Schedule 2 contains technical, design and operational requirements for **WFPSs** that are more detailed than those set out in CC6 and is intended to be complementary to CC6. However, in the event of any conflict between the requirements of CC6 and the requirements of this Schedule 2, the provisions of this Schedule 2 shall prevail. Detailed information relating to a particular connection will, where indicated below, be made available by the **TSO** on request by the **Generator**. A number of the requirements in this Schedule 2 and the **WFPS Settings Schedule** are applicable only to **Controllable WFPSs** or **Dispatchable WFPSs**. Such requirements are not, by definition, applicable to a **WFPS** first connected to the **NI System** before 1 April 2005 whose wind turbines comprise a **Registered Capacity** of 5 **MW** or more, unless that **WFPS** is subject to material modification, whereupon such a **WFPS** shall, for the purposes of this Schedule 2 and the **WFPS Settings Schedule**, be treated as a **Controllable WFPS** or **Dispatchable WFPS**.

(d) A **WFPS** that is not a **Controllable WFPS** or a **Dispatchable WFPS** shall, as a minimum requirement, and in addition to the requirements of CC6, comply with the requirements of Engineering Recommendation G59 (NI), "Recommendations for the Connection of Private **Generating Plant** to Northern Ireland Electricity's Distribution Systems" and with all other relevant Engineering Recommendations and relevant regulations and the particular requirements of the **TSO** which will take account of the conditions prevailing on the **NI System** at the **Connection Point** at the relevant time. The **TSO** will notify its particular requirements to the **Generator** during the course of the **Generator's** application for connection to the **NI System**.

CC.S2.2 **WFPS** Connections

Each connection between a **WFPS** and the **NI System** unless specified otherwise in the **Connection Agreement** must be controlled by a circuit breaker capable of interrupting the maximum short circuit current at the point of connection. The short circuit current design values at a **Connection Point** will be set out in the **Connection Agreement**.

CC.S2.3 **WFPS** Performance Requirements

CC.S2.3.1 For **WFPSs** that are not **Controllable WFPSs** or **Dispatchable WFPSs** the electrical parameters required to be achieved at the **Generator Terminals** shall be specified by the **TSO** in the **Connection Agreement** or in a **Request for Proposal**, as the case may be. For **WFPSs** whose wind turbines comprise a **Registered Capacity** of 2 **MW** or more**,** but less than 5 **MW**, the electrical parameters achieved at the **Generator Terminals** shall be monitored by the **TSO.**

CC.S2.3.2 For **WFPSs Reactive Power** capability shall as a minimum be:-

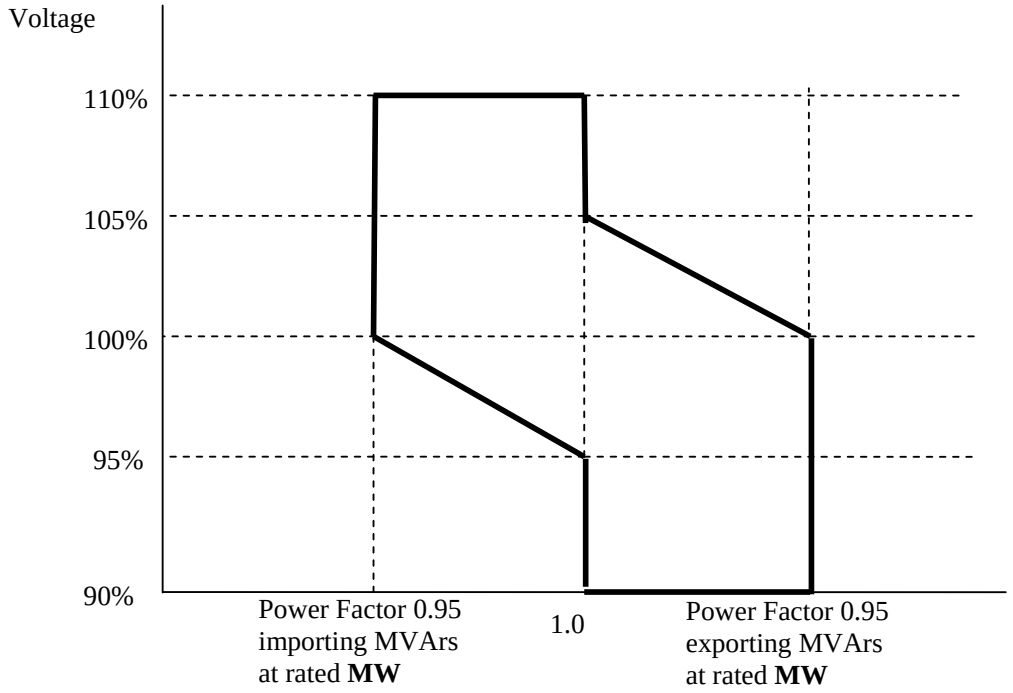
(i) rated power factor (absorbing) – 0.95;

(ii) rated power factor (generating) – 0.95;

within the voltage limits specified under CC5.4.

For the avoidance of doubt, all power factor measurements refer to the **Connection Point**.

WFPSs must be capable of responding to variations in the voltage of the **NI System** in accordance with the following diagram.

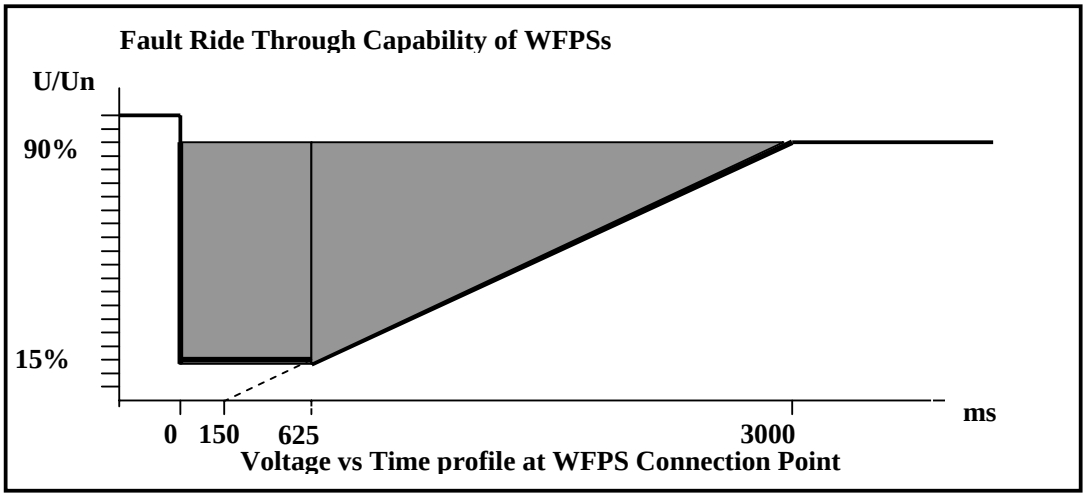


CC.S2.3.3 For **WFPSs** the minimum connected impedance applicable to the whole **WFPS** as a single unit will be specified in the **Connection Agreement**. The **TSO 's** requirements for the impedance will reflect the needs of the **NI System** from the fault level and stability points of view.

CC.S2.3.4 Given wind speeds equal to or faster than the manufacturer's cut-in point, and equal to or slower than the manufacturer's cut-out point, for operation of the wind turbines in the **WFPS**, both as specified within the **Connection Agreement** for the particular site, a **WFPS** must be capable of continuously supplying **Output** in accordance with the power curve as specified/set out in the **Connection Agreement** within the **System Frequency** range 49.5 Hz to 50.5 Hz. Within the **Frequency** range 49.5 Hz to 50.5 Hz there must be no reduction in **Output** whilst **Frequency** is falling. Any decrease in **Output** to a level below the **Output** to be delivered in accordance with the power curve as specified/set out in the **Connection Agreement** occurring in the **Frequency** range 49.5 Hz to 47 Hz must not be more than pro rata with any decrease below nominal **Frequency**.

CC.S2.3.5 The **Output** measured at each wind turbine generator terminal should not be affected by voltage changes in the normal operating range specified in CC5.4.

CC.S2.3.6 (a) In the event of a step change in voltage each **WFPS** first connected to the **NI System** on or after 1 April 2005 shall remain connected to the **NI System** as specified in the following diagram and the remainder of this CC.S2.3.6.



(b) **WFPSs** first connected to the **NI System** prior to 1 April 2005 shall not be required to comply with the requirements in the above diagram save where the **WFPS** is subject to material modification involving the installation of additional wind turbines in which case the requirements in the above diagram shall apply in respect of the performance of those turbines.

(c) A **WFPS** shall continuously control voltage at the **Connection Point** within its reactive power capability limits. The speed of response of the **WFPS** control system should be such that following a step change in voltage and recovery to the normal operating range the **WFPS** should achieve and maintain on average at least 90% of its steady state active power response, measured by **Output**, at the **Connection Point** within 1 second of the step change.

(d) **WFPSs** shall not consume on average more reactive power in the 10 seconds following a disturbance on the **NI System** than they did on average in the 10

minutes before the occurrence of the disturbance. Where a **WFPS** is supporting the **NI System** voltage through reactive power export, it shall not draw reactive power during or immediately following the disturbance.

(e) In order to ensure the continued performance of each **WFPS** the **Generator** shall meet the reasonable costs of the **TSO** in providing and maintaining a **Monitoring**, recording and transmitting device.

CC.S2.3.7 **Start-Up** and Ramp Rates

(a) The **Generator** shall ensure that a **WFPS** shall not start up more frequently than once in any 10 minute period. A **WFPS** shall have a positive ramp rate controller capable of being set within a range from 1 **MW** per minute to 10 **MW** per minute to control the ramp rate under normal operating conditions and including a zero ramp rate setting, which shall automatically take effect during a time period when a ramp blocking signal is present. Unless notified otherwise by the **TSO**, the **Generator** will set the controller to the setting as specified by the **TSO** from time to time in the **WFPS Settings Schedule** published on the SONI website (or such other place or by such other means as may be notified to the **Generator** from time to time). The ramp rate is the average rate of change in **Output** measured over any 10 minute period. The ramp rate averaged over 1 minute should not exceed 3 times the average ramp rate over 10 minutes.

(b) A **Controllable WFPS** or a **Dispatchable WFPS** shall have a ramp **Frequency** controller, which on **Start-Up** and during normal operation of any **Controllable WFPS** or **Dispatchable WFPS** shall only allow ramping when the **System Frequency** is below a set value and in the absence of a ramp blocking signal. The ramp **Frequency** controller should be capable of being set in the range 50.2 Hz to 52.0 Hz in steps of 0.1 Hz. Unless notified otherwise by the **TSO**, the **Generator** will set the controller to the setting as specified by the **TSO** from time to time in the **WFPS Settings Schedule** published on the SONI website (or such other place or by such other means as may be notified to the **Generator** from time to time).

(c) During operation the **TSO** may send to the **Generator** a positive ramp blocking signal if the **NI System** would otherwise be at risk from excess **Frequency** movements. This signal is designed to restrain **WFPSs** from ramping above the previous 10 minute average level at the time of receiving the signal. The **WFPS** may continue to supply **Output** up to this level until the signal is removed. The **TSO** will remove the ramp blocking signal as soon as stable conditions on the **NI System** are restored, as determined by the **TSO**.

(d) If wind speeds or potential wind speeds equal to or faster than the manufacturer's cut-out speed for the wind turbines in a **Controllable WFPS** or **Dispatchable WFPS** as specified within the **Connection Agreement** for the particular site are deemed by the **TSO**, acting reasonably, to require a reduction in the **Output** of a **Controllable WFPS** or **Dispatchable WFPS**, then the **TSO** may instruct the **Controllable WFPS** or **Dispatchable WFPS** as to the maximum **Output** from that **Controllable WFPS** or **Dispatchable WFPS** allowable under the prevailing conditions. To assist the **TSO** in determining that a reduction in **Output** is required, each **Controllable WFPS** or **Dispatchable WFPS** shall send SCADA

signals to the **TSO Control Centre** to the extent necessary to keep the **TSO** accurately informed as to how many turbines have been shut down on account of wind speeds equal to or faster than the manufacturer's cut-out speed. Unless the **Controllable WFPS** or **Dispatchable WFPS** has a continually manned control point the **TSO** shall send a SCADA signal indicating that a process of reducing maximum **Output** is to be initiated and the time interval over which the reduction of **Output** is to be achieved. A **Controllable WFPS** or **Dispatchable WFPS** receiving such a signal shall send a SCADA signal in response confirming that it has received the SCADA signal from the **TSO**. For a **Controllable WFPS** or **Dispatchable WFPS** whose wind turbines comprise a **Registered Capacity** of less than 50 **MW** no one increment of **Output** reduction shall exceed 5 **MW** and for all **Controllable WFPSs** or **Dispatchable WFPSs** the pattern(s) of **Output** reduction shall be set out in the **Connection Agreement** for the particular site. For the avoidance of doubt nothing in this CC.S2.3.7(d) shall be construed as requiring a **Controllable WFPS** or **Dispatchable WFPS** to operate beyond its technical limits.

(e) The ramp rate requirements for **WFPSs** need not be met in the case of:

(i) wind speed falling at a greater rate than that which would be required to control the **Output** to be within the ramp rate;

(ii) a **Frequency** deviation on the **NI System** from 50 Hz below the lower deadband setting or above the upper deadband setting (both as specified by the **TSO** in accordance with CC.S2.5.2 (a)) where the **WFPS** is (at the **TSO's** request) providing **Frequency Control**, to the extent that the ramp rate requirements can not be met solely due to the provision of **Frequency Control** or the **Generator's** compliance with the other provisions of the **Connection Conditions**.

CC.S2.4 **Black Start Capability**

A **WFPS** is not required to provide **Energy** to any part of the **NI System** during the restoration of power process following a Black Start and therefore does not require a **Black Start Capability**. For the avoidance of doubt a **WFPS** will be disconnected from the **NI System** during Black Start conditions until the **NI System** is restored to a stable operating mode, as determined by the **TSO**.

CC.S2.5 **WFPS** Control Arrangements

CC.S2.5.1 Each **Controllable WFPS** or **Dispatchable WFPS** must be capable, in accordance with CC.S2.5.2 and CC.S2.5.3, of contributing appropriately, as reasonably specified by the **TSO**, to **Frequency** by continuous modulation of **Active** and **Reactive Power** supplied to the **NI System**.

CC.S2.5.2 (a) Each **Controllable WFPS** or **Dispatchable WFPS** must be fitted with a fast acting proportional wind power governor to provide **Frequency Control** under normal operational conditions. This fast acting proportional governor should be equipped with controls which allow the droop to be set in the range 2% to 20% below 50.0 Hz and from 2% to 20% at 50.0 Hz and above, each setting being

capable of being set independently above and below 50.0 Hz. A deadband within which no control will be exercised must be capable of being set with a lower limit between 49.0 Hz and 50.0 Hz in steps of 0.05 Hz and an upper limit between 50.0 Hz and 51.0 Hz in steps of 0.05 Hz. In addition a high **Frequency** trip facility must be provided capable of being set in the range 51.0 Hz to 52.0 Hz in steps of 0.1 Hz. Unless the **Generator** is notified otherwise by the **TSO**, the **Governor Droop**, deadband and high **Frequency** trip settings shall be as specified by the **TSO** from time to time in the **WFPS Settings Schedule** published on the SONI website (or such other place or by such other means as may be notified to the **Generator** from time to time). Where a **Controllable WFPS** or **Dispatchable WFPS** becomes isolated from the rest of the **NI System** the **Controllable WFPS** or **Dispatchable WFPS** must immediately detect the condition and shut itself down.

(b) Under certain **System** conditions the **TSO** may require a **Controllable WFPS** or a **Dispatchable WFPS** to operate below its maximum instantaneous **Output** and in a manner where the droop setting will come into operation should the **System Frequency** fall below the lower deadband setting (as specified by the **TSO** in accordance with CC.S2.5.2(a)). In this mode of operation the **Controllable WFPS** or **Dispatchable WFPS** will be providing some of the **System** reserve. The use of this constrained operating mode shall be kept to a minimum and is most likely to occur during summer night operation. The **Controllable WFPS** or **Dispatchable WFPS** controller must be capable of being set to operate in a constrained manner within the range of at least 50% to 100% of maximum instantaneous **Output**. Unless the **Generator** is notified otherwise by the **TSO**, the setting of the controller shall be as specified by the **TSO** from time to time in the **WFPS Settings Schedule** published on the SONI website (or such other place or by such other means as may be notified to the **Generator** from time to time).

CC.S2.5.3 (a) Each **Controllable WFPS** or **Dispatchable WFPS** must be fitted with a fast acting control system capable of being switched to control the **Controllable WFPS** or **Dispatchable WFPS Output** voltage or the **Controllable WFPS** or **Dispatchable WFPS Output** power factor within a voltage band as specified within the **Connection Agreement** for the particular site, and in any case within statutory limits as specified under CC5.4.2. If the voltage exceeds the specified band the power factor control must revert to voltage control. The control of voltage and power factor must ensure stable operation over the entire operating range of the **Controllable WFPS** or **Dispatchable WFPS**. In the event that action by the **Controllable WFPS** or **Dispatchable WFPS** active and reactive power control functions is unable to achieve a sustained voltage within the statutory limits, the **Controllable WFPS** or **Dispatchable WFPS** must detect this and immediately shut down.

(b) Where a **Controllable WFPS** or **Dispatchable WFPS** is connected to the **NI System** through the same transformer as a **Customer** or **Customers**, the **Generator** must also install a power factor control loop as further provided in the **Connection Agreement**. The power factor control loop should be designed to be slow acting to allow the voltage control loop to respond to transient voltage changes. Where a transient voltage change occurs, the power factor control loop must restore the voltage to the set value over a period of 1 minute.

(c) Other voltage control schemes may be possible (e.g. control of **Controllable WFPS** or **Dispatchable WFPS** 33 kV busbar voltage using the wind turbines or other equipment), but agreement between the **Generator** and the **TSO** must be reached at the application stage for connection about their suitability. If voltage control is implemented for the **Controllable WFPS** or **Dispatchable WFPS**, rather than on individual wind turbines, then the range of power factor available should not be less than that which would have been available if voltage control had been on individual wind turbines. Voltage control schemes based upon equipment located on the **TSO's** side of the connection may be possible, but such schemes are considered special, and the details, responsibilities and cost schedule must be agreed between the **Generator** and the **TSO** in the **Connection Agreement**.

(d) In order to deal with **Controllable WFPSs** or **Dispatchable WFPSs** inducing power fluctuations, an additional control loop must be provided by the **Generator** to ensure that the wind turbine control system, wind turbulence or other factors in the **Controllable WFPS** or **Dispatchable WFPS** cannot produce power oscillations between 0.25 Hz and 1.75 Hz. It should be designed and operated to ensure that the total peak-to-peak **MW** oscillation within this **Frequency** range is less than 1% of the **Registered Capacity** of the **Controllable WFPS** or **Dispatchable WFPS.**

CC.S2.5.4 The **TSO** may specify the requirement for tap changing facilities on the **Site** Transformer(s) for **WFPSs**. Where a suitable **Site** Transformer does not exist the requirement may be applied to individual **Generator Transformers**. The tapping range and the step sizes will then be specified in the respective **Connection Agreements**.

CC.S2.6 Coordination with Existing **Protection**

CC.S2.6.1 A **Generator** must meet, in relation to a **WFPS**, the target clearance times for fault current interchange with the **NI System** in order to reduce to a minimum the impact on the **NI System** of faults on circuits owned by **Generators**. The target clearance times are measured from fault current inception to arc extinction and will be specified by the **TSO** to meet the requirements of the relevant part of the **NI System**. A **Generator** may obtain relevant details specific to its **WFPS** pursuant to CC.S2.1.

CC.S2.6.2 Unless otherwise agreed in the **Connection Agreement**, nothing in this CC.S2.6.2 shall prevent a **WFPS** or the **TO's Plant** and **Apparatus** at the **Connection Point** from having faster clearance times than those specified in the **Connection Agreement** (subject to necessary discrimination being maintained). The times specified in the **Connection Agreement** will reflect the **TSO 's** view of the requirements of both the **NI System** and the **User's System** for the expected life time of the **Protection** (for example, 15 years). The probability that the fault clearance times stated in the **Connection Agreement** will be exceeded by any given fault must be less than 2%.

CC.S2.6.3 To cover for failure of the above **Protection** systems to meet the above fault clearance times, back up **Protection** shall be provided by the **Generator**. The back up **Protection** shall be required to discriminate with other protections fitted on the **NI System**. Relevant details will be made available to a **Generator** upon request pursuant to CC.S2.1.

CC.S2.6.4 For **WFPSs** connected to the **Transmission System** the **Connection Agreement** will specify the **Protection** to be fitted, which may include circuit breaker fail **Protection**.

CC.S2.6.5 The setting of any **Protection** controlling a circuit breaker or the operating values of any automatic switching device at any **Connection Point** shall have been agreed between the **TSO** and the **User** during the course of the application for a **Connection Agreement**. The settings and operating values will only be changed if both the **TSO** and the **User** agree provided that neither the **TSO** nor the **User** shall unreasonably withhold their consent.

CC.S2.6.6 If in the opinion of the **TSO** following an overall review of **NI System Protection** requirements improvements to any **WFPS Protection** scheme are necessary, the relevant provisions of the **Connection Agreement** shall be followed.

CC.S2.6.7 The **WFPS Protection** must co-ordinate with any auto reclose policy specified by the **TSO**.

CC.S2.7 Negative Phase Sequence Loadings

WFPSs shall be capable of withstanding, without tripping, a negative phase sequence loading incurred by clearance of a close-up phase-to-phase fault by **System** back-up **Protection** which will be within the **Apparatus** short time rating the **TSO** will inform the **Generator** of the expected negative phase sequence loadings during the course of an application for a **Connection Agreement**.

CC.S2.8 Neutral **Earthing**

CC.S2.8.1 The winding configuration and method of **Earthing** of **WFPSs** and associated **Generator Transformers** shall be agreed with the **TSO** or, if agreement cannot be reached, determined by the **TSO**.

CC.S2.9 **Automatic Load Shedding Devices**

CC.S2.9.1 There is an expectation that **WFPSs** will continue to operate outside statutory **Frequency** limits. However, it is likely that this could mean connection within an **Automatic Load Shedding** zone as detailed in OC4. Consequently, **Users** shall ensure that **Protection** on **WFPSs** shall have settings to co-ordinate with the settings on the **Automatic Load Shedding** equipment as detailed by the **TSO** on request by the **User**.

CC.S2.9.2 (a) Each **WFPS** shall be capable of satisfactory operation at any **Frequency** within the range of 47.0 Hz to 52.0 Hz for the minimum time periods specified below unless the **TSO** has agreed to the use of any **Frequency** level relays which will trip the **WFPS** within this **Frequency** range.

Minimum time periods:

Frequency Range	**Time requirement, minimum**

50.5 Hz – 52.0 Hz	60 minutes
49.5 Hz – 50.5 Hz	Continuous operation
47.5 Hz – 49.5 Hz	60 minutes
47.0 Hz – 47.5 Hz	20 seconds

(b) Where **WFPSs** are equipped with rate-of-change-of-**Frequency** relays or other devices which measure and operate in relation to a rate-of-change-of **Frequency** (e.g. a governor) the procedure in CC.S2.9.2(c) below will be followed to ensure satisfactory operation of the **WFPSs**.

(c) (i) At a reasonable time prior to a **WFPS** being connected to the **NI System**, and prior to any relevant modification to a **WFPS** or any relevant **Power Station Equipment**, the **Generator** shall contact the **TSO** with details of the proposed rate-of-change-of-**Frequency** setting.

(ii) The **TSO** shall, within a reasonable period and in any case no more than 28 days, discuss with the **Generator** whether the proposed settings are satisfactory. The agreed settings shall be specified in the **Connection Agreement**.

(iii) In relation to any **Generator** which has agreed the settings with the **TSO** under these provisions, the **TSO** shall notify that **Generator** of any change of which it is aware in the expected rate-of-change-of-**Frequency** on the **NI System** which may require new settings to be agreed.

CC.S2.9.3 Each **Generator** shall be responsible for protecting the **WFPSs** owned or operated by it against the risk of damage which might result from any **Frequency** excursion outside the range 52 Hz to 47 Hz and for deciding whether or not to interrupt the connection between its **Plant** and/or **Apparatus** and the **NI System** in the event of such a **Frequency** excursion.

CC.S2.10 Additional information

CC.S2.10.1 Each **Generator** shall provide the calculated **Output** for the **WFPS** as part of the application for connection of that **WFPS** to the **NI System**. This will take the form of a diagram showing wind speed and direction against electrical output in **MW**, in "rose" format. Following connection, the **WFPS** shall be monitored for a period to confirm the validity of the calculations, which may be used for future **Output** predictions. This **Monitoring** shall be completed before a final **Grid Code** compliance certificate is issued. Each **Generator** requires a **Grid Code** compliance certificate in respect of each of its **WFPSs** before being allowed to operate it.

CC.S2.10.2 A temporary **Grid Code** compliance certificate may be issued to allow tests or **Monitoring** that can only be performed on energised and/or loaded **Plant**. After a period of time not exceeding one year from the date on which a temporary **Grid Code** compliance certificate takes effect (unless the **TSO** in its absolute discretion agrees to

extend the validity of a temporary **Grid Code** compliance certificate), the **TSO** shall issue a final **Grid Code** compliance certificate or indicate the reason why a certificate cannot be issued. The final **Grid Code** compliance certificate may be issued with or without conditions depending upon the result of compliance tests, and may be subsequently withdrawn for the non-compliance of the **Generator** or a **Generator's WFPS** with the **Grid Code** by the **TSO** giving such notice of the withdrawal (which notice shall set out the matters in respect of which there is non-compliance) as is reasonable in the circumstances. If the final **Grid Code** compliance certificate is not issued or is withdrawn the **Generator** must cease to operate its **WFPS** until such time as a temporary or final **Grid Code** compliance certificate is issued or re-issued in respect of the **WFPS**.

APPENDIX 1

FORMAT, PRINCIPLES AND BASIC PROCEDURE TO BE USED IN THE

PREPARATION OF **SITE RESPONSIBILITY SCHEDULES**

CC.A1.1 PRINCIPLES

CC.A1.1.1 The following **Site Responsibility Schedules** shall be drawn up using the proforma attached or with such variations as may be agreed between the **TSO** and the **User**, although in the absence of agreement the proforma attached will be used:

(a) Schedule of **HV Apparatus**;

(b) Schedule of **Plant, LV**/**MV Apparatus**, services and supplies;

(c) Schedule of telecommunications and measurements **Apparatus**.

Other than at **Generating Unit** and **Power Station** locations (including **WFPSs**)**,** the schedules referred to in (b) and (c) may be combined.

CC.A1.1.2 Each **Site Responsibility Schedule** for a **Connection Site** shall be prepared by the **TSO** in consultation with other **Users** at least 2 weeks prior to the date for connection proposed by the **User** pursuant to CC10.1.1(c). Each **User** shall provide information to the **TSO** to enable it to prepare the **Site Responsibility Schedule**.

CC.A1.1.3 Each **Site Responsibility Schedule** shall detail for each item of **Plant** and **Apparatus**:-

(a) **Plant/Apparatus** ownership;

(b) **Site** Manager;

(c) Safety (applicable **Safety Rules** and **Control Person** or other responsible person (**Safety Co-ordinator**), or such other person who is responsible for safety);

(d) Operations (applicable **Operational Procedures** and control engineer);

(e) Responsibility to undertake maintenance.

Each **Connection Point** shall be precisely shown.

CC.A1.1.4 In the case of **Site Responsibility Schedules** referred to in CC.A.1.1.1.(b) and (c), with the exception of **Protection** and **Intertrip Apparatus** operation, it will be sufficient to indicate the responsible **User** or the **TSO** as the case may be. In the case of the **Site Responsibility Schedule** referred to in CC.A.1.1.1 (a) for **Protection** and **Intertrip Apparatus**, the responsible management unit must be shown in addition to the **User** or the **TSO** as the case may be.

CC.A1.1.5 The **HV Apparatus Site Responsibility Schedule** for each **Connection Site** must include lines and cables emanating from the **Connection Site**.

CC.A1.1.6 Every page of each **Site Responsibility Schedule** shall bear the date of issue and the issue number.

CC.A1.1.7 When a **Site Responsibility Schedule** is prepared it shall be sent by the **TSO** to the **Users** involved for confirmation of its accuracy.

CC.A1.1.8 The **Site Responsibility Schedule** shall then be signed on behalf of the **TSO** by the Manager responsible and on behalf of each **User** involved by its **Responsible Manager** (see CC.A.1.1.15), by way of written confirmation of its accuracy if they agree on its accuracy.

CC.A1.1.9 Once signed, two copies will be distributed by the **TSO**, not less than two weeks prior to its implementation date, to each **User** which is a party on the **Site Responsibility Schedule**, accompanied by a note indicating the issue number and the date of implementation.

CC.A1.1.10 The **TSO** and **Users** must make the **Site Responsibility Schedules** readily available to their respective operational staff at the **Site**.

Alterations to existing **Site Responsibility Schedules**

CC.A1.1.11 Without prejudice to the provisions of CC.A.1.1.14, when a **User** identified on a **Site Responsibility Schedule** becomes aware that an alteration is necessary, it must inform the **TSO** immediately and in any event 8 weeks prior to any change taking effect (or as soon as possible after becoming aware of it, if less than 8 weeks remain when the **User** becomes aware of the change).

CC.A1.1.12 Where the **TSO** has been informed of a change by a **User**, or itself proposes a change, it will prepare a revised **Site Responsibility Schedule** by not less than six weeks prior to the change taking effect (subject to it having been informed or knowing of the change eight weeks prior to that time) and the procedure set out in CC.A.1.1.7 shall be followed with regard to the revised **Site Responsibility Schedule**.

CC.A1.1.13 The revised **Site Responsibility Schedule** shall then be signed in accordance with the procedure set out in CC.A.1.1.8 and distributed in accordance with the procedure set out in CC.A.1.1.9, accompanied by a note indicating where the alteration(s) has/have been made, the new issue number and the date of implementation.

CC.A1.1.14 When a **User** identified on a **Site Responsibility Schedule**, or the **TSO**, as the case may be, becomes aware that an alteration to the **Site Responsibility Schedule** is necessary urgently to reflect, for example, an emergency situation, the **User** shall notify the **TSO**, or the **TSO** shall notify the **User**, as the case may be, immediately and will discuss:

(a) what change is necessary to the **Site Responsibility Schedule**;

(b) whether the **Site Responsibility Schedule** is to be modified temporarily or permanently; and

(c) the distribution of the revised **Site Responsibility Schedule**.

The **TSO** will prepare a revised **Site Responsibility Schedule** as soon as possible, and in any event within seven days of it being informed of or knowing the necessary alteration. The **Site Responsibility Schedule** will be confirmed by **Users** and signed on behalf of the **TSO** and **Users** (by the persons referred to in CC.A.1.1.8) as soon as possible after it has been prepared and sent to **Users** for confirmation.

Responsible Managers

CC.A1.1.15 Each **User** and the **TSO** shall, prior to the date for connection proposed by the **User** pursuant to CC10.1.1(c), exchange names and status of managers with authority to sign **Site Responsibility Schedules.**

APPENDIX 2

PROCEDURES RELATING TO **OWNERSHIP DIAGRAMS**

CC.A2.1. Basic Principles

(a) Where practicable, all the **HV Apparatus** on any **Connection Site** shall be shown on one **Ownership Diagram**. Provided the clarity of the diagram is not impaired, the layout shall represent as closely as possible the geographical arrangement on the **Connection Site**.

(b) Where more than one **Ownership Diagram** is unavoidable, duplication of identical information on more than one **Ownership Diagram** must be avoided.

(c) The **Ownership Diagram** must show accurately the current status of the **Apparatus**, e.g. whether commissioned or decommissioned. Where decommissioned, the associated switchbay will be labelled "spare bay".

(d) Provision will be made on the **Ownership Diagram** for signifying approvals, together with provision for details of revisions and dates.

(e) **Ownership Diagrams** will be prepared in A4 format or such other format as may be agreed with the **TSO**.

CC.A2.2 **Apparatus** to be shown on **Ownership Diagrams**

1. Busbars
2. Circuit Breakers
3. Disconnector (Isolator) and Switch Disconnectors (Switching Isolators)
4. Disconnectors (Isolators) - Automatic Facilities
5. Bypass Facilities
6. **Earthing** Switches
7. Maintenance Earths
8. Overhead Line Entries
9. Overhead Line Traps
10. Cable and Cable Sealing Ends
11. **Generating Unit**
12. **Generator Transformers**
13. **Generating Unit Transformers**, Station Transformers, including the lower voltage circuit-breakers

13A. **WFPS** Transformers, including the lower voltage circuit-breakers

14. Synchronous Compensators
15. Static Variable Compensators
16. Capacitors (including Harmonic Filters)
17. Series or Shunt Reactors
18. Supergrid and Grid Transformers
19. Tertiary Windings
20. **Earthing** and Auxiliary Transformers
21. Three Phase VTs
22. Single Phase VT & Phase Identity
23. High Accuracy VT and Phase Identity

24. Surge Arrestors/Diverters
25. Neutral **Earthing** Arrangements on **HV Plant**
26. Fault Throwing Devices
27. Quadrature Boosters
28. Arc Suppression Coils
29. Current Transformers (where separate **Plant** items)
30. Wall Bushings

CC.A2.3 Recommended Graphical Symbols

Where appropriate, the recommended graphical symbols shown in the attachment to this Appendix 2 shall be used in the preparation of an **Ownership Diagram**.

APPENDIX 3

TECHNICAL REQUIREMENTS

LOW FREQUENCY RELAYS FOR THE AUTOMATIC

DISCONNECTION OF SUPPLIES AT LOW **FREQUENCY**

CC.A3.1 **Low Frequency Relays**

CC.A3.1.1 The **Low Frequency Relays** to be used shall be in accordance with the requirements of the **Connection Agreement**. They should have a setting range of 47 Hz to 50 Hz and be suitable for operation from a nominal AC input of 63.5, 110 or 240 V. The following general parameters on the requirements of approved **Low Frequency Relays** for automatic installations is given as an indication, without prejudice to the provisions that may be included in the **Connection Agreement**:

(a)	**Frequency** settings:	47 Hz – 50 Hz in steps of 0.05 Hz or better, preferably 0.01 Hz;
(b)	Measurement period settings:	Within a minimum selectable settings range of 4 to 6 cycles;
(c)	Operating time:	Between 100 and 150 ms dependent on measurement period setting;
(d)	Voltage lock-out:	Selectable within a range of 55 to 90% of nominal voltage;
(e)	Facility stages:	One or two stages of **Frequency** operation;
(f)	**Output** contacts:	Two **Output** contacts per stage to be capable of repetitively making and breaking for 1000 operations.

CC.A3.2 **Low Frequency Relay** Voltage Supplies

CC.A3.2.1 It is essential that the voltage supply to the **Low Frequency Relays** shall be derived from the primary **System** at the supply point concerned so that the **Frequency** of the **Low Frequency Relays** input voltage is the same as that of the primary **System**. This requires either:

(a) the use of a secure supply obtained from voltage transformers directly associated with the grid transformer(s) concerned, the supply being obtained where necessary via a suitable automatic voltage selection scheme; or

(b) the use of the **Substation** 240 V phase-to-neutral selected auxiliary supply, provided that this supply is always derived at the **Connection Point** concerned and for the avoidance of doubt is never derived from a standby supply **Generating Unit** or from another part of the **Distribution System**.

CC.A3.3 Scheme Requirements

CC.A3.3.1 The tripping facility should be engineered in accordance with the following reliability considerations:

(a) Dependability

Failure to trip at any one particular **Demand** shedding point would not harm the overall operation of the scheme. However, many failures would have the effect of reducing the amount of **Demand** under low **Frequency Control**. An overall reasonable minimum requirement for the dependability of the **Demand** shedding scheme is 96%, i.e. the average probability of failure of each **Demand** shedding point should be less than 4%. Thus the **Demand** under low **Frequency Control** will not be reduced by more than 4% due to relay failure.

(b) **Outages**

Low **Frequency Demand** shedding schemes will be engineered such that the amount of **Demand** under control is as specified by the **TSO** and is not reduced unacceptably during equipment **Outage** or maintenance conditions.

OPERATING CODE NO. 1
DEMAND FORECASTING

OC1.1 INTRODUCTION

Operating Code No 1 ("OC1") is concerned with **Demand** forecasting and specifies the procedures to be followed and the data to be supplied to the **Transmission System Operator (TSO)** to enable the **TSO** to forecast **Demand** on the **Northern Ireland (NI) System** through the timescales ranging from 3 years in advance (namely part of the **Operational Planning Phase**) through to the **Control Phase** and into real time operation.

OC1.2 OBJECTIVE

The objectives of OC1 are to set out the requirement for **Users** to provide data to the **TSO** to:-

(a) enable the **TSO** insofar as it is able to do so, to maintain a sufficient **Margin** during the **Operational Planning Phase** and the **Programming Phase**; and

(b) enable the **TSO** to know how much **Generating Plant** to **Schedule** and to **Dispatch** (insofar as **Generating Plant** is available) to meet **Demand** on the **NI System** to the **Licence Standards** in the **Control Phase**;

and to specify those factors which the **TSO** will take into account when conducting **Demand** forecasting.

OC1.3 SCOPE

OC1.3.1 OC1 applies to the **TSO** and to **Users** which in this OC1 means **Suppliers**, **Generators**, **Generator Aggregators** and the **DNO**.

OC1.4 PROCEDURE

OC1.4.1 **Users**, as specified below, must provide the following data to the **TSO** at the time and in the manner specified in order to enable the **TSO** to have the relevant data for it to carry out **Demand** forecasting over the periods specified in OC1.1.

OC1.4.1.1 **Energy** Sales

(a) Each **Supplier** must, by the end of week 48 each year, provide to the **TSO** in writing details of its anticipated aggregate annual sales of **Energy** in **GWh** (calculated in accordance with paragraph (c) below) in respect of each of the three following **TSO Financial Years**. If between such annual notifications the anticipated sales of **Energy** for any year materially changes, the **Supplier** must notify the **TSO** in writing without delay giving details in **GWh** of the revised anticipated sales of **Energy**.

(b) The details of anticipated sales of **Energy** notified to the **TSO** pursuant to (a) above must contain the **Supplier's** best estimate, acting as a reasonable and prudent **Supplier** in all the circumstances.

(c) Each **Supplier** must (subject as provided below), in order to avoid duplication of anticipated sales of **Energy** which another **Supplier** may be submitting to the **TSO**, only include in its estimate of **Energy** sales provided to the **TSO** pursuant to (a) above those anticipated sales of **Energy** in respect of which it has a contractual arrangement and those sales which would be necessary to meet any anticipated development in **Energy** sales relating to that contractual arrangement. However, where a contractual arrangement exists for only a portion of the period for which the data is to be supplied, the data will include an assumption for the remainder of the period (which must be identified as such in the submission) unless the **Supplier** is aware that the **Energy** sales will be made by another **Supplier**.

OC1.4.1.2 Generation Output

The output in **MW** and **Mvar** of **Power Stations** with a **Registered Capacity** of 5**MW** and above will be monitored by the **TSO** at the **Control Centre**. The output in **MW** and **Mvar** of **Power Stations** with a **Registered Capacity** of 2**MW** and above but below 5**MW** may be monitored by the **TSO** at the **Control Centre** or the **TSO** may request the **Generator** to provide to it a half hourly printout of metered output in respect of such a **Power Station**, which the **Generator** must provide. This is to enable the **TSO** to be able to assess the total **Demand** on the **NI System** and it will in due course form part of the historical records which are vital in carrying out **Demand** forecasting.

OC1.4.1.3 **Loading** Profiles

(a) Each **Generator** and, where appropriate each **Generator Aggregator** shall at the request of the **TSO**, in respect of each of its **Independent Generating Plants** with a **Registered Capacity** of 2**MW** and above, in respect of each of its **CDGUs** and, in the case of a **Generator Aggregator**, in respect of **Aggregated Generating Units** with a **Registered Capacity** of 2**MW** and above in relation to **Predicted Outputs**, submit to the **TSO** in writing by the end of week 45 each year an estimate of **Loading** profiles for such **Plant** or **Aggregated Generating Units** for each of the next three following **TSO Financial Years**. Such estimate will include the half hourly output in **MW** for each day in the period. If between each annual notification the estimate of **Loading** profiles materially changes, the **Generator** and, where appropriate the **Generator Aggregator** must notify the **TSO** in writing without delay giving details of the revised estimate of the **Loading** profiles for the relevant **Independent Generating Plant, CDGUs**, or **Aggregated Generating Units** as the case may be.

(b) Each **Generator** and, where appropriate, each **Generator Aggregator** shall at the request of the **TSO**, in respect of each of its **Independent Generating Plants** other than **WFPSs** with a **Registered Capacity** of **2MW** and above or, in the case of a **Generator Aggregator**, in respect of **Aggregated Generating Units** other than **WFPSs** with a **Registered Capacity** of 2**MW** and above, submit to the **TSO** in writing by 1000 hours each day an estimate of **Loading** profiles for such **Plant** or for such **Aggregated Generating Units** for the following **Schedule Day**, save that it will be for the next three

Schedule Days when given on a Friday and the next two **Schedule Days** when given on a Saturday (no notice being required on a Sunday) and shall be for such longer period as the **TSO** may specify, at least one week in advance, to cover holiday periods. Such estimate will include the half hourly output in **MW** for such **Plant** or **Aggregated Generating Units** as the case may be.

(c) Each **Generator** and, where appropriate, each **Generator Aggregator** shall at the request of the **TSO,** in respect of each of its **Independent Generating Plants** that is a **WFPS** or, where appropriate, in respect of **Aggregated Generating Units** that are **WFPSs** with a **Registered Capacity** of 2**MW** and above submit to the **TSO** in writing by 0600 hours on Friday an estimate of **Loading** profiles for such **Plant** or **Aggregated Generating Units** as the case may be for the following **Schedule Week.**

OC1.5 **DEMAND** FORECASTS

OC1.5.1 The following factors will be taken into account by the **TSO** when conducting **Demand** forecasting in the **Operational Planning Phase** and in the **Programming Phase**:-

(a) historic generation output information submitted by **Users** or monitored by the **TSO** in accordance with OC1.4.1.2;

(b) local factors known to the **TSO** in advance which may affect **Demand** on the **NI System**, for example trade holidays and school holidays;

(c) anticipated **Loading** profiles submitted by **Generators** and, where appropriate, **Generator Aggregators** in respect of **Independent Generating Plant**, **CDGUs**, or, in the case of a **Generator Aggregator**, **Aggregating Generating Units** pursuant to OC1.4.1.3;

(d) prospective new demand for **Energy** exceeding 2**MW** on the **NI System** submitted in accordance with the terms of the Planning Code;

(e) **Customer Demand Management** of which the **TSO**, is aware in accordance with OC4;

(f) estimated **Energy** sales information submitted by **Suppliers** pursuant to OC1.4.1.1;

(g) anticipated transfers across **Interconnectors** and the **Inter-jurisdictional Tie Lines** between Northern Ireland and the Republic of Ireland; and

(h) other information supplied by **Users**.

The peak daily **Demand** forecast in the **Operational Planning Phase** will become the **Average Cold Spell Demand** forecast which is utilised by the **TSO** to determine whether the **Licence Standards** can be met.

OC1.5.2 The following factors will be taken into account by the **TSO** when conducting **Demand** forecasting in the **Control Phase**:-

(a) historic load curves which the **TSO** considers to be relevant in the **Control Phase**, for example, in respect of the same or a similar day in the previous year or previous week;

(b) local factors known to the **TSO** in advance which may affect **Demand** on the **NI System**, for example trade holidays and school holidays;

(c) anticipated **Loading** profiles submitted by **Generators** in respect of **Independent Generating Plant** pursuant to OC1.4.1.3;

(d) weather forecasts and the current and historic weather conditions;

(e) **Demand Control** of which the **TSO** is aware in accordance with OC4;

(f) anticipated transfers across **Interconnectors** and the **Inter-jurisdictional Tie Lines** between Northern Ireland and the Republic of Ireland; and

(g) other information supplied by **Users**.

OPERATING CODE NO. 2
OPERATIONAL PLANNING

OC2.1 INTRODUCTION

OC2.1.1 **Operational Planning** involves planning through various timescales, the matching of generating capacity with forecast demand on the **All-Island Networks** together with a reserve of generation to provide the **Margin** taking into account **Outages** of **CDGUs** (and/or in the case of a **CCGT Installation**, **CCGT Modules** as provided in OC2), **Dispatchable WFPSs, Controllable WFPSs, Power Station Equipment** and **Outages** of and constraints on parts of the **NI System** and taking into account the output of **Independent Generating Plant** and transfers of electricity across any **Interconnector** and the **Inter-jurisdictional Tie Line** between Northern Ireland and the Republic of Ireland, in order to maintain the security and integrity of the **NI System**.

OC2.1.2 In general terms there is an "envelope of opportunity" for the release of **CDGUs, Dispatchable WFPSs, Controllable WFPSs** and **Power Station Equipment** and of parts of the **NI System** for **Outages** in accordance with this OC2. The envelope is determined by reference to the excess of the total generating capacity available (including transfers across any **Interconnector** and taking account of the output of **Independent Generating Plant**) over the sum of **Demand** plus the **Margin** at the relevant time.

OC2.1.3 OC2 sets out the data required by the **TSO** from **Generators** in order to conduct the co-ordinated **Operational Planning** process, and the procedures to be adopted by the **TSO** in the planning and co-ordination of **CDGU Outages**, (and/or in the case of a **CCGT Installation**, **Outages** of **CCGT Modules** as provided in OC2), **Dispatchable WFPSs Outages, Controllable WFPS Outages, Power Station Equipment Outages** and **NI System Outages** in accordance with this OC2.

OC2.1.4 In OC2, "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.

OC2.2 OBJECTIVE

OC2.2.1 The objective of OC2 is to ensure, as far as possible, that the **TSO**, in conjunction with the **Other TSO**, co-ordinates, optimises and approves **Outages** of **CDGUs** (and/or in the case of **CCGT Installations**, **CCGT Modules** as provided in OC2), **Dispatchable WFPSs, Controllable WFPSs** and **Power Station Equipment**, taking into account **System Outages** on the **NI System** and the **Other TSO's Transmission System**, to minimise so far as possible the number and effect of constraints on the **NI System**, the **Other Transmission System** and the **Inter-jurisdictional Tie Line** between Northern Ireland and the Republic of Ireland and in order to ensure that, so far as possible, forecast **Demand** plus the **Margin** (taking account of the output of **Independent Generating Plant** and transfers across any **Interconnector** and the **Inter-jurisdictional Tie Line** between Northern Ireland and the Republic of Ireland**)** is met.

OC2.3 SCOPE

OC2.3.1 OC2 applies to the **TSO**, **Generators**, **Interconnector Owners, Large Demand Customers** with a **Demand** greater than 10 **MW**, and the **DNO**.

OC2.4 INFORMATION EXCHANGE WITH **GENERATORS** IN RESPECT OF **INDEPENDENT GENERATING PLANT**

OC2.4.1 Such information as the **TSO** may reasonably require relating to **Independent Generating Plant** shall, where required by the **TSO** for the purposes of this OC2, be provided by the relevant **Generator** to the **TSO**. The **TSO** shall notify **Generators** with **Independent Generating Plant** of aspects of the **NI System Outage** plan which may affect the **Generator** in accordance with OC2.8. Notifications under OC5 may also be relevant.

OC2.5 SUMMARY

OC2.5.1 Under OC2 the interaction between the **TSO** and **Generators** with **CDGUs (**and/or in the case of a **CCGT Installation**, **CCGT Modules** as provided in OC2**)** and/or **Dispatchable WFPSs** and/or **Controllable WFPSs** will be as follows:-

OC2.5.1 (a) each **Generator** and in respect of **Outages** of **CDGUs** (and/or in the case of a **CCGT Installation**, **CCGT Modules**, as provided under OC2), **Controllable WFPSs, Dispatchable WFPSs** and/or **Power Station Equipment**; and

OC2.5.1 (b) the **TSO** and each **Generator** in respect of **NI System Outages** relevant to such **Generator**.

The provisions of this paragraph also apply to **Interconnector Owners** as if references to "**Generator**" and to a **Generator**'s units were references to an "**Interconnector Owner**" in respect of an "**Interconnector**".

OC2.5.2 Under OC2 the interaction between the **TSO** and **Large Demand Customers** with a **Demand** greater than 10 **MW** will be in respect of **NI System Outages** relevant to each **Large Demand Customers** with a **Demand** greater than 10 **MW.**

OC2.5.3 (a) In relation to all matters to be undertaken pursuant to this OC2, including (without limitation) making requests for **Outages** and supplying information to the **TSO** concerning overruns, each **Generator** must act reasonably and in good faith. Without limitation to such obligation, each **Generator** shall act in accordance with **Prudent Operating Practice** in planning its **Outages** and, in particular, so as to avoid a situation arising in which the **Generator** is obliged to request an **Outage** during the **Outage Planning** process by reason of obligations imposed upon the **Generator** by statute as a consequence of the **Generator** not having planned its **Outages** in accordance with **Prudent Operating Practice**, for example, by not having planned its **Outages** sufficiently far in advance of any statutory time limit. The provisions of this paragraph also apply to **Interconnector Owners** as if

references to "**Generator**" and to a **Generator**'s units were references to an "**Interconnector Owner**" in respect of an "**Interconnector**".

OC2.5.3 (b) In relation to all matters to be undertaken pursuant to this OC2, each **Large Demand Customers** with a **Demand** greater than 10 **MW** must act reasonably and in good faith.

OC2.5.3 (c) The **TSO** must, in relation to all matters to be undertaken pursuant to this OC2, including (without limitation) the co-ordination of **Generators'** or **Interconnector Owners' Outages**, act reasonably and in good faith in the discharge of its obligations.

OC2.5.4 Where in this OC2 there are references to outages of **CCGT Modules**, such provisions only apply where the **Power Station Agreement** and/or **Generating Unit Agreement** relating to the **CCGT Installation** of which the **CCGT Module** forms part so provides.

OC2.6 **OUTAGE** PLANNING PROCEDURES FOR **CDGUs, Dispatchable WFPSs, Controllable WFPSs,** AND/OR **POWER STATION EQUIPMENT**

OC2.6.1 Indicative Term **Operational Planning** - Planning for Years 4 to 7

The provisions of this section OC2.6 shall only apply if reasonably required and requested by the **TSO**. In each calendar year:

OC2.6.1 (a) By the End of March

Each **Generator** will provide the **TSO** in writing with a suggested **Indicative Outage Programme** for Years 4 to 7 which will contain the following information in relation to each proposed **Planned Outage** in the suggested **Provisional Outage Programme**:-

(i) identity of the **CDGUs** (or in the case of a **CCGT Installation**, **CCGT Module(s)** therein), **Controllable WFPSs, Dispatchable WFPSs** (or **Generating Unit(s)** therein) and/or the **Power Station Equipment** concerned;

(ii) **MW** concerned (i.e. **MW** which will not be **Available** as a result of the **Outage** and that which will, notwithstanding the **Outage**, still be **Available**, if any);

(iii) required duration of **Outage**;

(iv) preferred **Start Date** or range of **Start Dates**;

(v) whether the **Outage** is a **Flexible Planned Outage** or an **Inflexible Planned Outage**, provided that the **Generator** must not declare an **Outage** to be an **Inflexible Planned Outage** unless **Prudent Operating Practice** would not permit the **Outage** to be declared as a **Flexible Planned Outage**;

(vi) if it is a **Flexible Planned Outage**,

(aa) the period for which the **Outage** could be deferred at the request of the **TSO**, which period shall be not less than 30 days in length;

(bb) the period for which the **Outage** could be advanced at the request of the **TSO**, which period shall be not less than 10 days in length; and

(vii) where relevant, that the **Generator** wishes to take the **Outage** in order to enable it to comply with obligations relating to the operation and maintenance of **CDGUs** (or in the case of a **CCGT Installation**, **CCGT Module(s)** therein), **Controllable WFPSs** or **Dispatchable WFPS** (or **Generating Unit(s)** therein) and/or **Power Station Equipment** imposed upon the **Generator** by statute and, if so, the latest date by which the **Outage** must be taken.

In relation to sub-paragraph (v), the **Generator** must provide the **TSO** with such evidence as it may reasonably require in order to substantiate the declaration as an **Inflexible Planned Outage** and, if the **Generator** fails to establish to the **TSO 's** reasonable satisfaction that the **Outage** is required to be an **Inflexible Planned Outage**, the **Outage** shall be deemed to have been submitted as a **Flexible Planned Outage** with an attendant **Flexible Planned Outage Period** of 10 days for advancement and 30 days for deferment.

Details of proposed **Outages** for years 4 to 7 are required to signal adequately in advance major **Outages** which could impact on capacity adequacy or on the **TSO's** or the **Other TSO's Transmission Outage Maintenance and Development Programmes** and are indicative only. In rolling over the **Provisional Outage Programme** from one year to the next each **Generator** shall not be constrained in making any submission to any previous **Indicative Outage Programme.**

The provisions of this paragraph OC2.6.1(a) also apply to **Interconnector Owners** as if references to "**Generator**" and to a **Generator**'s units were references to an "**Interconnector Owner**" in respect of an "**Interconnector**".

OC2.6.1 (b) Between the End of March and the End of September

(i) The **TSO** will be calculating the weekly **Maximisation Generating Capacity** required from **Generating Plant** in Years 4 and 7 taking into account insofar as the **TSO** may consider to be appropriate:-

(aa) **Demand Forecasts**;

(bb) The **TSO's** estimate of **Customer Demand Management**;

(cc) forecast **Availability** of **CDGUs**;

(dd) forecast output available from any **Interconnectors**;

(ee) the **Margin** as set by the **TSO**;

(ff) **NI System** constraints and constraints on the **Inter-jurisdictional Tie Line** between Northern Ireland and the Republic of Ireland; and

(gg) **NI System Outages** to ensure that, in general, these have the least restraint on **CDGU**, **Dispatchable WFPS, Controllable WFPS** and **Power Station Equipment Outages**.

(ii) The calculation under (i) will, with anticipated **Outages** other than **Planned Outages** then taken into account, effectively define the envelope of opportunity for **Planned Outages** of **CDGUs,** (or in the case of a **CCGT Installation**, **CCGT Module(s)** therein), **Dispatchable WFPSs, Controllable WFPSs** (or **Generating Unit(s)** therein) and/or **Power Station Equipment**.

During this period the **TSO** may, as appropriate, contact each **Generator** which has supplied information to seek clarification on information received or such additional relevant information as is reasonable. The provisions of this paragraph OC2.6.1(b) also apply to **Interconnector Owners** as if references to "**Generator**" and to a **Generator**'s units were references to an "**Interconnector Owner**" in respect of an "**Interconnector**".

OC2.6.2 Long Term **Operational Planning** - Planning for Years 2 and 3

In each calendar year:

OC2.6.2 (a) By the End of March

Each **Generator** will provide the **TSO** in writing with a suggested **Provisional Outage Programme** for Years 2 and 3 (that part of the programme relating to Year 2 showing any updates to the programme for Year 3 which, by effluxion of time, has become that for Year 2) which will contain the following information in relation to each proposed **Planned Outage** in the suggested **Provisional Outage Programme**:-

(i) identity of the **CDGUs** (or in the case of a **CCGT Installation**, **CCGT Module(s)** therein), **Controllable WFPSs, Dispatchable WFPSs** (or **Generating Unit(s)** therein) and/or the **Power Station Equipment** concerned;

(ii) **MW** concerned (i.e. **MW** which will not be **Available** as a result of the **Outage** and that which will, notwithstanding the **Outage**, still be **Available**, if any);

(iii) required duration of **Outage**;

(iv) preferred **Start Date** and **Start Time** or range of **Start Dates** and **Start Times**;

(v) whether the **Outage** is a **Flexible Planned Outage** or an **Inflexible Planned Outage**, provided that the **Generator** must not declare an **Outage** to be an **Inflexible Planned Outage** unless **Prudent Operating Practice** would not permit the **Outage** to be declared as a **Flexible Planned Outage**;

(vi) if it is a **Flexible Planned Outage**,

(aa) the period for which the **Outage** could be deferred at the request of the **TSO**, which period shall be not less than 30 days in length;

(bb) the period for which the **Outage** could be advanced at the request of the **TSO**, which period shall be not less than 10 days in length; and

(vii) where relevant, that the **Generator** wishes to take the **Outage** in order to enable it to comply with obligations relating to the operation and maintenance of **CDGUs** (or in the case of a **CCGT Installation**, **CCGT Module(s)** therein), **Controllable WFPSs** (or **Generating Unit(s)** therein) and/or **Power Station Equipment** imposed upon the **Generator** by statute and, if so, the latest date by which the **Outage** must be taken.

In relation to sub-paragraph (v), the **Generator** must provide the **TSO** with such evidence as it may reasonably require in order to substantiate the declaration as an **Inflexible Planned Outage** and, if the **Generator** fails to establish to the **TSO 's** reasonable satisfaction that the **Outage** is required to be an **Inflexible Planned Outage**, the **Outage** shall be deemed to have been submitted as a **Flexible Planned Outage** with an attendant **Flexible Planned Outage Period** of 10 days for advancement and 30 days for deferment.

The updates to the programme for Year 3 when, by effluxion of time, Year 3 has become Year 2, may only reflect the **Generator**'s reasonable response to changed circumstances and changes which, in the context of the **Provisional Outage Programme** as a whole, are minimal in their effect on the operation of the **NI System**; otherwise it must reflect the **Provisional Outage Programme** for Year 3 issued the previous September.

The provisions of this paragraph OC2.6.2(a) also apply to **Interconnector Owners** as if references to "**Generator**" and to a **Generator**'s units were references to an "**Interconnector Owner**" in respect of an "**Interconnector**".

OC2.6.2 (b) Between the End of March and the End of September

(i) The **TSO** will be calculating the weekly **Maximisation Generating Capacity** required from **Generating Plant** in Years 2 and 3 taking into account insofar as the **TSO** may consider to be appropriate:-

(aa) **Demand Forecasts**;

(bb) The **TSO's** estimate of **Customer Demand Management**;

(cc) forecast **Availability** of **CDGUs**;

(dd) forecast output available from any **Interconnectors**;

(ee) the **Margin** as set by the **TSO**;

(ff) **NI System** constraints and constraints on the **Inter-jurisdictional Tie Line** between Northern Ireland and the Republic of Ireland; and

(gg) **NI System Outages** to ensure that, in general, these have the least restraint on **CDGU**, **Dispatchable WFPS, Controllable WFPS** and **Power Station Equipment Outages**.

(ii) The calculation under (i) will, with anticipated **Outages** other than **Planned Outages** then taken into account, effectively define the envelope of opportunity for **Planned Outages** of **CDGUs** (or in the case of a **CCGT Installation**, **CCGT Module(s)** therein), **Dispatchable WFPSs, Controllable WFPSs** (or **Generating Unit(s)** therein) and/or **Power Station Equipment**.

During this period the **TSO** may, as appropriate, contact each **Generator** which has supplied information to seek clarification on information received or such additional relevant information as is reasonable. The provisions of this paragraph OC2.6.2 (b) also apply to **Interconnector Owners** as if references to "**Generator**" and to a **Generator**'s units were references to an "**Interconnector Owner**" in respect of an "**Interconnector**".

OC2.6.2 (c) <u>By the End of September</u>

(i) The **TSO** will, in conjunction with the **Other TSO** and having taken into account the information notified to it pursuant to (a), the factors specified in (b) and, having discussed it with the **Generator** if appropriate, provide each **Generator** in writing with a **Provisional Outage Programme** showing the **CDGUs** (or in the case of a **CCGT Installation**, **CCGT Module(s)** therein), **Dispatchable WFPSs, Controllable WFPSs** (or **Generating Unit(s)** therein) and/or **Power Station Equipment** it may potentially withdraw from service during each week of Years 2 and 3 for a **Planned Outage** (including, for the avoidance of doubt, both **Flexible Planned Outages** and **Inflexible Planned Outages**)

and showing the **Flexible Planned Outage Periods**, by way of amendment to, or confirmation of, the suggested **Provisional Outage Programme** submitted by the **Generator**. When preparing the **Provisional Outage Programme** with respect to an **Interconnector**, the **TSO** shall take into account the arrangements it has in place under its Operating procedures with National Grid Electricity Transmission.

(ii) The **Provisional Outage Programme** may differ from the suggested **Provisional Outage Programme** as follows:-

(aa) **Flexible Planned Outages** (and associated **Flexible Planned Outage Periods**) and **Inflexible Planned Outages** may have been moved to co-ordinate all **Outage** proposals received by the **TSO** or generally for reasons relating to the proper operation of the **NI System** and the **Other TSO's Transmission System**. When dealing with Year 2, the **TSO** will give priority to including proposed **Inflexible Planned Outages** for the dates proposed by the **Generator** in the case of newly proposed **Inflexible Planned Outages** and for the dates included in the **Provisional Outage Programme** prepared the previous September in the case of **Inflexible Planned Outages** which were included in that **Provisional Outage Programme**;

(bb) a **Flexible Planned Outage** may have been re-designated as an **Inflexible Planned Outage**;

(cc) in addition, when preparing the **Provisional Outage Programmes** for Year 3 and for Year 2, where in the opinion of the **TSO** the **Licence Standards** could not otherwise be met, the **TSO** may request that a **Flexible Planned Outage** proposed by the **Generator** be deferred to a specific date (with an attendant **Flexible Planned Outage Period**) in the following year (then Year 4 or Year 3, as the case may be) and given priority over all other **Outages** in subsequent planning for that year. The **Generator** must accept such request unless this would not be in accordance with **Prudent Operating Practice**, in which case (subject to (iii) below) the **Outage** shall be included in the **Provisional Outage Programme** for Year 3 or Year 2, as the case may be;

provided that in Year 2 only (but not in Year 3) the **TSO** may not move a **Planned Outage** relating to which the **Generator** has informed the **TSO** under OC2.6.2(a)(vii) that it needs it to comply with statutory obligations, if to do so would result in the **Generator** being in breach of those statutory obligations. However, the **TSO** may discuss the **Planned Outage** with the **Generator** and may request the **Generator** to approach the relevant authorities for an

extension of time in order to avoid the breach of those statutory obligations. The **Generator** must accede to that request and use reasonable endeavours to obtain such an extension. In the case of a **Generator** with **PPA CDGUs**, the provisions of GC13.2 shall be imported into (and for the purposes of the **TSO Licence**, regarded as forming part of) this OC2**.**6.2(c)(ii). The **Generator** must, in all cases, inform the **TSO** of the position. In the event that an extension is obtained, the **TSO** may (subject to the other provisions of this paragraph (c)(ii)) move the **Planned Outage** accordingly.

(iii) In addition, where in the opinion of the **TSO** the **Licence Standards** could not otherwise be met, the **TSO** may (by giving the **Generator** a written notice designated as being under this OC2.6.2(c)(iii)) request:-

(aa) that a **Flexible Planned Outage** or an **Inflexible Planned Outage** which:-

(1) (where planning for Year 3) was requested by the **Generator** (and in the case of a **Flexible Planned Outage** was not deferred to Year 4 under (ii)(cc) above); or

(2) (where planning for Year 2) was shown in the **Provisional Outage Programme** for such year (prepared the previous September as the Year 3 programme) or is newly requested by the **Generator** (such request not reflecting a change in any **Outage** included in the **Provisional Outage Programme** prepared the previous September as the Year 3 programme);

be excluded from the **Provisional Outage Programme**; or

(bb) that an **Inflexible Planned Outage** which was proposed by the **Generator** be re-designated as a **Flexible Planned Outage** (with an attendant **Flexible Planned Outage Period** not exceeding 10 days for advancement and 30 days for deferment).

In the case of a **Generator** with **PPA CDGUs**, the provisions of GC13.1 shall be imported into (and for the purposes of the **TSO Licence**, regarded as forming part of) this OC2.6.2(c)(iii).

(iv) Subject to (iii) above, the amendments may be made by the **TSO** in relation to Year 2, even if the offered **Planned Outages** in the suggested **Provisional Outage Programme** reflect the **Provisional Outage Programme** for Year 3 issued the previous September, to the extent necessary for the **TSO** to carry out its obligations in relation to **Operational Planning**.

The provisions of this paragraph OC2.6.2(c) also apply to **Interconnector Owners** as if references to "**Generator**" and to a **Generator**'s units were references to an "**Interconnector Owner**" in respect of an "**Interconnector**".

OC2.6.2 (d) By the End of October

(i) Where a **Generator** objects to the **Provisional Outage Programme** showing the **CDGUs** (or in the case of a **CCGT Installation**, **CCGT Module(s)** therein), **Dispatchable WFPSs, Controllable WFPSs** (or **Generating Unit(s)** therein) and/or **Power Station Equipment** it can withdraw from service during each week of Years 2 and 3 for **Planned Outage** it may contact the **TSO** to explain its concerns and the **TSO** and that **Generator** will then discuss the problem and seek to resolve it.

(ii) The resolution of the problem may require the **TSO** to contact other **Generators** and joint meetings of parties may be convened by the **TSO**. A **Generator** which notifies the **TSO** of its objections in accordance with (i) above may request that such a meeting be convened and the **TSO** will give due and reasonable consideration to such request. The need for further discussions, be they on the telephone or at meetings, can only be determined at the time.

(iii) In the event of the above discussions not producing an agreed result, the **TSO** will determine the **Provisional Outage Programme**. With respect to an **Interconnector**, when determining the **Provisional Outage Programme**, the **TSO** shall take into account the arrangements it has in place under its Operating procedures with National Grid Electricity Transmission.

(iv) This paragraph (d) does not override paragraph (c) above.

The provisions of this paragraph OC2.6.2(d) also apply to **Interconnector Owners** as if references to "**Generator**" and to a **Generator**'s units were references to an "**Interconnector Owner**" in respect of an "**Interconnector**".

OC2.6.3 Medium Term **Operational Planning** - Planning for Year 1

The **Outage** programme for Year 2 forming part of the **Provisional Outage Programme** established under OC2.6.2 will become the Outage programme for Year 1 (until updated in accordance with this OC2.6.3) when, by effluxion of time, Year 2 becomes Year 1.

In each calendar year:

OC2.6.3 (a) By the End of March

Each **Generator** will provide the **TSO** in writing with its suggested **Final Outage Programme** for Year 1 (showing any updates to the outage programme for Year 2 which, by effluxion of time, has become that for Year 1), which will then, in accordance with this OC2, become the **Final Outage Programme**. For the avoidance of doubt, the suggested **Final Outage Programme** will contain the following information in relation to each proposed **Planned Outage** in the suggested **Final Outage Programme**:-

(i) identity of the **CDGUs** (or in the case of a **CCGT Installation**, **CCGT Module(s)** therein), **Dispatchable WFPSs, Controllable WFPSs** (or **Generating Unit(s)** therein) and/or the **Power Station Equipment** concerned;

(ii) **MW** concerned (i.e. **MW** which will not be **Available** as a result of the **Outage** and that which will, notwithstanding the **Outage**, still be **Available** (if any));

(iii) required duration of **Outage**;

(iv) preferred **Start Date** and **Start Time** or range of **Start Dates** and **Start Times**;

(v) whether the **Outage** is a **Flexible Planned Outage** or an **Inflexible Planned Outage**, provided that the **Generator** must not declare an **Outage** to be an **Inflexible Planned Outage** unless **Prudent Operating Practice** would not permit the **Outage** to be declared as a **Flexible Planned Outage**;

(vi) if it is a **Flexible Planned Outage**,

(aa) the period for which the **Outage** could be deferred at the request of the **TSO**, which period shall be not less than 30 days in length;

(bb) the period for which the **Outage** could be advanced at the request of the **TSO**, which period shall be not less than 10 days in length; and

(vii) where relevant, that the **Generator** wishes to take the **Outage** in order to enable it to comply with obligations relating to the operation and maintenance of **CDGUs** (or in the case of a **CCGT Installation**, **CCGT Module(s)** therein), **Dispatchable WFPSs, Controllable WFPSs** (or **Generating Unit(s)** therein) and/or **Power Station Equipment** imposed upon the **Generator** by statute and, if so, the latest date by which the **Outage** must be taken.

In relation to sub-paragraph (v), the **Generator** must provide the **TSO** with such evidence as it may reasonably require in order to substantiate the declaration as an **Inflexible Planned Outage** and, if the **Generator** fails to establish to the **TSO** '**s** reasonable satisfaction that the **Outage** is required to be an **Inflexible Planned Outage**, the **Outage** shall be deemed to have been

submitted as a **Flexible Planned Outage** with an attendant **Flexible Planned Outage Period** of 10 days for advancement and 30 days for deferment.

The updates to the programme for Year 2 when, by effluxion of time, Year 2 has become Year 1, may only reflect the **Generator's** reasonable response to changed circumstances and changes which, in the context of the **Provisional Outage Programme** as a whole, are minimal in their effect on the operation of the **NI System** and the **Other TSO's Transmission System**; otherwise it must reflect the **Provisional Outage Programme** for Year 2 issued the previous September.

The provisions of this paragraph OC2.6.3(a) also apply to **Interconnector Owners** as if references to "**Generator**" and to a **Generator**'s units were references to an "**Interconnector Owner**" in respect of an "**Interconnector**".

OC2.6.3 (b) Between the End of March and the End of June

The **TSO** will be considering the suggested **Final Outage Programme** in the light of the factors set out in OC2.6.2(b) and the requirement for **Minimum Demand Regulation** and will be analysing whether the **Margin** for the period can be met. With respect to an **Interconnector**, when considering the **Final Outage Programme**, the **TSO** shall take into account the arrangements it has in place under its Operating procedures with National Grid Electricity Transmission.

OC2.6.3 (c) By the End of June

(i) The **TSO** will provide each **Generator** in writing with a draft **Final Outage Programme** showing the **CDGUs** (or in the case of a **CCGT Installation**, **CCGT Module(s)** therein), **Dispatchable WFPSs, Controllable WFPSs** (or **Generating Unit(s)** therein) and/or **Power Station Equipment** it may potentially withdraw from service during each week of Year 1 for a **Planned Outage** (including, for the avoidance of doubt, both **Flexible Planned Outages** and **Inflexible Planned Outages**) and showing the **Flexible Planned Outage Periods**, by way of amendment to, or confirmation of, the suggested **Final Outage Programme** submitted by the **Generator**. With respect to an **Interconnector**, when preparing the draft **Final Outage Programme**, the **TSO** shall take into account the arrangements it has in place under its Operating procedures with National Grid Electricity Transmission.

(ii) The draft **Final Outage Programme** may differ from the suggested **Final Outage Programme** as follows:-

(aa) **Flexible Planned Outages** (and associated **Flexible Planned Outage Periods**) may have been moved to co-ordinate all **Outage** proposals received by the **TSO** or

generally for reasons relating to the proper operation of the **NI System** and the **Other TSO's Transmission System**;

(bb) a **Flexible Planned Outage** may have been re-designated as an **Inflexible Planned Outage**;

provided that the **TSO** may not move a **Planned Outage** relating to which the **Generator** has informed the **TSO** under OC2.6.3(a)(vii) that it needs it to comply with statutory obligations, if to do so would result in the **Generator** being in breach of those statutory obligations. However, the **TSO** may discuss the **Planned Outage** with the **Generator** and may request the **Generator** to approach the relevant authorities for an extension of time in order to avoid the breach of those statutory obligations. The **Generator** must accede to that request and use reasonable endeavours to obtain such an extension. In the case of a **Generator** with **PPA CDGUs**, the provisions of GC13.2 shall be imported into (and, for the purposes of the the **TSO Licence**, regarded as forming part of) this OC2.6.3(c)(ii). The **Generator** must, in all cases, inform the **TSO** of the position. In the event that an extension is obtained the **TSO** may (subject to the other provisions of this paragraph (c)(ii)) move the **Planned Outage** accordingly.

(iii) In addition, where in the opinion of the **TSO** the **Licence Standards** could not otherwise be met, the **TSO** may (by giving to the **Generator** a written notice designated as being under this OC2.6.3(c)(iii)) request:

(aa) that a **Flexible Planned Outage** or an **Inflexible Planned Outage** which was shown in the **Provisional Outage Programme** (prepared the previous September as the Year 2 programme) or is newly requested by the **Generator** (such request not reflecting a change in any **Outage** included in the **Provisional Outage Programme** prepared the previous September as the Year 2 programme) be excluded from the **Provisional Outage Programme**; or

(bb) that an **Inflexible Planned Outage** which was shown in the **Provisional Outage Programme** prepared the previous September as the Year 2 programme, be re-designated as a **Flexible Planned Outage** (with an attendant **Flexible Planned Outage Period** not exceeding 10 days for advancement and 30 days for deferment), or that the **Start Date** thereof (shown in the **Provisional Outage Programme** prepared the previous September) be moved.

In the case of a **Generator** with **PPA CDGUs**, the provisions of GC13.1 should be imported into (and, for the purposes of the **TSO Licence**, regarded as forming part of) this OC2.6.3(c)(iii).

(iv) Subject to sub-paragraph (iii) above, the amendments may be made by the **TSO** in relation to Year 1 even if the offered **Planned Outages** in the suggested **Provisional Outage Programme** reflect the **Provisional Outage Programme** for Year 2 issued the previous September to the extent necessary for the **TSO** to carry out its obligations in relation to **Operational Planning**.

The provisions of this paragraph OC2.6.3(c) also apply to **Interconnector Owners** as if references to "**Generator**" and to a **Generator**'s units were references to an "**Interconnector Owner**" in respect of an "**Interconnector**".

OC2.6.3 (d) By the End of July

Where a **Generator** or an **Interconnector Owner** objects to any changes to the suggested **Final Outage Programme**, equivalent provisions to those set out in OC2.6.2(d) will apply.

OC2.6.3 (e) Between the End of June and the End of September

The **TSO** will be considering the draft **Final Outage Programme** in the light of the factors set out in OC2.6.2(b), any changes as a result of (d) above and the requirement for **Minimum Demand Regulation** and will be analysing whether the **Margin** for the period can be met. With respect to an **Interconnector**, when considering the draft **Final Outage Programme**, the **TSO** shall take into account the arrangements it has in place under its Operating procedures with National Grid Electricity Transmission.

OC2.6.3 (f) By the End of September

(i) The **TSO** will notify each **Generator** in writing of any further changes (if any) to the draft **Final Outage Programme** by the issue of a **Final Outage Programme** showing the **CDGUs** (or, in the case of a **CCGT Installation**, **CCGT Module(s)**), **Dispatchable WFPSs, Controllable WFPSs** (or **Generating Unit(s)** therein) and/or **Power Station Equipment** it may potentially withdraw from service during each week of Year 1 for a **Planned Outage** and showing the **Flexible Planned Outage Periods**.

(ii) The **Final Outage Programme** may differ from the draft **Final Outage Programme** as follows:-

(aa) **Flexible Planned Outages** (and associated **Flexible Planned Outage Periods**) may have been moved to co-ordinate all **Outage** proposals received by the **TSO** or generally for reasons relating to the proper operation of the **NI System** and the **Other TSO's Transmission System**;

(bb) a **Flexible Planned Outage** may have been re-designated as an **Inflexible Planned Outage**;

provided that the **TSO** may not move a **Planned Outage** relating to which the **Generator** has informed the **TSO** under OC2.6.3(a)(vii) that it needs it to comply with statutory obligations, if to do so would result in the **Generator** being in breach of those statutory obligations. However, the **TSO** may discuss the **Planned Outage** with the **Generator** and may request the **Generator** to approach the relevant authorities for an extension of time in order to avoid the breach of those statutory obligations. The **Generator** must accede to that request and use reasonable endeavours to obtain such an extension. In the case of a **Generator** with **PPA CDGUs**, the provisions of GC13.2 shall be imported into (and for the purposes of the **TSO Licence**, regarded as forming part of) this OC2.6.3(f)(ii). The **Generator** must, in all cases, inform the **TSO** of the position. In the event that an extension is obtained, the **TSO** may (subject to the other provisions of this paragraph (f)(ii)) move the **Planned Outage** accordingly.

(iii) In addition, where in the opinion of the **TSO** the **Licence Standards** could not otherwise be met, the **TSO** may (by giving the **Generator** a written notice designated as being under this OC2.6.3(f)(iii)) request:

(aa) that a **Flexible Planned Outage** or an **Inflexible Planned Outage** which was shown in the draft **Final Outage Programme** be excluded from the **Final Outage Programme**; or

(bb) that an **Inflexible Planned Outage** which was shown in the draft **Final Outage Programme** be re-designated as a **Flexible Planned Outage** (with an attendant **Flexible Planned Outage Period** not exceeding 10 days for advancement and 30 days for deferment) or that the **Start Date** thereof (shown in the draft **Final Outage Programme**) be moved;

In the case of a **Generator** with **PPA CDGUs**, the provisions of GC13.1 shall be imported into (and, for the purposes of the **TSO Licence**, regarded as forming part of) this OC2.6.3(f)(iii).

The provisions of this paragraph OC2.6.3(f) also apply to **Interconnector Owners** as if references to "**Generator**" and to a **Generator**'s units were references to an "**Interconnector Owner**" in respect of an "**Interconnector**".

OC2.6.4 Short Term **Operational Planning** - Planning for Year 0

Throughout each calendar year and from 1st October of the preceding year:

OC2.6.4 (a) The **TSO** will monitor the **Margin** continuously in the light of any movement of **Planned Outages**, the factors specified in OC2.6.2(b)(i), the

incidence of **Outages** other than **Planned Outages** and the requirement for **Minimum Demand Regulation**.

OC2.6.4 (b) **Flexible Planned Outage** Movements

In the case of a **Flexible Planned Outage**, the **TSO** may, upon giving a **Generator** written notice of not less than 7 days (in the case of advancement, before the advanced **Start Date** and in the case of deferral, before the original **Start Date**) require the **Start Date** or **Start Time** of the **Flexible Planned Outage** to be advanced or deferred within the **Flexible Planned Outage Period**, and the **Generator** will take that **Outage** in accordance with the revised timing set out in that notice. Such written notice may be given in the preceding year where the **TSO** could not otherwise give the **Generator** a sufficient period of notice. The provisions of this paragraph OC2.6.4(b) also apply to **Interconnector Owners** as if references to "**Generator**" were references to an "**Interconnector Owner**".

OC2.6.4 (c) Amendments to **Planned Outages**

In the case of:-

(i) a **Flexible Planned Outage** which the **TSO** would like to move outside the **Flexible Planned Outage Period**; or

(ii) a **Flexible Planned Outage** which the **TSO** would like to move within the **Flexible Planned Outage Period** on less than seven days' notice (in the case of advancement, before the advanced **Start Date** and, in the case of deferral, before the original **Start Date**);

(iii) an **Inflexible Planned Outage** which the **TSO** would like to move;

the **TSO** may, upon giving a **Generator** written notice, request that the **Start Date** or **Start Time** of a **Planned Outage** be advanced or deferred. If the **Generator** agrees to such advancement or deferral, or the **TSO** and the **Generator** agree to some other advancement or deferral, the **Generator** will take the **Outage** in accordance with that agreement. The provisions of this paragraph OC2.6.4(c) also apply to **Interconnector Owners** as if references to "**Generator**" were references to an "**Interconnector Owner**".

OC2.6.4 (d) A **Generator** may, on reasonable grounds, by notice in writing submitted to the **TSO** at any time during Year 0, request that a **CDGU** (or in the case of a **CCGT Installation**, **CCGT Module(s)** therein) and/or **Generating Unit(s)** within a **Dispatchable WFPSs** or a **Controllable WFPS**, for which there is a **Flexible Planned Outage** or an **Inflexible Planned Outage**, as specified in the **Final Outage Programme**, remain in service and that one or more of the other **CDGUs** (or in the case of a **CCGT Installation**, **CCGT Module(s)** therein) and/or **Generating Unit(s)** within a **Dispatchable WFPSs** or a **Controllable WFPS**, as the case may be, at the same **Power**

Station (having substantially the same **Contracted Capacity** and **Contracted Technical Parameters,** or equivalent parameters in the case of **CCGT Modules**, **CDGUs** other than PPA **CDGUs**, and/or **Generating Unit(s)** within a **Dispatchable WFPSs** or a **Controllable WFPS**) be permitted to be taken out of service during the period for which such **Flexible Planned Outage** or **Inflexible Planned Outage** has been planned. The **TSO** shall not unreasonably withhold its consent to such substitution and, if the **TSO** does consent, the **Final Outage Programme** shall be amended and the **Generator** shall be entitled to take the **Outage** accordingly. The provisions of this paragraph OC2.6.4(d) also apply to **Interconnector Owners** as if references to "**Generator**" and to a **Generator**'s units were references to an "**Interconnector Owner**" in respect of an "**Interconnector**".

OC2.6.4 (e) **Short Term Planned Maintenance Outage**

(i) A **Generator** may at any time in Year 0 request the **TSO**, by giving not less than 7 days' notice before the earliest **Start Date**, for a **Short Term Planned Maintenance Outage**. The request notice must contain the following information:-

(aa) identity of the **CDGUs** (or in the case of a **CCGT Installation**, **CCGT Module(s)** therein), **Dispatchable WFPSs, Controllable WFPS(s)** (or **Generating Unit(s)** therein) and/or the **Power Station Equipment** concerned;

(bb) **MW** concerned (i.e.**MW** which would not be **Available** as a result of the **Outage** and that which would, notwithstanding the **Outage**, still be **Available** (if any));

(cc) required duration of **Outage** (which must not exceed 72 hours); and

(dd) preferred **Start Date** and **Start Time** or range of **Start Dates** and **Start Times**.

The **Generator** may (if it is the case), in addition, state that the **Outage** is required for the purposes of maintaining the brush gear of a **CDGU** (or in the case of a **CCGT Installation**, **CCGT Module(s)** therein), and/or a **Dispatchable WFPSs** or a **Controllable WFPS (or Generating Unit(s)** therein), in accordance with (v) below.

(ii) On receipt of a request notice under (i) above, the **TSO** shall consider the request and shall, having discussed the position with the **Generator**, reply within one **Business Day** in writing indicating:-

(aa) acceptance of the request, confirming the requested **Start Time** and duration of the **STPM Outage**;

(bb) proposals for the advancement or deferment of the **STPM Outage** if taken, indicating alternative **Start Time** and duration; or

(cc) rejection of the request.

(iii) If the **TSO** has accepted the request, the **STPM Outage**, if taken, must be taken by the **Generator** in accordance with the request. If the **TSO** has indicated an alternative **Start Time** and/or duration, the **TSO** and the **Generator** must discuss the alternative and any other options which may arise during the discussions. If agreement is reached, then the **Outage**, if taken, must be taken by the **Generator** in accordance with the agreement. If the request is refused by the **TSO** or if agreement is not reached then, subject to (iv) below, the **Outage** may not be taken by the **Generator**.

(iv) If, in respect of a particular **CDGU, Dispatchable WFPSs, Controllable WFPS** or item of **Power Station Equipment**, the **TSO** has rejected requests made under (i) above on two successive occasions which were not less than 7 days apart, the **TSO** may not reject a third request. However, the **TSO** may require that such **Outage**, if it is to be during the three months of peak winter **Demand**, be deferred if in the **TSO** 's reasonable opinion (were the **Outage** not to be deferred):

(aa) the **Licence Standards** could not be met; or

(bb) there would otherwise be insufficient generating capacity to meet forecast **Demand** and the **Margin**;

such deferral to be for so long as those circumstances exist, but in any event not be beyond the end of the month following the end of the three months of peak winter **Demand**. For the avoidance of doubt, such provision is without prejudice to the **TSO 's** rights under OC2.6.7.

(v) Where a **Generator** has requested an **STPM Outage** in respect of a **CDGU** (or in the case of a **CCGT Installation**, **CCGT Module(s)** therein), and/or **Dispatchable WFPSs** and/or **Controllable WFPS** (or **Generating Unit(s)** therein), which the **Generator** identified in the notice served under (i) above as requiring such **Outage** for the purposes of routine brush gear maintenance, the **TSO** shall permit the **Generator** to take the **Outage** within 14 days after the date of service of the request at such time as the **TSO** shall, in its absolute discretion, determine.

(vi) In the event that an **STPM Outage** is scheduled pursuant to this OC2.6.4(e), the **TSO** shall by notice in writing confirm the details thereof within one **Business Day** after the details of the **STPM**

Outage have been settled. Such notice shall contain the following information:-

(aa) the identity of the **CDGU(s)** (or in the case of a **CCGT Installation(s)**, **CCGT Module(s)** therein), and/or **Dispatchable WFPSs** and/or **Controllable WFPS(s)** (or **Generating Unit(s)** therein) and/or the **Power Station Equipment** concerned;

(bb) **MW** concerned (i.e. **MW** which will not be **Available** as a result of the **Outage** and that which will, notwithstanding the **Outage**, still be **Available** (if any));

(cc) duration of the **Outage**; and

(dd) the **Start Date** and **Start Time**.

The provisions of this paragraph OC2.6.4(e) also apply to **Interconnector Owners** as if references to "**Generator**" and to a **Generator**'s units were references to an "**Interconnector Owner**" in respect of an "**Interconnector**".

OC2.6.5 **Notified Unplanned Outages**

OC2.6.5 (a) A **Generator** must, if it considers that a **CDGU** (or in the case of a **CCGT Installation**, **CCGT Module(s)** therein), and/or a **Dispatchable WFPSs** and/or a **Controllable WFPS** (or **Generating Unit(s)** therein) and/or an item of **Power Station Equipment** will require an **Outage** which cannot reasonably be deferred to become a **Planned Outage** or a **Short Term Planned Maintenance Outage** but of which it has some warning, give the **TSO** as much notice as is reasonably possible. Such **Outage** is known as an **Notified Unplanned Outage** and the **Generator's** notice as an **Outage Notice**. Such notice must include an identification of the **CDGU** (or in the case of a **CCGT Installation**, **CCGT Module(s)** therein), and/or **Dispatchable WFPSs** and/or **Controllable WFPS** (or **Generating Unit(s)** therein) or item of **Power Station Equipment**, as the case may be, the expected **Start Date** and **Start Time** and duration of the **Notified Unplanned Outage** and the nature of the **Outage** together with the **MW** concerned (i.e. **MW** which will not be **Available** as a result of the **Outage** and that which will still be **Available** (if any)). The **TSO** must acknowledge such notification as soon as reasonably possible after the notification was received by the **TSO**. The provisions of this paragraph OC2.6.5(a) also apply to **Interconnector Owners** as if references to "**Generator**" and to a **Generator**'s units were references to an "**Interconnector Owner**" in respect of an "**Interconnector**".

OC2.6.5 (b) The **TSO** may request the **Generator** to advance or defer the **Outage** and if the **Generator** agrees to such a request, he shall send the **TSO** a written notice confirming this agreement, which the **TSO** will acknowledge, and the **Generator** must then (subject to any intervening **Outage**) take the **Outage** in accordance with that agreement. The provisions of this paragraph

OC2.6.5(b) also apply to **Interconnector Owners** as if references to "**Generator**" were references to an "**Interconnector Owner**".

OC2.6.5 (c) **24 Hour Recall**

In relation to an **Notified Unplanned Outage** notified to it pursuant to (a) above, the **TSO** may request the **Generator** to retain the **CDGU** (or in the case of a **CCGT Installation**, **CCGT Module(s)** therein), and/or **Dispatchable WFPSs** and/or **Controllable WFPS** (or **Generating Unit(s)** therein) or item of **Power Station Equipment** on **24 Hour Recall**, the period of which shall be the whole or part of the period identified by the **Generator** as the expected period of the **Outage**. If the **Generator** agrees to such a request to retain the **CDGU** (or in the case of a **CCGT Installation**, **CCGT Module(s)** therein), and/or **Dispatchable WFPSs** and/or **Controllable WFPS** (or **Generating Unit(s)** therein) or item of **Power Station Equipment** on **24 Hour Recall**, the **Generator** shall send to the **TSO** a notice confirming the period within which the **CDGU** (or in the case of a **CCGT Installation**, **CCGT Module(s)** therein), and/or **Dispatchable WFPSs** and/or **Controllable WFPS** (or **Generating Unit(s)** therein) or item of **Power Station Equipment** will be on **24 Hour Recall**. The **TSO** and the **Generator** may discuss amendments to the period suggested by the **TSO**, and any agreed amendment shall be reflected in the above notice. The **TSO** shall acknowledge the notice within 2 hours, such acknowledgement confirming that the **Outage** will be a **24 Hour Recall Outage**. The provisions of this paragraph OC2.6.5(c) also apply to **Interconnector Owners** as if references to "**Generator**" and to a **Generator**'s units were references to an "**Interconnector Owner**" in respect of an "**Interconnector**".

OC2.6.6 **Forced Outages**

OC2.6.6.1 In the event that a **CDGU** (or in the case of a **CCGT Installation**, **CCGT Module(s)** therein), and/or **Dispatchable WFPSs** and/or **Controllable WFPS** (or **Generating Unit(s)** therein) or item of **Power Station Equipment** suffers a **Forced Outage**, the relevant **Generator** shall, as soon as possible after the commencement of the **Outage** and in any event within 48 hours thereof, inform the **TSO** by written notice (in addition to the notifications required to be given by the **Generator** in such circumstances under SDC1.4.5, SDC2.4.2.10(b) and SDC2.4.2.15) of the **Generator's** best estimate of the date and time by which the **CDGU** (or in the case of a **CCGT Installation**, **CCGT Module(s)** therein), and/or **Controllable WFPS** (or **Generating Unit(s)** therein) or item of **Power Station Equipment** is likely to have been repaired and restored to its full level of **Availability**. (It should be noted that a **Forced Outage** of an item of **Power Station Equipment** may result in a reduced level of **Availability** of the associated **CDGU** and/or **Dispatchable WFPSs** and/or **Controllable WFPS.)** If the **Generator** is unable for any reason to comply with this requirement, it shall not later than 48 hours after the commencement of the **Forced Outage**, provide to the **TSO** such information as is then known to the **Generator** regarding the date and time of return from such **Outage** and shall provide such updates thereafter as the **TSO** may reasonably require. The **Generator** shall then inform the **TSO** by written notice of the **Generator's** best estimate of the date and time by which the **CDGU** (or in the case of a **CCGT Installation**, **CCGT Module(s)**

therein), and/or **Dispatchable WFPSs** and/or **Controllable WFPS** (or **Generating Unit(s)** therein) or item of **Power Station Equipment** is likely to have been repaired and restored to its full level of **Availability** as soon as the **Generator** is able. The provisions of this paragraph OC2.6.6.1 also apply to **Interconnector Owners** as if references to "**Generator**" and to a **Generator**'s units were references to an "**Interconnector Owner**" in respect of an "**Interconnector**".

OC2.6.6.2 Pursuant to and subject to SDC1.4.3, a **Generator** shall use all reasonable endeavours to ensure that, following a **Forced Outage**, the **CDGU** (or in the case of a **CCGT Installation**, **CCGT Module(s)** therein), and/or **Dispatchable WFPSs** and/or **Controllable WFPS** (or **Generating Unit(s)** therein) or item of **Power Station Equipment** (as the case may be) is repaired and restored to its full level of **Availability** as soon as possible and in accordance with **Prudent Operating Practice**. The provisions of this paragraph OC2.6.6.2 also apply to **Interconnector Owners** as if references to "**Generator**" and to a **Generator**'s units were references to an "**Interconnector Owner**" in respect of an "**Interconnector**".

OC2.6.7 Release of **CDGUs, Dispatchable WFPSs, Controllable WFPSs** and **Power Station Equipment**

OC2.6.7.1 **Generators** may only undertake **Planned Outages** with the **TSO 's** agreement in accordance with **Outage** programmes produced pursuant to this OC2.

OC2.6.7.2 In real time operation **CDGUs** (or in the case of a **CCGT Installation**, **CCGT Module(s)** therein), **Dispatchable WFPSs, Controllable WFPSs** (or **Generating Unit(s)** therein) and **Power Station Equipment** must not actually be withdrawn for a **Planned Outage** or a **Short Term Planned Maintenance Outage** without the **TSO's** express formal permission for such release according to the procedures set out in OC2.6.7.3, which permission shall be given except as described in OC2.6.7.4.

OC2.6.7.3 The **TSO 's** express formal permission shall specify (consistent with the details resulting from the application of the foregoing procedures of this OC2):

OC2.6.7.3 (a) the identity of the **CDGU** (or in the case of a **CCGT Installation**, **CCGT Module(s)** therein), and/or **Dispatchable WFPSs** and/or **Controllable WFPSs** (or **Generating Unit(s)** therein) and/or **Power Station Equipment** and **MW** concerned (**i.e**. **MW** which will not be **Available** as a result of the **Outage** and that which will, notwithstanding the **Outage**, still be **Available** (if any));

OC2.6.7.3 (b) the duration of the **Outage**; and

OC2.6.7.3 (c) the **Start Date** and **Start Time**.

OC2.6.7.4 (a) Notwithstanding anything else contained in this OC2, the **TSO** shall be entitled, on the basis set out in (b) below, to determine whether to release a **CDGU** (or in the case of a **CCGT Installation**, **CCGT Module(s)** therein), and/or a **Dispatchable WFPS** and/or a **Controllable WFPS** (or **Generating Unit(s)** therein) or an item of **Power Station Equipment** for a **Planned Outage** or a **Short Term Planned Maintenance Outage**.

OC2.6.7.4 (b) Subject to (c) below the **TSO** may withhold its permission for the release of a **CDGU** (or in the case of a **CCGT Installation**, **CCGT Module(s)** therein), and/or a **Dispatchable WFPS** and/or a **Controllable WFPS** (or **Generating Unit(s)** therein) or any item of **Power Station Equipment** for a **Planned Outage** or a **Short Term Planned Maintenance Outage** where such **Outage** has previously been planned in accordance with this OC2 where, in the **TSO 's** reasonable opinion (were such **Outage** not to be deferred):

(i) the **Licence Standards** could not be met; or

(ii) there would be insufficient generating capacity to meet forecast **Demand** and the **Margin**;

and may require the **Generator** to continue to defer such **Outage** for so long as those circumstances exist.

OC2.6.7.4 (c) In the case of a **Generator** with **PPA CDGUs**, the provisions of GC13.3 shall be imported into (and, for the purposes of the **TSO Licence**, shall be regarded as forming part of) this OC2.6.7.4. Nothing in this OC2.6.7.4 shall limit any other power which the **TSO** has in this OC2 to grant or withhold absolutely its permission for an **Outage** under this OC2.

OC2.6.7.5 The provisions of this OC2.6.7 also apply to **Interconnector Owners** as if references to "**Generator**" and to a **Generator**'s units were references to an "**Interconnector Owner**" in respect of an "**Interconnector**".

OC2.6.8 Return to service and overruns

OC2.6.8.1 (a) In relation to a **Planned Outage**, not later than 7 days before the expiry of the **Flexible Planned Outage Period** or the **Inflexible Planned Outage Period** (as the case may be), the **Generator** must inform the **TSO** by notice in writing, in such form as the **TSO** may reasonably require, (a "**RTS Notice**") either that its **CDGU** (or in the case of a **CCGT Installation**, **CCGT Module(s)** therein), and/or **Dispatchable WFPS** and/or **Controllable WFPS** (or **Generating Unit(s)** therein) or **Power Station Equipment** is returning to service earlier than expected, or at the time and date expected, or later than expected and if, upon return, it is expected to be **Fully Available**, the **Generator** shall so state. Where a **CDGU** (or in the case of a **CCGT Installation**, **CCGT Module(s)** therein), and/or **Dispatchable WFPSs** and/or **Controllable WFPS** (or **Generating Unit(s)** therein) is not expected to be **Fully Available** upon its return to service, the **Generator** shall state the **MW** level at which the **CDGU** (or in the case of a **CCGT Installation**, **CCGT Module(s)** therein), and/or **Dispatchable WFPS** and/or **Controllable WFPS** (or **Generating Unit(s)** therein) is expected to be **Available**. In the case of a **CDGU** which is capable of firing both on coal and on oil, the **Availability** must be stated for each **Designated Fuel**.

OC2.6.8.1 (b) In the case of a return from a **Planned Outage** earlier than expected, the **RTS Notice** must be given as far as possible in advance of return but in any event not later than required under (a) above.

OC2.6.8.1 (c) In the case of a return from a **Planned Outage** later than expected, the **RTS Notice** must be given not later than required under (a) above and shall state the reason for the delay in the return of the **CDGU** (or in the case of a **CCGT Installation**, **CCGT Module(s)** therein), the **TSO** and/or **Controllable WFPS** (or **Generating Unit(s)** therein) or **Power Station Equipment** to service and the **Generator's** best estimate of the date and time at which the **CDGU** (or in the case of a **CCGT Installation**, **CCGT Module(s)** therein), and/or **Controllable WFPS** (or **Generating Unit(s)** therein) or **Power Station Equipment** will return to service.

OC2.6.8.1 (d) If, after giving a **RTS Notice**, the **Generator** becomes aware that any details notified to the **TSO** in such notice are or have become inaccurate, the **Generator** shall give a revised **RTS Notice**.

OC2.6.8.2 Without prejudice to the provisions of SDC1.4.3 (which, for the avoidance of doubt, are not applicable in respect of **Controllable WFPSs),** a **Generator** must use all reasonable endeavours to ensure that, in respect of each **Planned Outage** of the **Generator's CDGUs** (or in the case of a **CCGT Installation**, **CCGT Module(s)** therein), and/or **Dispatchable WFPSs** and/or **Controllable WFPSs** (or **Generating Unit(s)** therein) and **Power Station Equipment**, the **Outage** as included in the **Final Outage Programme** (or as moved in accordance with this OC2) is followed.

OC2.6.8.3 Before returning from any **Outage** other than a **Planned Outage**, a **Generator** must inform the **TSO**, as far in advance as reasonably possible, by notice in writing in such form as the **TSO** may reasonably require, that its **CDGUs** (or in the case of a **CCGT Installation**, **CCGT Module(s)** therein), and/or **Dispatchable WFPSs** and/or **Controllable WFPS** (or **Generating Unit(s)** therein) or **Power Station Equipment** is returning to service. The **Generator** must, in addition, give an **Availability Notice** in accordance with SDC1 on the day prior to the **Schedule Day** on which the **CDGU** (or in the case of a **CCGT Installation**, **CCGT Module(s)** therein), or **Power Station Equipment** (other than **Power Station Equipment** used in the operation of a **Controllable WFPS)** is to return to service. The **Generator** must also give an updated **Availability Notice** amending or confirming the **Availability Notice** for the **Controllable WFPS** on the day prior to the day in the **Schedule Week** on which the **Controllable WFPS** (or **Generating Unit(s)** therein) or **Power Station Equipment** used in the operation of the **Controllable WFPS** is to return to service.

OC2.6.8.4 If at any time during an **Outage** (in the case of a **Planned Outage**, prior to giving a **RTS Notice**) the **Generator** becomes aware that its **CDGU** (or in the case of a **CCGT Installation**, **CCGT Module(s)** therein), or item of **Power Station Equipment** (other than **Power Station Equipment** used in the operation of a **Controllable WFPS)** will not (or is unlikely to) have been maintained, repaired or restored to be **Available** in accordance with SDC1.4.3 by the expiry of the period specified for the duration of the **Outage** in the **Final Outage Programme** or as otherwise notified in the case of **Outages** other than **Planned Outages,** the **Generator** shall notify the **TSO** immediately in writing stating the reason for the delay and the **Generator's** best estimate of the date and time by which the **CDGU** (or

in the case of a **CCGT Installation**, **CCGT Module(s)** therein), or item of **Power Station Equipment** (other than **Power Station Equipment** used in the operation of a **Controllable WFPS)** will actually have been maintained, repaired or restored to be **Available** in accordance with SDC1.4.3. If at any time during an **Outage** (in the case of a **Planned Outage,** prior to giving a **RTS Notice)** the **Generator** becomes aware that its **Dispatchable WFPS** or **Controllable WFPS** (or **Generating Unit(s)** therein) or item of **Power Station Equipment** used in the operation of the **Dispatchable WFPS** or the **Controllable WFPS** will not (or is unlikely to) have been maintained, repaired or restored to be **Available** by the expiry of the period specified for the duration of the **Outage** in the **Final Outage Programme** or as otherwise notified in the case of **Outages** other than **Planned Outages**, the **Generator** shall notify the **TSO** immediately in writing stating the reason for the delay and the **Generator's** best estimate of the date and time by which the **Dispatchable WFPS** or the **Controllable WFPS** (or **Generating Unit(s)** therein) or item of **Power Station Equipment** used in the operation of the **Dispatchable WFPS** or the **Controllable WFPS** will actually have been maintained, repaired or restored to be **Available.**

OC2.6.8.5 The provisions of this OC2.6.8 also apply to **Interconnector Owners** as if references to "**Generator**" and to a **Generator**'s units were references to an "**Interconnector Owner**" in respect of an "**Interconnector**".

OC2.7 ASSESSMENT OF CAPACITY ADEQUACY

In assessing capacity Adequacy the **TSO** shall, in conjunction with the **Other TSO**, estimate **Demand** growth, formulate **Demand Forecasts** and consider **Outages** of **CDGUs** (or in the case of a **CCGT Installation**, **CCGT Module(s)** therein as provided in OC2), **Dispatchable WFPSs, Controllable WFPSs** , **Power Station Equipment** and **Interconnectors.**

OC2.7.1 Capacity Margin for Year 1

If there is a deficit indicated in any week, the **TSO** and the **Other TSO** shall jointly issue a **System Capacity Shortfall Warning**.

OC2.7.2 Capacity Margin for Year 0

If there is a deficit indicated in any day, the **TSO** and the **Other TSO** shall jointly issue a **System Capacity Shortfall Warning**.

OC2.8 **OUTAGE** PLANNING PROCEDURES FOR **NI SYSTEM OUTAGES**

OC2.8.1 Long Term **Operational Planning** - Planning for Years 2 and 3 ahead

The **TSO** shall plan **NI System Outages** required in Years 2 and 3 as a result of construction or refurbishment works taking due account of known requirements. This contrasts with the planning of **NI System Outages** required in Years 0 and 1 ahead when the **TSO** will, in addition, take into account **NI System Outages** required as a result of maintenance. **NI System Outages** and **CDGU** (or in the case of a **CCGT Installation**, **CCGT Module(s)** therein) and/or **Dispatchable WFPS** and/or **Controllable WFPS** (or **Generating Unit(s)** therein) and/or **Power Station Equipment Outages** shall, during Years 2 and 3 but not in Year 1 or later, be co-

ordinated so that, in general, **CDGU** (or in the case of a **CCGT Installation**, **CCGT Module(s)** therein) and/or **Dispatchable WFPS** and/or **Controllable WFPS** (or **Generating Unit(s)** therein) and/or **Power Station Equipment Outages** shall take precedence over **NI System Outages** but subject always, in any particular case, to the **TSO's** discretion to determine otherwise on the basis of reasons relating to the proper operation of the **NI System** and the **Other TSO's Transmission System**. The provisions of this paragraph OC2.8.1 also apply to **Interconnectors** as if references to a **Generator**'s units were references to "**Interconnectors**".

OC2.8.2 In each calendar year:

By the End of September

The **TSO** will draw up a draft **NI System Outage** plan covering the period Years 2 and 3 for the **TSO** internal use and will notify each **Generator** in writing of those aspects of the draft plan which may operationally affect such **Generator** including, in particular, proposed start dates and end dates of relevant **NI System Outages**. The **TSO** will indicate to a **Generator** where a need may exist to use **Intertripping** or other measures including restrictions on the **Dispatch** of **CDGUs** and/or **Dispatchable WFPS** and/or **Controllable WFPSs** to allow the security of the **NI System** to be maintained within the **Licence Standards**. The **TSO** will also inform each **Large Demand Customers** with a **Demand** greater than 10 **MW** of the aspects of the plan which may affect it. The provisions of this paragraph OC2.8.2 also apply to **Interconnector Owners** as if references to "**Generator**" and to a **Generator**'s units were references to an "**Interconnector Owner**" in respect of an "**Interconnector**".

OC2.8.3 Medium Term **Operational Planning** - Planning for Year 1

The plan produced pursuant to OC2.8.2 will become the draft **NI System Outage** plan for Year 1 when, by effluxion of time, Year 2 becomes Year 1. Each calendar year the **TSO** shall update the draft **NI System Outage** plan and shall, in addition, take into account **Outages** required as a result of maintenance work.
In each calendar year:

OC2.8.3 (a) By the End of June

The **TSO** will draw up a draft **NI System Outage** plan and will inform each **Generator** of any potential **Generating Plant** and/or **Dispatchable WFPS** and/or Controllable **WFPS** restrictions which may affect it and generally the impact on the **NI System** in Year 1.

OC2.8.3 (b) By the end of July

Where a **Generator** objects to the proposed restrictions or impact notified to it under (a) above, equivalent provisions to those set out in OC2.6.2(d) will apply.

OC2.8.3 (c) Between the End of June and the end of September

The **TSO** will draw up a final **NI System Outage** plan covering Year 1.

OC2.8.3 (d) By the End of September

(i) The **TSO** will issue the final **NI System Outage** plan for Year 1.

(ii) The **TSO** will notify each **Generator** in writing of those aspects of the plan which may operationally affect such **Generator** including, in particular, proposed start dates and end dates of relevant **NI System Outages**. The **TSO** will also indicate where a need exists to use **Intertripping**, emergency switching, emergency load management or other measures including restrictions on the **Dispatch** of **CDGUs** and/or **Dispatchable WFPS** and/or **Controllable WFPSs** to allow the security of the **NI System** to be maintained within the **Licence Standards**. The **TSO** will also inform each **Large Demand Customers** with a **Demand** greater than 10 **MW** of the aspects of the plan which may affect it.

The provisions of this paragraph OC2.8.3 also apply to **Interconnector Owners** as if references to "**Generator**" and to a **Generator**'s units were references to an "**Interconnector Owner**" in respect of an "**Interconnector**".

OC2.8.4 Short Term **Operational Planning** - Planning in Year 0 Down to the **Programming Phase**

The **NI System Outage** plan for Year 1 issued under OC2.8.3(d) shall become the final plan for Year 0 when by effluxion of time Year 1 becomes Year 0.

OC2.8.5 **Programming Phase**

OC2.8.5 (a) By 11.00 hours Each Thursday

(i) The **TSO** shall update the **NI System Outage** plan for the following one week period beginning on the Friday.

(ii) The **TSO** will notify each **Generator** in writing of those aspects of the plan which may operationally affect such **Generator** including in particular proposed start dates and end dates of relevant **NI System Outages.** The **TSO** will also indicate where a need exists to use **Intertripping**, emergency switching, emergency load management or other measures including restrictions on the **Dispatch** of **CDGUs** and/or **Dispatchable WFPS** and/or **Controllable WFPSs** to allow the security of the **NI System** to be maintained within the **Licence Standards**. The **TSO** will also inform each **Large Demand Customers** with a **Demand** greater than 10 **MW** of the aspects of the plan which may affect it.

OC2.8.5 (b) During the **Programming Phase**

Each **Generator** and the **TSO** will inform each other immediately if there is any unavoidable requirement to depart from the **Outages** and actions determined and notified under paragraph OC2.8.5(a) above. In addition, the

TSO shall notify each **Large Demand Customers** with a **Demand** greater than 10 **MW** to whom it notified details of the updated **NI System Outage** plan pursuant to OC2.8.5(a) of any changes to such details.

The provisions of this paragraph OC2.8.5 also apply to **Interconnector Owners** as if references to "**Generator**" and to a **Generator**'s units were references to an "**Interconnector Owner**" in respect of an "**Interconnector**".

OC2.9 DATA REQUIREMENTS

OC2.9.1 (a) When requested initially under the **Connection Agreement**, and thereafter in calendar week 24 in each calendar year, each **Generator** shall in respect of each of its:-

(i) **CDGUs** other than **CCGT Installation**s, in relation to the **Generation Planning Parameters** and the **Generator Performance Chart**; and/or
(ii) **CCGT Installations** in relation to the **Generation Planning Parameters**; and
(iii) **CCGT Modules** within a **CCGT Installation** in relation to the **Generator Performance Chart**; and/or
(iv) **Dispatchable WFPSs** and **Controllable WFPSs** in relation to the **Generation Planning Parameters** and the **Generator Performance Chart**,

submit to the **TSO** in writing the **Generation Planning Parameters** and the **Generator Performance Chart** (which shall be within the parameters set out in CC.S1.3.2 or, in the case of **Controllable WFPSs,** CC.S2.3.2 and which shall reasonably reflect the true operating characteristics of the **CDGU** and/or **CCGT Module** within a **CCGT Installation** and/or **Dispatchable WFPS** and/or **Controllable WFPS**, as the case may be) to be applied (unless revised under this OC2, in the case of the **Generator Performance Chart**) from the beginning of week 25 onwards, in the **formats** indicated in Appendix 1 for the **Generator Performance Charts** and as set out in Appendix 2 for the **Generation Planning Parameters**.

OC2.9.1 (b) In the case of a **CDGU** which is capable of firing on two different **Designated Fuels** (or fuels in the case of a **CDGU** other than a **PPA CDGU**), the **Generator** must submit to the **TSO**, by separate written notifications, the **Generation Planning Parameters** in accordance with OC2.9.1(a) in respect of each **Designated Fuel** (or fuels in the case of a **CDGU** other than a **PPA CDGU**), each clearly marked to indicate for which fuel it applies.

OC2.9.1 (c) In the case of a **CCGT Module** within a **CCGT Installation**, the **Generator** must submit to the **TSO** details of the availability of any **Back-Up Fuel**.

OC2.9.1 (d) Any changes to the **Generator Performance Chart** or **Generation Planning Parameters** must be notified to the **TSO** promptly.

OC2.9.1 (e) **Generators** should note that the amendments to the composition of **CCGT Installations** may only be made in accordance with the principles set out in PC.A2.3.5. If in accordance with PC.A2.3.5 an amendment is made, any consequential changes to the **Generation Planning Parameters** must be notified to the **TSO** promptly.

OC2.9.2 **The Generator Performance Chart** must be on a **Generating Unit** specific basis at the **Generator Terminals** except in the case of **Dispatchable WFPS** or **Controllable WFPSs,** where it must be on a **Wind Farm Power Station** basis at the **Connection Point** to the **NI System** and must include details of the **Generator Transformer** parameters (or, in the case of **Dispatchable WFPSs** or **Controllable WFPSs**, to the extent present, the main step-up transformer(s) or, otherwise, the step-up transformers that relate exclusively to the operation of each wind turbine generator therein) and demonstrate the limitation on reactive capability of the **NI System** voltage at 3% above nominal.

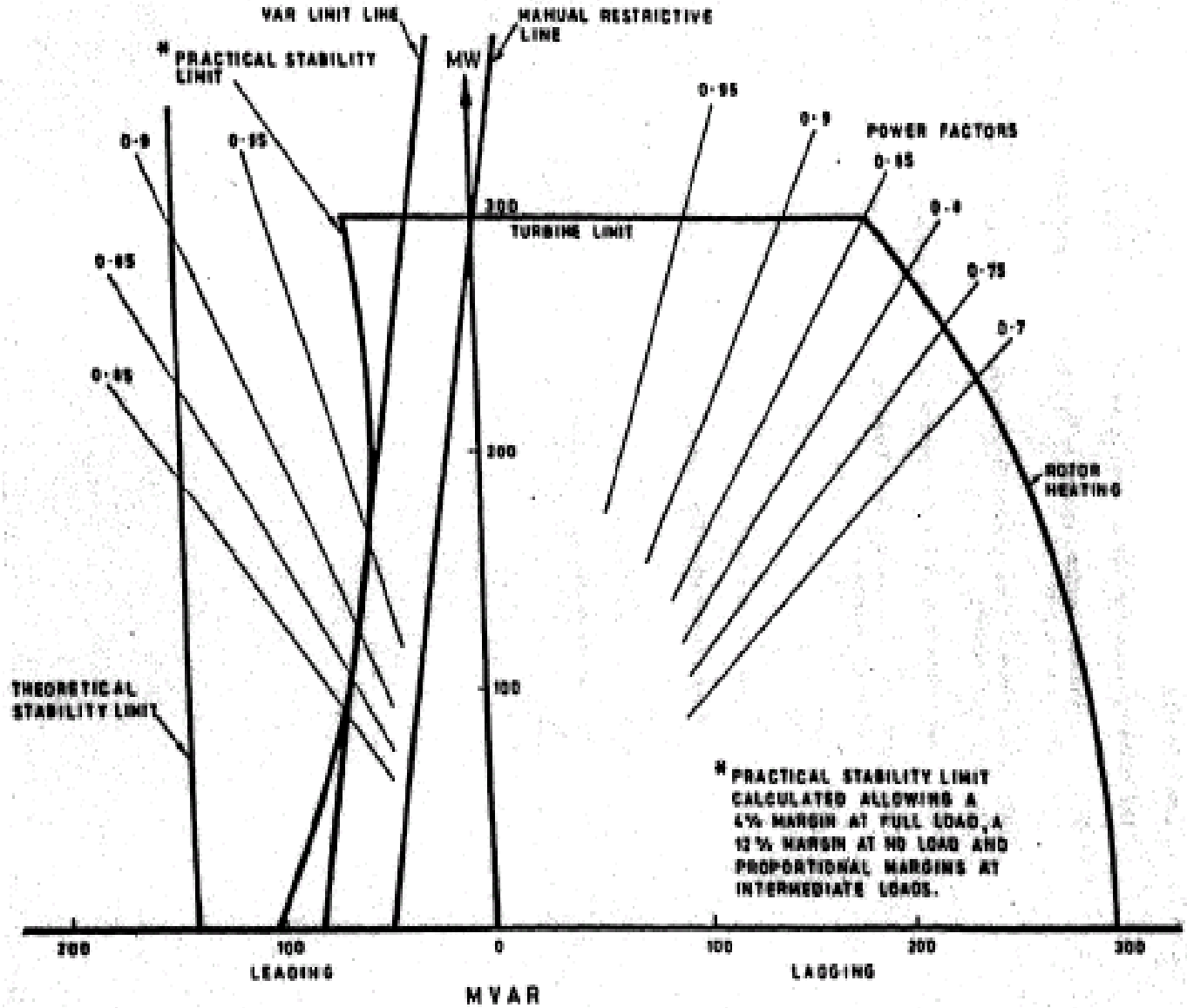
OC2.9.3 For each **CCGT Module**, and any other **Generating Unit** whose performance varies significantly with ambient temperature, the **Generator Performance Chart** shall show curves for at least two values of ambient temperature so that the **TSO** can assess the variation in performance over all likely ambient temperatures by a process of linear interpolation or extrapolation. One of these curves shall be for the ambient temperature at which the **Generating Unit's Output**, or **CCGT Installation's Output**, as appropriate, equals its **Registered Capacity**.

OC2.9.4 The **Generation Planning Parameters** supplied under OC2.9.1 shall be used by the **TSO** for **Operational Planning** purposes only and not in **Scheduling** and **Dispatch** (subject as otherwise permitted in the SDCs).

OC2.9.5 When determining **Operational Planning** timescales, the **TSO** shall use the information contained in the **CCGT Installation Matrix** submitted by the **Generator** under PCA2.3.4.

OC2 **APPENDIX 1**

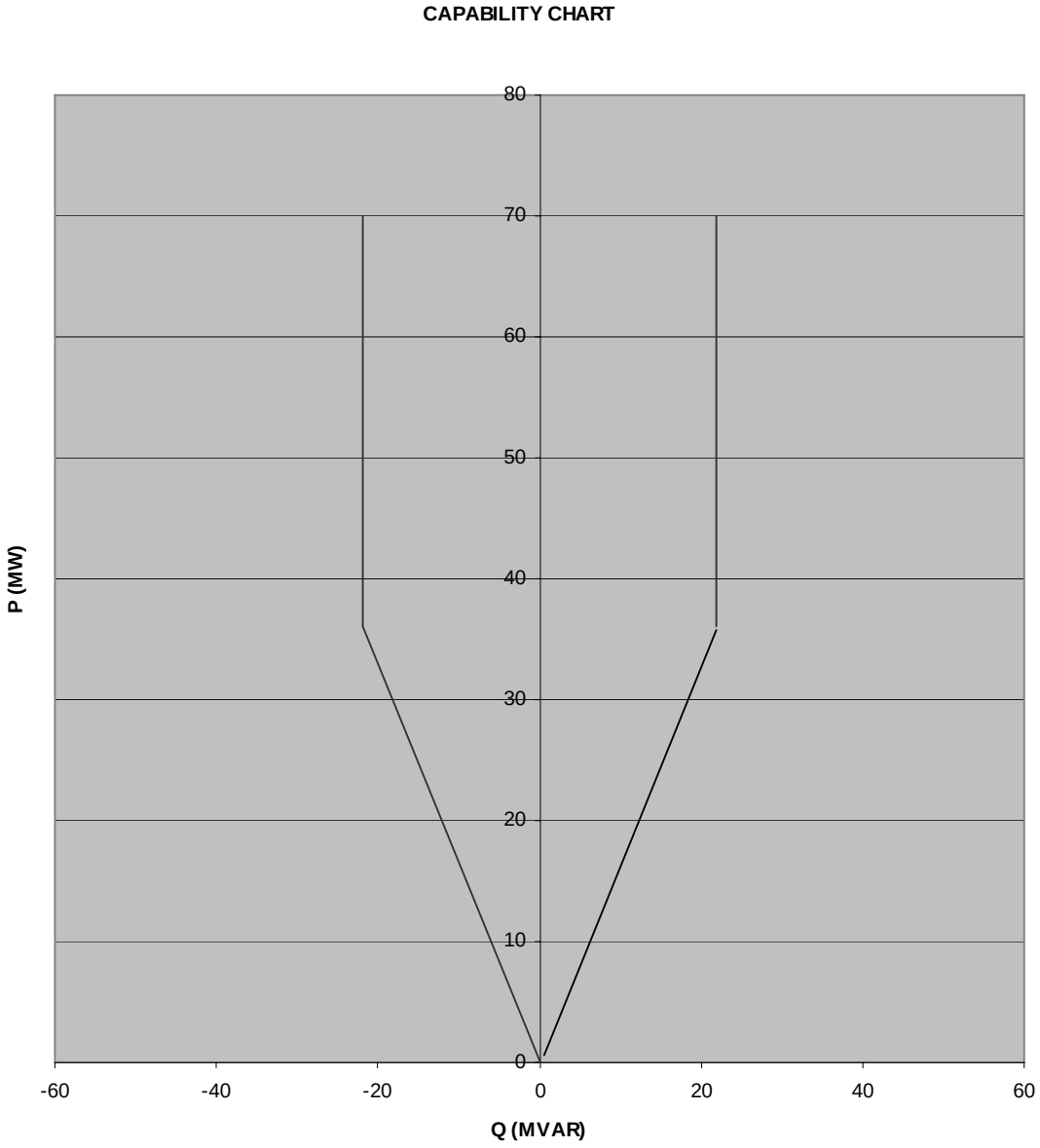
OC2.A1.1 **Capability Chart for CDGUs and CCGT Modules within a CCGT Installation**



CAPABILITY CHART

KOA 1.2 (KCA1.21)

OC2**.A1.2** **Capability Chart for Dispatchable WFPSs** and **Controllable WFPSs**



OC2 **APPENDIX 2**

OC2.A.2.1 **Generation Planning Parameters for CDGUs**

The following parameters are required in respect of each **CDGU**:-

(i) the minimum notice required to **Synchronise** a **Generating Unit** from **De-Synchronisation**;

(ii) the minimum time between **Synchronising** different **Generating Units** in a **Power Station**;

(iii) the minimum block **Load** requirements on **Synchronising**;

(iv) maximum **Generating Unit Loading** rates from **Synchronising** for the following conditions:-
hot;
warm;
cold;

(v) minimum time off **Load**;

(vi) maximum **Generating Unit** de**Loading** rates for the following conditions:-
hot;
warm;
cold;

(vii) maximum allowable starts per year:-
hot;
warm;
cold.

OC2.A.2.2 **Generation Planning Parameters for Dispatchable WFPSs** and **Controllable WFPSs**

The following parameters are required in respect of each **Dispatchable WFPS** and **Controllable WFPS:-**

(i) the minimum time to connect/reconnect the **Dispatchable WFPS** or **Controllable WFPS** (or part thereof) to the **NI System** following a **Dispatch** instruction;

(ii) the minimum time to connect/reconnect the **Dispatchable WFPS** or **Controllable WFPS** (or part thereof) to the **NI System** automatically following a trip of the **Controllable WFPS** (or part thereof) that does not cause damage to the **Controllable WFPS** (or part thereof);

(iii) the maximum rate at which Load can be increased following connection of the **Dispatchable WFPS** and **Controllable WFPS** (or part thereof) to the **NI System**;

(iv) the minimum fault level or voltage at the **Connection Point** below which the **Dispatchable WFPS** or **Controllable WFPS** cannot be connected.

OPERATING CODE NO.3
OPERATING MARGIN

OC3.1 INTRODUCTION

Operating Code No. 3 ("OC3") sets out the different types of reserve which make up the **Operating Margin** that the **TSO** may use in the **Control Phase**.

OC3.2 OBJECTIVE

The objective of OC3 is to set out and describe the types of reserve which may be utilised by the **TSO** acting in conjunction with the **Other TSO** pursuant to the **Scheduling and Dispatch Code**s (SDCs).

OC3.3 SCOPE

OC3 applies to the **TSO**, **Generators** with **Generating Plant** and **Interconnector Owners**.

OC3.4 CONSTITUENTS OF OPERATING MARGIN

The **Operating Margin** comprises **Contingency Reserve** and **Operating Reserve**.

OC3.4.1 **Contingency Reserve**

Contingency Reserve is the margin of generation over forecast demand which is required to be held in Northern Ireland in the period from 24 hours ahead down to real time to cover against uncertainties in generating plant **Availability** and **Interconnector Availability** and against both weather forecast and demand forecast errors. It is provided by **Generating Plant** in Northern Ireland which is not required to be **Synchronised** but which must be held available to **Synchronise** within a defined timescale as provided in OC3.4.6.1.

OC3.4.2 **Operating Reserve**

OC3.4.2.1 **Operating Reserve** is additional output from **Generating Plant** in Northern Ireland which must be realisable in real time operation to respond in order to contribute to containing and correcting any **System Frequency** deviation to an acceptable level, within the limits specified in the Electricity Supply Regulations (N.I.) 1991, in the event of a loss of generation or a loss of import from any **Interconnector** or mismatch between generation output and demand.

OC3.4.2.2 The **Operating Reserve** from **Generating Plant** must be capable of providing response in four distinct time scales:

OC3.4.2.2.1 **Primary Operating Reserve**

The automatic response to **NI System Frequency** changes which is released increasingly from the time of **Frequency** change and fully available by 5 seconds,

and, subject to the **Unit Load Controller** adjustment determined pursuant to the CC where applicable, must be sustainable, for at least 15 seconds.

OC3.4.2.2.2 **Secondary Operating Reserve**

The additional **MW** output compared to the pre-incident output, which is fully available and sustainable over the period from 15 to 90 seconds following an **Event**.

OC3.4.2.2.3 **Tertiary Operating Reserve band 1**

The additional **MW** output required compared to the pre-**Event** output which is fully available and sustainable from 90 seconds to 5 minutes following an **Event**.

OC3.4.2.2.4 **Tertiary Operating Reserve band 2**

The additional **MW** output required compared to the pre-**Event** output which is fully available and sustainable from 5 minutes to 20 minutes following an **Event**.

OC3.4.3 **Replacement Reserve**

The additional **MW** output required compared to the pre-**Event** output which is fully available and sustainable from 20 minutes to 4 hours following an **Event**.

OC3.4.4 **Substitute Reserve**

The additional **MW** output required compared to the pre-**Event** output which is fully available and sustainable from 4 hours to 24 hours following an **Event**.

OC3.4.5 **Demand Control**

Operating Reserve can also be provided by a reduction in **Demand** which is realisable by operation of **Low Frequency Relays** or **Special Protection Schemes.**

The **TSO**, in accordance with its **Licence** and statutory obligations, and acting in conjunction with the **Other TSO** which shall be looking at similar factors in respect of the **Other Transmission** System shall determine the amount of **Operating Reserve** to be carried at any time.. This will not be constrained by the **Trading and Settlement Code**.

OC3.4.6 Provision of **Operating Margin**

OC3.4.6.1 **Contingency Reserve**

This is the reserve over, and above**, Operating Reserve,** which is required in the period from 24 hours ahead (SDC1 **Scheduling**) down to real time to cover against uncertainties of generation output, weather conditions and demand forecast. The amount of **Contingency Reserve** required at the day ahead **Scheduling** stage under SDC1 and in subsequent timescales will be decided by the **TSO** acting in conjunction with the other TSO on the basis of historical trends in the reduction in **Availability** of **CDGUs** and increases in forecast demand up to real time operation.

OC3.4.6.2 **Operating Reserve**

The amount of **Operating Reserve** required at any time will be determined by the **TSO** acting in conjunction with the **Other TSO** having regard to the demand levels, generating plant availability shortfalls and the greater of the largest secured loss of generation on the Island of Ireland or loss of import from or sudden export across any **Interconnectors**. The **TSO** will allocate the **Operating Reserve** to the various classes of **Generating Plant**, to an **Interconnector** and/or to a reduction in the **Demand** initiated by the operation of **Low Frequency Relays** or **Special Protection Schemes** so as to fulfil the required levels of **Primary Operating Reserve**, **Secondary Operating Reserve, Tertiary Operating Reserve band 1** and **Tertiary Operating Reserve band 2**.

OC3.4.7 Instruction of **Operating Margin**

The **TSO** will instruct (as part of the **Dispatch Instructions**), sufficient individual **CDGUs** and **Interconnectors** and/or arrange for sufficient **Low Frequency** disconnection of **Demand** by means of **Special Protection Schemes** so as to fulfil in total the required levels of **Contingency Reserve, Replacement Reserve, Substitute Reserve** and **Operating Reserve** with the required levels of response. Such instructions of **CDGUs** and/or **Interconnectors** will be issued (as part of the **Dispatch Instructions**) pursuant to SDC2.

OC3.5 DATA REQUIREMENTS

The response capability data required for each **CDGU** (and in the case of a **CCGT Installation**, **CCGT Module(s)** therein), in connection with **Operating Reserve** and relating to circumstances when **NI System Frequency** falls to a level which fully opens the **CDGU's** governor valve, is listed in the **Appendix** to OC3 (in the case of an **Open Cycle Gas Turbine Unit**, only the data applicable to an **Open Cycle Gas Turbine Units** should be supplied). This data for all such units should be provided when required initially under the **Connection Agreement** and thereafter in Week 24 in each calendar year and shall be within the parameters set out in Schedule 1 to the CC**.** The provisions of SDC1.4.4.1(b) will apply, with necessary changes of terminology, to any changes to these parameters.

OC3.6 **UNIT LOAD CONTROLLERS**

CC.S1.5 requires certain **CDGUs** specified by the **TSO** (other than **Gas Turbine Units**) to be fitted with **Unit Load Controllers**. Each **Generator** must ensure that each of its **CDGUs** which is subject to this requirement operates with its **Unit Load Controller** in operation unless relieved of this obligation in respect of a particular **CDGU** by the **TSO**. A **Generator** at its **Generating Plant** may request the **TSO 's** agreement for one of its **CDGUs** at that **Generating Plant** to be operated without the **Unit Load Controller** in service. The **TSO 's** agreement will be dependent on the risk that would be imposed on the **NI System**, provided that in any event a **Generator** may take such action as is reasonably necessary to avoid, in the **Generator's** reasonable opinion, an imminent risk of injury to persons or material damage to property (including the **CDGU**).

OC3 APPENDIX

OC3.A.1 **Operating Reserve** to **Frequency** Change

To be given in a tabular form, describing **Primary Operating Reserve, Secondary Operating Reserve, Tertiary Operating Reserve band 1** and **Tertiary Operating Reserve band 2** at different levels of **Load**, ranging from **Minimum Generation** to **Registered Capacity**.

OC3.A.2 **Governor Droop** Characteristics

Governor Droop %

OC3.A.3 Unit Control Options

Maximum droop %
Normal droop %
Minimum droop %

OPERATING CODE NO. 4
DEMAND CONTROL

OC4.1 INTRODUCTION

OC4.1.1 Operating Code No 4 ("OC4") is concerned with the provisions made by the **TSO** and procedures to be followed by the **TSO** and **Users** to permit a reduction in **Demand** in the event that there are insufficient **Generating Plant**, **WFPSs, Independent Generating Plant**, **Demand Side Units** or transfers across any **Interconnectors** and the **Inter-jurisdictional Tie Lines** between Northern Ireland and the Republic of Ireland available to meet **Demand** in all or any part of the **NI System** and/or in the event of problems on the **NI System**, including, without limitation, in the event of both a steady state shortfall of generation and a transient shortfall of generation following a sudden loss of generation. OC4 also covers operating problems such as unacceptable voltage levels and thermal overloads and also the provision of information on any **Demand Control** arrangements by **Suppliers**, including **Demand Control** arrangements providing for the utilisation of controllable **Load** blocks on the **NI System** (for example, by radio teleswitching). OC4 does not override and must be read in conjunction with the **Operating Security Standard**. The **Demand Control** arrangements may also apply where there are insufficient **Generating Plant, Demand Side Units** or transfers to meet demand in all or any part of the **Other Transmission System** and/or in the event of problems on the **Other Transmission System** in circumstances where the **TSO** is able to assist the **Other TSO** and where doing so would not have a detrimental effect on the security of the **NI System**.

OC4.1.2 (a) OC4 deals with the following:-

(i) **Customer Demand Management** initiated by **Suppliers**;

(ii) **Customer Demand Management** initiated by the **TSO** (such as that achieved by directing the timing of supply to a **Customer** in a manner and to the extent agreed for commercial purposes between the **Supplier** and its **Customer** and offered by a **Supplier** to the **TSO** including that resulting from **Load Management Arrangements**);

(iii) **Customer Voltage Reduction** initiated by the **TSO**;

(iv) **Planned Manual Disconnection** (such as **Rota Load Shedding)** and/or **Emergency Manual Disconnection** initiated by the **TSO**;

(v) protection of supply to any part of the **NI System** where system security is weak; and

(vi) **Disconnection** of **Load** blocks by operation of **Automatic Load Shedding Devices** to preserve overall **NI System** security.

The term "**Demand Control**" is used to describe any or all of those methods of controlling **Demand**.

(b) The type of **Demand Control** utilised by the **TSO** in any particular case will depend upon the amount of time between the **TSO** becoming aware of the need for implementing **Demand Control** and the time at which it needs to be implemented. In the event of a sudden and unexpected loss of generation and/or **NI System** problems and, subject to the circumstances set out in OC4.1.1, in the event of a sudden and unexpected loss of generation on the **Other Transmission System** and/or **Other Transmission System** problems, the requisite **Demand Control** will normally be achieved by means of **Automatic Load Shedding** but, occasionally, **Emergency Manual Disconnection** may additionally be required. The amount of time which the **TSO** has in which to implement **Demand Control** will also determine whether **Customer Demand Management** will be implemented before voltage reduction. In all cases when **Demand Control** is necessary, the **TSO** will generally use **Demand Disconnection** as the last option.

OC4.1.3 **Load Shedding** shall not, so far as possible, be exercised in respect of **Protected Customers** and **Contract Customers**. OC4, therefore, applies subject to this exclusion.

OC4.2 OBJECTIVE

OC4.2.1 The objective of OC4 is to detail the provisions required to enable the **TSO** to achieve a reduction in **Demand** to avoid or relieve operating problems on all or any part of the **NI System** and, subject to the circumstances set out at OC4.1.1, the **Other Transmission System**. Subject to OC4.1.3, the **TSO** will utilise **Demand Control** in a manner which does not unduly discriminate against, or unduly prefer, any one or any group of **Customers**. OC4 requires that the **TSO** be notified of any **Demand Control** arrangements entered into or utilised by **Users**.

OC4.3 SCOPE

OC4.3.1 OC4 applies to the **TSO** and to **Users**, which in OC4 means **Suppliers**, **Generators** and the **DNO**.

OC4.4 PROCEDURES

OC4.4.1 **Customer Demand Management**

Customer Demand Management means reducing the level of supply of **Energy** to a **Customer**, **Disconnecting** a **Customer** or directing the timing of supply to a **Customer** in all cases in a manner agreed for commercial purposes between a **Supplier** and its **Customer**.

OC4.4.2 **Customer Demand Management** Initiated by a **Supplier**

OC4.4.2.1 Each **Supplier** which enters into (or amends) an agreement or other arrangement with a **Customer** allowing **Customer Demand Management** must notify the **TSO** in writing in accordance with OC4.4.2.2 of the following when the aggregate of its possible **Customer Demand Management** pursuant to all such agreements or arrangements it has effected can equal or exceed 2 **MW** at any point in time:-

(a) the level of expected and possible **Demand Control** in **MW**;

(b) the circumstances in which the **Customer Demand Management** is expected to be and may be utilised;

(c) the expected duration of **Demand Control** and the maximum permitted;

(d) the expected and possible frequency of initiation; and

(e) the locations at which it is expected that **Demand Control** will be exercised.

The **Supplier** must supply its best estimate to the **TSO** for each item specified above although the **Supplier** will not then become bound to act in accordance with its estimate. The information may be supplied to the **TSO** on an aggregated basis, thus avoiding the ability to identify individual **Customers**, insofar as that is possible without destroying its meaning.

OC4.4.2.2 The notification must be given when the total of such **Customer Demand Management** can equal or exceed 2**MW** at any point in time and thereafter must be updated by the end of March each year in respect of the year commencing on 1st May following such notification in order to permit the **TSO** to reflect the effects of such **Customer Demand Management**. If following the end of March, or initial notification, as the case may be, any of the details change, the **TSO** must be notified in writing by the **Supplier** promptly.

OC4.4.2.3 Each **Supplier** must notify the **TSO** in writing on each occasion that any **Customer Demand Management**, of which it has notified the **TSO** under OC4.4.2.1 and OC4.4.2.2, is planned to be instructed (or has been instructed) by that **Supplier** and which will in aggregate equal or exceed (or has equalled or exceeded) 2**MW** at any point in time other than following an instruction by the **TSO**.

OC4.4.2.4 (a) The notification will, where the **Customer Demand Management** is planned sufficiently in advance, be given by 1400 hours on the day prior to the **Trading Day** on which the **Customer Demand Management** is to be implemented.

(b) Where the **Customer Demand Management** is planned after that time, the **TSO** will be notified as soon as possible after the decision to implement has been made.

(c) If it is not possible to notify in advance, the **Supplier** must notify the **TSO** within 10 minutes of implementation.

(d) Any material change in the details contained in such notice must be notified to the **TSO** in writing as soon as possible and in any event not later than 10 minutes after the implementation of such change. Such notification shall be confirmed to the **TSO** in writing as soon as possible after the notification has been given.

OC4.4.2.5 The notification will contain the following:-

(a) the amount of **Customer Demand Management** planned to be instructed, or which has already been instructed;

(b) the length of time that the **Customer Demand Management** is anticipated to be in force and the time at which it is to commence, or commenced; and

(c) the locations on the **Total System** at which the **Customer Demand Management** is to be, or has been, implemented.

OC4.4.2.6 A **Supplier** which has initiated **Customer Demand Management**, otherwise than pursuant to an instruction from the **TSO**, which has equalled or exceeded 2**MW** in aggregate at any point in time must, in addition, notify the **TSO** of details as to the **Customer Demand Management** which was actually achieved. The notification must be made within 2 weeks of the initiation of such **Customer Demand Management** and (to the extent it differs from the **Customer Demand Management** details supplied already) must contain the **TSO** profiles on a half hourly basis and the amount of **Demand** reduction achieved from such use of **Demand Control**. Such information is required by the **TSO** in order to establish the effect that the level of **Customer Demand Management** actually achieved had on the **NI System**.

OC4.4.2.7 Where a **Supplier** wishes to utilise voltage reduction as **Customer Demand Management** on the **User System** of any of its **Customers**, the **Supplier** must notify the **TSO** of such details of the proposed voltage reduction as the **TSO** reasonably requires in writing as far in advance of the implementation of such voltage reduction as is reasonably practicable. The **Supplier** will need to make adequate arrangements with its **Customers** to prevent any problems arising on such **Customers User Systems** in the event that the **TSO** implements voltage reduction on such **User Systems** at any time whilst voltage reduction utilised by the **Supplier** is in effect. In particular, the **Supplier** must take steps to ensure that the **Customer** is aware that the voltage at the point of supply from the **NI System** may be reduced within the limit set out in the Electricity Supply Regulations (NI) 1991.

OC4.4.3 **Customer Demand Management** Initiated by the **TSO**

OC4.4.3.1 If a **Supplier** would like to make arrangements with the **TSO** whereby the **TSO** would be given the ability to use **Customer Demand Management** which the **Supplier** has arranged for the purposes of **Demand Control**, it shall notify the **TSO** in accordance with OC4.4.3.3 and OC4.4.3.4**.** Each **Supplier** must ensure that it does not, by initiating **Customer Demand Management** itself, limit the **Customer Demand Management** which it has made available to the **TSO** under this OC4.4.3.

OC4.4.3.2 The notification must be given by the **Supplier** to the **TSO** in writing by the end of March each year. If, following the end of March, any of the details change, the **TSO** must be notified in writing by the **Supplier** promptly. By so notifying, the **Supplier** will be agreeing that, throughout the year commencing on 1 May following the notification (or such other date as may be agreed between the **TSO** and the **Supplier**), it will comply with the **TSO's** instructions relating to the **Customer Demand Management** provided these instructions are within the parameters set out in the notification. Any commercial arrangements relating to this are outside the **Grid Code**. For the avoidance of doubt, commercial arrangements cannot override the provisions of the **Grid Code**.

OC4.4.3.3 The notification must contain the following information:-

(a) the amount of the **Demand Control** reduction available;
(b) how often it can be used;
(c) the length of time that **Demand Control** can be used;
(d) the notice required to be given to the **Supplier** by the **TSO**;
(e) any situations under which the available **Customer Demand Management** may be varied or cannot be instructed by the **TSO**;
(f) the duration of the arrangement with the **Customer**; and
(g) any other information which the **Supplier** reasonably considers would be relevant to the **TSO.**

OC4.4.3.4 The **TSO** will, when it considers it necessary, implement the **Customer Demand Management** arranged and made available to it by a **Supplier** within the parameters notified to it.

OC4.4.4 **Customer Voltage Reduction**

OC4.4.4.1 The **TSO** will, insofar as it is able, organise the **NI System** and make such other arrangements as are necessary so that a 6 per cent reduction of voltage supplied to all or any group of **Customers** on a particular part of the **NI System** can be implemented.

OC4.4.4.2 The arrangement will provide for two 3 per cent stages of voltage reduction, which can be applied to all or selected groups of **Customers**.

OC4.4.4.3 The **TSO** will, when it considers it necessary, implement **Customer Voltage Reduction** of either 3 per cent or 6 per cent.

OC.4.4.5 **Planned** and/or **Emergency Manual Disconnection**

OC4.4.5.1 **Planned Manual Disconnection** is the procedure adopted when a generation shortfall and/or **NI System** problems requiring **Demand Control** is clearly forecastable for a protracted period and rotation of **Disconnection** under a **Rota Load Shedding** procedure may be required to ensure equitable treatment, insofar as practicable, for all **Customers** as further detailed in OC4.4.5.2 and OC4.4.5.3.

OC4.4.5.2 The **TSO** will arrange for the purposes of **Rota Load Shedding**, insofar as it is able, that the total **Demand** on the **NI System** is arranged in groups of approximately 5 per

cent. of total **Demand** (as a percentage at time of winter peak) so that any or all such groups can be **Disconnected** when the **TSO** considers it necessary.

OC4.4.5.3 Where **Disconnection** is envisaged by the **TSO** to be prolonged, the **TSO** will, where possible, utilise **Disconnection** rotas where approximately 5 per cent. groups are interchanged to ensure (so far as possible) equitable treatment of **Customers**.

OC4.4.5.4 **Emergency Manual Disconnection** is utilised when a loss of generation or a mismatch of generation output and **Demand** is such that there is an operational requirement to shed **Load** at short notice (or no notice) to maintain a **Regulating Margin** between generation output and **Demand** and in certain circumstances to deal with operating problems such as unacceptable voltage levels and thermal overloads.

OC4.4.5.5 To avoid affecting the operational integrity of the **Automatic Load Shedding** scheme the **Load** blocks shed under **Planned Manual Disconnection** and/or **Emergency Manual Disconnection** will, as far as practicable, not be those within the **Automatic Load Shedding** scheme which could be shed under a single operational contingency. To ensure no undue discrimination against any **Customers**, manual **Load Shedding** will be dealt with in conjunction with the provisions for rotating **Load Shedding** in OC4.4.7 and the **TSO** will monitor **Load Shedding** to ensure no undue discrimination.

OC4.4.5.6 The **TSO** will, when it considers necessary, implement **Planned Manual Disconnection** and/or **Emergency Manual Disconnection**.

OC4.4.6 **Demand Control** with Weak or Reduced **System** Capabilities

OC4.4.6.1 This section covers the situation where the **TSO** may wish to initiate **Demand Control** to maintain partial supplies to a part of the **NI System** which cannot support the full area **Demand** of that part of the **NI System**. It applies to circumstances where the **TSO** wishes to allow for fault contingencies more severe than envisaged in the **Licence Standards** because the impact of these contingencies on the **NI System** would be unacceptable. It can also apply to circumstances where **Planned Outages** or unplanned **Outages** would, in the opinion of the **TSO**, result in a single contingency having an unacceptable impact on the **NI System**.

OC4.4.6.2 Where the **TSO** considers that it should put in place arrangements to enable **Demand Control** to be effected in the circumstances outlined in OC4.4.6.1, it may effect such arrangements and **Demand Control** under such arrangements may be initiated by the **TSO**.

OC4.4.6.3 **Load** shedding caused by these schemes will be assimilated into **Load** shedding caused by the **Automatic Load Shedding** scheme detailed in OC4.4.7 to ensure no **Customer** or group of **Customers** is unfairly discriminated against.

OC4.4.7 **Automatic Load Shedding**

OC4.4.7.1 Under generation shortfall conditions a **Frequency** graded **Automatic Load Shedding** scheme is utilised to prevent **Frequency** collapse on the **NI System** and to restore the balance between generation output and **Demand**.

OC4.4.7.2 The **Demand** on the **NI System** subject to **Automatic Load Shedding** will be split into discrete blocks. The number, location, size and the associated low **Frequency** settings of these blocks will be as determined by the **TSO** on a rota basis insofar as possible.

OC4.4.7.3 Where conditions are such that, following **Automatic Load Shedding**, and the subsequent recovery of **Frequency** on the **NI System**, it is not possible to restore a large proportion of the total **Demand** so **Disconnected** within a reasonable period of time, the **TSO** may implement additional **Disconnection** manually to restore an equivalent amount of the **Demand** which has been **Disconnected** automatically.

OC4.4.7.4 For the avoidance of doubt, no **Demand** shed by operation of **Automatic Load Shedding Devices** will be restored without the specific direction of the **TSO**.

OC4.4.8 **General**

OC4.4.8.1 In most instances of **Demand Control**, other than with **Customer Demand Management** initiated by **Suppliers, Demand Control** is initiated by the **TSO. Suppliers** should note, however, that although implementation of **Demand Control** in respect of their **Customers** is not, in general, exercisable by them, their **Customers** may be affected by **Demand Control**. The contractual arrangements of **Suppliers** with their **Customers** may, accordingly, need to reflect this.

OC4.4.8.2 During the implementation of **Demand Control, Scheduling** and **Dispatch** in accordance with the principles in the SDCs for determining which **CDGUs** will be **Scheduled** and **Dispatched** may cease and will not be re-implemented until the **TSO** decides that normal operation can be resumed. The **TSO** will inform **Generators** when normal **Scheduling** and **Dispatch** in accordance with the SDCs is to be re-implemented as soon as reasonably practicable.

OC4.4.8.3 Where time permits, the **TSO** will, insofar as it is reasonably able, inform all affected **Users** that **Demand Control** is planned to be exercised.

OC4.5 **FUEL SECURITY CODE**

OC4.5.1 Each **Supplier** agrees to comply with the **Fuel Security Code** to the extent it is expressed to apply to it and with any instructions issued by the **TSO** pursuant to the **Fuel Security Code**.

OPERATING CODE NO. 5
OPERATIONAL LIAISON

OC5.1 INTRODUCTION

OC5.1.1 OC5 sets out the requirements for the exchange of information in relation to **Operations** and/or **Events** on the **Total System** which have had (or may have had) or will have (or may have) an **Operational Effect**:-

(i) on the **NI System** in the case of an **Operation** and/or **Event** occurring on a **User System**; and

(ii) on a **User System** in the case of an **Operation** and/or **Event** occurring on the **NI System** or the **Other Transmission System**;

where no requirement for liaison is specified in any other section of the **Grid Code**. OC5 also sets out the procedure for issue of warnings in the event of a risk of serious and widespread disturbance of the whole, or part of, the **NI System**.

OC5.1.2 Where an **Operation** and/or **Event** on the **NI System** falls to be reported by the **TSO** to the **Other TSO** under the **System Operator Agreement**, the **TSO** may include in that report the information which it has been given by the **User** in relation to the **Operation** and/or **Event** on the **User System** which has itself then caused or exacerbated the **Operation** or **Event** on the **NI System**.

OC5.2 OBJECTIVE

The exchange of information is needed in order that the implications of the **Operation** and/or **Event** can be considered and the possible risks arising from it can be assessed and appropriate action taken by the relevant party in order to maintain the integrity of the **Total System**. OC5 does not seek to deal with any actions arising from the exchange of information, but merely with that exchange.

OC5.3 SCOPE

OC5 applies to the **TSO** and to **Users**, which in this OC5 means **Generators**, **Interconnector Owners**, **Large Demand Customers** and the **DNO**.

OC5.4. PROCEDURE

OC5.4.1 The term **"Operation"** means a scheduled or planned action relating to the operation of a **System** or on the **Other Transmission System** but, for the avoidance of doubt, does not include fault locating operations undertaken by the **TSO**.

OC5.4.2 The term **"Event"** means an unscheduled or unplanned (although it may have been anticipated) occurrence on a **System** or on the **Other Transmission System** including, without limiting that general description, faults, incidents and breakdowns.

OC5.4.3 The term **"Operational Effect"** in the whole of this OC5 shall mean any effect on the operation of the relevant **System** or on the **Other Transmission System** which will or may cause the **Systems** of the **TSO** or the other **User or Users**, as the case may be, to operate differently from the way in which they would or may have operated in the absence of that effect.

OC5.4.4 Requirement to notify **Operations**

OC5.4.4.1 The **TSO**

In the case of an **Operation** on the **NI System** which will have, or may have, an **Operational Effect** on a **User System**, the **TSO** will (unless this requirement arises under any other part of the **Grid Code**) notify the **User**, or **Users**, whose **System(s)** will, or may in the opinion of the **TSO**, be so affected in accordance with this OC5. The provisions of this OC5.4.4.1 shall also apply to circumstances where an **Operational Effect** on the **User System** was caused or may have been caused by an **Operation** on the **Other Transmission System**, provided that the **TSO**'s duty to notify a **User** shall be solely a duty to pass on the information that the **TSO** has received from the **Other TSO**.

OC5.4.4.2 **User**

In the case of an **Operation** on a **User System** which will have or may have an **Operational Effect** on the **NI System** the **User** will (unless this requirement arises under any other part of the **Grid Code**) notify the **TSO** in accordance with this OC5. Following notification by the relevant **User**, the **TSO** will notify any other **User** or **Users** on whose **System(s)** the **Operation** will (or, in the **TSO**'s reasonable opinion, may) have an **Operational Effect**, and may also notify the **Other TSO** if the **Operation** will (or, in the **TSO'**s reasonable opinion, may) have an equivalent effect on the **Other Transmission System**, in accordance with this OC5.

OC5.4.4.3 Whilst in no way limiting the general requirement to notify in advance as set out in OC5.4.4.1 and OC5.4.4.2, the following are examples of scheduled or planned actions for which notification will be required under this OC5 if they will, or may, have an **Operational Effect**:-

(i) the planned operation (other than, in the case of a **User**, at the instruction of the **TSO**) of any circuit breaker or isolator or any sequence or combination of the two; and

(ii) voltage control.

OC5.4.4.4 Nature of Notification

(a) A notification under OC5.4.4.1 or OC5.4.4.2 (save where the notification is to be given to a **Large Demand Customer**, in which event the provisions of (b) below shall apply) must be of sufficient detail to describe the **Operation** (although it need not state the cause) and to enable the recipient of the notification reasonably to consider and assess the implications and risks arising and will include the name of the individual reporting the **Operation**

on behalf of the **TSO** or the **User**, as the case may be. The recipient may ask questions to clarify the notification and the notifying party shall use its reasonable endeavours to provide the necessary information.

(b) A notification which is to be given under OC5.4.4.1 or OC5.4.4.2 to a **Large Demand Customer** will not contain the information specified in (a) above but may indicate that there will be, or is likely to be, an incident on the **Total System**, the general nature of the incident (but not the cause of the incident) and, if known, in circumstances where power supplies are thought likely to be affected, the estimated time of cessation and return to service.

OC5.4.4.5 Timing

A notification under OC5.4.4.1 or OC5.4.4.2 must be given as far in advance as practicable and in any event shall be given in sufficient time as will reasonably allow the recipient to consider and assess the implications and risks arising.

OC5.4.4.6 Recording

The notification shall be given in writing whenever possible. If there is insufficient time before the **Operation** is scheduled to take place for notification to be given in writing, then notification shall be given orally and, if either party requests, it shall be written down by the sender and dictated to the recipient who shall write it down and repeat each phrase as received and, on completion, shall repeat the notification in full to the sender and check that it has been accurately recorded.

OC5.4.5 Requirement to notify **Events**

OC5.4.5.1 The **TSO**

In the case of an **Event** on the **NI System** which has had (or may have had) an **Operational Effect** on a **User System**, the **TSO** will (unless this requirement arises under any other part of the **Grid Code**) notify the **User** or **Users** whose **System(s)** have been (or in the reasonable opinion of the **TSO** may have been) so affected, in accordance with this OC5. The provisions of this OC5.4.5.1 shall also apply to circumstances where an **Operational Effect** on the **NI System** was caused by an **Operation** on the **Other Transmission System**, provided that the **TSO's** duty to notify a **User** shall be solely a duty to pass on the information that the **TSO** has received from the **Other TSO**.

OC5.4.5.2 **User**

In the case of an **Event** on a **User System** which has had (or may have had) an **Operational Effect** on the **NI System** the **User** will (unless this requirement arises under any other part of the **Grid Code**) notify the **TSO** in accordance with this OC5. Following notification by the relevant **User**, the **TSO** will notify any other **User** or **Users** on whose **System** the **Event** has had or may have had in the **TSO's** reasonable opinion an **Operational Effect**, and may also notify the **Other TSO** if the **Event** has had or may have had in the **TSO's** reasonable opinion an equivalent effect on the **Other Transmission System**, in accordance with this OC5.

OC5.4.5.3 Whilst in no way limiting the general requirement to notify set out in OC5.4.5.1 and OC5.4.5.2, the following are examples of situations where notification will be required under this OC5 if they have had, or may have had, an **Operational Effect**:-

(i) where **Plant** and/or **Apparatus** is being operated in excess of its capability or may present a hazard to personnel;

(ii) the activation of any alarm or indication of any abnormal operating condition;

(iii) adverse weather conditions being experienced;

(iv) breakdown of, or faults on, or temporary changes in the capabilities of, **Plant** and/or **Apparatus**;

(v) breakdown of, or faults on, control, communications or metering equipment;

(vi) increased risks of **Protection** operation.

OC5.4.5.4 Nature of Notification

(a) A notification under OC5.4.5.1 or OC5.4.5.2 (save where the notification is to be given to a **Large Demand Customer**, in which event the provisions of (b) below shall apply) will be of sufficient detail to describe the **Event** (although it need not state the cause) and so enable the recipient of the notification reasonably to consider and assess the implications and risks arising. The recipient may ask questions to clarify the notification and the notifying party shall use its reasonable endeavours to provide the necessary information.

(b) A notification which is to be given under OC5.4.4.1 or OC5.4.4.2 to a **Large Demand Customer** will not contain the information specified in (a) above but may indicate that there has been an incident on the **Total System**, the general nature of the incident (but not the cause of the incident) and, if known, in circumstances where power supplies have been affected, an estimated time of return to service.

OC5.4.5.5 Recording

Notification shall be given orally and, except in the case of emergency, if either party requests, shall be written down by the sender and dictated to the recipient who shall write it down and repeat each phrase as received and, on completion, shall repeat the notification in full to the sender and check that it has been accurately recorded.

OC5.4.5.6 Timing

A notification under OC5.4.5.1 or OC5.4.5.2 shall be given as soon as possible after the occurrence of the **Event**, or the time that the **Event** is known of or anticipated by the

giver of the notification under this OC5, and in any event within 15 minutes of such time.

OC5.4.6 **Significant Incidents**

OC5.4.6.1 Where a **User** notifies the **TSO** under OC5.4.5.2 of an **Event** which the **TSO** considers has had or may have had a significant effect on the **NI System,** the **TSO** may require the **User** to report that **Event** in writing in accordance with the provisions of OC8 in which event it will, within one **Business Day**, notify that **User** accordingly.

OC5.4.6.2 Where the **TSO** notifies a **Generator** or an **Interconnector Owner** of an **Event** under this OC5 which the **Generator** or the **Interconnector Owner** considers has had or may have had a significant effect on that **Generator's** or **Interconnector Owner's System**, that **Generator** or **Interconnector Owner** may require the **TSO** to report that **Event** in writing in accordance with the provisions of OC8 in which event it will, within one **Business Day**, notify the **TSO** accordingly.

OC5.4.6.3 **Events** which the **TSO** requires a **User** to report in writing pursuant to OC5.4.6.1 and **Events** which a **Generator** requires the **TSO** to report in writing pursuant to OC5.4.6.2 are known as **"Significant Incidents"**.

OC5.4.6.4 Without limiting the general description set out in OC5.4.6.1 and OC5.4.6.2, a **Significant Incident** will include an **Event** having an **Operational Effect** which results in, or is likely to result in, the following:-

(i) tripping of **Plant** and/or **Apparatus** either manually or automatically;

(ii) voltage outside statutory limits;

(iii) **System Frequency** outside statutory limits;

(iv) **System** instability; or

(v) **System** overloads.

OC5.4.7 Warnings

(i) A warning will be issued by the **TSO** (usually by telephone or other electronic means) to **Users** who may be affected when the **TSO** knows there is a risk of widespread and serious disturbance to the whole, or part of, the **NI System**. Where the warning is given by telephone or other electronic means, the **TSO** will issue a written confirmation as soon as reasonably practicable thereafter.

(ii) The warning will contain such information as the **TSO** reasonably considers to be necessary in order to explain the nature and extent of the anticipated disturbance to the **User** provided that sufficient time is available to the **TSO** prior to the issue of the warning and that such information is available to the **TSO**;

(iii) For the duration of a warning each **User** in receipt of the warning shall take the necessary steps to warn its operational staff and maintain its **Plant** and/or **Apparatus** in the condition in which it is best able to withstand the anticipated disturbance;

(iv) **Scheduling** and **Dispatch** in accordance with the **Scheduling and Dispatch Codes** may be affected during the period covered by a warning. Further provisions on this are contained in the **Scheduling and Dispatch Codes**.

OPERATING CODE NO. 6
SAFETY CO-ORDINATION

OC6.1 INTRODUCTION

OC6.1.1 (a) Operating Code No. 6 ("OC6") specifies the standard procedures which, subject to (b) below, are to be followed by the **TO** and **Generators**, **Interconnector Owners** and/or the **DNO** for the co-ordination, establishment and maintenance of necessary **Safety Precautions** when work and/or testing (other than **System Tests**, which are covered by OC10 and the type of tests covered in OC11) is to be carried out on the **NI System** or a **Generator's** and/or **Interconnector Owner's User System** and when, for this to be done safely, **Safety Precautions** are required on the other's **System**.

(b) The procedures to be followed by the **TO** and persons connected to the **NI System** other than **Generators** and/or **Interconnector Owners** for the co-ordination, establishment and maintenance of **Safety Precautions** when work and/or testing (other than **System Tests**, which are covered by OC10 and the type of tests covered by OC11) is to be carried out on the **NI System** or such person's **User System** are not dealt with under this OC6, but are to be agreed locally.

OC6.1.2 Where, by reason of the design of any **HV Apparatus** on which **Safety Precautions** are to be applied, it is not practicable to apply **Safety Precautions** on such **HV Apparatus**, the **Safety Precautions** shall be applied at the most appropriate point(s) on the **Generator's** and/or **Interconnector Owner's Plant** and **Apparatus** (for example, at steam valves) to achieve **Safety From The System** on the **HV Apparatus** on which **Safety From The System** is to be achieved.

OC6.1.3 OC6 does not apply to a situation in which **Safety Precautions** need to be agreed solely between **Generators** and/or between **Interconnector Owners** or between **Generators** and/or **Interconnector Owners** and other persons connected to the **NI System**.

OC6.1.4 OC6 does not seek to impose a particular set of **Safety Rules** on the **TO** and **Generators** and/or **Interconnector Owners**; the **Safety Rules** to be adopted and used by the **TO** and each **Generator** and/or **Interconnector Owner** shall be those chosen by each.

OC6.1.5 The procedures set out in this OC6 do not refer expressly to a situation in which both the **TO** and a **User** require the other to implement **Safety Precautions** at the same time. In such circumstances the relevant procedures of this OC6 should be applied twice, once with the **TO** acting as **Implementing Safety Co-ordinator** and once with the **User** acting in that role.

OC6.1.6 In this OC6 the following terms shall have the following meanings:-

(a) "**HV Apparatus**" means **High Voltage** electrical circuits forming part of a **System** on which **Safety From The System** may be required or on which **Safety Precautions** may be applied to allow work and/or testing to be carried out on a **System**;

(b) "**Isolation**" means the disconnection of **HV Apparatus** from the remainder of the **System** in which that **HV Apparatus** is situated by means either of an **Isolating Device(s)** in the isolating position or adequate physical separation or sufficient gap or the disablement (by means of switching or dismantling) of **Plant** and/or **Apparatus** so that electrical energy cannot pass from the **Apparatus** (or in the case of **Plant**, from the associated **Apparatus**) to the **HV Apparatus** other than by an **Isolating Device**;

(c) "**Earthing**" means a way of providing a connection between conductors and earth by means of an **Earthing Device**.

OC6.2 OBJECTIVE

The objective of this OC6 is to achieve **Safety From The System** when work and/or testing on a **System** necessitates the provision of **Safety Precautions** on or relating to another **System** (on or relating to **HV Apparatus**) up to a **Connection Point**.

OC6.3 SCOPE

OC6.3.1 OC6 applies to the **TO**, to the **TSO**, to **Generators** and to **Interconnector Owners**.

OC6.3.2 The **TSO** shall procure that the **TO** complies with its obligations under OC6.

OC6.4 PROCEDURE

OC6.4.1 Approval of **Local Safety Instructions**

OC6.4.1.1 In accordance with the timing requirements of its **Connection Agreement**, each **Generator** and/or **Interconnector Owner** shall supply to the **TSO** a copy of its **Local Safety Instructions** relating to its side of the **Connection Point** at each **Connection Site**. In accordance with the timing requirements of each **Connection Agreement**, the **TSO** shall supply to each **Generator** and/or **Interconnector Owner** a copy of the **TO's Local Safety Instructions** relating to the **TO** side of the **Connection Point** at each **Connection Site**. Prior to connection and in accordance with the timing requirements of the relevant **Connection Agreement**, the **TO** and the **User** must have approved each other's **Local Safety Instructions** dealing with **Isolation** and **Earthing.**

OC6.4.1.2 If the party required to give approval requires, for that approval to be given, more stringent provisions relating to **Isolation** and/or **Earthing** (including relating to **Earthing Devices**) (and to the extent that these are not unreasonable), the other party will make such changes as soon as reasonably practicable to the provisions in its **Local Safety Instructions** relating to **Isolation** and/or **Earthing** (including relating to **Earthing Devices**) affecting the **Connection Site** (which may of course need to cover the application of **Isolation** and/or **Earthing** at a place remote from such **Connection Site**, depending upon the **System** layout). There is no right to withhold approval on the grounds that the party required to approve reasonably believes the provisions relating to **Isolation** and/or **Earthing** (including **Earthing Devices**) are too stringent.

OC6.4.1.3 If, following approval, a party wishes to change the provisions in its **Local Safety Instructions** relating to **Isolation** and/or **Earthing** (including **Earthing Devices**), it must inform the other party. If the change is to make the provisions more stringent, then the

other party merely has to note the changes. If the change is to make the provisions less stringent, then the other party needs to approve the new provisions and the procedures referred to in OC6.4.1.2 will apply.

OC6.4.2 **Safety Co-ordinators**

OC6.4.2.1 The **TO** and each **Generator** and/or **Interconnector Owner** will at all times have nominated a person or persons to be responsible for the co-ordination of **Safety Precautions** at each **Connection Point**, when work and/or testing is to be carried out on a **System** which necessitates the provision of **Safety Precautions** on (or relating to) **HV Apparatus**, pursuant to this OC6 ("**Safety Co-ordinator(s)**"). A **Safety Co-ordinator** may be responsible for the co-ordination of safety on (or relating to) **HV Apparatus** at more than one **Connection Point.** It should be noted that, for the purposes of this OC6, the **Safety Co-ordinator's** role is limited to the co-ordination of **Safety Precautions**. The **Safety Co-ordinator** will not necessarily but may undertake the physical implementation of **Safety Precautions**. In the case of the **TO**, the **Safety Co-ordinator** may be an employee of the **TSO** acting on behalf of the **TO**.

OC6.4.2.2 Each **Generator** and/or **Interconnector Owner** shall, prior to being connected to the **NI System**, in accordance with any timing provisions of the **Connection Agreement** or, in the absence of such provisions, as far in advance as possible, give notice in writing to the **TO** of the identity of its **Safety Co-ordinator(s)** and shall update the written notice whenever there is a change to the identity of its **Safety Co-ordinator(s)**.

OC6.4.2.3 The **TO** shall at the time of a **Generator** and/or **Interconnector Owner** being connected to the **NI System**, in accordance with the timing provisions of the **Connection Agreement** or, in the absence of such provisions, as far as possible in advance, give notice in writing to that **Generator** and/or **Interconnector Owner** of its **Safety Co-ordinator(s)** and shall update the written notice whenever there is a change to the **Safety Co-ordinator(s)**.

OC6.4.2.4 Contact will be made between **Safety Co-ordinators** via normal operational channels and, accordingly, separate telephone numbers for **Safety Co-ordinators** need not be provided.

OC6.4.2.5 If work and/or testing is to be carried out on a **System** which necessitates the provision of **Safety Precautions** on (or relating to) **HV Apparatus** in accordance with the provisions of this OC6, the **Safety Co-ordinator** who is identified on the relevant **Site Responsibility Schedule** as responsible for the **HV Apparatus** on which or in relation to which **Safety From The System** is to be achieved (the "**Requesting Safety Co-ordinator**") shall contact the **Safety Co-ordinator** who is identified on that same **Site Responsibility Schedule** as being responsible for the **HV Apparatus** which is connected at the **Connection Point** to the **HV Apparatus** on which **Safety From The System** is required (the "**Implementing Safety Co-ordinator**"), to co-ordinate the **Safety Precautions**.

OC6.4.3 **RISSP**

OC6.4.3.1 OC6 sets out the procedures for utilising the **Record of Inter-System Safety Precautions** ("**RISSP**").

OC6.4.3.2 The **TO** will use the format of the **RISSP** forms set out in Appendix A and Appendix B to this OC6. That set out in Appendix A and designated as "**RISSP-A**", shall be used when the **TO** is the **Requesting Safety Co-ordinator**, and that in Appendix B and designated as "**RISSP-B**", shall be used when the **TO** is the **Implementing Safety Co-ordinator**.

OC6.4.3.3 **Generators** and/or **Interconnector Owners** may either adopt the format referred to in OC6.4.3.2, or use a form or other tangible written record in an equivalent format provided that the form, or other tangible written record, includes sections for containing the same information and has the same numbering of sections as **RISSP-A** and **RISSP-B** as set out in Appendix A and Appendix B, respectively. Whichever method **Generators** and/or **Interconnector Owners** choose, they shall provide proformas or other means of recording in writing for use by their staff.

OC6.4.3.4 All references to **RISSP-A** and **RISSP-B** shall be taken as referring to the corresponding parts of the alternative forms or other tangible written records used by each **Generator** and/or **Interconnector Owner**.

OC6.4.3.5 **RISSP-A** shall have written or printed on it an identifying number, comprising a unique prefix which identifies the location at which it is issued, and a unique (for each **Generator** and/or **Interconnector Owner** or the **TO**, as the case may be) serial number consisting of four digits and the suffix "**R**".

OC6.4.3.6 At the time that the **Generator** and/or **Interconnector Owner** first gives notice to the **TO** of its **Safety Co-ordinators**, each **Generator** and/or **Interconnector Owner** shall apply in writing to the **TO** for the **TO's** approval of its proposed prefix. The **TO** shall consider the proposed prefix to see if it is the same as (or confusingly similar to) a prefix used by the **TO** or another **Generator** and/or **Interconnector Owner** and shall, as soon as possible (and in any event within ten days), respond in writing to the **Generator** and/or **Interconnector Owner** with its approval or disapproval. If the **TO** disapproves, it shall explain in its response why it has disapproved and will suggest an alternative prefix and the **Generator** and/or **Interconnector Owner** shall either notify the **TO** in writing of its acceptance of the suggested alternative prefix or it shall apply in writing to the **TO** with revised proposals and the above procedure shall apply to that application.

OC6.5 **SAFETY PRECAUTIONS** ON OR RELATING TO **HV APPARATUS**

OC6.5.1 **Safety Precautions**

For the purpose of the co-ordination of safety under OC6 relating to **HV Apparatus,** the term "**Safety Precautions**" means **Isolation** and/or **Earthing**.

OC6.5.2 Agreement of **Safety Precautions**

OC6.5.2.1 When the **TO** or a **Generator** and/or **Interconnector Owner** wishes to carry out work and/or testing on its **System** and it is of the opinion that, for this to be done safely, **Safety Precautions** are required on the **TO's HV Apparatus** (in the case of a **Generator** and/or **Interconnector Owner**), or on or relating to the **HV Apparatus** of a **Generator** and/or **Interconnector Owner** (in the case of the **TO**), the **Requesting Safety Co-ordinator** will contact the **Implementing Safety Co-ordinator** for the part of the **System** on which (or relating to which) the **Safety Precautions** are, in his reasonable opinion, required, in

order to agree in accordance with the procedure contained in this OC6.5, the **Location** at which the **Safety Precautions** will be implemented or applied.

OC6.5.2.2 When the **TO** wishes to carry out work and/or testing on the **NI System** and it is of the opinion that, for this to be done safely, **Safety Precautions** are required on (or relating to) the **System** of more than one **Generator** and/or **Interconnector Owner** the provisions of this OC6.5 shall be followed with regard to each **Generator** and/or **Interconnector Owner** separately.

OC6.5.3 Agreement of **Isolation**

OC6.5.3.1 The **Requesting Safety Co-ordinator** shall inform the **Implementing Safety Co-ordinator** of the **HV Apparatus** on which **Safety From The System** is to be achieved and they will need to reach agreement on the **Location(s)** at which **Isolation** is to be established on (or relating to) the **Implementing Safety Co-ordinator's System**.

OC6.5.3.2 The **Implementing Safety Co-ordinator** shall then promptly inform the **Requesting Safety Co-ordinator** of the following:

(a) for each **Location**, the identity (by means of name and numbering or position, as applicable) of each point of **Isolation**; and

(b) whether **Isolation** is to be achieved by an **Isolating Device** in the isolating position or by an adequate physical separation or sufficient gap or by disablement (by means of switching or dismantling) of **Plant** and/or **Apparatus** so that electrical energy cannot pass from the **Apparatus** (or, in the case of **Plant**, from the associated **Apparatus**) to the **HV Apparatus**, other than by an **Isolating Device**.

OC6.5.3.3 The **Implementing Safety Coordinator** shall maintain each point of **Isolation** in accordance with the relevant **Local Safety Instructions**.

OC6.5.4 Agreement of **Earthing**

OC6.5.4.1 If, in addition to the **Isolation** requested under OC6.5.3, the **Requesting Safety Co-ordinator** requires **Earthing**, he shall notify this requirement to the **Implementing Safety Co-ordinator** and they will need to reach agreement on the **Location(s)** at which **Earthing** is to be established on the **Implementing Safety Co-ordinator's System**.

OC6.5.4.2 The **Implementing Safety Co-ordinator** shall then promptly inform the **Requesting Safety Co-ordinator** for each **Location**, the identity (by means of **HV Apparatus** name and numbering or position, as is applicable) of each point of **Earthing**.

OC6.5.4.3 The **Implementing Safety Coordinator** shall maintain each point of **Earthing** in accordance with the relevant **Local Safety Instructions**.

OC6.5.5 In the event of disagreement

In any case where the **Requesting Safety Co-ordinator** and the **Implementing Safety Co-ordinator** are unable to agree the **Location** of the **Isolation** and (if requested) **Earthing**, it shall be at the closest available points on the infeeds to the **HV Apparatus** on which **Safety From The System** is to be achieved as indicated on the **Ownership Diagram** or, in the case where, by reason of the design of any **HV Apparatus** on which **Safety Precautions** are to be applied, it is not practicable to apply **Safety Precautions** on such **HV Apparatus**, it shall be at the most appropriate point(s) on the **Generator's** and/or **Interconnector Owner's Plant** and/or **Apparatus** (for example, a continuation of a steam valve or valves and/or field winding switchgear and/or unit transformer switchgear) to achieve **Safety From The System** on the **HV Apparatus** on which **Safety From The System** is to be achieved, as determined by the **TO**.

OC6.5.6 Implementation of **Isolation** and **Earthing**

Once the **Location** of **Isolation** and (if requested) **Earthing** are agreed in accordance with OC6.5.3 and OC6.5.4 above, the following procedure will apply:

(a) the **Implementing Safety Co-ordinator** will ensure the implementation of the **Isolation**;

(b) the **Implementing Safety Co-ordinator** will confirm to the **Requesting Safety Co-ordinator** that the **Isolation** has been established on his **System**;

(c) when the **Implementing Safety Co-ordinator** has confirmed the establishment of **Isolation** in accordance with (b) above, the **Requesting Safety Co-ordinator** shall confirm to the **Implementing Safety Co-ordinator** the establishment of relevant **Isolation** on his **System** and request, if it has been required, the implementation of the **Earthing**;

(d) the **Implementing Safety Co-ordinator** will ensure the implementation of the **Earthing** on his **System**; and

(e) the **Implementing Safety Co-ordinator** will confirm to the **Requesting Safety Co-ordinator** that **Earthing** has been established on his **System**.

OC6.5.7 Recording of **Safety Precautions**

OC6.5.7.1 Following confirmation by the **Implementing Safety Co-ordinator** to the **Requesting Safety Co-ordinator** that all of the agreed **Safety Precautions** have been established on or relating to the **System** of the **Implementing Safety Co-ordinator**, the **Implementing Safety Co-ordinator** will record the details of the **HV Apparatus** on which he has been told that **Safety From The System** is required and the **Safety Precautions** established on or relating to the **System** of the **Implementing Safety Co-ordinator** onto parts 1.1 and 1.2 of his **RISSP-B**. Where **Earthing** was not requested (either because **Earthing** was possible but was not required or because **Earthing** was not possible), part 1.2(b) of the **RISSP-B** will be completed with the words "not earthed".

OC6.5.7.2 The **Implementing Safety Co-ordinator** shall then contact the **Requesting Safety Co-ordinator** and confirm, by reading out the details entered on parts 1.1 and 1.2 of **RISSP-B**, to the **Requesting Safety Co-ordinator**, that the **Safety Precautions** have been established.

OC6.5.7.3 The **Requesting Safety Co-ordinator** will then complete parts 1.1 and 1.2 of **RISSP-A** with the precise details received from the **Implementing Safety Co-ordinator** and then read back all those details to the **Implementing Safety Co-ordinator**. If both confirm that the details entered are the same, the **Requesting Safety Co-ordinator** shall issue the **RISSP** identifying number, as stated on the **RISSP-A**, to the **Implementing Safety Co-ordinator** who shall ensure that the number, including its prefix and suffix, is correctly entered on the **RISSP-B**.

OC6.5.7.4 The **Requesting Safety Co-ordinator** and the **Implementing Safety Co-ordinator** shall then respectively complete part 1.3 of **RISSP-A** and **RISSP-B** (which relates to the identity and location of the **Implementing Safety Co-ordinator** and the **Requesting**

Safety Co-ordinator respectively). Each **Safety Co-ordinator** shall then complete the issue of the **RISSP** by signing part 1.3 of their respective **RISSPs** and then enter the time and date. Once signed, no alteration to the **RISSP** is permitted; the **RISSP** may only be cancelled.

OC6.5.7.5 The **Requesting Safety Co-ordinator** is then free to authorise work, but not testing. Where testing is to be carried out, the procedure set out below in OC6.5.8 shall be implemented. The procedure to carry out the work is entirely an internal matter for the party which the **Requesting Safety Co-ordinator** is representing.

OC6.5.8 Testing

OC6.5.8.1 Where the **Requesting Safety Co-ordinator** wishes to authorise the carrying out of a test to which the procedures in this OC6.5 apply he may not do so and the test will not take place unless and until the following procedures have been followed:

(a) confirmation is obtained from the **Implementing Safety Co-ordinator** that no person is working on, or testing, or has been authorised to work on, or test, any parts of the **Systems** within the points of **Isolation** identified on the **RISSP** form relating to the test which is proposed to be undertaken (the "original **RISSP**"), and the points of **Isolation** on the **Requesting Safety Co-ordinator's System**, and will not be so authorised until the proposed test has been completed (or cancelled) and the **Requesting Safety Co-ordinator** has notified the **Implementing Safety Co-ordinator** of its completion (or cancellation) and thereby the cancellation of the requirements;

(b) all current **RISSPs** (except for the original **RISSP**) between the **Requesting Safety Co-ordinator** and the **Implementing Safety Co-ordinator** which relate to those parts of the **Systems** between the points of **Isolation** identified on the original **RISSP** and the points of **Isolation** on the **Requesting Safety Co-ordinator's System**, have been cancelled in accordance with the procedures set out in OC6.5.9; and

(c) the **Implementing Safety Co-ordinator** agrees with the **Requesting Safety Co-ordinator** to permit the testing on those parts of the **Systems** between the points of **Isolation** identified in the original **RISSP** and the points of **Isolation** on the **Requesting Safety Co-ordinator's System**.

OC6.5.8.2 The **Requesting Safety Co-ordinator** will inform the **Implementing Safety Co-ordinator** as soon as the test has been completed or cancelled. Where **Earthing** has been removed during a test and has not been restored at the original position upon completion or cancellation of the test, the original **RISSP** shall be cancelled immediately in accordance with the procedure set out in OC6.5.9.

OC6.5.9 Cancellation

OC6.5.9.1 When the **Requesting Safety Co-ordinator** decides (having followed all relevant internal procedures) that **Safety Precautions** are no longer required, he will contact the **Implementing Safety Co-ordinator** and inform him of the **RISSP** identifying number (including the prefix and suffix). The **Requesting Safety Co-ordinator** shall read out to the **Implementing Safety Co-ordinator** the details entered on parts 1.1 and 1.2 of his

RISSP-A, and the **Implementing Safety Co-ordinator** shall confirm that the details entered on parts 1.1 and 1.2 of the **RISSP-B** are the same. The **Requesting Safety Co-ordinator** shall then confirm to the **Implementing Safety Co-ordinator** that the **Safety Precautions** are no longer required.

OC6.5.9.2 The **Requesting Safety Co-ordinator** and the **Implementing Safety Co-ordinator** shall then respectively complete part 2.1 of **RISSP-A** and **RISSP-B** (which relates to the identity and location of the **Implementing Safety Co-ordinator** and the **Requesting Safety Co-ordinator** respectively). Each **Safety Co-ordinator** shall then complete the cancellation of the **RISSP** procedure by signing part 2.1 of their respective **RISSPs** and then entering the time and date.

OC6.5.9.3 Subject as provided in OC6.5.9.4, the **Implementing Safety Co-ordinator** is then free to arrange the removal of the **Safety Precautions**, the procedure to achieve that being entirely an internal matter for the party which the **Implementing Safety Co-ordinator** is representing. The only situation in which any **Safety Precautions** may be removed without first cancelling the **RISSP** in accordance with OC6.5.9 is when **Earthing** is removed in the situation envisaged in OC6.5.8.2.

OC6.5.9.4 Where **Earthing** has been requested neither **Safety Co-ordinator** shall instruct the removal of any **Isolation** forming part of the **Safety Precautions** until it is confirmed to each by the other that all **Earthing** has been removed.

OC6.5.10 Loss of Integrity of **Safety Precautions**

In any instance when any **Safety Precautions** may be ineffective for any reason the relevant **Safety Co-ordinator** shall without delay inform the other **Safety Co-ordinator(s)** of that being the case and, if requested, of the reasons why.

OC6.6 SAFETY LOG

OC6.6.1 The **TO** and each **Generator** and/or **Interconnector Owner** shall maintain a safety log which shall be a chronological record of all messages relating to safety co-ordination under this OC6 sent and received by the **Safety Co-ordinator(s)**. The safety log must be retained for a period of not less than 3 years.

OC6 - APPENDIX A

[Northern Ireland Electricity] [CONTROL CENTRE/SITE]

RECORD OF INTER-SYSTEM SAFETY PRECAUTIONS (RISSP-A)

(Requesting Safety Co-ordinator's Record)

RISSP NUMBER

PART 1

1.1 HV APPARATUS IDENTIFICATION

Safety Precautions have been established by the **Implementing Safety Co-ordinator** to achieve (in so far as it is possible from that side of the **Connection Point**) **Safety From The System** on the following **HV Apparatus** on the **Requesting Safety Co-ordinator's System**: [State identity - name(s) and, where applicable, identification of the HV circuit(s) up to the **Connection Point**]:

_____

_

_____

_

_____

_

1.2 SAFETY PRECAUTIONS ESTABLISHED

(a) **ISOLATION**

[State the **Location(s)** at which **Isolation** has been established. For each **Location**, identify each point of **Isolation**. For each point of **Isolation**, state the means by which the **Isolation** has been achieved and whether immobilised and Locked, Caution Notice affixed or other safety procedures applied, as appropriate.]

_____

_

_____

_

_____

_

(b) **EARTHING**

[State the **Location(s)** at which **Earthing** has been established. For each **Location**, identify each point of **Earthing**. For each point of **Earthing**, state the means by which the **Earthing** has been achieved and whether immobilised and Locked or other safety procedures applied, as appropriate].

_____

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_____

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_____

_

1.3 ISSUE

I have received confirmation from _____ (name of **Implementing Safety Co-ordinator**) at _____ (location) that the **Safety Precautions** identified in paragraph 1.2 have been established and that instructions will not be issued at his location for their removal until this **RISSP** is cancelled.

Signed .....(**Requesting Safety Co-ordinator**)

at ..... (time) on .....(date)

PART 2

2.1 CANCELLATION

I have confirmed to _____ (name of the **Implementing Safety Co-ordinator**) at _____ (location) that the **Safety Precautions** set out in paragraph 1.2 are no longer required and accordingly the **RISSP** is cancelled.

Signed .....(**Requesting Safety Co-ordinator**)

at .....(time) on .....(Date)

OC6 - APPENDIX B

[Northern Ireland Electricity] [CONTROL CENTRE/SITE]

RECORD OF INTER-SYSTEM SAFETY PRECAUTIONS (RISSP-B)

(Implementing Safety Co-ordinator's Record)

RISSP NUMBER

PART 1

1.1 HV APPARATUS IDENTIFICATION

Safety Precautions have been established by the **Implementing Safety Co-ordinator** to achieve (in so far as it is possible from that side of the **Connection Point**) **Safety From The System** on the following **HV Apparatus** on the **Requesting Safety Co-ordinator's System**: [State identity - name(s) and, where applicable, identification of the HV circuit(s) up to the **Connection Point**]:

_____

_____

_____

___

1.2 SAFETY PRECAUTIONS ESTABLISHED

(a) **ISOLATION**

[State the **Location(s)** at which **Isolation** has been established. For each **Location**, identify each point of **Isolation**. For each point of **Isolation**, state the means by which the **Isolation** has been achieved and whether immobilised and Locked, Caution Notice affixed or other safety procedures applied, as appropriate.]

_____

_____

_____

___

(b) **EARTHING**

[State the **Location(s)** at which **Earthing** has been established. For each **Location**, identify each point of **Earthing**. For each point of **Earthing**, state the means by which the **Earthing** has been achieved and whether immobilised and Locked or other safety procedures applied, as appropriate].

_____

_____

_____

___

1.3 ISSUE

I have confirmed to _____ (name of **Requesting Safety Co-ordinator**) at _____ (location) that the **Safety Precautions** identified in paragraph 1.2 have been established and that instructions will not be issued at my location for their removal until this **RISSP** is cancelled.

Signed .....(**Implementing Safety Co-ordinator**)

at ..... (time) on .....(date)

PART 2

2.1 CANCELLATION

I have received confirmation from _____ (name of the **Requesting Safety Co-ordinator**) at _____ (location) that the **Safety Precautions** set out in paragraph 1.2 are no longer required and accordingly the **RISSP** is cancelled.

Signed .....(**Implementing Safety Co-ordinator**)

at .....(time) on .....(Date)

(Note: This form to be a different colour from **RISSP-A**)

OPERATING CODE NO.7
CONTINGENCY PLANNING

OC7.1 INTRODUCTION

OC7.1.1 Operating Code No.7 ("OC7") covers the following:-

(a) the implementation of recovery procedures in the event of a **Total Shutdown** or **Partial Shutdown**;

(b) the **Re-Synchronisation** of parts of the **Total System** which have ceased to be **Synchronised** with each other where there is no **Total Shutdown** or **Partial Shutdown**;

(c) the establishment of a communication route and arrangements between senior management representatives of the **TSO** and **Users** involved in, or who may be involved in, actual or potential serious or widespread disruption to the **Total System** or a part of the **Total System** which requires, or may require, urgent managerial response, day or night, but which does not fall within the provisions described in OC7.1.2; and

(d) the procedure to be followed when the **TSO Control Centre** is incapacitated for any reason.

OC7.1.2 It should be noted that, under Article 58 of the **Order**, the **Department** may give directions to the **TSO** and/or any **Generator** and/or any **Supplier** for the purpose of, "mitigating the effects of any civil emergency which may occur" (ie. for the purposes of planning for dealing with a civil emergency); a civil emergency is defined in the **Order** as "any natural disaster or other emergency which, in the opinion of the **Department**, is or may be likely to disrupt electricity supplies". Under the Energy Act 1976, the Secretary of State has powers to make orders and give directions controlling the production, supply, acquisition or use of electricity, where an Order in Council under Section 3 is in force declaring that there is an actual or imminent emergency affecting electricity supplies. In the event that any such directions are given or orders made under the Energy Act 1976, the provisions of the Grid Code will be suspended insofar as they are inconsistent with them.

OC7.2 OBJECTIVE

The overall objectives of OC7 are:-

(a) to achieve, as far as possible, restoration of the **Total System** and to enable **Demand** once again to be satisfied in the shortest possible time, taking into account **Power Station** capabilities, transfers across any **Interconnectors** and the inter-jurisdictional **Tie Lines** between Northern Ireland and the Republic of Ireland and the operational constraints of the **Total System**;

(b) to achieve the **Re-Synchronisation** of parts of the **Total System** which have ceased to be **Synchronised** with each other;

(c) to ensure that communication routes and arrangements are available to enable senior management representatives of the **TSO** and **Users**, who are authorised to make binding decisions on behalf of the **TSO** or the relevant **User**, as the case may be, to communicate with each other in the circumstances described in OC7.1.1(c); and

(d) to ensure that the **NI System** can continue to operate in the event that the **TSO Control Centre** is incapacitated for any reason.

OC7.3 SCOPE

OC7 applies to the **TSO** and to **Users** which in this OC7 means **Generators**, **Large Demand Customers** and the **DNO.**

OC7.4 **BLACK START PROCEDURE**

OC7.4.1 **Total Shutdown**

A "**Total Shutdown**" is the situation existing when all generation has ceased and there is no electricity supply across any **Interconnectors** and the inter-jurisdictional **Tie Lines** between Northern Ireland and the Republic of Ireland and, therefore, the **Total System** has shutdown with the result that it is not possible for the **Total System** to begin to function again without the **TSO's** directions relating to a **Black Start**.

OC7.4.2 **Partial Shutdown**

A "**Partial Shutdown**" is the same as a **Total Shutdown** except that all generation has ceased in a separate part of the **Total System** and there is no electricity supply across any **Interconnectors** and the inter-jurisdictional **Tie Lines** between Northern Ireland and the Republic of Ireland or other parts of the **Total System** to that part of the **Total System** and, therefore, that part of the **Total System** is shutdown with the result that it is not possible for that part of the **Total System** to begin to function again without the **TSO** directions relating to a **Black Start**, which may include re-connecting that part of the **Total System** which is subject to a **Partial Shutdown** to another, operating, part of the **Total System**.

OC7.4.3 During a **Total Shutdown** or **Partial Shutdown** and during the period leading up to such shutdowns and the subsequent recovery, the **Licence Standards** may not be met and the whole or any part of the **Total System** may be operated outside normal voltage and/or **Frequency** standards. Further, **Scheduling** and **Dispatch** in accordance with the SDCs may cease and will not be re-implemented until the **TSO** decides that the **NI System** is once again capable of operating under normal **Scheduling** and **Dispatch** procedures and that they should be re-implemented.

OC7.4.4 Certain **Power Stations** ("**Black Start Stations**") are identified, pursuant to the relevant **Generator's Connection Agreement** as having an ability for at least one of its **CDGUs** to **Start-Up** as soon as possible from **Shutdown** and to energise a part of the **Total System** and to be **Synchronised** to the **NI System** upon instruction from the **TSO**, without an external electrical power supply (ie. power which has not been generated at the **Power Station**) ("**Black Start Capability**").

OC7.4.5 **Black Start** Situation

In the event of a **Total Shutdown** or **Partial Shutdown**, the **TSO** will inform **Users** (or, in the case of a **Partial Shutdown**, **Users** which in the **TSO's** opinion need to be informed) that a **Total Shutdown** or, as the case may be, a **Partial Shutdown**, exists and that the **TSO** intends to implement a **Black Start**.

OC7.4.6 **Black Start**

OC7.4.6.1 The procedure necessary for a recovery from a **Total Shutdown** or **Partial Shutdown** is known as a **"Black Start"**. The procedure for a **Partial Shutdown** is the same as that for a **Total Shutdown** except that it applies only to a part of the **Total System**. It should be remembered that a **Partial Shutdown** may affect parts of the **Total System** which are not themselves shutdown.

OC7.4.6.2 The complexities and uncertainties of recovery from a **Total Shutdown** or **Partial Shutdown** require that this OC7 is sufficiently flexible to accommodate the full range of **Power Station** and **Total System** characteristics and operational possibilities, and this precludes the setting out of precise chronological sequences. The overall strategy will, in general, include the overlapping phases of establishment of isolated **Power Stations**, together with complementary local **Demand**, termed **"Power Islands"**, step by step integration of these **Power Islands** into larger sub-systems and, eventually, complete re-establishment of the **Total System**.

OC7.4.6.3 The procedure for a **Black Start** will, therefore, be that specified by the **TSO** at the time. **Users** shall (subject to the provisions of OC7.4.6.6) abide by the **TSO's** instructions during a **Black Start** situation, even if they conflict with the general overall strategy outlined in OC7.4.6.2.

OC7.4.6.4 The **TSO's** instructions may (although this list should not be regarded as exhaustive) be to a **Black Start Station** relating to the commencement of generation, to a **Large Demand Customer** relating to the restoration of **Demand**, and to a **Generating Plant** relating to preparation for commencement of generation once an external power supply has been made available to it and, in each case, may include switching instructions. Instructions to **Black Start Stations** will be in the format required for instructions to **CDGUs** under the SDCs.

OC7.4.6.5 (a) The **TSO** instructions relating to a **Black Start** will be given in the same format and will be notified to **Generators** by the same means as set out in SDC2 for normal **Dispatch Instructions**. Accordingly, the **TSO** will, as part of a **Black Start**, instruct a **Generator** with a **Black Start Station** to **Start-Up** a particular **CDGU** following which the **Generator** must **Start-Up** that **Generating Unit** as soon as possible and confirm to the **TSO** when this has been achieved. Following such confirmation, the **TSO** will endeavour to stabilise that **CDGU** by the establishment of appropriate **Demand**, following which the **TSO** may instruct the **Start-Up** and **Synchronisation** of the remaining available **CDGUs** at that **Black Start Station** and their loading with appropriate **Demand** to create a **Power Island**.

(b) If during this **Demand** restoration process any **CDGU** cannot, because of the **Demand** being experienced, either keep within its **Technical Parameters** or

operate outside its **Technical Parameters** without giving rise to the circumstances specified in OC7.4.6.6, the **Generator** shall inform the **TSO** and the **TSO** will, where possible, either instruct **Demand** to be altered or will re-configure the **NI System** in order to alleviate the problem being experienced by the **Generator**.

OC7.4.6.6 A **Generator** must always comply with the **TSO's** instructions relating to a **Black Start** where these are within the **Technical Parameters** of the relevant **CDGU**. In the case of a **Generator** with **PPA CDGUs**, the provisions of GC13.4 shall be imported into (and, for the purposes of the **TSO Licence**, regarded as forming part of) this OC7.4.6.6.

OC7.4.6.7 The conclusion of the **Black Start** and the time of the return to normal operation of the **Total System** will be determined by the **TSO** which shall inform **Users** (or, where there has been a **Partial Shutdown**, **Users** in the area subject to **Partial Shutdown** and other **Users** which in the **TSO**'s reasonable opinion need to be informed) that the **Black Start** situation no longer exists and that normal operation of the **Total System** has begun. The **TSO** will inform all **Generators** with **Generating Plant** when normal **Scheduling** and **Dispatch** in accordance with the SDCs has been re-implemented.

OC7.5 **RE-SYNCHRONISATION** OF **DE-SYNCHRONISED** ISLANDS

OC7.5.1 Where parts of the **Total System** have ceased to be **Synchronised** with each other but there is no **Total Shutdown** or **Partial Shutdown**, the **TSO** will instruct relevant **Users** to regulate generation or **Demand**, as the case may be, to enable the **De-Synchronised** islands to be **Re-Synchronised** and the **TSO** will inform those **Users** when **Re-Synchronisation** has taken place.

OC7.5.2 During a period in which the circumstances described in OC7.5.1 apply, the **Licence Standards** may not be met and the whole or any part of the **Total System** may be operated outside normal voltage and/or **Frequency** standards. Further, **Scheduling** and **Dispatch** in accordance with the principles in the SDCs for determining which **CDGUs** will be **Scheduled** and **Dispatched** may cease and will not be re-implemented until the **TSO** decides that normal **Scheduling** and **Dispatch** procedures can be re-implemented. The **TSO** will inform all **Generators** with **Generating Plant** when normal **Scheduling** and **Dispatch** has been re-implemented.

OC7.5.3 In circumstances where the part of the **NI System** to which **Generating Units** are connected has become detached from the rest of the **NI System** and there is no **Synchronising** system available to facilitate **Re-synchronisation** with the rest of the **NI System**, then the **Generator** shall, under the **TSO's** instructions, ensure that the **Generating Units** are **Disconnected** and held ready for **Re-synchronisation** upon the **TSO's** subsequent instructions.

OC7.6 **JOINT SYSTEM INCIDENT** PROCEDURE

OC7.6.1 A "**Joint System Incident**" is an **Event**, wherever occurring on the **Total System** which, in the opinion of the **TSO** or a **User**, has had or may have a serious and/or widespread effect, in the case of an **Event** on a **User(s) System(s)**, on the **NI System** and, in the case of an **Event** on the **NI System**, on a **User(s) System(s).** Where an **Event** on a **User(s) System(s)** has had or can have no material effect on the **NI System**, then such an **Event** cannot fall within the ambit of OC7 and accordingly OC7 shall not apply to it.

OC7.6.2 Each **User** must provide in writing to the **TSO** and the **TSO** must provide in writing to each **User**, a telephone number or numbers at which, or through which, senior management representatives nominated for this purpose and who are authorised fully to make binding decisions on behalf of the **TSO** or the relevant **User**, as the case may be, can be contacted day or night for the purposes of this OC7.6. The lists of telephone numbers will be provided in accordance with the timing requirements of the **User's Connection Agreement** prior to the time that a **User** connects to the **NI System** and must be up-dated (in writing) as often as the information contained in them changes.

OC7.6.3 Following notification of an **Event** under OC5, the **TSO** or a **User**, as the case may be, will, if it considers necessary, telephone the **User** or the **TSO**, as the case may be, on the telephone number referred to in OC7.6.2, to obtain such additional information as it may reasonably require.

OC7.6.4 Following notification of an **Event** under OC5, and/or the receipt of any additional information requested pursuant to OC7.6.3, the **TSO** or a **User**, as the case may be, will determine whether or not the **Event** is a **Joint System Incident** and, if so, the **TSO** and/or the **User** may set up an **Incident Room** in order to avoid overloading the existing **TSO's** or that **User's**, as the case may be, operational/control arrangements.

OC7.6.5 Where the **TSO** has determined that an **Event** is or will be a **Joint System Incident**, the **TSO** shall, as soon as possible, notify all relevant **Users** that a **Joint System Incident** has occurred or is expected to occur and, if appropriate, that it has established an **Incident Room** and the telephone number(s) of its **Incident Room** if different from those already supplied pursuant to OC7.6.2.

OC7.6.6 If a **User** establishes an **Incident Room** it shall, as soon as possible, notify the **TSO** that it has been established and the telephone number(s) of the **Incident Room** if different from those already supplied pursuant to OC7.6.2.

OC7.6.7 The **TSO Incident Room** and/or the **User's Incident Room** will not assume any responsibility for the operation of the **NI System** or **User's System**, as the case may be, but will be the focal point in the **TSO** or the **User**, as the case may be, for the communication and dissemination of information between the **TSO** and the senior management representatives of **User(s)** or between the **User** and the senior management representatives of the **TSO**, as the case may be, relating to the **Joint System Incident**. During a **Joint System Incident**, the normal communication channels for operational/control communication between the **TSO** and **Users** will continue to be used as normal.

OC7.6.8 All communications between the senior management representatives of the relevant parties with regard to the **TSO's** role in the **Joint System Incident** shall be made via the **TSO's Incident Room** if one has been established.

OC7.6.9 All communications between the senior management representatives of the **TSO** and a **User** with regard to that **User's** role in the **Joint System Incident** shall be made via that **User's Incident Room** if one has been established.

OC7.6.10 The **TSO** will decide when conditions no longer justify the use of its **Incident Room** and will inform all relevant **Users** of this decision.

OC7.6.11 Each **User** which has established an **Incident Room** will decide when conditions no longer justify the use of that **Incident Room** and will inform the **TSO** of this decision.

OC7.7 Loss of the **TSO Control Centre**

OC7.7.1 If the **Event** referred to in OC7.6 is the temporary loss of the **TSO Control Centre**, then the provisions of OC7.6 shall not apply but instead the following provisions shall apply.

OC7.7.2 Each **Generator** shall continue to operate its **CDGUs** in accordance with the last **Dispatch Instructions** to have been issued by the **TSO** but shall use all reasonable endeavours to maintain **NI System Frequency** at the target **Frequency** of 50Hz plus or minus 0.05Hz by monitoring **Frequency** and increasing/decreasing the output of its **CDGUs** as necessary until such time as new **Dispatch Instructions** are received from the **TSO**.

OC7.7.3 The **TSO** will have arrangements in place whereby, if the circumstances described in OC7.7.1 arise, the **TSO** may transfer the functions of the **TSO Control Centre** to an alternative control facility whereupon the **TSO** will re-commence the issue of **Dispatch Instructions** in accordance with the SDCs and inform **Users** of the communications details for the new location. The **TSO** will inform all **Generators** with **CDGUs** as and when **Scheduling** and/or **Dispatch** in accordance with the principles in the SDCs for determining which **CDGUs** will be **Scheduled** and **Dispatched** can be reimplemented.

OPERATING CODE NO. 8

OPERATIONAL EVENT REPORTING AND INFORMATION SUPPLY

OC8.1 INTRODUCTION

OC8 sets out the requirements for reporting in writing and, where appropriate, more fully those **Significant Incidents** which initially were reported to the **TSO** or a **Generator** orally under OC5 and the requirements for the provision to the **TSO** of information to enable it to prepare analyses and assessments of policies in the **Grid Code**.

OC8.2 OBJECTIVE

The objective of OC8 is to facilitate:-

(i) the provision of more detailed information in writing of **Significant Incidents**;

(ii) the provision of information aimed at enabling the **NI System** to be operated in accordance with the **Grid Code**; and

(iii) the assessment of the effectiveness of policies adopted in accordance with the **Grid Code**.

OC8.3 SCOPE

OC8 applies to the **TSO** and to **Users**, which in this OC8 means **Generators**, **Interconnector Owners**, **Large Demand Customers**, and the **DNO**.

OC8.4 PROCEDURE

OC8.4.1 Written Reports of **Events**

OC8.4.1.1 In the case of a **Significant Incident** which has been notified as an **Event** by a **User** to the **TSO** pursuant to OC5, the **User** shall provide a written report to the **TSO** in accordance with this OC8.

OC8.4.1.2 In the case of a **Significant Incident** which has been notified as an **Event** by the **TSO** to a **Generator** or an **Interconnector Owner** pursuant to OC5, the **TSO** shall provide a written report to the **Generator** or **Interconnector Owner** in accordance with this OC8.

OC8.4.1.3 Form of Report

(a) A report under OC8.4.1 will be in writing and, in the case of a report by a **User**, shall be addressed to the **TSO** and marked for the attention of the

System Operations Manager and, in the case of a report by the **TSO** to a **Generator** or **Interconnector Owner**, shall be addressed to the **Generator** or **Interconnector Owner** and marked for the attention of the person notified to the **TSO** by the **Generator** or **Interconnector Owner** in writing from time to time for this purpose (or in the absence of notification, to the Company Secretary).

(b) In either case, the report will contain a written confirmation of the oral notification given under OC5 together with such further information which has become known relating to the **Significant Incident** since the oral notification under OC5. The report shall, as a minimum, contain those matters specified in Appendix 1 to this OC8. Appendix 1 is not intended to be exhaustive.

(c) Whilst the report need not state the cause of the **Significant Incident**, it shall contain an indication as to whether the cause has been ascertained and whether it is thought likely by the party issuing the report that the matter which caused the **Significant Incident** will recur. The recipient may raise questions to clarify the report.

OC8.4.1.4 Timing

(a) Where a **User** is required to produce a written report under OC8.4.1, it shall do so as soon as possible and in any event within two **Business Days** after notification by the **TSO** under OC5.4.6.1. In the event that the **User** is unable to provide a full report within this timescale, it shall provide to the **TSO** a preliminary report containing such information as is then known to the **User** not later than two **Business Days** after the notification by the **TSO** under OC5.4.6.1 and shall provide such up-dates thereafter as the **TSO** may reasonably require. A full report shall then be provided to the **TSO** as soon as the **User** is able.

(b) Where the **TSO** is required to produce a written report under OC8.4.1, it shall do so as soon as possible and in any event within two **Business Days** after notification by the **Generator** under OC5.4.6.2. In the event that the **TSO** is unable to provide a full report within this timescale, it shall provide to the **Generator** a preliminary report containing such information as is then known to the **TSO** not later than two **Business Days** after the notification by the **Generator** under OC5.4.6.2 and shall provide such up-dates thereafter as the **Generator** may reasonably require. A full report shall then be provided to the **Generator** as soon as the **TSO** is able.

OC8.4.1.5 The **TSO** and **Users** shall each nominate responsible officers in order to establish communication channels to enable timely and adequate flows of information between the **TSO** and **Users** to be maintained and thus to ensure the effectiveness of this OC8.

OC8.4.1.6 Provision of Reports to Other **Generators**

Whenever a **Generator** has provided a written report in respect of a **Significant Incident** to the **TSO** in accordance with OC8.4.1.1, the **TSO** shall consider whether

the **System** of another **User** (or **Users**) has been or is likely to have been materially affected. If the **TSO** considers that another **User System** (or **Systems**) has been or is likely to have been so affected, the **TSO** shall notify the **Generator** which prepared the report accordingly and the **Generator** shall supply an extract from its report, containing only the technical information (and no information of commercial value) which was set out in the report, to the other **Users** identified by the **TSO**.

OC8.4.2 The Provision of Information to the **TSO**

OC8.4.2.1 The **TSO** may require (to the extent not supplied under any other provision of the **Grid Code**) information of a technical (but not of a commercial) nature to be supplied by **Users** under this OC8.4.2 to enable it to undertake the following:-

(i) the preparation of **NI System** and/or **Total System** appraisal statements;

(ii) surveys of **NI System** and/or **Total System** conditions;

(iii) analysis and validation of policies in the **Grid Code**; and

(iv) analyses of the **TSO** equipment performance;

insofar as such information is necessary to enable the **TSO** to fulfil its obligations relating to the operation of the **NI System**.

OC8.4.2.2 When the **TSO** requires information from a **User** or **Users** for the purposes set out in OC8.4.2.1 it shall send a written request to the **User** or **Users** setting out the information it reasonably requires, the reasons (in such detail as the **TSO** reasonably considers to be appropriate) why such information is required and the time by which it reasonably requires a response. Normally this will be within two **Business Days**.

OC8.4.2.3 The **User** or **Users** will use all reasonable endeavours to respond in writing within the time stated. However, a **User** will not be obliged to supply the information requested by the **TSO** to the extent that it considers that it is not reasonable to comply with the request. In such circumstances, the **User** must, in its written response to the **TSO**, state such reason in sufficient detail to enable the **TSO** to consider whether the **User** is acting reasonably in refusing to supply the information.

OC8.4.2.4 Although the request will set out the information required, an indication of the sort of information that may be requested is set out in Appendix 2 to this OC8. The list contained in Appendix 2 shall not limit the information which may be requested, but is merely given by way of example.

OC8.4.2.5 The information supplied to the **TSO** pursuant to this OC8.4.2 will be used by the **TSO** only for the purposes set out in OC8.4.2.1.

OC8.5 STATUTORY EVENT REPORTING PROCEDURE

Nothing in this OC8 shall be construed as relieving **Users** from their duty to report events in accordance with the Electricity Supply Regulations (N.I.) in so far as they apply to **Users.**

OC8 - APPENDIX 1

MATTERS, IF APPLICABLE TO THE **SIGNIFICANT INCIDENT**,
TO BE INCLUDED IN A WRITTEN REPORT
GIVEN IN ACCORDANCE WITH OC8.4.1

1. Time and date of **Significant Incident**.
2. Location.
3. **Plant** and/or **Apparatus** involved.
4. Brief description of **Significant Incident**.
5. Estimated time and date of return to service.
6. Supplies/generation interrupted and duration of interruption.
7. **Generating Unit/WFPS - Frequency** response achieved.
8. **Generating Unit/WFPS - Mvar** performance achieved.
9. Any other information which either the **TSO** or the **Generator** reasonably considers that the other might reasonably require in relation to the **Significant Incident**.

OC8 - APPENDIX 2

INDICATION OF THE SORT OF INFORMATION THAT MAY BE REQUESTED UNDER OC8.4.2

1. **FREQUENCY**
   Time and date
   Location
   Recorded **Frequency**
   Set/station
   Frequency Response Parameters (List to be included)
   Reasons for difference between **Technical Parameters** and achieved performance

2. VOLTAGE
   Time and date
   Location
   Target volts
   Actual volts
   Reason if different

3. **MW/Mvar** CAPABILITY
   Time and date
   Location
   Set identification
   Generating Unit/WFPS performance parameters (List to be included)
   Reasons for difference between **Technical Parameters** and achieved performance

4. TRANSFERS AT **CONNECTION POINT**
   Time and date
   Location
   Direction and magnitude of **MW** and **Mvar** flows

5. FAULT LEVELS AT **CONNECTION POINT**
   Time and date
   Location
   Fault infeed

   The necessary data to enable (single phase to earth and three phase symmetrical) fault levels to be calculated

6. **PROTECTION** PERFORMANCE UNDER FAULT CONDITIONS

   Time and date
   Location
   Differences between anticipated and actual performance.

OPERATING CODE NO. 9

NUMBERING AND NOMENCLATURE OF PLANT AND APPARATUS AT CONNECTION SITES

OC9.1 INTRODUCTION

OC9.1.1 This **Operating Code** sets out the responsibilities and procedures for determining and notifying the **TSO** and **Users** of the numbering and/or nomenclature of the other's **Plant** and/or **Apparatus** at **Connection Sites**. For clarification, nomenclature shall include the selection of **Substation** names.

OC9.1.2 The numbering and/or nomenclature of **Plant** and/or **Apparatus** is to be included in an **Ownership Diagram** prepared for each **Connection Site** as provided in the CC.

OC9.2 OBJECTIVES

The prime objective embodied in this OC9 is to ensure that at any **Connection Site** every item of **Plant** and/or **Apparatus** has numbering and/or nomenclature that, so far as possible, has been mutually agreed and that has been notified between the **TSO** and **Users** to ensure, so far as is reasonably practicable, the safe and effective operation of the **Total System** by minimising the risk of error in identifying **Plant** and/or **Apparatus**.

OC9.3 SCOPE

OC9 applies to the **TSO** and to **Users** which, in this OC9, means **Generators, Interconnector Owners**, **Large Demand Customers** and the **DNO**.

OC9.4 PROCEDURE

OC9.4.1 General Requirement

OC9.4.1.1 **Plant** and/or **Apparatus** of a **User** at a **Connection Site** shall have numbering and/or nomenclature which cannot be confused with that of the **TO** at that **Connection Site**.

OC9.4.1.2 In furtherance of the general requirement set out in OC9.4.1.1 above, no **User** will install, or permit the installation of, any **Plant** and/or **Apparatus** which has numbering and/or nomenclature which could be confused with that of the **TO** which is either already on that **Connection Site** or which the **TSO** has notified the **User** will be installed on that **Connection Site**. The procedure for determining the applicable numbering and nomenclature for new and existing **Connection Sites** is set out in OC9.4.2.1 and OC9.4.2.2 respectively.

OC9.4.2 **Plant** and **Apparatus**

OC9.4.2.1 New **Connection Sites**

When a **User** intends to install or the **TSO** intends to ensure the installation of **Plant** and/or **Apparatus** as part of the construction and commissioning of a new **Connection Site**, the proposed numbering and/or nomenclature shall be notified as part of the production of the **Ownership Diagram** in accordance with the provisions of the CC. The principles to apply to determine whether that proposed numbering and/or nomenclature is acceptable will be those set out in this OC9 (including, for the avoidance of doubt, the provisions of OC9.4.2.2(e)).

OC9.4.2.2 Existing **Connection Sites**

(a) When a **User** intends to install or the **TSO** intends to ensure the installation of **Plant** and/or **Apparatus** at an existing **Connection Site** the proposed numbering and/or nomenclature to be adopted for the **Plant** and/or **Apparatus** shall be notified to the other.

(b) The notification shall be made in writing to the other and will consist of a revised **Ownership Diagram** incorporating the proposed new **Plant** and/or **Apparatus** to be installed and its proposed numbering and/or nomenclature.

(c) The notification shall be made at least six months (or such shorter period as the **TSO** or the **User**, as the case may be, may agree) prior to the proposed installation of the **Plant** and/or **Apparatus.**

(d) The recipient of the notification shall respond in writing within one month of the receipt of the notification confirming receipt and confirming whether the proposed numbering and/or nomenclature is acceptable or, if not, what would be acceptable.

(e) In the event that agreement cannot be reached between the **TSO** and the **User**, the **TSO** acting reasonably, shall have the right to determine the numbering and nomenclature to be applied at the **Connection Site**.

OC9.4.3 Changes to Existing **Plant** and **Apparatus**

Where there needs to be a change of the existing numbering or nomenclature of any of the **TO's Plant** and/or **Apparatus** at a **Connection Site** or a **User** needs to change the existing numbering or nomenclature of any of its **Plant** and/or **Apparatus** at a **Connection Site**, the provisions of OC9.4.2.2 shall apply, with any amendments necessary to reflect that only a change is being made.

OC9.4.4 Clear Labelling

The **TSO** shall be responsible for ensuring the provision, erection and maintenance of clear and unambiguous labelling showing the numbering and nomenclature of the **TO's Plant** and/or **Apparatus** at **Connection Sites** and each **User** shall be responsible for the provision, erection and maintenance of clear and unambiguous labelling showing the

numbering and nomenclature of its **User's Plant** and/or **Apparatus** at **Connection Sites**.

OPERATING CODE NO. 10
SYSTEM TESTS

OC10.1 INTRODUCTION

OC10.1.1 Operating Code No. 10 ("OC10") relates to the following types of test (all of which are referred to as "**System Tests**"):-

(a) tests to be carried out by a **User** or the **TSO** which involve or may involve simulating conditions or the controlled application of irregular, unusual or extreme conditions on the **User's System** or the **NI System** (as the case may be) which may have a material effect on the **Total System**, beyond the **User's System** or the **NI System** (as the case may be); and

(b) **Commissioning/Acceptance Tests** of **Plant** and **Apparatus** to be carried out by a **User** or the **TSO** which involve or may involve the application of irregular, unusual or extreme conditions and which may have a material effect on the **Total System**, beyond the **User's System** or the **NI System** (as the case may be).

OC10.1.2 OC10 only deals with the responsibilities and procedures for arranging and carrying out tests which have (or may have) a material effect on the **Systems** of both the **TSO** and **Users**. Accordingly, where a test proposed by a **User** will not have a material effect on the **NI System** or where a test proposed by the **TSO** will not have a material effect on a **User System**, such test will not fall within this OC10 and OC10 shall not apply to it.

OC10.1.3 OC10 does not cover **Commissioning/Acceptance Tests** of a **User's Plant** and **Apparatus** which will have no material effect on the **Total System** beyond the **User's System**; such tests will be undertaken solely pursuant to CC10. Neither does it cover the type of tests which are dealt with in OC11, "**Testing, Monitoring and Investigation**".

OC10.2 OBJECTIVE

The overall objectives of OC10 are:-

(a) to ensure, so far as possible, that tests proposed to be carried out either by:

(i) a **User** which may have a material effect on the **Total System** or any part of the **Total System** (in addition to that **User's System**) including the **NI System**; or

(ii) the **TSO** which may have a material effect on the **Total System** or any part of the **Total System** (in addition to the **NI System**);

do not threaten the safety of personnel or threaten to damage **Plant** and/or **Apparatus** and cause minimum detriment to the **TSO** and **Users**; and

(b) to set out the procedures to be followed for establishing and where appropriate reporting such tests and to set out guidelines for which tests need to be notified to the **TSO** prior to the test being carried out.

OC10.3 SCOPE

OC10 applies to the **TSO** and to **Users** which, in this OC10**,** means **Generators**, **Interconnector Owners**, **Large Demand Customers**, **Aggregators** and the **DNO**.

OC10.4. PROCEDURE

OC10.4.1 **Proposal Notice**

OC10.4.1.1 The level of **Demand** on the **NI System** varies substantially according to the time of day and time of year and, consequently, certain **System Tests** which may have a significant impact on the **NI System** (for example, tests of the **Full Load** capability of a **Generating Unit** over a period of several hours) can only be undertaken at certain times of the day and year. Other **System Tests**, for example, those involving substantial **Mvar** generation or valve tests, may also be subject to timing constraints. It therefore follows that notice of **System Tests** should be given as far in advance of the date on which they are proposed to be carried out as reasonably practicable.

OC10.4.1.2 Where a **User** wishes to carry out a **System Test** it shall submit a notice (a "**Proposal Notice**") to the **TSO** as far in advance of the date it would like to undertake the proposed **System Test** as is reasonably practicable. In the event that a **User** submits to the **TSO** a programme for proposed **Commissioning/Acceptance Testing** pursuant to CC10.1.4 which the **TSO** considers may involve the application of irregular, unusual or extreme conditions and which may have a material effect on the **Total System**, beyond the **User's System**, such programme shall be treated as a **Proposal Notice** for the purposes of this OC10**.**

OC10.4.1.3 The **Proposal Notice** shall be in writing, or in such other form as the **TSO** and the relevant **User** may otherwise agree (such agreement not to be unreasonably withheld), and shall contain details of the nature and purpose of the proposed **System Test** and shall indicate the identity and situation of the **Plant** and/or **Apparatus** involved. In the case of a **System Test** (other than an on-**Load** valve test) involving a **CDGU**, the **User** shall state in the **Proposal Notice** the level of **Availability** and the values for **Technical Parameters** which will be declared for the **CDGU** for the period of the test in accordance with SDC1 and shall also include details of the **Dispatch Instructions** which the **User** wishes the **TSO** to issue to it for the purposes of the test which may be outside the **Availability** and **Technical Parameters** to be so declared.

OC10.4.1.4 If the **TSO** is reasonably of the view that the information set out in the **Proposal Notice** is insufficient, it will contact the person who submitted the **Proposal Notice** (the **"Test Proposer"**) as soon as reasonably practicable, with a written request for further information. The **TSO** shall not be required to do anything under this OC10 until it is satisfied with the details supplied in the **Proposal Notice** or pursuant to a request for further information.

OC10.4.1.5 If the **TSO** wishes to undertake a **System Test**, the **TSO** shall be deemed to have received a **Proposal Notice** for that **System Test**.

OC10.4.1.6 The **TSO** will use all reasonable endeavours to accommodate requests for **System Tests** but has absolute discretion as to the timing of such tests (which discretion will be exercised reasonably consistently with previous practice) to ensure the proper operation of the **NI System** and so as to ensure that the **Licence Standards** are not breached.

OC10.4.1.7 Without prejudice to the general description of the types of **System Tests** which have to be dealt with under this OC10, as set out in OC10.1.1 above, each **Generator** must submit a **Proposal Notice** to the **TSO** if it proposes to carry out any of the following tests, each of which is therefore a **System Test**:-

(a) Var limiter tests;

(b) main steam valve tests; and

(c) **Load** rejection tests.

OC10.4.2 Establishment of **Test Panel**

OC10.4.2.1 Using the information supplied (or deemed to have been supplied) to it under OC10.4.1, the **TSO** will determine, in its reasonable estimation, which **Users**, other than the **Test Proposer**, may be materially affected by the proposed **System Test** and will notify such **Users** accordingly.

OC10.4.2.2 The **TSO** will then determine, in its reasonable opinion, whether a **Test Panel** is required taking into account the degree of severity of its possible effect on the **Systems** of the **TSO** and **Users**. A **Test Panel** will not generally be needed for a routine test and, since the majority of **System Tests** are routine, the establishment of a **Test Panel** will be the exception rather than the rule. If the **TSO**, in its reasonable discretion, decides that a **Test Panel** is necessary, the provisions set out in the **Appendix** to this OC10 will apply.

OC10.4.3 The **TSO** Supervision

OC10.4.3.1 If the **TSO** determines that no **Test Panel** is required, it will determine, acting reasonably, whether and, where appropriate, when the proposed **System Test** can take place and it will consider:-

(a) the details of the nature, technical reasons for and timing of the proposed **System Test** and other matters set out in the **Proposal Notice** (together with any further information requested by the **TSO** under OC10.4.1.4);

(b) the economic, operational and risk implications of the proposed **System Test**; and

(c) the possibility of combining the proposed **System Test** with any other tests and with **Plant** and/or **Apparatus Outages** which arise pursuant to the **Operational Planning** requirements of the **TSO** and **Users**.

If the **TSO** determines that the proposed **System Test** cannot take place, it will, insofar as it is able to do so without breaching any obligations regarding confidentiality contained either in the **TSO Licence** or in any agreement, notify the **Test Proposer** of the reasons for such decision in such degree of detail as the **TSO** considers reasonable in the circumstances.

OC10.4.3.2 **Users** identified by the **TSO** under OC10.4.2.1 (and the **Test Proposer**) shall be obliged to supply the **TSO**, upon written request, with such details as the **TSO** reasonably requires in order to consider the proposed **System Test**.

OC10.4.3.3 The **TSO** will consult with each **User** identified by it under OC10.4.2.1. regarding the proposed **System Test** including, in particular, the effects which such test is likely to have on such **User's System**.

OC10.4.4 The **TSO Test Programme**

OC10.4.4.1 As soon as practicable the **TSO** shall, if it approves of the proposed **System Test** taking place (of which it will notify the **Test Proposer**), taking into account the factors specified in OC10.4.3.1, prepare a programme (the "**Test Programme**"), in such detail as the **TSO** considers, in its reasonable opinion, to be appropriate for the test, which will include:-

(a) the procedure to be adopted for carrying out the **System Test**, including the switching sequence and proposed timings of the switching sequence;

(b) the manner in which the **System Test** is to be monitored;

(c) a list of those members of staff to be involved in carrying out the **System Test**, including those who will be responsible for site safety; and

(d) such other matters as the **TSO** considers appropriate including (without limitation) matters suggested by **Users** identified by the **TSO** pursuant to OC10.4.2.1.

OC10.4.4.2 The **TSO**, the **Test Proposer** and each **User** identified by the **TSO** under OC10.4.2.1 will determine by agreement the basis on which the costs of the **System Test** (including unanticipated costs, for example, costs arising from modifications etc) shall be borne as between the affected parties (the general principle being that the **Test Proposer** will bear such costs). If agreement cannot be reached (each party having acted in good faith), the **System Test** will be cancelled.

OC10.4.4.3 Without prejudice to the provisions of OC10.4.1, the **TSO** shall be entitled to require the proposed **System Test** to be modified, delayed or cancelled if, in its reasonable opinion, it considers that such test would impose unacceptable effects on the **NI System** or any **User System**.

OC10.4.4.4 If the **TSO** requires the proposed **System Test** to be cancelled or if it requires such test to be delayed or modified but the **Test Proposer** considers that such delay or modification is not possible, the proposed **System Test** shall not take place.

OC10.4.4.5 The **Test Programme** will, subject to OC10.4.4.6, bind the **Test Proposer** to act in accordance with the provisions of the **Test Programme** in relation to the proposed **System Test**.

OC10.4.4.6 Any problems with the proposed **System Test** perceived by the **Test Proposer** or any affected **User** or the **TSO** which arise or are anticipated after the issue of the **Test Programme** and prior to the day of the proposed **System Test** must be notified by the **Test Proposer** or affected **User** or the **TSO** (as the case may be) to the others as soon as possible in writing. If, in any such case, the **TSO** decides that these anticipated problems merit an amendment to, or postponement of, the **System Test**, it shall notify the **Test Proposer** and affected **Users** accordingly.

OC10.4.4.7 If, on the day of the proposed **System Test**, operating conditions on the **Total System** are such that any of the **TSO**, the **Test Proposer** or an affected **User** wishes to delay or cancel the start or continuance of the **System Test**, they shall immediately inform the others of this decision and the reasons for it. The **TSO** shall then postpone or cancel, as the case may be, the **System Test** and another suitable time and date shall be arranged in accordance with this OC10.4.4.

Appendix

OC10.A.1 **Test Panel** Supervision

OC10.A.1.1 If the **TSO** determines pursuant to OC10.4.2.2 that a **Test Panel** is required, it will appoint a representative to co-ordinate the **System Test** (the **"Test Co-ordinator"**) as soon as reasonably practicable after it has, or is deemed to have, received a **Proposal Notice** and in any event prior to the distribution of the **Preliminary Notice** referred to below. The **Test Co-ordinator** shall act as Chairman of the **Test Panel** and shall be a full member of the **Test Panel**.

OC10.A.1.2 The **TSO** will notify all **Users** identified by it under OC10.4.2.1 of the proposed **System Test** by a notice in writing (a "**Preliminary Notice**") and will send a copy of the **Preliminary Notice** to the **Test Proposer**. The **Preliminary Notice** will contain:

(a) the details of the nature and purpose of the proposed **System Test**, the identity and situation of the **Plant** and/or **Apparatus** involved, the identities of the **Users** identified by the **TSO** under OC10.4.2.1 and the identity of the **Test Proposer**;

(b) an invitation to nominate within one month a suitably qualified representative (or representatives if the **Test Co-ordinator** considers that it is appropriate for a particular **User** to nominate more than one representative) to be a member of the **Test Panel** for the proposed **System Test**; and

(c) the name of the **TSO** representative whom the **TSO** has appointed as the **Test Coordinator** and who will be a member of the **Test Panel** for the proposed **System Test** together with the names of any other representatives whom the **TSO** has nominated to be members of the **Test Panel**.

OC10.A.1.3 The **Preliminary Notice** will be sent within one month of the later of either the receipt by the **TSO** of the **Proposal Notice**, or of the receipt of any further information requested by the **TSO** under OC10.4.1.3. Where the **TSO** is the proposer of the **System Test**, the **Preliminary Notice** will be sent within one month of the proposed **System Test** being fully formulated.

OC10.A.1.4 Replies to the invitation in the **Preliminary Notice** to nominate a representative to be a member of the **Test Panel** must be received by the **TSO** within one month of the date on which the **Preliminary Notice** was sent to the **User** by the **TSO**. Any **User** which has not replied within that period will not be entitled to be represented on the **Test Panel**. If the **Test Proposer** does not reply within that period, the proposed **System Test** will not take place and the **TSO** will notify all **Users** identified by it under OC10.4.2.1 accordingly.

OC10.A.1.5 The **TSO** will, as soon as possible after the expiry of that one month period, appoint the nominated persons to the **Test Panel** and notify all **Users** identified by it under OC10.4.2.1 and the **Test Proposer**, of the composition of the **Test Panel**.

OC10.A.2 **Test Panel**

OC10.A.2.1 A meeting of the **Test Panel** will take place as soon as possible after the **TSO** has notified all **Users** identified by it under OC10.4.2.1 and the **Test Proposer** of the composition of the **Test Panel**, and in any event within one month of the appointment of the **Test Panel**.

OC10.A.2.2 The **Test Panel** shall consider:

(a) the details of the nature, technical reasons for and timing of the proposed **System Test** and other matters set out in the **Proposal Notice** (together with any further information requested by the **TSO** under OC10.4.1.3);

(b) the economic, operational and risk implications of the proposed **System Test**;

(c) the possibility of combining the proposed **System Test** with any other tests and with **Plant** and/or **Apparatus Outages** which arise pursuant to the **Operational Planning** requirements of the **TSO** and **Users**; and

(d) whether, at the conclusion of the **System Test**, the **Test Proposer** should be required to prepare a written report on the **System Test** (a "**Final Report**") in accordance with OC10.A.4 and, if so, the period within which the **Final Report** must be prepared.

OC10.A.2.3 **Users** identified by the **TSO** under OC10.4.2.1, the **Test Proposer** (whether or not they are represented on the **Test Panel**) and the **TSO** shall be obliged to supply the **Test Panel**, upon written request, with such details as the **Test Panel** reasonably requires in order to consider the proposed **System Test**.

OC10.A.2.4 The **Test Panel** shall be convened by the **Test Co-ordinator** as often as he considers necessary to conduct its business.

OC10.A.3 **Test Panel Test Programme**

OC10.A.3.1 As soon as practicable after its first meeting, the **Test Panel** shall, taking into account the factors specified in OC10.A.2.2, prepare a programme (the "**Test Programme**") which will include:-

(a) the procedure to be adopted for carrying out the **System Test**, including the switching sequence and proposed timings of the switching sequence;

(b) the manner in which the **System Test** is to be monitored;

(c) a list of those members of staff to be involved in carrying out the **System Test**, including those who will be responsible for site safety; and

(d) such other matters as the **Test Panel** considers to be appropriate.

OC10.A.3.2 The **Test Panel** shall also determine the basis on which the costs of the **System Test** (including unanticipated costs) shall be borne as between the affected parties (the general principle being that the **Test Proposer** will bear such costs). If the **Test Panel** cannot agree on this (each party having acted in good faith), the **System Test** will be cancelled.

OC10.A.3.3 The **Test Co-ordinator** shall be entitled to require the proposed **System Test** to be modified, delayed or cancelled if, in his reasonable opinion, he considers that such test would impose unacceptable effects on the **NI System** or on any **User System**.

OC10.A.3.4 If the **Test Co-ordinator** requires the proposed **System Test** to be cancelled or if he requires such test to be delayed or modified but the **Test Proposer** considers that such delay or modification is not possible, the proposed **System Test** shall not take place and the **Test Panel** will disband automatically.

OC10.A.3.5 If the **Test Co-ordinator** requires the proposed **System Test** to be modified or delayed and such modification or delay is possible, the **Test Panel** shall, as soon as practicable, revise the **Test Programme** accordingly.

OC10.A.3.6 The **Test Programme** will, subject to OC10.A.3.7, bind all recipients to act in accordance with the provisions of the **Test Programme** in relation to the proposed **System Test**.

OC10.A.3.7 Any problems with the proposed **System Test** which arise or are anticipated after the issue of the **Test Programme** and prior to the day of the proposed **System Test** must be notified to the **Test Co-ordinator** as soon as possible in writing. If the **Test Co-ordinator** decides that these anticipated problems merit an amendment to, or postponement of, the **System Test**, he shall notify the **Test Proposer** (unless the test was proposed by the **TSO**) and each **User** identified by the **TSO** under OC10.4.2.1 accordingly.

OC10.A.3.8 If, on the day of the proposed **System Test**, operating conditions on the **Total System** are such that any party involved in the proposed **System Test** wishes to delay or cancel the start or continuance of the **System Test**, they shall immediately inform the **Test Co-ordinator** of this decision and the reasons for it. The **Test Co-ordinator** shall then postpone or cancel, as the case may be, the **System Test** and shall, if possible, agree with the **Test Proposer** (unless the test was proposed by the **TSO**) and all **Users** identified by the **TSO** under OC10.4.2.1 another suitable time and date. If he cannot reach such agreement, the **Test Co-ordinator** shall reconvene the **Test Panel** as soon as practicable, which will endeavour to arrange another suitable time and date for the **System Test**, in which case the relevant provisions of this OC10 shall apply.

OC10.A.4 **Test Panel Final Report**

OC10.A.4.1 At the conclusion of the **System Test**, the **Test Proposer** shall, if so decided by the **Test Panel** pursuant to OC10.A.2.2(d), prepare a **Final Report** for submission to the **TSO** and the other members of the **Test Panel**. The **Final Report** shall be submitted within the period agreed by the **Test Panel** pursuant to OC10.2.2(d).

OC10.A.4.2 The **Test Proposer** may omit from the **Final Report** matters which, in its reasonable opinion, are confidential to it and the **Final Report** shall not be submitted to any person who is not a member of the **Test Panel** unless the **Test Panel**, having considered the confidentiality issues arising, shall have unanimously approved such submission.

OC10.A.4.3 The **Final Report** shall include a description of the **Plant** and/or **Apparatus** tested and a description of the **System Test** carried out, together with the results and, where appropriate, the conclusions and recommendations of the **Test Panel**.

OC10.A.4.4 When the **Final Report** has been prepared and submitted in accordance with OC10.A.4.1, the **Test Panel** will disband automatically. If a **Final Report** is not required by the **Test Panel** then it will disband automatically upon the conclusion of the **System Test**.

OPERATING CODE NO. 11
TESTING, MONITORING AND INVESTIGATION

OC11.1 INTRODUCTION

Operating Code No. 11 ("OC11") specifies the procedures to be followed by the **TSO** in carrying out:

(a) **Monitoring** of the compliance of **CDGUs, Demand Side Units, Aggregated Generating Units** or **Interconnectors** with **Dispatch Instructions** issued by the **TSO** under SDC2 and of whether **Spinning Reserve** requirements can be met;

(b) **Testing**:-

(i) in certain circumstances, (whether by means of a formal test or verification by inspection) to ascertain whether the **Design and Operating Requirements** are being complied with in respect of **CDGUs** and **Users' Equipment** (including that of **Large Demand Customers** and the **DNO)** and whether **Spinning Reserve** requirements can be met; and

(ii) at the request of a **User**, in certain circumstances; and

(c) **Investigations** in relation to equipment and operational procedures at **Power Stations** and other **User Sites**.

It should be noted that **Testing** and **Monitoring** under this OC11 are two different procedures with, in general terms, **TSO** representatives being present at the **Power Station** or **User Site** for a **Test**, but not for **Monitoring**. It should also be noted that **Testing** under OC11 includes **Within-Day Tests**.

OC11.2 OBJECTIVES

The objectives of OC11 are to establish whether **CDGUs** and **User's Equipment** operate within their **Design and Operating Requirements** or the relevant requirements of the **SSS Agreement** and (in the case of **CDGUs**) comply with **Dispatch Instructions** and are capable of providing **Spinning Reserve** and whether **Large Demand Customers'** equipment and the **DNO's** equipment complies with the CC.

OC11.3 SCOPE

OC11 applies to the **TSO** and to **Users** which in this OC11 means **Generators**, **Aggregators**, **Interconnector Owners**, **Dispatchable Demand Customers**, **Large Demand Customers** and the **DNO**.

OC11.4 SPINNING RESERVE MONITORING

The **Spinning Reserve Monitor** (which may be installed pursuant to the provisions of the **MC**) may (if so agreed between the **TSO** and the relevant **User** or determined by the **Authority** pursuant to the **MC**) be used as part of **Operational Metering**.

OC11.5 PROCEDURE FOR **MONITORING**

OC11.5.1 **Monitoring** may be carried out at any time by the **TSO** and involves the analysis of the output of **Monitoring** equipment (as required or permitted under the CC and/or relevant **Connection Agreements** and/or **SSS Agreements** and/or the **MC**), either on the **CDGU**, the **User System, Interconnectors**, the **NI System** or, in relation to **Aggregators**, the **Aggregator Systems** for which they are **Aggregators**, which is relayed to the **TSO**, which shows the output and/or performance of the **CDGU, Demand Side Unit, Aggregated Generating Unit** or **Interconnector** and associated **Equipment** in order to see whether the **CDGU, Demand Side Unit, Aggregated Generating Unit or Interconnector** is complying with its **Dispatch Instructions**. The output from such **Monitoring** equipment installed may be used to **Monitor** the performance of **CDGUs, Demand Side Unit, Aggregated Generating Unit** or **Interconnector** in the event of a sudden fall in **NI System Frequency** for comparison with the **Unit Dynamic Models**.

OC11.5.2 In determining whether a **CDGU, Demand Side Unit, Aggregated Generating Unit** or **Interconnector** has complied, or is complying, with a **Dispatch Instruction**, the **TSO** shall in each case give due regard to operating conditions on the **NI System**. The **TSO** shall also apply the **Tolerance Bands** set out in the relevant table in Appendix 1 to the **Monitoring** of the relevant **Dispatch Characteristic**, as indicated in the relevant paragraphs of this OC11. The **TSO** shall, when **Monitoring Active Power** or **Reactive Power**, select either the **Wide Tolerance Band** (for **Monitoring** sustained performance) or the **Narrow Tolerance Band** (for **Monitoring** stability over a short period). When **Monitoring** on the **Narrow Tolerance Band**, the **TSO** will select either the **Maximum Tolerance Band** or the **Minimum Tolerance Band**. In the event of a **Frequency Transient** occurring whilst the **TSO** is **Monitoring** the compliance by a **CDGU, Demand Side Unit, Aggregated Generating Unit** or **Interconnector** with a **Dispatch Characteristic** (regardless of which **Tolerance Band** is being applied by the **TSO** at the time) to which the **CDGU** responds in accordance with the relevant **User's** obligations to provide **Spinning Reserve Response**, the **CDGU** shall not fail the **Monitoring** by reason of such response.

OC11.5.3 (a) If, having applied the relevant **Tolerance Band**, the **TSO** suspects that a **CDGU, Demand Side Unit, Aggregated Generating Unit** or **Interconnector** has not complied, or is not complying, with a **Dispatch Instruction**, the **TSO** will, if it wishes to continue with the **Monitoring** inform the relevant **User** by submitting a **Warning Notice** (either orally or in writing) and, subject to the requirements of **System** security (which may require the **Dispatch Instruction** to be cancelled in which case the **Warning Notice** will be deemed to have been withdrawn), the **TSO** will allow the **User** 10 minutes after such notice to comply with the **Dispatch Instruction.**

(b) If in that 10 minute period the **User** still fails to comply with the **Dispatch Instruction**, the **TSO** may give notice to the**User** by submitting a **Monitoring Notice** (either orally or in writing) that the **CDGU, Demand Side Unit, Aggregated Generating Unit** or **Interconnector** is being **Monitored**.

(c) The **Monitoring Notice** will:-

(i) identify the **Dispatch Characteristic(s)** which is being **Monitored** and the underlying **Technical Parameter(s**);

(ii) specify, if relevant, whether the **Tolerance Band** to be used is the **Wide Tolerance Band** or the **Narrow Tolerance Band**; and

(iii) specify, if relevant, whether the **Narrow Tolerance Band** is to apply as a **Maximum Tolerance Band** or as a **Minimum Tolerance Band**.

(d) The **User** has the right, before the issue of the **Monitoring Notice**, or at any time thereafter by submitting to the **TSO** an **Availability Notice**, a **Technical Parameters Notice** or a **Technical Parameters Revision Notice** (as the case may be), to re-declare **Availability** or the **Technical Parameters** (in accordance with the provisions of SDC1) in respect of the **Dispatch Characteristic(s)** to be **Monitored**, such re-declaration to take effect from the time of receipt of the **Warning Notice** by the **User**. In the event that the **User** submits to the **TSO** an **Availability Notice** or a **Technical Parameters Notice** or a **Technical Parameters Revision Notice** at or about the same time as the **TSO** submits to the **User** a **Post Event Notice** (or **Interim Post Event Notice**) pursuant to OC11.5.4 or OC11.5.5 seeking to re-register the **Availability** or the same **Technical Parameter** (as the case may be) of the **CDGU, Demand Side Unit, Aggregated Generating Unit** or **Interconnector** in question to a different value, then the value of **Availability** or the value of the relevant **Technical Parameter** shall be deemed to be redeclared to the inferior of the values specified in the two notices.

(e) The period of **Monitoring** shall not exceed the period set out in the relevant table in Appendix 1 for the relevant **Dispatch Characteristic(s)** and the selected **Tolerance Band**.

OC11.5.4 Consequences of **Monitoring** and **Post Event Notices**

(a) At the end of the period of **Monitoring**, if the **User** has achieved each **Dispatch Instruction** for the period of the **Monitoring** within the relevant **Tolerance Band**, the **CDGU, Demand Side Unit, Aggregated Generating Unit** or **Interconnector** will be deemed to have complied with each **Dispatch Instruction**.

(b) If the average value of the **Dispatch Characteristic(s)** in any 5 minute period during the period of **Monitoring** falls outside the relevant **Tolerance Band** the **TSO** may by submitting a **Post Event Notice** to the **Generator** re-register the value of **Availability** or of the relevant **Technical Parameter** corresponding to that **Dispatch Characteristic** to the most inferior value outside the **Tolerance Band** for any 5 minute period during the period of **Monitoring** (with effect from the **Settlement Period** in which the **Monitoring Notice** was issued) and the **TSO** may also notify the **Generator** not later than 10 minutes before the end of the period of **Monitoring** that it will continue to **Monitor** the **CDGU, Demand Side Unit, Aggregated Generating Unit** or **Interconnector** for a further period not exceeding that shown in the relevant Table in Appendix 1 in respect of the particular **Dispatch Characteristic** and with reference to the relevant or selected **Tolerance Band**.

(c) If at the end of the further period of **Monitoring** the average value of the **Dispatch Characteristic(s)** in any 5 minute period during the **Monitoring** falls outside the relevant **Tolerance Band**, the **TSO** may re-register the value of the **Availability** or of the relevant **Technical Parameter** corresponding to that **Dispatch Characteristic** to the most inferior value for any 5 minute period during the period of **Monitoring** (with effect from the **Settlement Period** in which the **Monitoring Notice** was issued). Further periods of **Monitoring** may also take place, in accordance with the procedure set out in paragraph (b) above and the provisions of this paragraph (c) will apply to such further periods of **Monitoring**.

(d) (i) If (other than pursuant to a **Dispatch Instruction** to **De-Load**) the average value of **Output** for any 5 minute period is less than 80% of the average **Output** for either of the two immediately preceding 5 minute periods, the **TSO** may issue a **Post Event Notice** re-registering the **Availability** of the **CDGU, Demand Side Unit, Aggregated Generating Unit** or **Interconnector** at the level consistent with its average value for that 5 minute period with effect from the beginning of the **Settlement Period** in which such 5 minute period commenced.

(ii) If (following a **Dispatch Instruction** to **De-Load**) the average value of **Active Power** for any 5 minute period is less than 80% of the average value of **Active Power** which would have been generated by the **CDGU, Demand Side Unit, Aggregated Generating Unit** or **Interconnector** for such 5 minute period had it been **De-Loaded** at its maximum **De-Loading** rate (registered as a **Technical Parameter**), the **TSO** may issue a **Post Event Notice** re-registering the **Availability** of the **CDGU** at the level consistent with the average value for that 5 minute period with effect from the beginning of the **Settlement Period** in which such 5 minute period commenced.

(e) Prior to submitting a **Post Event Notice**, the **TSO** may deliver an **Interim Post Event Notice** to the **User** not later than 2 hours after:

(i) in the case of an event of the type specified in (d) (i) or (ii) above the end of the **Settlement Period** during which the event occurred; or

(ii) in the case of instances of **Monitoring**, the end of the relevant period of **Monitoring**;

if it is not reasonably practicable for the **TSO** to deliver a **Post Event Notice** to the **User** within that time.

(f) An **Interim Post Event Notice** shall specify:

(i) the **Settlement Period** during which the event of the type specified in (d) (i) or (ii) above occurred and, in the instance of **Monitoring**, the **Settlement Period** during which the relevant **Warning Notice** was issued; and

(ii) the matters or values which the **TSO** intends to redeclare in a **Post Event Notice** as a result of what happened.

(g) Each **Generating Unit Agreement** and **SSS Agreement** contains provisions on the validity of **Post Event Notices** which shall apply to the **Grid Code**.

OC11.5.5 **Spinning Reserve Monitoring** (including **Governor Droop Monitoring**)

(a) In the case of **CDGUs**, the following provisions of this OC11.5.5 shall apply to the **Monitoring** of **Spinning Reserve** and **Governor Droop** unless Schedule 8 of the relevant **Nominated Generating Unit Agreement** (or the relevant part of the **SSS Agreement**) otherwise requires. For the purposes of this OC11.5, in the event of any conflict between the provisions of this OC11.5 and the provisions of Schedule 8 of the relevant **Nominated Generating Unit Agreement** (or the relevant part of the **SSS Agreement**), the provisions of Schedule 8 (or the relevant part, as the case may be) shall apply. **Monitoring** of **Governor Droop** in relation to **Open Cycle Gas Turbine CDGUs** may be undertaken pursuant to the provisions of this OC11.5 set out above.

(b) For the purposes of this OC11:

(i) in respect of any **Frequency Transient**:

(aa) "**Pretransient Load**" means instantaneous **Load** level (in **MW**) of the **CDGU** at 5 seconds before the **Frequency Transient** commenced;

(bb) the response of the **CDGU** to such **Frequency Transient**, in terms of **Load** lift (in **MW**) above **Pretransient Load**, continuously over the period of 5 minutes starting when the **Frequency Transient** commenced, is referred to as "**Spinning Reserve Response**" and comprises **Initial Response** and **Sustained Response**;

(cc) the **Spinning Reserve Response** achieved by the **CDGU** in response to such **Frequency Transient** is referred to as the "**Achieved**" response;

(c) **Spinning Reserve Response**

(i) For the purposes of this OC11 and in relation to each **Generator** until the date (the "**Transition Date**"), being not more than 30 days after the **Unit Dynamic Model** has been accepted by the relevant **Generator** or determined (with or without modification) by the Expert (pursuant to **Schedule 8** of the relevant **Nominated Generating Unit Agreement** (or the relevant part of the **SSS Agreement** as the case may be)) to be valid, whereupon the **TSO** and the relevant **Generator** shall adopt (and thenceforth be bound by) the **Unit Dynamic Model** for the purposes of **Schedule 8** to the relevant **Nominated Generating Unit Agreement** (or the relevant part of the **SSS Agreement**, as the case may be) and this OC11:

(aa) the **Spinning Reserve Response** for the period from 10 seconds to 5 minutes after the commencement of a **Frequency Transient** is referred to as "**Sustained Response**";

(bb) a **CDGU** is required to attain and maintain at all times in this period a **Sustained Response** not less than the instantaneous value determined under (d) below (the "**Contracted**" response);

(cc) without prejudice to the relevant **Contracted Technical Parameter** (or to the requirement to attain **Contracted Sustained Response**), there is no specific requirement under this OC11.5.5(c)(i) as to **Spinning Reserve Response** in the period from 0 to 10 seconds ("**Initial Response**");

(ii) For the purposes of this OC11 after the **Transition Date**, the **Spinning Reserve Response** for the period from the commencement of a **Frequency Transient**:

(aa) from 0 to 5 seconds, is referred to as **Initial Response**; and

(bb) from 5 seconds to 5 minutes, is referred to as **Sustained Response.**

(d) **Contracted Response**

(i) For the purposes of this OC11 and prior to the **Transition Date**, for any **Frequency Transient**, the **Contracted Sustained Response** (in **MW**) is whichever is the least of:

(aa) the unconstrained response, which is the value for **Spinning Reserve** corresponding to the **Pretransient Load** on the **Sustained Load Diagram**. If the **Pretransient Load** is less than **Minimum Generation** for the **CDGU**, the unconstrained response shall be zero;

(bb) the **Availability** constrained response, which is:

$$A - PTL$$

where:

A = the **Availability** of the **CDGU** at the time at which the **Frequency Transient** commenced; and

PTL = **Pretransient Load** (**MW**);

(cc) the **Governor Droop** constrained response (SR_G), determined as follows:

$$SR_G = CC/Fg * \{(Fp - Ft) - 2A/3\}$$

where:

CC = **Contracted Capacity** (**MW**);

Fg = determined as:

50Hz * D/100

where D is specified **Governor Droop** (%) notified in the most recent relevant **Technical Parameters Notice**;

Fp = **NI System Frequency** (Hz) at the time 5 seconds before the **Frequency Transient** commenced;

Ft = the instantaneous **NI System Frequency** (Hz) at any time during the **Frequency Transient**;

A = determined as:
(Fp - Ft) - (Fg * B)
except where this term has a negative value, in which case A is 0;
where B is determined as:
0.9 - PTL/CC
except where this term has a negative value, in which case B is 0;
where PTL is **Pretransient Load**.

(ii) For the purposes of this OC11, after the **Transition Date**, the responses of a **CDGU** to a **Frequency Transient** predicted by the **Unit Dynamic Model** (described below) are referred to as the "**Contracted**" responses.

(e) OC3, "**Operating Margin**", specifies the timescales within which the **Operating Reserve** from **CDGUs** must be provided (and which are further described in SDC3, "**Frequency Control**"), as follows:-

(i) **Primary Operating Reserve**: from the time of a **Frequency** change, which must be fully available by 5 seconds, and which must be sustainable (subject to the **Unit Load Controller** adjustment, where applicable) for at least 15 seconds. For the period from 0 to 5 seconds, **Primary Operating Reserve** therefore falls within the category of **Initial Response**. Thereafter (from 5 seconds to 15 seconds) **Primary Operating Reserve** falls within the category of **Sustained Response**;

(ii) **Secondary Operating Reserve**: which is fully available and sustainable over the period from 15 to 90 seconds following an **Event**. **Secondary Operating Reserve** therefore falls within the category of **Sustained Response**;

(iii) **Tertiary Operating Reserve band 1**: which is fully available and sustainable for a period from 90 seconds to 5 minutes following an **Event**. Where **Tertiary Operating Reserve band 1** is provided by a steam turbine **CDGU** already **Synchronised** to the **NI System**, this will, to the extent it is provided within 5 minutes from the time of a **Frequency** change, fall within the category of **Sustained Response**. **Tertiary Operating Reserve band 1** provided by gas turbine **Units** does not fall within the category of **Sustained**

Response because gas turbine **Units** do not have a **Spinning Reserve Capability**;

(iv) **Tertiary Operating Reserve band 2**: which is fully available and sustainable for a period from 5 minutes to 20 minutes following an **Event**. **Tertiary Operating Reserve band 2** therefore does not fall within the category of **Sustained Response** (which is not **Monitored** after 5 minutes from the time of the **Frequency** change);

(v) **Replacement Reserve**: which is fully available and sustainable for a period from 20 minutes to 4 hours following an **Event**; and

(vi) **Substitute Reserve**: which is fully available and sustainable for a period from 4 hours to 24 hours following an **Event**.

(f) **Unit Dynamic Model**

(i) For the purposes of this OC11 and after the **Transition Date**, the **Unit Dynamic Model** is a computer model which predicts, for any set of relevant circumstances, the **Initial Response** and (on the basis described in (iv) below) the **Sustained Response** of a **CDGU** to a **Frequency Transient**.

(ii) The relevant circumstances referred to in (i) above are:-

(aa) in relation to the **CDGU**, the declared values of **Availability** and **Technical Parameters** (including **Governor Droop**) and steady state **Load** and other electrical performance characteristics; and

(bb) the condition of the **NI System**;

immediately prior to and during the **Frequency Transient**.

(iii) Upon the occurrence of a **Frequency Transient**, meters, monitors and event recorders (described in the MC and in the CC) will determine the relevant circumstances (referred to in paragraph (ii) above); and on the basis of such input data and other relevant data, the **Unit Dynamic Model** will determine the predicted **Initial Response** and **Sustained Response** of the **CDGU**.

(iv) The **Unit Dynamic Model** predicts **Sustained Response** over the period of 3 to 30 seconds from when the **Frequency Transient** commenced; for the purposes hereof it will be assumed that over the period 30 seconds to 5 minutes the predicted value of **Sustained Response** is equal to its predicted value at 30 seconds.

(g) **Achieved Response**

(i) The event recorders described in Sub-Code 3 of the **MC** will capture (at 0.1 second intervals), and upon the occurrence of a **Frequency Transient**, the **Frequency** logging equipment constituting part of **Operational Metering** will

record (from not less than 5 seconds before the **Frequency Transient** commenced) and retain, the instantaneous **Load** level of the **CDGU**.

(ii) The **Spinning Reserve Response Achieved** by the **CDGU** will be determined from the data referred to in (i) above and will be compared with the **Contracted** response.

(h) **Sustained Response Capability**

(i) For the purposes of the **Grid Code** the **"Sustained Response Capability"** is a factor (not greater than one) which represents actual or anticipated **Achieved Sustained Response** as a fraction of (where less than) **Contracted Sustained Response**. **Sustained Response Capability** may be:

(aa) declared by the **Generator** by submitting a **Technical Parameters Notice** or a **Technical Parameters Revision Notice** on the basis of anticipated response (generically, for all possible **Frequency Transients** and sets of relevant circumstances);

(bb) determined by the **TSO** (and notified to the **Generator** in a **Post Event Notice**) following the occurrence of a **Frequency Transient**, based on the instantaneous values of the **Contracted Sustained Response** and **Achieved Sustained Response** for which the **Sustained Response Deviation** (as defined below) was determined; or

(cc) determined on the basis of the result of a **Test** as described in OC11.6.2.

(ii) For the purposes of this OC11, in respect of any **Frequency Transient**, the "**Adjusted Contracted Sustained Response**" **(ACSR)** is the **Contracted Sustained Response (CSR)** adjusted by the prevailing **Sustained Response Capability (SRC)**, determined as follows:

ACSR = CSR * SRC

(i) **Spinning Reserve Deviation**

(i) For the purposes of this OC11 prior to the **Transition Date**:

(aa) the "**Sustained Response Deviation**" is the greatest amount (in **MW**) by which, following a **Frequency Transient**, at any time over the relevant period, the instantaneous value of **Sustained Response Achieved** deviated below the **Adjusted Contracted Sustained Response**;

(bb) the **Spinning Reserve Deviation** is the **Sustained Response Deviation**; and

(cc) the **Spinning Reserve Deviation** shall be zero if it would otherwise be negative.

(ii) For the purposes of this OC11 after the **Transition Date**:

(aa) the **"Initial Response Deviation"** and the **"Sustained Response Deviation"** are respectively the greatest amounts (in **MW**) by which, following a **Frequency Transient**, at any time over the relevant periods, the instantaneous values of **Initial Response Achieved** and **Sustained Response Achieved** deviated by more than the deviation tolerance below the **Contracted Initial Response** and the **Adjusted Contracted Sustained Response** respectively, as follows:

(i) the **Initial Response Deviation** is the greatest value of:

{CIR(1-t)} - AIR;

(ii) the **Sustained Response Deviation** is the greatest value of:

{ASCR(1-t)} - ASR;

where CIR, AIR, CSR and ASR are instantaneous values of **Contracted Initial Response**, **Achieved Initial Response**, **Contracted Sustained Response** and **Achieved Sustained Response**, and "t" is the deviation tolerance;

(bb) the **Spinning Reserve Deviation** is whichever is the greater of the **Sustained Response Deviation** and the **Initial Response Deviation**;

(cc) the **Spinning Reserve Deviation** shall be zero if it would otherwise be negative.

(j) **Spinning Reserve Failure**

For the purposes of this OC11, there is a "**Spinning Reserve Failure**" whenever following a **Frequency Transient**, the **Spinning Reserve Response Achieved** deviated (as described in (g) above) below the **Contracted** response and the **Spinning Reserve Deviation** is the amount of such deviation (determined in accordance with (g) above).

(k) Successive **Frequency Transients**

Where a **Frequency Transient** has occurred while the **CDGU** was **Synchronised**, the **CDGU** will not be required to respond to any further **Frequency Transient** for 5 minutes after the end of the first **Frequency Transient**; and the provisions of this OC11 shall apply accordingly.

(l) The **Generator** shall be entitled at any time, by submitting a **Technical Parameters Notice** or a **Technical Parameters Revision Notice** to the **TSO**, to re-declare the **Sustained Response Capability** or the **Governor Droop** value of a **CDGU**. Within 48 hours of receiving the **Technical Parameters Notice** or the **Technical Parameters**

Revision Notice from the **Generator**, the **TSO** may require the **Generator** to carry out a **Sustained Response Test** or a **Governor Droop Test** and if the test is failed, the **TSO** may by issuing a **Post Event Notice** to the **Generator**, re-register the **Spinning Reserve Capability** or the **Governor Droop** value for that **CDGU**, such re-registration to take effect from the beginning of the **Settlement Period** in which the **Technical Parameters Notice** or the **Technical Parameters Revision Notice** took effect.

OC11.5.6 In addition to the provisions set out in OC11.5.5, a **Generator** shall, having redeclared or having had a **Technical Parameter** of one of its **CDGUs** re-registered as a result of non-compliance, notify the **TSO** when it has rectified the fault which caused that non-compliance or believes reasonably that the **CDGU** is no longer so failing to comply by submitting a **Technical Parameters Notice** or a **Technical Parameters Revision Notice** to the **TSO** under SDC1. Upon the **TSO** receiving such notification, the relevant **Technical Parameter** will be deemed to be re-declared to either its original value or to the value specified in the **Technical Parameters Notice** or the **Technical Parameters Revision Notice** (which may be a lesser value which is an improved value to that to which it had been re-registered). The re-declared value will be regarded for all purposes as the applicable value for that **Technical Parameter**.

OC11.5.7 The **TSO** may then, of course, **Monitor** that re-declared value in accordance with the provisions of this OC11 and may, if the **CDGU** fails to comply with the re-registered **Technical Parameter,** follow the procedures set out in OC11.5.

OC11.6 PROCEDURE FOR **TESTING**

OC11.6.1 **Testing** (other than relating to **Spinning Reserve**)

(a) In circumstances where the **TSO** reasonably considers that, in relation to a **CDGU** or item of **User's Equipment**, a **User** might be failing to comply or might in the foreseeable future fail to comply with the relevant **Design and Operating Requirements** (or the requirements of the **SSS Agreement**, as the case may be), the **TSO** may, upon giving reasonable notice identifying the **Design and Operating Requirement** concerned, send representatives to the relevant **Power Station** or **User Site** in order to verify by **Testing** or inspection (in the case of **Testing,** conducted by the **User**) whether in relation to the **CDGU** or item of **User's Equipment**, as the case may be, the **Design and Operating Requirement** (or **SSS Agreement** requirement, and the case may be) is being complied with. The **Test** or inspection may involve the giving of specific **Dispatch Instructions** within the provisions of SDC2. The period of notice which is reasonable will depend upon all the circumstances, including the **Design and Operating Requirement** (or **SSS Agreement** requirement, as the case may be) in question.

(b) A **Generator** or other **User**, as the case may be, must allow the **TSO** representatives access to all relevant parts of its **Power Station** or **User Site** for the purposes of this OC11.

(c) The procedure for the **Test**, and the criteria for passing the **Test**, will, if not agreed between the **TSO** and the **Generator** or other **User**, be as determined by the **TSO** acting reasonably and as notified to the **Generator** or other **User**, as the case may be,

at the time and the **Generator** or other **User**, as the case may be, will comply with all reasonable instructions of the **TSO** in carrying out the **Test**.

(d) If the procedure for the **Test**, and the criteria for passing the **Test**, are so determined by the **TSO** and, within 48 hours after completion of the **Test**, the **User** notifies the **TSO** in writing that it objects to the procedure and/or the criteria which were used for the **Test**, then the question of whether the **Test** procedure and/or the criteria were valid shall:-

(i) in the case of a **Design and Operating Requirement** contained in the **User's** relevant **Nominated Generating Unit Agreement** (or **Nominated Power Station Agreement**), be decided by the Expert in accordance with the relevant dispute resolution procedure set out in that Agreement; or

(ii) in the case of a **Design and Operating Requirement** contained in the **Grid Code**, be decided in accordance with the relevant dispute resolution procedure set out in the **User's** relevant **Connection Agreement**; or

(iii) in the case of a **Design and Operating Requirement** contained in the **User's** relevant **Connection Agreement**, be decided in accordance with the relevant dispute resolution procedure set out in the **User's** relevant **Connection Agreement**; or

(iv) in the case of a requirement contained in the **User's** relevant **SSS Agreement**, be decided in accordance with the relevant dispute resolution procedure set out in the **User's** relevant **SSS Agreement;**

and, in any such case, the effects of the **Test** shall be suspended until such time as it has been determined that the procedure for the **Test** or the criteria for passing the **Test** were valid. If it is determined that the procedure for the **Test** or the criteria for passing the **Test** were not valid, then the **Test** shall not be effective for the purposes of the relevant **Agreement** or the **Grid Code**, as the case may be. The **TSO** may, however, conduct a further **Test** in accordance with this OC11.6 (including this OC11.6(d)), taking into account any relevant recommendations of the Expert, in determining the procedure and/or criteria for such further **Test.**

(e) (i) In determining whether the **CDGU** or item of **User's Equipment**, as the case may be, has passed a **Test**, due regard will be given by the **TSO** to operating conditions on the **NI System** and (where applicable) the relevant **Tolerance Bands** will be applied to the relevant matters being **Tested** as set out in Appendix 1 and the **Conversion Factors** and the **Additional Conversion Factors** may also be applied.

(ii) If, within 48 hours after completion of the **Test**, the **User** notifies the **TSO** in writing that it disagrees that the results show that the **CDGU** or item of **User's Equipment** has failed the **Test**, then the question of whether the **Test** has been passed or failed shall:-

(aa) in the case of a **Design and Operating Requirement** contained in the **User's** relevant **Nominated Generating Unit Agreement** (or

Nominated Power Station Agreement), be decided by the Expert in accordance with the relevant dispute resolution procedure set out in that Agreement; or

(bb) in the case of a **Design and Operating Requirement** contained in the **Grid Code**, be decided in accordance with the relevant dispute resolution procedure set out in the **User's** relevant **Connection Agreement**; or

(cc) in the case of a **Design and Operating Requirement** contained in the **User's** relevant **Connection Agreement**, be decided in accordance with the relevant dispute resolution procedure set out in the **User's** relevant **Connection Agreement**; or

(dd) in the case of a requirement contained in the **Users** relevant **SSS Agreement**, be decided in accordance with the relevant dispute resolution procedure set out in the **User's** relevant **SSS Agreement**;

and, in any such event, the effects of the **Test** shall be suspended until such time as it has been determined that the **CDGU** or item of **User's Equipment** has failed the **Test**.

(f) If in relation to the **CDGU** or item of **User's Equipment**, as the case may be, the **Generator** fails the **Test** then:

(i) if the **Design and Operating Requirement** is one under the **Grid Code**, the **TSO** may, in the case of those **Design and Operating Requirements** where a parameter or other data item is registrable (that is, those other than CC parameters), re-register the value of the relevant **Design and Operating Requirement** to reflect the lower level of compliance shown by the **Test**;

(ii) the **User** will, if the **Design and Operating Requirement** is one under a **Nominated Generating Unit Agreement** to which it is a party, be subject to such consequences (if any) as may arise under that agreement;

(iii) the **User** will, if the **Design and Operating Requirement** is one under a **Connection Agreement** to which it is a party, be subject to such consequences (if any) as may arise under that agreement; and

(iv) the **User** will, if it is a **SSS Agreement** requirement, be subject to such consequences as may arise under that agreement.

OC11.6.2 **Testing** relating to **Spinning Reserve**

(a) In certain circumstances and in relation to steam turbine **CDGUs** in relation to their **Steam Turbine Units** only, **Sustained Response Capability** and **Governor Droop** may, unless **Schedule 8** of the relevant **Generating Unit Agreement** (or the relevant part of the **SSS Agreement**, as the case may be) otherwise requires, be tested as described in this OC11.6.2. For the purposes of this OC11.6.2, in the event of any conflict between the provisions of this OC11.6.2 and the provisions of Schedule 8 of the relevant **Generating Unit Agreement** (or the relevant part of the **SSS Agreement**, as the case may be), the provisions of Schedule 8 shall apply.

(b) The following provisions apply as to **Testing** of **Sustained Response Capability** for steam turbine **CDGUs** in relation to their **Steam Turbine Units**:

(i) A **Test** (**"Sustained Response Test"**) in respect of **Sustained Response Capability** may be requested in the following circumstances:

(aa) by the **Generator**, at any time; in which case the **TSO** will by the same time on the second **Business Day** thereafter specify the time (within 3 days) for the **Test** which shall be as soon as reasonably practicable having regard to **System** constraints (but in any event within 3 days); and

(bb) by the **TSO**, on not less than 24 hours' notice of the start of the **Test**:

(i) at any time, if the **TSO** has reasonable grounds to believe that the **Sustained Response Capability** is impaired; or

(ii) within 48 hours (the **Test** to start within 72 hours) after the **Generator** redeclared up the value of the **Sustained Response Capability** either:

(1) where the **Sustained Response Capability** had earlier been declared down following a **Frequency Transient**; or

(2) where following a previous **Test** under this paragraph OC11.6.2.(b)(i) (bb) (ii) **Sustained Response Capability** had been determined at a level lower than previously declared by the **Generator**.

(ii) If the **TSO** requests a test pursuant to OC11.6.2(b)(i)(bb)(ii) above and the **Sustained Response Capability** determined pursuant to such **Test** is lower than the value which had been redeclared (as described in (1) or (2) thereof) by the **TSO**, the value determined pursuant to such test shall be applied retrospectively (from the **Settlement Period** in which the **TSO's** redeclaration was made) in calculating the value of the "Sustained Response Inflexibility Factor" (as such term is defined in the relevant **Nominated Generating Unit Agreement** (or the relevant part of the **SSS Agreement**, as the case may be)) under paragraph 10.9 of Schedule 2 to each **Nominated Generating Unit Agreement** relating to steam turbine **CDGUs** in relation to their **Steam**

Turbine Units or under the relevant provision of the **SSS Agreement**, as the case may be.

(iii) The **Sustained Response Test** is a **Test** of sustained **Load** increases at particular initial **Load** levels, in comparison with expected values shown on the diagram included in the relevant **Nominated Generating Unit Agreement** (or the **SSS Agreement**, as the case may be) (the **"Sustained Load Diagram"**). The **Test** is carried out using turbine speeder input and involves fast **Load** increases of various magnitudes (up to the applicable value on the **Sustained Load Diagram**) at up to 3 different initial **Loads** nominated by the party which called for the **Test**. During the **Test** the event recorder is used to monitor relevant parameters.

(iv) For each initial **Load** level, the maximum **Load** increase which was sustained for 5 minutes will set the value (of **Load** increase) at which the **Test** was passed ("the achieved sustained increase"). If for any initial **Load** level the achieved sustained increase deviated from (and below) the relevant expected value on the **Sustained Load Diagram** by more than the greater of 2**MW** and 5% (the "test tolerance"), the party which called for the **Test** may redeclare the value of the **Sustained Response Capability (SRC)** (but subject to the right of the **Generator** subsequently to redeclare), determined as:

SRC = Va/{(1-T) * Ve}

where:

Va = the value (in **MW**) of the **Achieved Sustained Response**;

Ve = the relevant expected value (in **MW**) on the **Sustained Load Diagram**; and

T = the **Test** tolerance, which shall be 5%, and expressed as a decimal fraction of one for the purposes of the above equation.

(c) The following provisions apply as to **Testing** of **Governor Droop** in relation to steam turbine **CDGUs** in relation to their **Steam Turbine Units** (**Governor Droop** may be tested in relation to gas turbine **CDGUs** under OC11.6.1):

(i) For the purposes of this OC11, "**Specified Governor Droop**" means the highest incremental **Governor Droop** at any **Load** below 90% of **Contracted Capacity**. For a given **Specified Governor Droop** (**SGD**):

(aa) the lowest incremental **Governor Droop** at any **Load** between zero and 90% of **Contracted Capacity** shall be:

0.4 * SGD

(bb) the highest incremental **Governor Droop** at any **Load** above 90% of **Contracted Capacity** shall be:

(ii) A **Test** of **Governor Droop** may be requested by the **TSO**, on not less than 24 hours' notice, at any time if the **TSO** has reasonable grounds to believe that the **Specified Governor Droop** of the **CDGU** in relation to its **Steam Turbine Units** is higher than its declared value. The **Test** is carried out with the turbine at speed but with the **CDGU** not **Synchronised**, and determines the relationship between governor hydraulic output and turbine speed, as turbine speed is decreased, from several speeder set points. Incremental **Governor Droop** values are calculated for the turbine **Load** range from the recorded results of the **Test**.

(iii) The **TSO** may then redeclare the value of **Specified Governor Droop** to the value determined according to such **Test** (to the extent that it is higher than the value previously declared by the **Generator**).

(d) (i) To the extent that the **TSO** and a **Generator** are unable to agree on any further details or procedures for carrying out the **Sustained Response Test** or testing of **Governor Droop**, an Expert may be requested, pursuant to the relevant **Nominated Generating Unit Agreement** (or **SSS Agreement**, as the case may be), to determine such details or procedures, which will then be adopted and thereafter applied in any further **Testing** by the parties.

(ii) In the event of a dispute as to the result of a **Sustained Response Test** or a **Test** of **Governor Droop**, the matter shall be referred to an Expert for determination pursuant to the relevant **Nominated Generating Unit Agreement** (or **SSS Agreement**, as the case may be).

OC11.7 **INVESTIGATIONS**

(a) The **TSO** may, upon giving reasonable notice (in any event not less than 2 **Business Days**), send representatives to a **Power Station** or **User Site** in order to investigate any equipment or operational procedure.

(b) An **Investigation** may take place only for the purposes of enabling the **TSO** to fulfil its obligations relating to the operation of the **NI System** (and where in the reasonable opinion of the **TSO** in the absence of an **Investigation** it would be unable properly to fulfil such obligations).

(c) An **Investigation** shall not take place during or less than 2 days before or after a period of **Monitoring** (carried out following the issue of a **Warning Notice**) or **Test** in respect of **Plant** or equipment at the relevant **Power Station** or **User Site**.

(d) The **TSO's** notice under (a) shall specify:

(i) the nature and purpose of the **Investigation** and the reasons therefor;

(ii) the equipment or operational procedure subject to the **Investigation**; and

(iii) the procedure (as reasonably determined by the **TSO**) for the **Investigation**.

(e) The scope of an **Investigation** and the information and parts of the **Power Station** or **User Site** to which the **TSO** shall be entitled to access shall be limited to that required for the purposes of the **Investigation** as specified in the **TSO's** notice under (d).

(f) The **User** shall comply with the reasonable requests of the **TSO** in carrying out the **Investigation**, and allow the **TSO** representative access to all relevant parts of the **Power Station** or **User Site** to conduct the **Investigation**.

(g) An **Investigation** shall not of itself result in consequences for the **User** under the **Grid Code** or any **Nominated Generating Unit Agreement**, **Nominated Power Station Agreement**, **SSS Agreement** or **Connection Agreement**.

(h) These provisions shall be without prejudice to **TSO's** rights of access under any other document or agreement.

OC11.8 TESTING AT THE REQUEST OF A **GENERATOR** OR **USER**

OC11.8.1 A **Generator** or other **User**, as the case may be, shall, subject to OC11.8.2, be entitled, by notice in writing setting out the desired procedure (or, if the **TSO** acting reasonably so agrees, taking into account the nature of the test being requested, by oral request specifying the desired procedure, such oral request to be confirmed in writing as soon as reasonably practicable thereafter), to request the **TSO** to assist it (by **Dispatch**) in carrying out a test on any of its **CDGUs** or **User's Equipment**, as the case may be, as such **Generator** or other **User**, acting reasonably in accordance with **Prudent Operating Practice**, may request. In the case of a test (other than an on-**Load** valve test) on a **CDGU**, the procedure set out in the notice or specified in the oral request (as the case may be) shall include the level of **Availability** and the values for **Technical Parameters** which will be declared for the **CDGU, Demand Side Unit, Aggregated Generating Unit or Interconnector** for the period of the test in accordance with SDC1 and shall also include details of the **Dispatch Instructions** which the **Generator** wishes the **TSO** to issue to it for the purposes of the test which may be outside the **Availability** and **Technical Parameters** to be so declared.

OC11.8.2 The **TSO** shall be entitled to refuse to conduct any test requested under OC11.8.1 (or refuse to conduct it in accordance with the procedure or at the time requested) if, in the **TSO's** reasonable opinion, it is unsafe for the **NI System** to conduct such a test or if it is otherwise not practicable to do so (or to do so in accordance with the procedure or at the time requested) for **System** or any other reasons, including if all reasonable costs and expenses of the **TSO** are not, in the **TSO's** reasonable view, adequately covered by the **User**. The **TSO** may only continue to refuse to conduct the test (or to conduct it in accordance with the procedure) for so long as these reasons continue.

OC11.8.3 (a) If the **TSO** refuses to conduct the test, either at all or in accordance with the procedure or at the time requested, the **TSO** and the **Generator** or other **User**, as the case may be, may discuss an alternative form of test or procedure for conducting the test or timing of the test to see whether agreement can be reached.

(b) If the **TSO** agrees to the test taking place, to the procedure for conducting the test and to the time of the test, either in response to the original request or following the

discussion referred to in (a) above, it will notify the **Generator** or other **User**, as the case may be, accordingly.

(c) If the **TSO** does not (following the discussion referred to in (a)) agree to the test taking place, then it will not take place, provided that as indicated in OC11.8.2 above, the **TSO** may only continue to refuse to conduct the test for so long as the reasons set out in that paragraph continue to apply.

(d) If the **TSO** does not (following such discussion) agree to the procedure for conducting the test, then if the test is to go ahead, the **TSO's** requirements relating to the procedure will prevail, unless the reasons set out in OC11.8.2 above no longer continue.

(e) If the **TSO** does not (following such discussion) agree to the timing of the test, then if the test is to go ahead, the **TSO's** requirements relating to timing will prevail.

OC11.8.4 (a) The **TSO** may then, in accordance with the agreed (or otherwise settled) procedure and timing and if agreed by the **User**, send representatives to the **Power Station** or **User Site**, as the case may be, in order to witness the test.

(b) The **Generator** or other **User**, as the case may be, must, if agreed under (a) above, allow the **TSO** witnesses access to all relevant parts of its **Power Station** or **User Site** in order to witness such a test.

(c) The **TSO** shall take all reasonable steps to ensure that any representatives that it sends to the **Power Station** or **User Site** pursuant to (a) above comply at all times with all relevant safety requirements of the **Generator** or other **User** (as the case may be) of which they are made aware and with all reasonable directions of the **Generator** and (but subject to (b) above) any reasonable restrictions on access whilst at the **Power Station** or **User Site** in question.

OC11.9 COMMISSIONING/ACCEPTANCE TESTING

The CC reflects the **Commissioning/Acceptance Testing** which will be required under each **Connection Agreement** for **User's Equipment** prior to being certified as acceptable to be and remain connected (or to be reconnected) to the **NI System** and for modifications to existing **User's Equipment.**

APPENDIX I

TABLE A

TABLE OF **TOLERANCE BANDS** FOR **DISPATCH INSTRUCTIONS**

DISPATCH CHARACTERISTIC	**Wide Tolerance Band**	Maximum period of **Monitoring** at **Wide Tolerance Band**	**Narrow Tolerance Band**	Max. period of **Monitoring** at **Narrow Tolerance Band**
Active Power (**MW**)	±5**MW** or ± 5% of **Dispatched Load** whichever is greater	6 hours	**Maximum Tolerance Band:** + 1**MW** and -5**MW**. **Minimum Tolerance Band**: -1**MW** and +5**MW**.	30 minutes
Reactive Power (Mvar)	±10 **Mvar**	2 hours	±5 **Mvar**	1 hour
Loading Rate (**MW**/min)	±5% or ±2 minutes for period to achieve **Load** whichever is longer	period to achieve **Load**	Not Applicable	Not Applicable
Synchronising Time	±5 minutes	Not Applicable	Not Applicable	Not Applicable
Governor Droop	3.5-5.5%	Not Applicable	Not Applicable	Not Applicable

TABLE B

TABLE OF **TOLERANCE BANDS** FOR **DISPATCH INSTRUCTIONS: GAS TURBINE UNITS**

DISPATCH CHARACTERISTIC	**Wide Tolerance Band**	Maximum period of **Monitoring** at **Wide Tolerance Band**	**Narrow Tolerance Band**	Max. period of **Monitoring** at **Narrow Tolerance Band**
Active Power (MW)	**± 3MW**	**2 hours**	**Maximum Tolerance Band: +1MW and -5MW Minimum Tolerance Band: -1MW and +5MW**	**30 Minutes**
Reactive Power (Mvar)	**± 5Mvar**	**2 hours**	**± 3Mvar**	**30 minutes**
Loading Rate (**MW**/min)	**± 5%**	**period to achieve Load**	**Not applicable**	**Not applicable**
Synchronous Compensation	**± 5Mvar**	**2 hours**	**± 3Mvar**	**30 minutes**
Governor Droop	**4%**	**Not applicable**	**Not applicable**	**Not applicable**

SCHEDULING AND DISPATCH CODE NO.1

UNIT SCHEDULING

SDC1.1 INTRODUCTION

SDC1.1.1 **SEM** Provisions

(a) This Scheduling and Dispatch Code No. 1 ("SDC1") forms part of the **Sections under Common Governance** of the **Grid Code**. The **Sections under Common Governance** are those parts of the **Grid Code** which are under common governance in both the **Grid Code** and **the Other Grid Code**.

(b) The form of this SDC1 is similar to the SDC1 in the **Other Grid Code.** Differences relate to references to relevant power systems and related terms. Where there is a difference between a provision in this **Grid Code** and an equivalent provision in the **Other Grid Code**, the wording in question is shaded in grey. In addition, those parts of this SDC1 that are not part of the **Other Grid Code** are shaded in grey in this SDC1. Differences between the form of this SDC1 and the SDC1 in the **Other Grid Code** are summarised in Annex 1 to this SDC1.

(c) This SDC1 is intended to work in conjunction with other documents, including the **Trading and Settlement Code ("TSC")**. The provisions of the **Grid Code** and the **Other Grid Code** will take precedence over the **TSC**. The **TSC** is the document under which the principal elements of the market for electricity operate. Every **User** which trades in electricity above certain minimum thresholds or their **Intermediary** shall be a party to the **TSC**. The **Market Operator** is a party to the **TSC**, as is the **TSO** and the **Other TSO**.

(d) The obligation to submit data in relation to some of the information required to be provided to the **TSO** by this SDC1 may be fulfilled by **Users** where such information submitted under the **TSC** by a **User** or by an **Intermediary** on behalf of **Users** is then provided to the **TSO** by the **Market Operator** under the provisions of the **TSC**, as further provided in this SDC1. The **TSO** may require **Users** to verify or provide revisions to data received by it via the **Market Operator**.

(e) Further provisions dealing with the **Sections under Common Governance** are contained in the **General Conditions**.

SDC1.1.2 SDC1 sets out the procedure for:

(a) **Availability**: the daily submission by a **User** to the **TSO** of an **Availability Notice** in respect of any of its:

(i) **CDGUs** (which for the avoidance of doubt comprise, **Generating Units** subject to **Central Dispatch**, **CCGT Installations**, **Hydro Units**, **Pumped Storage Generation** (but not **Pumped Storage Plant Demand**) and **Dispatchable WFPSs**);

(ii) **Pumped Storage Plant Demand**;

(iii) **Interconnector Availability** (in the case of the **Interconnector Owner**) and **Price** (in the case of an **Interconnector User**);

(iv) **Demand Side Units**;

(v) in the case of **Generator Aggregators**, its **Aggregated Generating Units**; and

(vi) **Controllable WFPSs.**

(b) **Technical Parameters**: the daily notification to the **TSO** of the **Technical Parameters**, in respect of the following **Trading Day**, by each **User** in a **Technical Parameters Notice**, notification of **Other Relevant Data** and notification of other technical data including ***Ancillary Services/System Support Services*** capability;

[Note: Please note that "Ancillary Services" will be used in the EirGrid Grid Code and "System Support Services" will be used in the SONI Grid Code.]

(c) **Commercial Offer Data**: the daily notification of **Commercial Offer Data**;

(d) Revisions/**Re-declarations:** revisions / **Re-declarations** of such information (other than **Commercial Offer Data** after **Gate Closure**) as provided for this in SDC1;

(e) **Indicative Operations Schedule**: the production and issuing by the **TSO** of an **Indicative Operations Schedule** the day before the **Trading Day** as a statement of which:

(i) **CDGUs;**

(ii) **Pumped Storage Plant Demand;**

(iii) **Interconnectors;**

(iv) **Demand Side Units;**

(v) **Aggregated Generating Units;** and/or

(vii) **Controllable WFPSs**

may be required.

SDC1.1.3 In this SDC1, the term "**Gate Closure**" shall mean 10.00 hours on the day preceding the relevant **Trading Day** to which the notice relates (D-1).

SDC1.1.4 *In respect of **PPA Generation** the provisions of Appendix B prevail and replace, as stated, the other parts of this SDC1.*

[Note: Please note that this paragraph applies to the SONI Grid Code only.]

SDC1.2 OBJECTIVE

The objectives of SDC1 are:

(a) to enable the **TSO**, in conjunction with the **Other TSO**, to prepare an **Indicative Operations Schedule** (utilising, amongst other things, a **Merit Order**) by 16.00 hours on the day preceding the relevant **Trading Day** (D-1) to be used in the **Scheduling** and **Dispatch** process for that **Trading Day**;

(b) to thereby ensure (so far as possible) the integrity of the **Transmission System** and to ensure that the **TSO** acts in conjunction with the **Other TSO** so that the **Other TSO** can ensure the integrity of the **Other Transmission System** (with the **Other TSO** having a similar objective);

(c) to ensure the security and quality of supply in relation to the **Transmission System** and to ensure that the **TSO** acts in conjunction with the **Other TSO** so that the **Other TSO** can ensure the security and quality of supply in relation to the **Other Transmission System** (with the **Other TSO** having a similar objective);

(d) to ensure that there is sufficient capacity to meet the electrical power demand, and thereby in conjunction with the **Other TSO** to ensure that there is sufficient capacity to meet the demand on the Island of Ireland at all times and in both cases together with an appropriate margin of reserve;

(e) to publish an **Indicative Operations Schedule** as provided for in this SDC1.

SDC1.3 SCOPE

SDC1 applies to the **TSO** and to the following **Users**:

(a) **Generators** with regard to their:
CDGUs; and
Controllable WFPSs.

(b) **Pumped Storage Generators** with regard to their **Pumped Storage Plant Demand**;

(c) **Interconnector Owners** with regard to their **Interconnectors**;

(d) In respect of the submission of **Commercial Offer Data** under SDC1.4.4.5 only, **Interconnector Users** in respect of their **Interconnector Units**;

(e) **Dispatchable Demand Customers** in relation to their **Individual Demand Site**;

(f) **Dispatchable Demand Customers** in relation to their **Aggregated Demand Sites**; and

(f) **Generator Aggregators** in respect of their **Aggregated Generating Units**.

Each of which (other than the **TSO**) is a "**User**" under this SDC1.

SDC1.4 PROCEDURE

SDC1.4.1 **Availability Notice**

SDC1.4.1.1 Requirement

(a) Each **User** shall, by not later than **Gate Closure** each day, notify the **TSO** by means of an **Availability Notice** (in such form as the **TSO** may reasonably notify from time to time or in the form published on the **TSO** website) of the **Availability**, available transfer capacity and/or **Demand Reduction** (as the case may be) of each of its:

(i) **CDGUs**;

(ii) **Controllable WFPSs**;

(iii) **Pumped Storage Plant Demand**;

(iv) **Interconnectors** (to be submitted by the **Interconnector Owner**);

(v) **Demand Side Units**; or

(vii) **Aggregated Generating Units** as the case may be.

(b) A **User** may satisfy this obligation by submitting the data under the **TSC**, unless the **TSO** requires, by notice to the **User**, the data to be submitted to it directly under the **Grid Code**.

(c) A **Generator Aggregator** will satisfy the obligation in this SDC1.4.1.1 by notifying to the **TSO** in an **Availability Notice** in the form described in paragraph (a) above the **Availability** of its **Aggregated Generating Units** as the case may be.

SDC1.4.1.2 Content

(a) The **Availability Notice** shall state the:

(i) **Availability** of the relevant:

- **CDGU;** or
- **Controllable WFPSs;** or

(ii) the **Demand Reduction** of the **Demand Side Unit** or **Pumped Storage Plant Demand**; or

(iii) the available transfer capacity as defined in the **TSC** in respect of an **Interconnector**;

as the case may be, (including, in the case of a **CCGT Installation**, the **Availability** of each of the ***CCGT Modules/CCGT Units*** within it) for each **Trading Period** in the following **Optimisation Time Horizon** (subject to revision under SDC1.4.5.1(a)). The **Availability Notice** submitted in relation to an **Optimisation Time Horizon** will supersede the previous one in relation to that part of the previous **Optimisation Time Horizon** which is covered by the new one.

[Note: The term "CCGT Module" applies to the SONI Grid Code and the term "CCGT Unit" will apply to the EirGrid Grid Code.]

(b) In the case of a **Generator Aggregator**, the **Availability Notice** shall state the **Availability** of its **Aggregated Generating Units** as a whole.

SDC1.4.1.3 Whole Numbers: The **MW** figure stated in the **Availability Notice** shall be a whole number.

SDC1.4.1.4 Atmospheric Conditions: In the case of **CDGUs** and **Controllable WFPSs** which are affected by ambient conditions, an **Availability Notice** submitted by a **Generator** shall be stated as being the **User's** best estimate of the prevailing atmospheric conditions for the **Trading Period** to which each part of the **Availability Notice** relates.

SDC1.4.2 **Additional Grid Code Availability Notice**

The following items are required to be submitted by each **User** by no later than **Gate Closure** each day, with the exception of **Aggregators** and **Dispatchable Demand Customers**, direct to the **TSO**, regardless of whether these have to be submitted under the **TSC**. The requirements in SDC1.4.1 in relation to data apply to this SDC1.4.2 as if repeated here.

SDC1.4.2.1 Fuels: In the case where a **CDGU** is capable of firing on different fuels, then the **Generator** shall submit an **Availability Notice** setting out the information in SDC1.4.1 above for each fuel for the **CDGU**.

SDC1.4.2.2 **CCGT Availability**

(a) The **Availability** of each ***CCGT Module/CCGT Unit*** within each **CCGT Installation**;

[Note: The term "CCGT Module" will apply to the SONI Grid Code and the term "CCGT Unit" will apply to the EirGrid Grid Code.]

CCGT Installations

[Note: The heading will apply in respect of the SONI Grid Code only.]

(b) In the case of a **CCGT Installation**, the **CCGT Installation Matrix** submitted by the **Generator** *under PCA2.3.4 of the Planning Code / PC.A4.3 of the Planning Code Appendix* (as may be revised as therein provided is used and relied upon by the **TSO** as a 'look up table' to determine the number of ***CCGT Modules/CCGT Units*** within a **CCGT Installation** which will be synchronised to achieve the **MW Output**

specified in a **Dispatch Instruction**. When using a **CCGT Installation Matrix** for **Scheduling** purposes, the **TSO** will take account of any updated information on the individual **Availability** of each ***CCGT Module/CCGT Unit*** contained in an **Availability Notice** submitted by a **Generator** pursuant to this SDC1. The individual **Availability** figures submitted under this SDC1.4.2.2 must be consistent with the **Generator's** submission under the **TSC**.

[Note: Please note that "PCA2.3.4" will be referred to in the SONI Grid Code and "PC.A4.3 of the Planning Code Appendix" will be referred to in the EirGrid Grid Code.]

[Note: The term "CCGT Module" will apply to the SONI Grid Code and the term "CCGT Unit" will apply to the EirGrid Grid Code.]

(c) It is accepted that in cases of change in **MW Output** in response to **Dispatch** instructions issued by the **TSO**, there may be a transitional variance to the conditions reflected in the **CCGT Installation Matrix**. Each **Generator** shall notify the **TSO** as soon as practicable after the event of any such variance.

(d) In achieving a **Dispatch Instruction** the range or number of ***CCGT Modules/CCGT Units*** envisaged in moving from one **MW Output** level to the other should not be departed from.

(e) There is a provision in SDC1.4.5 for the **Generator** to revise the individual **Availability** of each ***CCGT Module/CCGT Unit*** within each **CCGT Installations**, subject always to the provisions of this SDC1.4.2.2;

[Note: The term "CCGT Module" will apply to the SONI Grid Code and the term "CCGT Unit" will apply to the EirGrid Grid Code.]

(f) *The **CCGT Installation Matrix** can only be amended such that the **CCGT Installation** comprises different **CCGT Modules** in accordance with PCA2.3.5.*

[Note: Please note that the above paragraph applies to Northern Ireland only.]

SDC1.4.3 **General Availability Requirements**

*The provisions at SDC1.4.3.1, SDC1.4.3.2 and SDC1.4.3.3 do not apply to **PPA Generation** which is dealt with in Appendix B.1.*

[Note: Please note that words in italics above will not be incorporated in the EG Grid Code.]

SDC1.4.3.1 **Availability** of **Generating Units**

Each **Generator** and **Generator Aggregator** shall in relation to its **CDGUs**, **Controllable WFPSs** or **Aggregated Generating Units** maintain, repair, operate and fuel the **CDGU** and/or **Controllable WFPS** and/or **Aggregated Generating Unit** as required by ***Prudent Operating Practice/Prudent Utility Practice*** and any legal requirements applicable to its jurisdiction, with a view to providing the required ***System Support Services*** *as provided for in a **System Support Services***

Agreement / Ancillary Services *as provided for in an* ***Ancillary Services Agreement****.*

[Note: Please note that the term "Prudent Operating Practice" will be used in the SONI Grid Code whilst the term "Prudent Utility Practice" will be used in the EirGrid Grid Code.]

[Note: Please note that "System Support Services" will be referred to in the SONI Grid Code and "Ancillary Services" will be referred to in the EirGrid Grid Code.]

SDC1.4.3.2 Each **Generator**, and where relevant each **Generator Aggregator**, shall, subject to the exceptions in SDC1.4.3.3, use reasonable endeavours to ensure that it does not at any time declare in the case of its **CDGU**, **Controllable WFPS**, or **Aggregated Generating Unit**, the **Availability** or **Technical Parameters** at levels or values different from those that the **CDGU, Controllable WFPS**, and/or an **Aggregated Generating Unit** could achieve at the relevant time. The **TSO** can reject declarations to the extent that they do not meet these requirements.

SDC1.4.3.3 SDC1.4.3.2 shall not apply to the extent:

(a) it would require the **Generator** or, where relevant, the **Generator Aggregator** to declare levels or values better than the **Registered Capacity** and **Technical Parameters** as submitted under the **Planning Code** in respect of a **CDGU**, a **Controllable WFPS** and/or an **Aggregated Generating Unit**;

(b) necessary during periods of ***Scheduled Outage / Planned Outage*** or ***Short Term Scheduled Outage / Planned Maintenance Outage*** or otherwise with the consent of the **TSO**;

[Note: Please note that "Scheduled Outage" and "Short Term Scheduled Outage" will be used in the EirGrid Grid Code and "Planned Outage" and "Planned Maintenance Outage" will be used in the SONI Grid Code.]

(c) necessary while repairing or maintaining the **CDGU**, the **Controllable WFPS** and/or the **Aggregated Generating Unit** or equipment necessary to the operation of the **CDGU**, the **Controllable WFPS** and/or the **Aggregated Generating Unit** where such repair or maintenance cannot reasonably, in accordance with ***Prudent Operating Practice/Prudent Utility Practice***, be deferred to a period of ***Scheduled Outage / Planned Outage*** or ***Short Term Scheduled Outage /Planned Maintenance Outage****;*

[Note: Please note that references to "Prudent Utility Practice", "Scheduled Outage" and "Short Term Schedule Outage" will be made in the EirGrid Grid Code whereas references to "Prudent Operating Practice", "Planned Outage" and "Planned Maintenance Outage" shall be made in the SONI Grid Code.]

(d) necessary to avoid an imminent risk of injury to persons or material damage to property (including the **CDGU**, the **Controllable WFPS** and/or the **Aggregated Generating Unit**); or

(e) it is not lawful for the **Generator** to operate the **CDGU**, the **Controllable WFPS** and/or the **Aggregated Generating Units**.

SDC1.4.3.4 **Availability of Demand Side Units**

Each **Dispatchable Demand Customer** shall, subject to the exceptions in SDC1.4.3.5, use reasonable endeavours to ensure that it does not at any time declare the **Demand Reduction** and the **Demand Side Unit** characteristics of its **Demand Side Unit** at levels or values different from those that the **Demand Side Unit** could achieve at the relevant time,. The **TSO** can reject declarations to the extent that they do not meet these requirements.

SDC1.4.3.5 SDC1.4.3.4 shall not apply to the extent:

(a) it would require the **Dispatchable Demand Customer** to declare levels or values better than **Registered Capacity** and **Technical Parameters** as submitted under the Planning Code in respect of a **Demand Side Unit**;

(b) necessary during periods of ***Scheduled Outage / Planned Outage*** or ***Short Term Scheduled Outage / Planned Maintenance Outage*** or otherwise with the consent of the **TSO**;

[Note: Please note that "Scheduled Outage" and "Short Term Scheduled Outage" will be used in the EirGrid Grid Code and "Planned Outage" and "Planned Maintenance Outage" will be used in the SONI Grid Code.]

(c) necessary while repairing or maintaining the **Demand Side Unit** or equipment necessary to the operation of the **Demand Side Unit** where such repair or maintenance cannot reasonably, in accordance with ***Prudent Operating Practice/Prudent Utility Practice***, be deferred to a period of ***Scheduled Outage / Planned Outage*** or ***Short Term Scheduled Outage / Planned Maintenance Outage.***

[Note: Please note that references to "Prudent Utility Practice", "Scheduled Outage" and "Short Term Schedule Outage" will be made in the EirGrid Grid Code whereas references to "Prudent Operating Practice", "Planned Outage" and "Planned Maintenance Outage" shall be made in the SONI Grid Code.]

(d) necessary to avoid an imminent risk of injury to persons or material damage to property (including the **Demand Side Unit**);

(e) it is not lawful for the **Dispatchable Demand Customer** to reduce its **Demand** or to operate its **Demand Side Unit**.

SDC1.4.3.6 Changes in **Availability**:

(a) Increasing: If a **Generator**, a **Generator Aggregator** or a **Dispatchable Demand Customer** in respect of a **CDGU**, an **Aggregated Generating Unit,** a **Demand Side Unit** or **Pumped Storage Plant** in relation to

Demand, issues an **Availability Notice** increasing (from zero or otherwise) the level of **Availability** or **Demand Reduction** from a specified time, such notice shall be construed as meaning that:

(i) in the case of a **CDGU** and/or **Aggregated Generating Unit**, the **CDGU** and/or **Aggregated Generating Unit** is capable of being synchronised to the **Transmission System** or **Distribution System** at that specified time or increasing its **MW Output** at that specified time as the case may be;

(ii) in the case of a **CDGU** which is an **Open Cycle Gas Turbine**, the **CDGU** is capable of being started at that specified time; or

(iii) in the case of a **Demand Side Unit**, the **Demand Side Unit** is capable of delivering subsequent Demand Reduction(s) at that specified time.

(b) **Controllable WFPS:** If a **Generator** or, where relevant a **Generator Aggregator**, in respect of a **Controllable WFPS**, issues an **Availability Notice** increasing (from zero or otherwise) or decreasing the level of **Availability** from a specified time, such notice shall be effective from the **Trading Period** following the specified time.

SDC1.4.3.7 Decreasing: When a **CDGU** and/or **Controllable WFPS** is **Synchronised** to the **System** the **Generator** may have occasion to issue an **Availability Notice** decreasing the level of **Availability** of the **CDGU** and/or **Controllable WFPS** from a specified time. Such notice shall be construed as meaning that the **CDGU** and/or **Controllable WFPS** is capable of maintaining **Load** at the level of the prevailing **Availability** until the time specified in the notice. Thereafter, the **CDGU** and/or **Controllable WFPS** shall be capable of maintaining **Load** to the level which would have been achieved if a **Dispatch Instruction** had been given to reduce the **Load**. This would have occurred with effect from the specified time, at the maximum **De-Loading Rate** and/or **Ramp-Down Rate** declared for the **CDGU** and/or **Controllable WFPS** as a **Technical Parameter** at such time down to the level of **Availability** specified in the new **Availability Notice**.

SDC1.4.3.8 If an **Interconnector Owner** in respect of an **Interconnector** issues an **Availability Notice** increasing (from zero or otherwise) or decreasing the level of available transfer capacity on the **Interconnector** as a whole from a specified time, such notice shall, subject to SDC1.4.5.1(a), be effective immediately following the specified time.

SDC1.4.4 **Technical and Commercial Data Requirements**

*Additional provisions in relation to **PPA Generation** are contained in Appendix B2, which supplement and/or replace the provisions in this section SDC1.4.4.*

[Note: This sentence applies to the SONI Grid Code only.]

SDC1.4.4.1 **Technical Parameters**

(a) (i) By not later than **Gate Closure**, each **User** shall in respect of each:

- **CDGU;**

- **Controllable WFPS**;
- **Aggregated Generating Unit**,
- **Pumped Storage Plant Demand**; and/or
- **Demand Side Unit**,

submit to the **TSO** a **Technical Parameters Notice** in such form as the **TSO** may reasonably notify to each **User** or in the form published on the **TSO** website from time to time, containing the **Technical Parameters** to apply for the following **Trading Day**.

(ii) A **User** may satisfy this obligation by submitting the data under the **TSC**, unless the **TSO** requires, by notice in writing to the **User**, the data to be submitted to it under the **Grid Code**.

(iii) If there is a change to the data submitted under the **TSC**, the **User** shall notify the **TSO**.

(b) Flexibility:

(i) In the case of any **Technical Parameters** as to which the **User** should, acting in accordance with ***Prudent Operating Practice/Prudent Utility Practice***, have some flexibility either in the revision itself or in the time at which the revision is to take effect the **TSO** may, acting reasonably, suggest an amended data figure and/or an amended time at which the data figure is to take effect.

(ii) Insofar as it is able to do so without breaching any obligations regarding confidentiality contained either in the **TSO Licence** or in any agreement, the **TSO** shall notify the **User** of the reasons for such flexibility request in such degree of detail as the **TSO** considers reasonable in the circumstances.

(iii) If the **User** agrees to such suggestion (such agreement not to be unreasonably withheld) the **User** shall use reasonable endeavours to accommodate such suggestion and submit a revised **Technical Parameters Notice** accordingly. In any event, the **TSO** may require such further information on the revision as is reasonable and the **User** shall give the **TSO** such information as soon as reasonably practicable.

A **User** shall notify the **TSO** as soon as it becomes aware, acting in accordance with ***Prudent Operating Practice/Prudent Utility Practice***, that any of the data submitted under SDC1.4.4.1 changes.

SDC1.4.4.2 **Additional Grid Code Characteristics Notice**

The following items are required to be submitted by each **User**, with the exception of **Aggregators**, direct to the **TSO**:

(a) Individual ***CCGT Module/CCGT Unit*** data equivalent to the data required for a **CCGT Installation**. It shall also show any revisions to the **Technical Parameters** for each of the ***CCGT Modules/CCGT Units*** within it.

[Note: The term "CCGT Module" applies to the SONI Grid Code and the term "CCGT Unit" will apply to the EirGrid Grid Code.]

(b) Different Fuels: In the case where a **CDGU** is capable of firing on different fuels, then the **Generator** shall submit an **Additional Grid Code Characteristics Notice** in respect of any additional fuel for the **CDGU**, each containing the information set out in SDC1.4.4.1 above for each fuel and each marked clearly to indicate to which fuel it applies.

(c) *Export adjustment factors applied by the **User** in submitting data and that may be applied by the **TSO** where applicable in issuing **Dispatch Instructions** and otherwise in calculations relating to instructions in relation to the relevant **Plant** and/or **Apparatus**, between the **Generator Terminals** and the **Connection Points**.*

[Note: This provision applies to the EirGrid Grid Code only.]

(d) In the case of **Interconnector Owners**, **Interconnector** data, including but not limited to the **Availability** of **Interconnector Filters**.

(e) In relation to each **Demand Side Unit**, the **Demand Profile** and the **Initial Demand Reduction Time**.

(f) Where there is a ***System Support Services Agreement*** / ***Ancillary Services Agreement*** in place, the ***System Support Services*** / ***Ancillary Services*** which are **Available**.

[Note: Please note that the SONI Grid Code will be referring to System Support Services and the EirGrid Grid Code will be referring to Ancillary Services.]

(g) The parameters listed in Appendix A Part 2 of SDC1.

*(h) A **Generator** shall submit to the **TSO** the **Operating Reserve** capabilities for each category of **Operating Reserve** defined in OC4.6.3 for each of its **CDGUs** for each **Trading Period**.*

[Note: Please note that the above paragraph only applies to the EirGrid Grid Code only.]

*(i) In the case of Kilroot **Power Station** and Ballylumford **Power Station**, which configuration referred to in PC.A3.3.12 the **Power Station** is operating at for each **Trading Period**.*

[Note: This paragraph applies to the SONI Grid Code only.]

A **User** shall notify the **TSO** as soon as it becomes aware, acting in accordance with ***Prudent Operating Practice/Prudent Utility Practice***, that any of the data submitted under SDC1.4.4.2 changes.

SDC1.4.4.3 Reserve capability:

(a) *A **Generator** or **Generator Aggregator** shall notify the **TSO** as soon as it becomes aware, acting in accordance with **Prudent Operating Practice**, if any of its **CDGUs** and/or **Controllable WFPSs** or **Aggregated Generating Units** (or associated **Power Station Equipment**) is unable to meet the reserve capability (as contained in a **Sustained Load Diagram** in the relevant **System Support Services Agreement** and submitted pursuant to the Planning Code ("PC")), whether that is due to a defect in the **CDGU** and/or **Controllable WFPS** and/or **Aggregated Generating Units** or in its associated **Power Station Equipment** submitted pursuant to the PC.*

*Such notification shall be made by submitting a **Technical Parameters Notice** in relation to **Sustained Response Capability**. In accordance with the **Generator's** obligations under SDC1.4.3.2 and paragraphs 1.B.1.1 and 1.B.1.2 of Appendix B to this SDC1, such **Reserve Characteristics** may only be amended (without the **TSO's** consent) in the event of a defect in or failure of a **CDGU** and/or **Controllable WFPS** and/or **Aggregated Generating Units** or any associated **Power Station Equipment.***

(b) *A change following such notification will only take effect for so long as it takes, acting in accordance with **Prudent Operating Practice**, for the relevant **CDGU** and/or **Controllable WFPS** and/or **Aggregated Generating Units** or associated **Power Station Equipment** to be repaired and such repair shall re-instate the reserve capability to its previous level or to such other level as the **TSO** may, acting in accordance with **Prudent Operating Practice**, agree, taking into account the provisions of SDC1.4.4.4(a), and the **Generator** shall then submit a **Technical Parameters Notice** re-declaring the reserve capability accordingly. The **Generator** shall advise the **TSO** of the nature of any such defect or failure and of the **Generator's** best estimate, acting as a reasonable and prudent **Generator**, of the time it will take to effect the repair to restore the **Reserve Characteristics** to their former level.*

[Note: Please note that the above paragraphs in italics only apply to the SONI Grid Code.]

SDC1.4.4.4 **Other Relevant Data**

(a) By not later than **Gate Closure** each day, each **User** in respect of each of its **Plant**, shall in respect of the following **Trading Day** submit to the **TSO** in writing in the form set out on the **TSO** website or in such other form as the **TSO** may reasonably notify to each **User** from time to time), details in relation to the following **Trading Day** of any newly arisen special factors, including abnormal risk to loss, which in the reasonable opinion of the **User** may have a material effect on the likely **MW Output** or **Demand Reduction** of such **Plant** (including, for a **CCGT Installation** in relation to each of the ***CCGT Modules/CCGT Units*** therein). The notice shall be consistent with the **User's** obligations under SDC1.4.3.2. The provisions of this paragraph also apply to **Interconnector Owners** in relation to their **Interconnector Filters**.

[Note: The term "CCGT Module" will apply to the SONI Grid Code and the term "CCGT Unit" will apply to the EirGrid Grid Code.]

(b) Where a **CDGU** is capable of firing on different fuels, then the **Generator** shall submit details in respect of each fuel for the **CDGU**. Each set of details shall contain the information set out in (a) above for each fuel and each shall be marked clearly to indicate to which fuel it applies.

A **User**, acting in accordance with ***Prudent Operating Practice/Prudent Utility Practice*****,** shall notify the **TSO** as soon as it becomes aware that any of the data submitted under SDC1.4.4.4 has changed.

SDC1.4.4.5 **Commercial Offer Data**

(a) Each:

- **Generator**;
- **Pumped Storage Generator**;
- **Interconnector User**;
- **Dispatchable Demand Customer**; and
- **Generator Aggregator,**

shall in respect of:

- each of its **CDGUs**;
- each of its **Pumped Storage Plant Demand**;
- each of its **Interconnector Units**;
- each of its **Demand Side Units**; and
- its **Aggregated Generating Units**,

submit to the **TSO**, either directly or by means of an **Intermediary** on its behalf, **Commercial Offer Data** by **Gate Closure** for the following **Trading Day** in accordance with the **TSC.**

(b) Each **Generator** shall in respect of each of its **Energy Limited Generating Units** submit an **Energy Limit** as well as the **Commercial Offer Data** by **Gate Closure** for the following **Trading Day**.

(c) Each **Pumped Storage Plant** will, with respect to its **Pumped Storage Plant Demand**, submit its **Target Reservoir Level** by **Gate Closure** for the following **Trading Day**.

The **TSO** may require, by notice to the relevant **User**, the data referred to at SDC1.4.4.5 (a) to (c) to be submitted to it directly under the **Grid Code.** All data items submitted under this SDC1.4.4.5 are to be at levels of **MW Output** at the **Connection Point**.

SDC1.4.5 Revisions/**Re-declarations** to data

SDC1.4.5.1 **Availability**

(a) **Availability**: A **User** may, subject to SDC1.4.3 and as provided in this SDC1, make revisions to the **Availability Notice** submitted to the **TSO** under SDC1.4.1.1 at any time after submission of the **Availability Notice** in accordance with its obligations to make the **Unit Available** under SDC1.4.3 *and Appendix B to this SDC1* by submission by **the Electronic Interface** of a revised **Availability Notice** which shall be in the form set out on the **TSO** website or in such other form as the **TSO** may reasonably notify to each **User** from time to time.

[Note: The wording in italic will apply to the SONI Grid Code only.]

(b) In the event that the **TSO** submits a **Post Event Notice** under *OC11 / OC10* in relation to any part of the period covered by the **Availability Notice** at any time after submission of the **Availability Notice**, the **User** shall be deemed to have submitted a revised **Availability Notice** consistent with such **Post Event Notice**.

[Note: Please note that the SONI Grid Code will be referring to "OC11" whilst the EirGrid Grid Code will be referring to "OC10".]

(c) The revisions to the **Availability Notice** may include revisions of the levels of **Availability** in the **CCGT Installation Matrix** reflecting the revised **Availability**.

(d) Additional **Availability Notice**: A **User** may, subject to SDC1.4.3 and to the provisions of this SDC1, make revisions to the **Additional Grid Code Availability Notice** submitted to the **TSO** under SDC1.4.2 at any time after the submission of the **Additional Grid Code Availability Notice** in accordance with its obligations to make the Unit **Available** under SDC1.4.3 *and Appendix B to this SDC1* by submission by the **Electronic Interface** of a revised **Additional Grid Code Availability Notice**. The Notice shall be in the form set out on the **TSO** website or in such other form as the **TSO** may reasonably notify each **User** from time to time.

[Note: The wording in italic will apply to the SONI Grid Code only.]

SDC1.4.5.2 **Technical Parameters** and **Additional Grid Code Characteristics**

(a) **Technical Parameters:** If any of the data submitted to the **TSO** under SDC1.4.4.1, *SDC1.4.4.3 and the relevant provisions of Appendix B to this SDC1* and SDC1.4.4.4 changes, a **User** shall, subject to SDC1.4.3, (in the case of data submitted under SDC1.4.4.1 by means of a **Technical Parameters Notice**) make revisions to such data. The **User** shall notify the **TSO** of any revisions to any previously revised data by submitting by the **Electronic Interface** a revised **Technical Parameters Notice** in the form set out on the **TSO** website or in such other form as the **TSO** may reasonably notify to each **User** from time to time. The **User** must notify the **TSO** of any new **Other Relevant Data** of which it becomes aware at any time after any original submission, in writing.

[Note: Reference to SDC1.4.3 and Appendix B will be made in the SONI Grid Code only.]

(b) **Additional Grid Code Characteristics**: A **User** may make revisions to the **Additional Grid Code Characteristics Notice** submitted to the **TSO**

under SDC1.4.4.2 at any time after the submission of the **Additional Grid Code Characteristics Notice** by submitting by **Electronic Interface** a revised **Additional Grid Code Characteristics Notice**. The notice shall be in the form set out on the **TSO** website or in such other form as the **TSO** may reasonably notify to each **User** from time to time.

(c) **Energy Limits** for **Hydro Units**: A **Generator** in respect of its **Hydro Units** shall resubmit **Energy Limits** on the **Trading Day** regardless of whether the **Energy Limits** have changed since **Gate Closure**. Revised **Energy Limits** for **Hydro Units** may be submitted at any time up until 18.00 hours on the **Trading Day** in writing per unit basis.

SDC1.4.5.3 The **TSO** shall, insofar as it is reasonably able, take account of such revisions or notifications submitted under SDC1.4.5 for **Scheduling** and **Dispatch** purposes.

SDC1.4.6 (a) Defaults:

(i) Insofar as any data submitted or deemed to have been submitted on any particular day in any **Availability Notice**, **Technical Parameters Notice** (such notice not being relevant to an **Interconnector Owner**), or notice of **Other Relevant Data** or any revision thereto is inconsistent with any other data in any other such notice, then the most recently submitted data which, if substituted for the inconsistent data, would make the data in such notices consistent, shall apply for the next following **Trading Day** *or any other values that the **TSO** may reasonably deem appropriate*.

[Note: Please note that the words in italic apply to the EirGrid Grid Code only.]

(ii) Insofar as an **Availability Notice** is not submitted, the **User** shall be deemed to have submitted an **Availability Notice** by **Gate Closure** stating that the **Availability** of the relevant **CDGU**, **Controllable WFPS**, **Demand Side Unit** and/or the **Aggregated Generating Units** for the whole of the following **Trading Day** will be the level of **Availability** and **Operating Mode** declared in respect of the final **Trading Period** of the current **Trading Day** *or any other values that the **TSO** may reasonably deem appropriate*.

[Note: Please note that the words in italic apply to the EirGrid Grid Code only.]

(iii) Insofar as not submitted or revised, the applicable **Standing Technical Offer Data** for **Technical Parameters** shall apply for the next following **Trading Day**.

(iv) Insofar as not submitted or revised, the last notice relating to **Other Relevant Data** to have been submitted shall apply for the next following **Trading Day**.

(v) In respect of **Hydro Units**, the **Energy Limit** that applied to the previous **Trading Day** will be used.

(b) As a general requirement, the **User** shall ensure that the data in any **Availability Notice, Technical Parameters Notice,** or notice of any **Other Relevant Data** or any revision thereto is consistent with its obligations under SDC1.4.3.2 and SDC1.4.3.4.

SDC1.4.7 Form of Submission

(a) Where this SDC1 requires a **User** to submit a notice, it may instead of submitting it in writing, submit the information required in such a notice (which information shall be supplied in full) by telephone subject to the **TSO**'s prior consent (identifying unambiguously the type of notice which is thereby being submitted).

(b) The individual who is giving the notice by telephone on behalf of the **User** shall firstly specify the time at which the notice is being given, then identify himself and ask the individual receiving the notice on behalf of the **TSO** also to identify himself. The information required by the notice shall then be given, including (without limitation) the identity of the **CDGU**, **Controllable WFPS**, **Aggregated Generating Unit**, **Pumped Storage Plant** and **Demand Side Unit** to which the notice relates.

(c) The notice shall then be confirmed by facsimile transmission or by any electronic means as agreed with the **TSO** as soon as possible thereafter (and in any event be sent to the **TSO** within 2 hours). Where a facsimile is so sent by way of confirmation, it shall state clearly that it is in confirmation of a notice already given by telephone and shall state the exact time at which the notice was given by telephone.

SDC1.4.8 Compilation of the **Indicative Operations Schedule**

SDC1.4.8.1 An **Indicative Operations Schedule** will be compiled daily by the **TSO** in conjunction with the **Other TSO** as further provided in this SDC1.4.8 as a statement of which **CDGUs** and/or **Controllable WFPS** and/or transfers across any **Interconnector** and/or **Demand Side Units** and/or **Pumped Storage Plant Demand** and/or **Aggregated Generating Units** and equivalent units in *Northern Ireland/Republic of Ireland* may be required to operate and their expected **MW Output** for the next following **Trading Day**.

[Note: Please note that the SONI Grid Code will be referring to the "Republic of Ireland" and the EirGrid Grid Code will be referring to "Northern Ireland".]

SDC1.4.8.2 **Merit Order**

Subject as provided below, a **Merit Order** will be compiled by the **TSO** (in conjunction with the **Other TSO**) for each **Trading Day** from the **Price Quantity Pairs**, **Start-Up Cost**, **Shutdown Cost** and **No-Load Cost** (which together shall be known as the "**Price Set**") and, subject as provided in this SDC1, used to determine which of the **CDGUs, Controllable WFPSs**, **Pumped Storage Plant Demand**, **Demand Side Units**, **Aggregated Generating Units** or **Interconnector** tranche to **Schedule** and **Dispatch** in relation to their **Price Sets**. The **Merit Order** will be on the basis of ascending prices so that the **CDGU, Controllable WFPS**, **Pumped Storage Plant Demand**, **Demand Side Unit, Aggregated Generating Unit Price Set** or **Interconnector** tranche **Price Set** at the head of the **Merit Order** will be that

which has the lowest **Incremental Price** per **MWh**, and that at the foot of the **Merit Order** shall be the one with the highest **Incremental Price** per **MWh** *and taking into account the average **CDGU, Pumped Storage Plant Demand, Demand Side Unit, Aggregated Generating Unit Price Set** or **Interconnector Output***. Each **CDGU, Controllable WFPS**, **Pumped Storage Plant Demand**, **Demand Side Unit**, **Aggregated Generating Units** and**/**or **Interconnector** tranche shall appear in the **Merit Order** for each **Price Set** submitted.

[Note: The word in italics apply to the SONI Grid Code only.]

SDC1.4.8.3 In compiling the **Indicative Operations Schedule** in conjunction with the **Other TSO**, the **TSO** will take account of and give due weight to the following factors (and the equivalent factors on the **Other Transmission System** will be so treated separately by the **Other TSO**):

(i) **Transmission System** constraints from time to time, as determined by the **TSO;**

(ii) Reserve constraints from time to time, as determined by the **TSO;**

(iii) the need to provide an **Operating Margin** (by using the various categories of reserve as specified in *OC3 /OC4.6 and CC7.3.1.1* (as the case may be), as determined by the **TSO** acting in conjunction with the **Other TSO**;

[Note: Please note that the SONI Grid Code will be referring to "OC3" whilst the EirGrid Grid Code will be referring to "OC4.6 and CC7.3.1.1".]

(iv) **Transmission System** stability considerations;

(v) the level of **MW Output** and availability covered by **Non Centrally Dispatched Generating Units**, by **Plant** subject to **Priority Dispatch** and by **Controllable WFPS**;

(vi) the **Target Reservoir Levels** for **Pumped Storage** taken against the initial conditions at 0600 hours the previous day;

(vii) the **Energy Limits** for **Hydro Units**;

(viii) in respect of all **Plant**, the values of their **Technical Parameters** registered under this SDC1 and other information submitted under SDC1.4.4.4;

(ix) the **Start-Up Cost** of each **CDGU** and/or **Controllable WFPS** and the **Shutdown Cost** of each **Demand Side Unit;**

(x) the requirements, as determined by the **TSO**, for **Voltage Control** and **Mvar** reserves;

(xi) **CDGU** and/or **Controllable WFPS** stability, as determined by the **TSO**;

(xii) other matters to enable the **TSO** to meet its **Licence Standards** and the **Other TSO** to meet its equivalent;

(xiii) the requirements as determined by the **TSO,** for maintaining **Frequency Control**;

(xiv) **Monitoring** and/or **Testing** and/or **Investigations** to be carried out, or being carried out, under *OC11/OC10* (as the case may be), Testing to be carried out, or being carried out, at the request of a User under *OC11.8 / OC8* and/or **Commissioning/*Acceptance* Testing** under the CC;

[Note: Please note that the SONI Grid Code will be referring to "OC11" and "OC11.8" whilst the EirGrid Grid Code will be referring to "OC10" and "OC8".]

[Note: Please note that the word "Acceptance" applies to the SONI Grid Code only.]

(xv) **System Tests, *Operational Tests*** *and* ***Commissioning Tests***;

[Note: Please note that the words in italics apply to the EirGrid Grid Code only.]

(xvi) the inability of any **CDGU** and/or **Controllable WFPS** to meet its full reserve capability;

(xvii) **Inter-jurisdictional Tie Line** limits;

(xviii) other facts as may be reasonably considered by the **TSO** to be relevant to the **Indicative Operations Schedule**;

(xix) the inflexible characteristics as declared by the **Generator** and abnormal risks;

(xx) losses on the **Transmission System** and on the **Other Transmission System;**

(xxi) **Nomination Profiles** where relevant;

(xxii) requirements within any **Constrained Group**;

(xxiii) the fact that the **Interconnector** tranches in the unconstrained **Indicative Market Schedule** cannot be changed in the **Indicative Operations Schedule**;

(xxiv) *in the case of* ***PPA CDGUs*** *any "take or pay" contract for the purchase of fuel to which such a* ***Generator*** *is a party and the terms of which have been agreed by* ***NIE Energy*** *and notified to the* ***TSO*** *and which impact on* ***NIE Energy*** *and/or the terms of any other contract to which* ***NIE Energy*** *is a party and which may, in its opinion, be relevant and which is notified to the TSO.*

[Note: Please note that the above paragraph applies to the SONI Grid Code only.]

(xxv) *the requirements to manage gas flows.*

[Note: Please note that the above paragraph applies to the SONI Grid Code only.]

SDC1.4.8.4 Taking account of and applying the factors referred to in SDC1.4.8.3, the **Indicative Operations Schedule** shall be compiled by the **TSO** in conjunction with the **Other TSO** to **Schedule** such **CDGUs, Controllable WFPS, Pumped Storage Plant Demand**, **Demand Side Units**, **Aggregated Generating Units** and/or such **Interconnector** tranches, and equivalent units or tranches of equivalent units in *Northern Ireland/ the Republic of the Ireland*, which have been declared **Available** in an **Availability Notice** (and the equivalents on the **Other Transmission System**):

[Note: The SONI Grid Code will refer to "the Republic of Ireland", whereas the EirGrid Grid Code will refer to "Northern Ireland".]

(i) in accordance with the **Merit Order**, starting with the **CDGU, Controllable WFPS, Pumped Storage Plant Demand**, **Demand Side Units** and/or **Aggregated Generating Unit Price Set,** and the **Price Set** for equivalent units in *Northern Ireland/ the Republic of the Ireland,* together with **Interconnector** tranches in the unconstrained **Indicative Market Schedule** at the head of the **Merit Order**;

[Note: The SONI Grid Code will refer to "the Republic of Ireland", whereas the EirGrid Grid Code will refer to "Northern Ireland".]

(ii) as will in aggregate (after taking into account electricity delivered other than from **CDGUs**, **Controllable WFPSs**, **Aggregated Generating Units**, and/or **Interconnector** tranches and variation in **Demand** from **Pumped Storage Plant Demand** and **Demand Side Units**) be sufficient to match at all times (to the extent possible having regard to the **Availability** or **Demand Reduction** of **CDGUs, Controllable WFPSs, Pumped Storage Plant Demand**, **Demand Side Units**, **Aggregated Generating Units** and **Interconnector** tranches) the forecast aggregated **Demand** (derived under OC1 of the **Grid Code** and the **Other Grid Code**) together with such margin of reserve as the **TSO** working in conjunction with the **Other TSO** shall consider to be appropriate; and

(iii) as will in aggregate be sufficient to match minimum forecast **Demand** levels together with a sufficient **Minimum Demand Regulation**.

The taking account of and application of the factors in SDC1.4.8.3 will mean that, in general, the strict **Merit Order** may not necessarily be followed.

SDC1.4.8.5 After the completion of the **Scheduling** process, but before the issue of **Indicative Operations Schedule**, the **TSO** may consider it necessary to make adjustments to the **MW Output** as determined by the **Scheduling** process. Such adjustments could be made necessary by any of the following factors (and the equivalent factors on the **Other Transmission System** which will be so dealt with separately by the **Other TSO**):

(a) changes to **Availability** or **Demand Reduction** and/or **Technical Parameters** of **CDGUs** and/or **Controllable WFPS** and/or **Aggregated Generating Units** and/or **Demand Side Units** notified to the **TSO** after the commencement of the **Scheduling** process;

(b) changes to **Demand** forecasts on the Island of Ireland;

(c) changes to wind power forecasts on the Island of Ireland;

(d) changes to **Transmission System** constraints, emerging from the necessarily iterative process of **Scheduling** and network security assessment;

(e) changes to **CDGU** and/or **Controllable WFPS** requirements following notification to the **TSO** of the changes in capability of a **Generator** to provide a **Special Action** as described in SDC2;

(f) changes to **CDGU** and/or **Controllable WFPS** requirements within **Constrained Groups**, following re-appraisal of **System Demand** forecasts on the Island of Ireland within that **Constrained Group**;

(g) changes to any conditions which in the reasonable opinion of the **TSO**, would impose increased risk to the **Transmission System** and would therefore require an increase in the **Operating Margin**;

(h) known (or emerging) limitations and/or deficiencies of the **Scheduling** process.

SDC1.4.8.6 When:

(a) adverse weather is anticipated;

(b) there is a high risk to the whole or part of the **Transmission System** and/or the **Other Transmission System**;

(c) **Demand Control** has been instructed by the **TSO**;

(d) a **Total** or **Partial Shutdown** exists; or

*(e) the **Fuel Security Code** is invoked or is anticipated to be invoked;*

[Note: Please note that the words in italic apply to the SONI Grid Code only.]

these factors may mean that a **CDGU**, **Controllable WFPS, Pumped Storage Plant Demand**, **Demand Side Unit**, **Aggregated Generating Unit** and/or **Interconnector** transfers is/are chosen other than in accordance with the **Merit Order** to a greater degree than would be the case when merely taking into account and giving due weight to the factors listed in SDC1.4.8.3 in order to seek to maintain the integrity of the **Transmission System**.

SDC1.4.8.7 (a) The **Synchronising** and **De-Synchronising** times (and, in the case of **Pumped Storage Plant Demand**, the relevant effective time) shown in the **Indicative Operations Schedule** are indicative only and it should be borne in mind by **Users** that the **Dispatch Instructions** could reflect more or different **CDGU**, **Aggregated Generating Unit** and/or **Controllable WFPS, Pumped Storage Plant Demand** and/or **Aggregate Generating Unit** requirements than in the **Indicative Operations Schedule**. The **TSO** may issue **Dispatch Instructions** in respect of any **CDGU** and/or **Aggregated Generating Unit**, **Controllable WFPS, Pumped Storage Plant Demand** or **Aggregated**

Generating Unit which has not declared an **Availability** or **Demand Reduction** of 0 **MW** in an **Availability Notice**. **Users** with **CDGUs** and/or **Aggregated Generating Units**, **Controllable WFPS, Pumped Storage Plant Demand** shall ensure that their units are able to be **Synchronised**, or in the case of **Pumped Storage Plant Demand,** used at the times **Scheduled**, but only if so **Dispatched** by the **TSO** by issue of a **Dispatch Instruction**. **Users** shall, as part of a revision to the **Technical Parameters**, indicate to the **TSO** the latest time at which a **Dispatch Instruction** is required to meet the scheduled **Synchronising** time or in the case of **Pumped Storage Plant Demand**, the **Scheduled** relevant effective time.

(b) The provisions of SDC1.4.8.7(a) shall apply to **Demand Side Units** with the exception that reference to relevant effective time shall be read as a reference to **Initial Demand Reduction Time**.

SDC1.4.8.8 Content of **Indicative Operations Schedule**

The information contained in the **Indicative Operations Schedule** will indicate, where appropriate, on an individual **CDGU**, **Controllable WFPS, Pumped Storage Plant Demand**, **Demand Side Unit** and/or **Aggregated Generating Units** basis, the period and **Loading** for which it is **Scheduled** during the following **Trading Day**. In the case of a **CDGU** which is capable of firing on two different fuels, it will also indicate the fuel for which it is **Scheduled** during the following **Trading Day**. If no fuel is contained in the **Indicative Operations Schedule**, then the most recently specified fuel shall be treated as having been indicated.

SDC1.4.8.9 Issue of **Indicative Operations Schedule**

(a) The **Indicative Operations Schedule** will be published for access by **Users** by 1600 hours each day preceding the relevant **Trading Day**, provided that all the necessary information from the **Users** was made available by not later than **Gate Closure**. However, if on any occasion the **TSO** is unable to meet this time, the **TSO** also reserves the right to extend the timescale for the issue of the first **Indicative Operations Schedule** to the extent necessary. Following the issue of the **Indicative Operations Schedule**, the **TSO** may issue revised **Indicative Operations Schedules** up until one hour before the start of the **Trading Day**.

(b) The **TSO** may issue **Dispatch Instructions** to **Users** in respect of **CDGUs, Controllable WFPSs, Pumped Storage Plant Demand** and**/**or **Demand Side Units** and/or **Aggregated Generating Units** and/or **Interconnector** transfers before the issue of the **Indicative Operations Schedule** for the **Trading Day** to which the **Dispatch** instruction relates if the length of **Notice to Synchronise** the relevant **CDGUs** and/or **Controllable WFPSs, Pumped Storage Plant Demand** and**/**or **Demand Side Unit** and/or **Aggregated Generating Unit** requires the **Dispatch** instruction to be given at that time. When the length of the time required for **Notice to Synchronise** is within 30 minutes of causing the **CDGU** and/or **Controllable WFPSs** and/or **Pumped Storage Plant Demand** to be unable to meet the indicative **Synchronising** time in the **Indicative Operations Schedule** or a subsequent indicative **Synchronising** time and no **Dispatch Instruction** has been received, the **Generator** shall inform the **TSO** without delay.

SDC1.4.8.10 Regulation

It is a requirement for running the **Transmission System** that all **Synchronised CDGUs** and/or **Controllable WFPSs** shall at all times be capable of reducing **MW Output** sufficient to allow a sufficient **Regulating Margin** for adequate **Frequency Control**. The **TSO** will monitor the **MW Output** data of the **Indicative Operations Schedule** against forecast of **System Demand** on the Island of Ireland to see whether the level of regulation for any period is sufficient, and may take any shortfall into account in **Scheduling** and **Dispatch**.

SDC1.4.8.11 Data Requirements

SDC1 Appendix A Part 1 sets out the **Technical Parameters** for which values are to be supplied by a **User** in respect of each of its **CDGUs** and/or **Controllable WFPSs** and/or **Pumped Storage Plant Demand** and/or **Demand Side Units** and/or **Aggregated Generating Units** by not later than **Gate Closure** on the day prior to the **Trading Day**.

SDC1 Appendix A Part 2 sets out the additional data items required in respect of an **Additional Grid Code Characteristics Notice**.

SDC1 – APPENDIX A

Part 1. Technical Parameters

[Note: The factors applicable to CDGUs below 10 MW apply to the EirGrid Grid Code only.]

Technical Parameter	CDGU				Control WFPS	DSU		Agg. Gen	*CDGu <10 MW*	Pump Storag Deman d
	Thermal	Hydr/ En Ltd	Disp. WFPS	Pump S Gen	-	Individual Demand Site	Aggregate d Demand Sites		-	-
Block Load Cold	✓	✓	✓	✓	✓					
Block Load Hot	✓									
Block Load Warm	✓									
Demand Profile						✓	✓			
Deload Break Point	✓	✓	✓	✓	✓					
De-Loading Rate 1	✓	✓	✓	✓	✓					
De-Loading Rate 2	✓	✓	✓	✓	✓					
Dwell Time 1	✓	✓	✓	✓	✓					
Dwell Time 2	✓	✓	✓	✓	✓					
Dwell Time 3	✓	✓	✓	✓	✓					
Dwell Time Trigger Point 1	✓	✓	✓	✓	✓					
Dwell Time Trigger Point 2	✓	✓	✓	✓	✓					
Dwell Time Trigger Point 3	✓	✓	✓	✓	✓					
End Point of Start Up Period	✓	✓	✓	✓	✓					
Energy Limit		✓								
Energy Limit Factor		✓								
Energy Limit Start		✓								
Energy Limit Stop		✓								
Forecast Minimum Output Profile				✓						✓
Forecast Minimum Generation Profile	✓	✓	✓	✓		✓	✓			
Initial Demand Reduction Time						✓	✓			
Load Up Break Point Cold (1)	✓	✓	✓	✓	✓					
Load Up Break Point Cold (2)	✓	✓	✓	✓	✓					
Load Up Break Point Hot (1)	✓									
Load Up Break Point Hot (2)	✓									
Load Up Break Point Warm (1)	✓									
Load Up Break Point Warm (2)	✓									
Loading Rate Cold (1)	✓	✓	✓	✓	✓					

Technical Parameter	CDGU				Control WFPS	DSU		Agg. Gen	*CDGu <10 MW*	Pump Storag Deman d
	Thermal	Hydr/ En Ltd	Disp. WFPS	Pump S Gen	-	Individual Demand Site	Aggregate d Demand Sites		-	-
Loading Rate Cold (2)	✓	✓	✓	✓	✓					
Loading Rate Cold (3)	✓	✓	✓	✓	✓				✓	
Loading Rate Hot (1)	✓								✓	
Loading Rate Hot (2)	✓								✓	
Loading Rate Hot (3)	✓								✓	
Loading Rate Warm (1)	✓								✓	
Loading Rate Warm (2)	✓								✓	
Loading Rate Warm (3)	✓								✓	
Max Ramp Down Rate (shall be a number greater than zero)						✓	✓			
Max Ramp Up Rate (shall be a number greater than zero)						✓	✓			
Maximum Down Time						✓	✓			
Maximum Generation / Registered Capacity	✓	✓	✓	✓	✓				✓	
Maximum On Time	✓	✓	✓	✓	✓				✓	
Maximum Storage Capacity				✓						
Minimum Down Time						✓	✓			
Minimum Generation	✓	✓	✓	✓	✓				✓	
Minimum off time	✓	✓	✓	✓	✓				✓	
Minimum on time	✓	✓	✓	✓	✓				✓	
Minimum Storage Capacity				✓						✓✓
(Other relevant technical parameters)	✓	✓	✓	✓	✓			✓	✓	
Pumping capacity				✓						✓
Ramp Down Break Point 1	✓	✓	✓	✓	✓			✓	✓	
Ramp Down Break Point 2	✓	✓	✓	✓	✓			✓	✓	
Ramp Down Break Point 3	✓	✓	✓	✓	✓			✓	✓	
Ramp Down Break Point 4	✓	✓	✓	✓	✓			✓	✓	
Ramp Down Rate 1	✓	✓	✓	✓	✓			✓	✓	
Ramp Down Rate 2	✓	✓	✓	✓	✓			✓	✓	
Ramp Down Rate 3		✓	✓	✓	✓			✓		
Ramp Down Rate 4	✓	✓	✓	✓	✓			✓	✓	
Ramp Down Rate 5	✓	✓	✓	✓	✓			✓	✓	
Ramp Up Break Point 1	✓	✓	✓	✓	✓			✓	✓	
Ramp Up Break Point 2	✓	✓	✓	✓	✓			✓	✓	
Ramp Up Break Point 3	✓	✓	✓	✓	✓			✓	✓	
Ramp Up Break Point 4	✓	✓	✓	✓	✓			✓	✓	
Ramp Up Rate 1	✓	✓	✓	✓	✓			✓	✓	

Technical Parameter	CDGU				Control WFPS	DSU		Agg. Gen	*CDGu <10 MW*	Pump Storag Deman d
	Thermal	Hydr/ En Ltd	Disp. WFPS	Pump S Gen	-	Individual Demand Site	Aggregate d Demand Sites		-	-
Ramp Up Rate 2	✓	✓	✓	✓	✓			✓	✓	
Ramp Up Rate 3	✓	✓	✓	✓	✓			✓	✓	
Ramp Up Rate 4	✓	✓	✓	✓	✓			✓	✓	
Ramp Up Rate 5	✓	✓	✓	✓	✓			✓	✓	
Short Term Maximisation Capability	✓	✓	✓	✓	✓				✓	
Soak Time Cold (1)	✓	✓	✓	✓	✓				✓	
Soak Time Cold (2)	✓	✓	✓	✓	✓				✓	
Soak Time Hot (1)	✓								✓	
Soak Time Hot (2)	✓								✓	
Soak Time Trigger Point Cold (1)	✓	✓	✓	✓	✓				✓	
Soak Time Trigger Point Cold (2)	✓	✓	✓	✓	✓				✓	
Soak Time Trigger Point Hot (1)	✓								✓	
Soak Time Trigger Point Hot (2)	✓								✓	
Soak Time Trigger Point Warm (1)	✓								✓	
Soak Time Trigger Point Warm (2)	✓								✓	
Soak Time Warm (1)	✓								✓	
Soak Time Warm (2)	✓								✓	
Synchronous Start-Up Time Cold	✓	✓	✓	✓	✓				✓	
Synchronous Start-Up Time Hot	✓	✓	✓	✓	✓				✓	
Synchronous Start-Up Time Warm	✓								✓	
Target Reservoir Level Percentage				✓						✓
Start of Restricted Range 1	✓	✓	✓	✓	✓				✓	
End of Restricted Range 1	✓	✓	✓	✓	✓				✓	
Start of Restricted Range 2	✓	✓	✓	✓	✓				✓	
End of Restricted Range 2	✓	✓	✓	✓	✓				✓	

[Part 2. Additional data items required in an Additional Grid Code Characteristics Notice]

[Note: Please note that this part of the Appendix applies to the SONI Grid Code only .]

Variable	***Applies to***
Time from initiation of a start to achieving ***Dispatched Load***	***CDGUs*** *which are* ***Open Cycle Gas Turbines*** *or* ***CCGTs***
Governor Droop	*All* ***CDGUs****, except* ***Aggregated Generating Units***
Sustained Response Capability	*All* ***CDGUs****, except* ***Aggregated Generating Units***
Two shifting limitation (limitation on the number of ***Start-ups*** *per* ***Trading Day****)*	*All* ***CDGUs****, except* ***Aggregated Generating Units***
The ***MW*** *and* ***Mvar*** *capability limits within which the* ***CDGU*** *is able to operate as shown in the relevant* ***[Generator Performance Chart]***	*All* ***CDGUs****, except* ***Aggregated Generating Units***
[Note: Consider whether this chart is need in SDC1. If so, need to consider a definition for this term.]	
Maximum number of on ***Load*** *cycles per 24 hour period, together with the maximum* ***Load*** *increases involved*	*All* ***CDGUs****, except* ***Aggregated Generating Units***
^Maximum number of changes to the ***Dispatched Fuel*** *per 24 hour period*	*All* ***CDGUs****, except* ***Aggregated Generating Units***
Maximum quantity of oil in "ready-use tanks" and associated pipework	*All* ***CDGUs****, except* ***Aggregated Generating Units***
^Maximum number of changes to the ***Designated Fuel*** *per 24 hour period*	*All* ***CDGUs****, except* ***Aggregated Generating Units***
^Minimum notice to change the ***Designated Fuel****.*	*All* ***CDGUs****, except* ***Aggregated Generating Units***
Settings of the ***Unit Load Controller*** *for each* ***CDGU*** *for which a* ***Unit Load Controller*** *is required under CCS1.5.5 of the* ***SONI Grid Code***	*All* ***CDGUs****, except* ***Aggregated Generating Units***
Declared Maximisation Capacity	*All* ***CDGUs****, except* ***Aggregated Generating Units***
Time between ***De-Synchronising*** *different* ***CDGUs*** *in a Power Station which, in the case of Coolkeeragh Power Station only, shall be stated for both paired and single* ***CDGUs****.*	*All* ***CDGUs****, except* ***Aggregated Generating Units***

[Part 2. Additional data items required in an Additional Grid Code Characteristics Notice]

[Note: Please note that this part of the Appendix applies to the EirGrid Grid Code only.]

Table (i)

Variable	***Applies to***
Declared POR	***CDGUs**, excluding **Dispatchable WFPSs***
Declared SOR	***CDGUs**, excluding **Dispatchable WFPSs***
Declared TOR1	***CDGUs**, excluding **Dispatchable WFPSs***
Declared TOR2	***CDGUs**, excluding **Dispatchable WFPSs***
Declared Replacement Reserve	***CDGUs**, excluding **Dispatchable WFPSs***
*Minimum MW for **POR***	***CDGUs**, excluding **Dispatchable WFPSs***
*Minimum MW for **SOR***	***CDGUs**, excluding **Dispatchable WFPSs***
*Minimum MW for **TOR1***	***CDGUs**, excluding **Dispatchable WFPSs***
*Minimum MW for **TOR2***	***CDGUs**, excluding **Dispatchable WFPSs***
*Minimum MW for **Replacement Reserve***	***CDGUs**, excluding **Dispatchable WFPSs***
POR Decrement Rate	***CDGUs**, excluding **Dispatchable WFPSs***
SOR Decrement Rate	***CDGUs**, excluding **Dispatchable WFPSs***
TOR1 Decrement Rate	***CDGUs**, excluding **Dispatchable WFPSs***
TOR2 Decrement Rate	***CDGUs**, excluding **Dispatchable WFPSs***
Replacement Reserve Decrement Rate	***CDGUs**, excluding **Dispatchable WFPSs***
Governor Droop	***CDGUs**, excluding **Dispatchable WFPSs***

Table (ii)

***Black Start Capability** (yes/no)*	***CDGUs**, excluding **Dispatchable WFPSs***
***Declared Reactive Power** (Consumption)*	***CDGUs**, excluding **Dispatchable WFPSs***
***Declared Reactive Power** (Production)*	***CDGUs**, excluding **Dispatchable WFPSs***
***Correction Factor** (**Mvar consumption**)*	***CDGUs**, excluding **Dispatchable WFPSs***
***Correction Factor** (**Mvar** Production)*	***CDGUs**, excluding **Dispatchable WFPSs***
Export Adjustment Factor 1	***CDGUs**, excluding **Dispatchable WFPSs***
Export Adjustment Factor 2	***CDGUs**, excluding **Dispatchable WFPSs***
Unit Loss Factor	***CDGUs**, excluding **Dispatchable WFPSs***

SDC1 - APPENDIX B

[Note: Please note that this appendix applies to the SONI Grid Code only.]

SDC1.B.1 *The following paragraphs apply in relation to **PPA Generation** in place of SDC1.4.3.1 to SDC1.4.3.3.*

SDC1.B.1.1 *In relation to **PPA Generation**, each **Generator** shall subject always to the terms and conditions of any applicable **Generating Unit Agreement** throughout the term of the **Generating Unit Agreement** relating to a particular **PPA CDGU**, maintain, repair, operate and fuel the **CDGU** as required by **Prudent Operating Practice** and any legal requirements with a view to providing the **Contracted Capacity** and the **Contracted GSDPs**, provided that in determining when so to maintain or repair the **CDGU**, the **Generator** may have regard to the amount of **Availability Payments** (including reductions in and rebates of **Availability Payments**) which may at any time be earned (or suffered) by it under the relevant **Generating Unit Agreement** and to its obligations under clause 5.1 of the relevant **Power Station Agreement**.*

SDC1.B.1.2 *In relation to **PPA Generation**, the **Generator** shall use reasonable endeavours to ensure that it does not at any time declare by issuing or allowing to remain outstanding an **Availability Notice**, or a **GSDP Notice** which declares the **Availability** or **GSDPs** of the **CDGU,** (including, in the case of a **CCGT Installation**, its **Operating Mode**) at levels or values different from those that the **PPA CDGU** could achieve at the relevant time except:-*

(a) *during periods of **Planned Outage** or **Short Term Planned Maintenance Outage** or otherwise with the consent of the **TSO**;*

(b) *while repairing or maintaining the **PPA CDGU** or equipment necessary to the operation of the **PPA CDGU** where such repair or maintenance cannot reasonably, in accordance with **Prudent Operating Practice**, be deferred to a period of **Planned Outage** or **Short Term Planned Maintenance Outage**;*

(c) *where necessary to avoid an imminent risk of injury to persons or material damage to property (including the **PPA CDGU**);*

(d) *if it is not lawful for the **Generator** to operate the **PPA CDGU**; or*

(e) *to the extent that the **Generator** is affected by **Force Majeure** under the **Generating Unit Agreement**;*

*provided that nothing in the **Grid Code** shall require the **Generator** to declare levels or values better than **Contracted Capacity** and **Contracted GSDPs** in respect of a **PPA CDGU.***

SDC1.B.1.3 *The **Generator** shall provide the **TSO** with all information necessary to enable the **TSO** to implement and apply the above provisions.*

SDC1.B.2 *The following paragraphs apply in relation to **PPA Generation** at Kilroot power Station in addition to the other provisions of this SDC1.*

SDC1.B.2.1 *In relation to any steam turbine **PPA CDGU** at Kilroot Power Station, the **TSO** may, in respect of any **Trading Period** (and/or successive **Trading Periods**) give notice (an "**Overburn Notice**") to the relevant **Generator** with as much notice as possible*

*and in any event (except in the circumstances specified in (iii) below) not less than 24 hours before the start of such **Trading Period** (or the first such period) with the following effect and subject as follows:*

*(i) the **Contracted Capacity** (Coal) shall thereby be increased to **Overburn Contracted Capacity** in respect of such **Trading Period** (or periods) following which the **Generator** shall redeclare the **Availability** of the **CDGU** in an **Availability Notice** (and, for the avoidance of doubt, such increase shall only apply for the **Trading Periods** specified in the **Overburn Notice**);*

*(ii) the aggregate number of **Trading Periods** in any period of 24 hours and in any period of 12 months for which **Overburn Notices** may be given shall be no greater than the limits set out in paragraph 3 of schedule 1 to the relevant **Generating Unit Agreement**;*

*(iii) The **TSO** will procure that **NIE** will waive the rebate of **Availability Payments** for late declaration of **Availability** under paragraph 13.2 of schedule 2 to the relevant **Generating Unit Agreement** if the **Overburn Notice** is issued by the **TSO** less than 24 hours in advance of the start of the relevant **Trading Period**.*

SDC1.B.3 **References to fuel**

*The following paragraphs apply in relation to **PPA Generation** and the interpretation of this SDC1.*

*SDC1.B.3.1 References to "fuel" at SDC1.4.2.1, SDC1.4.4.2 and SDC1.4.4.4(b) shall be read as references to "**Designated Fuel**".*

SDC1.B.3.2 The final two sentences of SDC1.4.8.8 shall be read as follows:.

*In the case of a **CDGU** which is capable of firing on two different **Designated Fuels**, it will also indicate the **Designated Fuel** for which it is scheduled during the following **Trading Day**. If no **Declared Fuel** and/or, where relevant **Designated Fuel** is contained in the **Indicative Operations Schedule**, then the most recently specified **Declared Fuel** and/or, where relevant, **Designated Fuel** shall be treated as having been indicated.*

*SDC1.B.3.3 References to the **Price Set** in SDC1.4.8.2 shall be construed as in relation to each **Designated Fuel** or **Declared Fuel**, as the case may be.*

SDC1.B.4 ***GSDPs***

*SDC1.B.4.1 The following paragraph applies in relation to **PPA Generation** in addition to (and in place of) the equivalent provisions of SDC 1.4.4.3.(a).*

*SDC1.B.4.2 A **Generator** must notify the **TSO** as soon as it becomes aware, acting in accordance with **Prudent Operating Practice** if (whether due to a defect in the **CDGU** or in its associated **Power Station Equipment**) any of its **CDGUs** is unable to meet the **Spinning Reserve Capability** set out in the **Sustained Load Diagram** attached to Schedule 8 of the relevant **Generating Unit Agreement** and submitted pursuant to the PC.*

*SDC1.B.4.3 In SDC1.4.4.3(a) and (b) the term "reserve capability" shall be construed as "**Spinning Reserve Capability**".*

SDC1.B.4.4 *In relation to **PPA Generation** the **User** shall provide in the **GSDP Notice** any revisions to the **GSDPs** compared to the **Contracted GSDPs**.*

ANNEX I

Explanatory Note of differences between SDC1 in the SONI Grid Code and EirGrid Grid Code

This annex is an explanatory note only and does not form part of the Grid Code.

1. General Differences in wording

The table below summarises the general differences in wording between the form of SDC1 in the SONI Grid Code and the form of SDC1 in the EirGrid Grid Code, which appear repeatedly throughout SDC1.

Terms used in SONI Grid Code	Equivalent terms used in EirGrid Grid Code (where different)	Reason
System Support Services	Ancillary Service(s)	The existing arrangements for Ancillary Services and System Support Services are continuing until further notice.
System Support Services Agreement	Ancillary Service(s) Agreement	These agreements will continue to stay in place with their existing names
CCGT Module	CCGT Unit	This is the phrase currently used to describe the individual parts of a Combined Cycle Plant CCGT Module is an important concept in Northern Ireland and is reflected in many other agreements. EirGrid is keeping the phrase CCGT Unit, as it more closely describes the concept of an individual unit and EirGrid has formerly used CCGT Module to describe the whole CCGT Installation.
Prudent Operating Practice	Prudent Utility Practice	Each Code uses a different phrase for this concept.
Planned Outage	Schedule Outage	Each Code uses a different phrase for this concept.
Planned Maintenance Outage	Short Term Scheduled Outage	Each Code uses a different phrase for this concept.

2. Specific differences in wording between equivalent provisions in both Grid Codes

The table below provides a list of the other specific differences in wording between equivalent provisions of SDC1 in both Grid Codes.

Provision	SONI Grid Code	EirGrid Grid Code	Reason
SDC1.4.2.2(b)	Reference is made to "PCA2.3.4"	Reference is made to "PCA.4.3 of the Planning Code Appendix"	These are the respective requirements for the provision of the CCGT Installation data.
SDC1.4.3.4	Reference is made to "NI	Reference is made to	NI System refers

	System"	"Network"	to both the NI Transmission System and NI Distribution System and Network refers to the Ireland Transmission System and Distribution System
SDC1.4.5.1(b)	Reference is made to "OC11"	Reference is made to "OC10"	These are the respective requirements for Testing Monitoring and Investigation
SDC1.4.5.1(d)	Reference is made to a User acting in accordance with its obligations under "SDC1.4.3 and Appendix B to this SDC1"	Reference is made to a User acting in accordance with its obligations under "SDC1.4.3" only	SONI has separate requirements for Availability and Technical Parameter related issues in respect of PPA Generation.
SDC1.4.6(a)(ii)		The EirGrid Grid Code contains the following additional words at the end of the paragraph: "*or any other values that the **TSO** may reasonably deem appropriate"*	Difference is due to different requirements in both jurisdictions.
SDC1.4.8.1	Reference is made to "the Republic of Ireland".	Reference is made to "Northern Ireland".	Reference is being made in each Grid Code to the other jurisdiction.
SDC1.4.8.3(i)	Reference is made to the "Transmission System and Distribution System constraints"	Reference is made to the "Transmission System constraints" only.	EirGrid will not be in a position to take Distribution Constraints into account in determining the IOS.
SDC1.4.8.3(iii)	Reference is made to "OC3"	Reference is made to "OC4.6 and CC7.3.1.1"	These are the respective references to Operating Margin.
SDC1.4.8.3(xiv)	Reference is made to "OC11" and then to "OC11.8"	Reference is made to "OC10" and then to "OC8"	These are the respective references to Testing Monitoring and

			Investigation and Operational Testing.
SDC1.4.8.3(xiv)	Reference is made to "Commissioning/Acceptance Testing"	Reference is made to "Commissioning/Testing"	These are the respective terms used in each Grid Code
SDC1.4.8.3(xv)	Reference is made to "System Tests" only	Reference is made to "System Tests, Operational Tests and Commissioning Tests"	The EirGrid Grid Code definition of System Tests excludes Operational and Commissioning Tests whereas the SONI definition includes them.
SDC1.4.8.4	Reference is made to "the Republic of Ireland".	Reference is made to "Northern Ireland".	Reference is being made in each Grid Code to the other jurisdiction.
SDC1.4.8.4(i)	Reference is made to "the Republic of Ireland".	Reference is made to "Northern Ireland".	Reference is being made in each Grid Code to the other jurisdiction.
SDC1.4.8.5(d)	Reference is made to the "Transmission System and Distribution System constraints"	Reference is made to the "Transmission System constraints" only.	EirGrid will not be in a position to take Distribution Constraints into account in determining the IOS.
SDC1 Appendix A Part 1 – CDGUs < 10 MW	No technical parameters are required from Autonomous Generating units.	Various factors are applicable to Autonomous Generating Units.	This is to reflect different requirements in both codes.
SDC1 Appendix A Part 2	Part 2 refers to factors applicable to the SONI Grid Code only	Part 2 refers to factors applicable to the EirGrid Grid Code only	The two System Operators require some data items specific to that system and they are detailed here.

3. Provisions applicable to one Grid Code only

The table below provides a list of the provisions of SDC1 which exist in one Grid Code only.

Provisions used in SONI Grid Code only	**Reason**
SDC1.1.4	SONI has extra requirements due to the presence of PPA Generation in Northern Ireland.
SDC1.4.3: Introductory sentence	
SDC1.4.4: Introductory sentence	
SDC1.4.8.3(xxiv)	
SDC1 Appendix B	
SDC1.4.2.2(f)	The CCGT Matrix can be amended in the SONI Grid Code as per a specific requirement in the Planning Code Appendix, whereas the EirGrid Code can be amended as per any Planning Code data.
SDC1.4.4.2(i)	This provision is necessary to deal with conversion factors applicable to PPA Generators in Northern Ireland.
SDC1.4.4.3	There are differences in how Reserve capabilities are notified to both SONI and EirGrid.

Provisions used in EirGrid Grid Code only	
SDC1.4.4.2 (h)	There are differences in how Operating Reserve capabilities are notified to both SONI and EirGrid.
SDC1.4.4.2(c)	The SONI Grid Code addresses the issue of conversion factors in a different way by cross-referring to the Planning Code.

SCHEDULING AND DISPATCH CODE NO. 2

CONTROL SCHEDULING AND DISPATCH

SDC2.1 INTRODUCTION

SDC2.1.1 **SEM** Provisions

(a) This Scheduling and Dispatch Code No. 2 ("SDC2") forms part of the **Sections under Common Governance** of the **Grid Code**. The **Sections under Common Governance** are those parts of the **Grid Code** which are under common governance in both the **Grid Code** and the **Other Grid Code**.

(b) The form of this SDC2 is similar to the SDC2 in the **Other Grid Code.** Differences relate to references to relevant power systems and related terms. Where there is a difference between a provision in this **Grid Code** and an equivalent provision in the **Other Grid Code**, the wording in question is shaded in grey. In addition, those parts of this SDC2 that are not part of the **Other Grid Code** are shaded in grey in this SDC2. Differences between the form of this SDC2 and the SDC2 in the **Other Grid Code** are summarised in Annex 1 to this SDC2.

(c) This SDC2 is intended to work in conjunction with other documents, including the **Trading and Settlement Code ("TSC")**. The provisions of the **Grid Code** and the **Other Grid Code** will take precedence over the **TSC**. The **TSC** is the document under which the principal elements of the market for electricity operate. Every **User** which trades in electricity above certain minimum thresholds is required to be a party to the **TSC**. The **Market Operator** is a party to the **TSC**, as is the **TSO** and the **Other TSO**.

(d) The obligation to submit data in relation to some of the information required to be provided to the **TSO** by this SDC2 may be fulfilled by **Users** where such information submitted under the **TSC** by a **User** or by an **Intermediary** on behalf of **Users** is then provided to the **TSO** by the **Market Operator** under the provisions of the **TSC**, as further provided in this SDC2. The **TSO** may require **Users** to verify or update data received by it via the **Market Operator**.

(e) Further provisions dealing with the **Sections under Common Governance** are contained in the **General Conditions**.

SDC2.1.2 SDC2 sets out the procedure for the **TSO** to issue **Dispatch Instructions** to:-

(a) **Generators** in respect of their **CDGUs** (which for the avoidance of doubt comprise, **Generating Units** subject to **Central Dispatch**, **CCGT Installations**, **Hydro Units**, **Pumped Storage Generation** *(but not **Pumped Storage Demand**)* and **Dispatchable WFPSs**);

[Note: Please note that the words in italics apply to the SONI Grid Code only.]

(b) **Pumped Storage Generators** in respect of their **Pumped Storage Plant Demand**;

(c) **Interconnector Owners** in respect of their **Interconnectors**;

(d) **Dispatchable Demand Customers** in respect of their **Individual Demand Sites**;

(e) **Dispatchable Demand Customers** in respect of their **Aggregated Demand Sites**; and

(e) **Generator Aggregators** in respect of their **Aggregated Generating Units**.

Controllable WFPSs are not currently subject to **Dispatch Instructions.**

SDC2.1.3 *Certain provisions relating to **PPA Generation** are included in Appendix C and prevail, supplement and/or replace as the case may be the provision of SDC2.*

[Note: This paragraph applies to the SONI Grid Code only.]

SDC2.2 OBJECTIVE

The procedure for the issue of **Dispatch Instructions** by the **TSO**, is intended to enable (as far as possible) the **TSO** to match continuously **CDGU**, **Demand Side Unit**, **Aggregated Generating Units** output (or reduction as the case may be) and/or **Interconnector** transfers to **Demand**, and thereby in conjunction with the **Other TSO**, the demand on the Island of Ireland, by utilising the **Merit Order** derived pursuant to SDC1 and the factors to be taken into account listed there and by taking into account any **NCDGU MW Output** in both cases together with an appropriate margin of reserve, whilst maintaining (so far as possible) the integrity of the **Transmission System** together with the security and quality of supply (with the **Other TSO** having a similar objective with regard to its **Transmission System**).

SDC2.3 SCOPE

SDC2 applies to the **TSO**, and:-

(a) **Generators** with regard to their **CDGUs**;

(b) **Pumped Storage Generators** with regard to their **Pumped Storage Plant Demand**;

(c) **Interconnector Owners** with regard to their **Interconnectors**;

(d) **Dispatchable Demand Customers** in relation to their **Individual Demand Sites**;

(e) **Dispatchable Demand Customers** in relation to their **Aggregated Demand Sites**; and

(f) **Generator Aggregators** in respect of their **Aggregated Generating Units**.

Each of which (other than the **TSO**) is a "**User**" under this SDC2.

SDC2.4 PROCEDURE

SDC2.4.1 Information Used

SDC2.4.1.1 The information which the **TSO** shall use in assessing which **CDGU**, **Demand Side Unit**, **Interconnector** transfers, **Pumped Storage Plant Demand** and/or **Aggregated Generating Units** to **Dispatch**, will be:

(a) the **Availability Notices**;

(b) the **Merit Order** as derived under SDC1;

(c) the other factors to be taken into account under SDC1 and which were used by the **TSO** to compile the **Indicative Operations Schedule**; and

(d) the:

(i) **Technical Parameters**;

(ii) **Additional Grid Code Characteristics Notices**;

(iii) **Reserve Characteristics**; and

(iv) **Other Relevant Data**,

in respect of that **CDGU**, **Demand Side Unit**, **Interconnector** transfers**, Pumped Storage Plant Demand** and/or **Aggregated Generating Units** subject to any subsequent revisions to the data under SDC1 and SDC2.

SDC2.4.1.2 Additional factors which the **TSO** will also take into account are:

(a) those **Generators** or **Dispatchable Demand Customers** who have not complied with **Dispatch Instructions** or **Special Actions**;

(b) real time variation requests; and

(c) the need to **Dispatch CDGUs**, **Aggregated Generating Units, Demand Side Units**, **Interconnector** transfers, and **Pumped Storage Plant Demand** for **Monitoring, Testing** or **Investigation** purposes (and/or for other trading purposes whether at the request of a **User**, for **Commissioning** or **Acceptance**, **System Tests** or otherwise).

SDC2.4.1.3 In the event of two or more **CDGUs**, **Demand Side Units**, **Pumped Storage Plant Demand** and/or **Aggregated Generating Units** having the same **Price Set** and the **TSO** not being able to differentiate on the basis of the factors identified in SDC1.4.8.2, SDC1.4.8.3 and SDC1.4.8.4, then the **TSO** will select first for **Dispatch** the one which in the **TSO**'s reasonable judgement is most appropriate in all the circumstances.

SDC2.4.1.4 *In this SDC2, where the provisions relating to **CCGTs** differ from the explicit requirements contained in a **Generating Unit Agreement**, a **Power Station Agreement** and/or a **System Support Services Agreement** in Northern Ireland, the provisions of that agreement will prevail.*

[Note: Please note that the above paragraph applies to the SONI Grid Code only.]

SDC2.4.2 **Dispatch Instructions**

SDC2.4.2.1 Introduction

Dispatch Instructions relating to the **Trading Day** will normally be issued at any time during the period beginning immediately after the issue of the first **Indicative Operations Schedule** in respect of that **Trading Day**. The **TSO** may, however, at its discretion, issue **Dispatch Instructions** in relation to a **CDGU**, **Demand Side Unit**, **Interconnector** transfers, **Pumped Storage Plant Demand** and/or **Aggregated Generating Units** prior to the issue of an **Indicative Operations Schedule** which includes that **CDGU**, **Demand Side Unit**, **Interconnector**, **Pumped Storage Plant Demand** and/or **Aggregated Generating Units**.

SDC2.4.2.2 Issue of **Dispatch Instructions**

The **TSO** will issue **Dispatch Instructions** direct to:

(a) the **Generator** for the **Dispatch** of each of its **CDGUs**.

(b) the **Generator Aggregator** for the **Dispatch** of its **Aggregated Generating Units**.

(c) the **Dispatchable Demand Customer** and the **Pumped Storage Demand User** in respect of each of their **Demand Side Units** and **Pumped Storage Plant Demand** respectively.

(d) the **Interconnector Owner** for the **Dispatch** of the **Interconnector** transfers.

(e) The **TSO** may issue **Dispatch Instructions** for any **CDGU**, **Demand Side Unit**, **Interconnector** transfers, **Pumped Storage Plant Demand** and/or **Aggregated Generating Units** which has been declared **Available** in an **Availability Notice** even if that **CDGU**, **Demand Side Unit**, **Interconnector** transfers, **Pumped Storage Plant Demand** and/or **Aggregated Generating Units** was not included in an **Indicative Operations Schedule**.

SDC2.4.2.3 Scope of **Dispatch Instructions**

*In addition to instructions relating to the **Dispatch** of **Active Power**, **Dispatch Instructions** (unless otherwise specified by the **TSO** at the time of giving the **Dispatch Instructions**) shall be deemed to include an automatic instruction of **Spinning Reserve**, the level of which is to be provided in accordance with the **Sustained Load Diagram** set out in Schedule 8 of the relevant **Generating Unit Agreement** (or in the **System Support Services Agreement**, as the case may be), and submitted pursuant to the PC.*

[Note: the above paragraph applies to the SONI Grid Code only.]

*In addition to instructions relating to the **Dispatch** of **Active Power**, **Dispatch Instructions** (unless otherwise specified by the **TSO** at the time of giving the **Dispatch Instructions**) shall be deemed to include an automatic instruction of **Operating Reserve**, the level of which is to be provided in accordance with the **Declared Operating Reserve Availability** under SDC1 and the **Ancillary Service Agreement.***

[Note: Please note that the above paragraph applies to the EirGrid Grid Code only.]

SDC2.4.2.4 In addition to instructions relating to the **Dispatch** of **Active Power**, **Dispatch Instructions** in relation to **CDGUs** and, **Demand Side Units** and/or **Pumped Storage Plant Demand** may include:

(a) a **Dispatch Instruction** to provide a ***System Support Service / Ancillary Service***;

[Note: The SONI Grid Code will be referring to "System Support Service" and the EirGrid Grid Code will be referring to "Ancillary Service".]

(b) (i) **Mvars**: the individual **Reactive Power** output from **CDGUs** at the **Generator Terminals** or *voltage/**Voltage*** levels (at instructed **MW** level) at the **Connection Point** which will be maintained by the **CDGU**.

[Note: Please note that the SONI Grid Code will be using "voltage" as an undefined term whereas the EirGrid Grid Code will be using "Voltage" as a defined term.]

(ii) The issue of **Dispatch Instructions** for **Active Power** will be as at the **Connection Point** and will be made with due regard to any resulting change in **Reactive Power** capability and may include instruction for reduction in **Active Power** generation to increase **Reactive Power** capability.

(iii) In the event of a sudden change in **System** voltage a **Generator** must not take any action in respect of any of its **CDGUs** to override automatic **Mvar** response unless instructed otherwise by the **TSO** or unless immediate action is necessary to comply with stability limits. A **Generator** may take such action as is in its reasonable opinion necessary to avoid an imminent risk of injury to persons or material damage to property (including the **CDGU**).

(iv) *Further provisions in relation to **Dispatch Instructions** regarding **Generator Reactive Power Dispatch** are set out in Appendix B to this SDC2.*

[Note: Please note that this paragraph applies to the EirGrid Grid Code only.]

(c) Fuels: **Fuels** to be used by the **Generator** in operating the **CDGU**. The **Generator** shall only be permitted to change **Fuels** with the **TSO's** prior consent. *Appendix C provides further detail on **Dispatch Instructions** for different fuels.*

[Note: Please note that the last sentence of paragraph (c) applies to the SONI Grid Code only.]

(d) **Special Protection Scheme**: an instruction to switch into or out of service an **Special Protection Scheme** or other **Intertripping Scheme**;

(e) Time to **Synchronise**/react: a time to **Synchronise** or **De-Synchronise CDGUs** and, where appropriate **Demand Side Units** and/or **Pumped Storage Plants** in relation to **Pumped Storage Plant Demand** and time to react for **Demand Side Units**;

(f) **Synchronous Compensation**: an instruction, (where contracted, where that is necessary), for a **CDGU** to operate in **Synchronous Compensation** mode;

(g) **Testing** etc: an instruction in relation to the carrying out of **Testing, Monitoring** or **Investigations** as required under *OC11/ OC10*, or testing at the request of a **User** under *OC11.8/OC8.5*, or **Commissioning/*Acceptance* Testing** under the CC;

[Note: Please note that the SONI Grid Code will referring to "OC11" and "OC11.8", whereas the EirGrid Grid Code will be referring to "OC10" and "OC8.5".]

[Note: Please note that the word "Acceptance" applies to the SONI Grid Code only.]

(h) **System Tests**: an instruction in relation to the carrying out of a **System Test** as required under *OC10/OC 8.4*;

[Note: Please note that the SONI Grid Code will referring to "OC10" whereas the EirGrid Grid Code will be referring to "OC8.4".]

(i) **Maximisation**: in the case of a **CDGU** which is subject to an agreement with the **TSO** for the provision of **Maximisation** an instruction requiring it to generate at a level in excess of its **Availability** but not exceeding its **Short Term Maximisation Capability** which may only be given if, at the time of issue of the instruction, the **CDGU** is **Dispatched** to a **MW Output** equal to its **Availability** and provided that the limit on the number of hours for which such instructions may be given in any year, as set out in any arrangement relating to the relevant agreement is not thereby exceeded. Such an instruction shall be identified as a "**Maximisation Instruction**". When the **TSO** gives a **Dispatch Instruction** which is in excess of the **Availability** of the **CDGU** which is not designated a "**Maximisation Instruction**", the **Generator** must inform the **TSO** immediately that the **Dispatch Instruction** is so in excess in order that the **TSO** can so designate the **Dispatch Instruction** as a **Maximisation Instruction** or withdraw the instruction. The **Generator** shall not then be obliged to comply with the **Dispatch Instruction** unless and until the **TSO** notifies it that the instruction is designated a "**Maximisation Instruction**";

(j) **Cycle Operating Mode**: in the case of a **CCGT Installation**, an instruction specifying the **Cycle Operating Mode** and/or an instruction to **Dispatch** a **CCGT Installation** in **Open Cycle Mode**. The **Generator** must then ensure that the **CCGT Installation** achieves the new **Dispatched Operating Mode**, without undue delay, in accordance with the **CCGT Installation's** declared **Availability** and declared **Technical Parameters. Dispatch Instructions** in relation to **Cycle Operating Modes** issued by the **TSO** shall reflect the applicable **Availability Notice** and **Technical Parameters**;

(k) **Pumped Storage**: mode changes for **Pumped Storage Plants**, where contracted, in relation to **Pumped Storage Plant Demand**;

(l) **Under Test Flags**: **Dispatch Instructions** will, where appropriate, contain a flag to indicate that a unit is under **Within Day Test** and the part of the **Dispatch Instruction** subject to the flag will not be deemed to be a **Dispatch Instruction** for settlement purposes;

(m) Gas supply emergency: instructions relating to gas supply emergencies, where the ordinary **Dispatch** process may not be followed;

*(n) Tap Positions: an instruction for a change in **Generator Transformer** tap positions;.*

[Note: This applies to the SONI Grid Code only].

*(o) **Fuel Security Code**: in relation to **CDGUs**, an instruction given by the **TSO** pursuant to the **Fuel Security Code,** with which document all **Generators** are required under the Grid Code to comply.*

[Note: This applies to the SONI Grid Code only].

SDC2.4.2.5 Form of Instruction

(a) Instructions may normally be given via **Electronic Interface** but can be given by telephone, by facsimile transmission *or by radio telephone*. In the case of a **Special Protection Scheme**, a **Low Frequency Relay** *or any other automatic **Primary Frequency Control** scheme (excluding governor response)* initiated response from a **CDGU**, **Demand Side Unit**, and/or **Pumped Storage Plant** in relation to **Pumped Storage Plant Demand,** the instruction will be given for the effective time which is consistent with the time at which the **Low Frequency Relay** operation occurred. This **Dispatch Instruction** will be issued retrospectively.

[Note: "Radio telephones" will be referred to in the SONI Grid Code only.]

[Note: Please note that the other words in italic above apply to the EirGrid Grid Code only.]

(b) The reduction by a **Generator** of the **MW Output** of one of its **CDGUs** under *SDC3.6.1 / OC4.3* shall be deemed to have followed a **Dispatch Instruction** issued by the **TSO**.

[Note: The SONI Grid Code will be referring to "SDC3.6.1"and the EirGrid Grid Code will be referring to "OC4.3".]

(c) (i) In the event of a temporary loss of the ***NI Control Centre/National Control Centre*** as described under *OC7/OC9*, each **Generator** shall, subject to the provisions of SDC2.4.2.5(c)(ii), continue to operate its **CDGUs** in accordance with the last **Dispatch Instructions** to have been issued by the **TSO** but shall use all reasonable endeavours to maintain **System Frequency** at the indicated **Target Frequency** *plus or minus 0.05Hz* by monitoring **Frequency** and increasing/decreasing the **MW Output** of its **CDGUs** as necessary until such time as new **Dispatch Instructions** are received from the **TSO**.

[Note: The SONI Grid Code will be referring to "OC7" and the EirGrid Grid Code will be referring to "OC9".]

[Note: The words "plus or minus 0.05 Hz" apply to the EirGrid Grid Code only.]

(ii) When operating its **CDGUs** in the circumstances described under SDC2.4.2.5(c)(i), a **Generator** shall never be required to **Dispatch**

these units in a manner in which the **TSO** would not be entitled to require such units to be **Dispatched** by means of a **Dispatch Instruction** issued in accordance with this SDC2.

(d) The **De-Synchronisation** of a **CDGU** following the operation of a **Special Protection Scheme** selected by the **TSO** shall be deemed to have happened as a result of a **Dispatch Instruction** issued by the **TSO**.

SDC2.4.2.6 **Target Frequency**

(a) **Dispatch Instructions** to **Generators** will generally indicate the target **MW** (at **Target Frequency**) to be provided at the **Connection Point** to be achieved in accordance with the respective **CDGU's Technical Parameters** and/or parameters as provided in the **Additional Grid Code Characteristics Notices** provided under SDC1 or this SDC2, or such rate within those parameters as is specified by the **TSO** in the **Dispatch Instructions**.

(b) **Dispatch Instructions** deemed to be given upon the operation of an agreed **Low Frequency Relay** will be deemed to indicate the target **MW** (at **Target Frequency**), which may either be at maximum **MW Output** or at some lower **MW Output** (as previously specified by the **TSO**), to be provided at the **Connection Point** which reflects and is in accordance with the **CDGU's Technical Parameters** and/or parameters as provided in the **Additional Grid Code Characteristics Notice** data given under (or as revised in accordance with) SDC1 or this SDC2.

SDC2.4.2.7 To aid clarity, the form of and terms to be used by the **TSO** in issuing instructions together with their meanings are set out in the Appendices to this SDC2.

SDC2.4.2.8 (a) Subject only to SDC2.4.2.9 and as provided below in this SDC2.4.2.8**,** **Dispatch Instructions** will not be inconsistent with the **Availability** and/or **Technical Parameters** and/or **Additional Grid Code Characteristics Notice** data and **Other Relevant Data** notified to the **TSO** under SDC1 (and any revisions under SDC1 or this SDC2 to that data).

(b) A new **Dispatch Instruction** may be subsequently given (including an instruction for a **Cancelled Start**) at any time.

(c) **Dispatch Instructions** may however be inconsistent with the **Availability** and/or **Technical Parameters** and/or **Additional Grid Code Characteristics Notice** data and/or **Other Relevant Data** so notified to the **TSO** for the purposes of carrying out a test at the request of the relevant **Generator** under *OC11.8/OC8.5* or a **System Test** at the request of the relevant **Generator** under *OC10.4/OC8.6*, to the extent that such **Dispatch Instructions** are consistent with the procedure agreed (or otherwise determined) for conducting the test or **System Test** (as the case may be). ***Dispatch Instructions*** *may also be inconsistent with the* ***Availability*** *and/or* ***Technical Parameters*** *and/or* ***Additional Grid Code Characteristics Notice*** *data and/or* ***Other Relevant Data*** *so notified to the* ***TSO*** *in circumstances where the* ***TSO*** *issues a* ***Dispatch Instruction*** *to a* ***Generator*** *in relation to its* ***CDGUs*** *pursuant to the* ***Fuel Security Code.***

[Note: The SONI Grid Code will be referring to "OC11.8" and "OC10.4" whereas the EirGrid Grid Code will be referring to "OC8.5" and "OC8.6".]

[Note: Please note that the words in italic above apply to the SONI Grid Code only.]

(d) For the avoidance of doubt, any **Dispatch Instructions** issued by the **TSO** for the purposes of carrying out a test at the request of the relevant **Generator** under *OC11.8/OC8.5* or a **System Test** at the request of the relevant **Generator** under *OC10.4/OC8.6* shall not be deemed to be **Dispatch Instructions** given pursuant to SDC2.4.2.9.

[Note: The SONI Grid Code will be referring to "OC11.8" and "OC10.4" whereas the EirGrid Grid Code will be referring to "OC8.5" and "OC8.6".]

SDC2.4.2.9 (a) To preserve **System** integrity under emergency circumstances where, for example, **Licence Standards** cannot be met the **TSO** may, however, issue **Dispatch Instructions** to change **CDGU**, **Aggregated Generating Units**, **Demand Side Unit, Interconnector** transfers and/or **Pumped Storage Plant Demand MW Output** or **Demand Reduction** even when this is outside parameters so registered or so amended. This may, for example, be an instruction to trip or partially load a **CDGU**. The instruction will be stated by the **TSO** to be one in relation to emergency circumstances under SDC2.4.2.9.

(b) A **User** may refuse to comply or continue to comply with instructions referred to in this SDC2.4.2.9 but only in order to avoid, in the **Generator's** reasonable opinion, an imminent risk of injury to persons or material damage to property (including in the case of a **Generator**, the **CDGU**).

SDC2.4.2.10 Communication with **Users**

(a) **Dispatch Instructions** whether given via **Electronic Interface**, by telephone, by facsimile transmission *or by radio telephone* must formally acknowledged immediately by the **User** at the **Control Facility** by **Electronic Interface** or, with the **TSO's** prior consent, by telephone, by return facsimile transmission *or by radio telephone,* in the manner agreed between the **User** and the **TSO** or a reason must be given as soon as possible for non-acceptance, which may (subject to SDC2.4.2.9) only be to avoid, in the **User's** reasonable opinion, an imminent risk of injury to persons or material damage to property (including the **CDGU**) or because they are not in accordance with the applicable **Availability Notice,** or **Technical Parameters**, or **Additional Grid Code Characteristics Notices** or do not reflect **Other Relevant Data** submitted by the **User** pursuant to SDC1.

[Note: "radio telephones" will only be referred to in the SONI Grid Code.]

(b) In the event that in carrying out the **Dispatch Instructions**, an unforeseen problem arises, giving rise, in the **User's** reasonable opinion, to an imminent risk of injury to persons or material damage to property (including the **CDGU**) the **TSO** must be notified as soon as possible by telephone.

SDC2.4.2.11 Action Required from **Users**

(a) Each **User** will comply in accordance with SDC2.4.2.12 with all **Dispatch Instructions** given by the **TSO** unless the **User** has given notice to the **TSO** under the provisions of SDC2.4.2.10 regarding non-acceptance of **Dispatch Instructions**.

(b) When complying with **Dispatch Instructions** for a **CCGT Installation** a **Generator** will operate its ***CCGT Modules/CCGT Units*** in accordance with the applicable **CCGT Installation Matrix**.

[Note: The term "CCGT Module" applies to the SONI Grid Code and the term "CCGT Unit" will apply to the EirGrid Grid Code.]

(c) Where the **TSO** issues a **Synchronising** time to a **Generator** for a specific **CDGU** (other than an **Open Cycle Gas Turbine**) and the **Generator** identifies that such **CDGU** will not be **Synchronised** within *+/- 10 minutes/+15/-5 minutes* of the instructed time, the **Generator** must immediately (at the time the discrepancy is identified) inform the **TSO** of the situation and estimate the new **Synchronising** time.

[Note: Please note that "+/- 10 minutes" will apply to the EirGrid Grid Code and "+15 / –5 minutes" will apply to the SONI Grid Code.]

(d) If the **Synchronising** time of the **CDGU** (other than an **Open Cycle Gas Turbine**) is different from the instructed time by more than 15 minutes but less than 1 hour, this will constitute a **Short Notice Re-declaration** by the **CDGU** for that **Generator.**

(e) If the **Synchronising** time of the **CDGU** (other than an **Open Cycle Gas Turbine**) is different from the instructed time by more than 1 hour, this will constitute a **Re-declaration** for the **CDGU** by the **Generator.**

SDC2.4.2.12 Implementation of Instructions by **Users**

When a **User** has received a **Dispatch Instruction** given by the **TSO**, it will react by responding to that **Dispatch Instruction** given by the **TSO** without undue delay, and, in any event, within one minute in accordance with the instruction *or in the case of **Dispatch Instructions** for **Mvars** within two minutes of the instruction*, including those **Dispatch Instructions** issued pursuant to SDC2.4.2.9. Instructions indicating a target **MW Output** at the **Target Frequency** will be complied with by **Users** notwithstanding any tolerance bands set out in any **Testing** requirement or elsewhere in the **Grid Code**.

[Note: Please note that the words in italic apply to the EirGrid Grid Code only.]

SDC2.4.2.13 (a) Subject to the exception set out below in this SDC2.4.2.13, **Generators** will only **Synchronise** or **de-Synchronise CDGUs** to the **Dispatch Instructions** of the **TSO** or unless it occurs automatically as a result of **Special Protection Schemes** or **Low Frequency Relay** operations. Subject to the exception set out below in this SDC2.4.2.13, **Dispatchable Demand Customers** will only reduce or increase their **Demand Reduction** to the **Dispatch Instructions** of the **TSO** or unless it occurs automatically as a result of **Special Protection Schemes** or **Low Frequency Relay** operations.

(b) **De-Synchronisation** may otherwise only take place without the **TSO's** prior agreement if it is to avoid, in the **Generator's** reasonable opinion, an imminent risk of injury to persons or material damage to property (including the **CDGU**). **Demand Side Units**, who can not maintain the provision of any **Demand Reduction,** may otherwise only take place without the **TSO's** prior agreement if it is to avoid, in the **Dispatchable Demand Customer's**

reasonable opinion, an imminent risk of injury to persons or material damage to property (including the **Demand Side Unit**).

(c) If one of these exceptions occur, then the **TSO** must be informed that it has taken place as soon as possible.

SDC2.4.2.14 The **TSO** may suspend the issue of **Dispatch Instructions** to **User's Plant** in accordance with the **Merit Order** (having taken account of and applied the factors referred to in SDC1.4.8.3) to the extent that the conditions in SDC1.4.8.6 or SDC2.4.2.4(m) arise. When necessary the **TSO** will issue **Dispatch Instructions** for a **Black Start**.

SDC2.4.2.15 **User Plant** Changes

Each **User** at its **Control Facility** will, without delay, notify the **TSO** by **Electronic Interface**, telephone or by facsimile transmission of any change or loss (temporary or otherwise) to the operational capability of its **Plant** including any changes to the **Technical Parameters** and/or **Additional Grid Code Characteristics Notice** data of each of the **User's Plant** (in the case of **Technical Parameters**, by the submission of a **Technical Parameters Revision Notice**) indicating (where possible) the magnitude and the duration of the change. In the case of **CDGUs** already **Synchronised** to the **System**, each **Generator**, in respect of its **Generating Units**, must also state whether or not the loss was instantaneous.

SDC2.4.2.16 Each **Generator**, in respect of its **Generating Units**, will operate its **Synchronised CDGUs** with **AVRs** and **Var** limiters in service at all times (where required pursuant to *CC.S1.5 /CC7.3 and SDC2.B.7*) unless released from this obligation in respect of a particular **CDGU** by the **TSO**.

[Note: Please note that the SONI Grid Code will be referring to "CC.S1.5" and the EirGrid Grid Code will be referring to "CC7.3 and SDC2.B.7".]

SDC2.4.2.17 Each **Generator**, in respect of its **Generating Units**, shall request the **TSO's** agreement for one of its **CDGUs** at that **Generating Plant** to be operated without the **AVR** or **Var** limiter in service. The agreement of the **TSO** will be dependent on the risk that would be imposed on the **System**. However, a **Generator** may, in any event, take such action in relation to that **CDGU** as is reasonably necessary to avoid, in the **Generator's** reasonable opinion, an imminent risk of injury to persons or material damage to property (including the **CDGU**).

SDC2.4.2.18 **Minimum Demand Regulation ("MDR")**

Synchronised CDGUs must at all times be capable of reducing **MW Output** sufficient to allow a sufficient **Regulating Margin** for adequate **Frequency Control**. The **TSO** will monitor the **MW Output** data of the **Indicative Operations Schedule** against the forecast **Demand** to see whether the level of **MDR** for any period is insufficient, and may take any shortfall into account in **Dispatch**.

SDC2.4.3 **Special Actions**

The **TSO** may also issue **Dispatch Instructions** for **Special Actions** (either pre- or post-fault) to a **User** in respect of any of its **Plant** in the event that the **TSO** in its reasonable opinion believes that such instructions are necessary in order to ensure that the **Licence Standards** are met. **Special Actions** will generally involve a **Load** change, a **Load** reduction change or a change in required **Notice to Synchronise** (or, in the case of a **Demand Side Unit** or **Pumped Storage Plant Demand**, a change in the relevant effective time) in a specific timescale on individual or groups of **CDGUs**. They may also include selection of **Special**

Protection Scheme for stability or thermal reasons. Instructions for **Special Actions** will always be within **Technical Parameters**.

SDC2 - APPENDIX A

Dispatch Instructions for **CDGUs and Demand Side Units**

SDC2.A.1 General

This Appendix A to SDC2 provides further information on the form of a **Dispatch Instruction** as well as an example of a **Dispatch Instruction** for **CDGUs** and **Demand Side Units**.

*In this **SDC2**, where the provisions relating to **CCGT Modules** and **CCGT Installations** differ from the explicit requirements contained in a **Generating Unit Agreement**, a **Power Station Agreement** and/or a **System Support Services Agreement**, the provisions of that agreement will prevail.*

[Note: This paragraph applies to the SONI Grid Code only.]

SDC2.A.2 Form of **Dispatch Instruction**

SDC2.A.2.1 All **Loading/De-Loading Rates** will be assumed to be in accordance with **Technical Parameters** and **Additional Grid Code Characteristics Notice** data. Each **Dispatch Instruction** will, wherever possible, be kept simple, drawing as necessary from the following forms and SDC2.4.2**.**

SDC2.A.2.2 The **Dispatch Instruction** given by **Electronic Interface**, telephone, or facsimile transmission will normally follow the form:

(a) where appropriate, the specific **CDGU** or **User's Plant** to which the instruction applies;

(b) the **MW Output** (or **Demand Reduction**) to which it is instructed;

(c) if the start time is different from the time the instruction is issued, the start time will be included;

(d) where specific **Loading/De-Loading Rates** are concerned, a specific target time;

(e) the issue time of the instruction;

(f) the ***Designated Fuel, Declared Fuel*** *or* fuel as the case may be; ***[Note: The words in italics apply to the SONI Grid Code only]***

(g) in the case of **CDGUs** , if the instruction is designated as a "**Maximisation Instruction**", this will be stated; and

(h) in the case of a **CCGT Installation**, the **Operating Mode** to which it is instructed.

SDC2.A.3 **Dispatching** a **Synchronised CDGU** to increase or decrease **MW Output**

SDC2.A.3.1 If the time of the **Dispatch Instruction** is 1400 hours, the Unit is Unit 1 and the **MW Output** to be achieved is 205 **MW**, the relevant part of the instruction would be, for example:

"Time 1400 hours. Unit 1 to 205 **MW**"

SDC2.A.3.2 If the start time is 1415 hours, it would be, for example:

"Time 1400 hours. Unit 1 to 205 **MW**, start at 1415 hours"

SDC2.A.3.3 **Loading** and **De-Loading Rates** are assumed to be in accordance with **Technical Parameters** and **Additional Grid Code Characteristics Notice** data unless otherwise stated. If different **Loading** or **De-Loading Rates** are required, the time to be achieved will be stated, for example:

"Time 1400 hours. Unit 1 to 205 **MW** by 1420 hours"

SDC2.A.4 **Dispatching** a **CDGU** to **Synchronise/de-Synchronise**

SDC2.A.4.1 **CDGU Synchronising**

SDC2.A.4.1.1 In this instance, for **CDGUs**, the **Dispatch Instruction** issue time will always have due regard for the **Synchronising** time declared to the **TSO** by the **Generator** as a **Technical Parameters** or as part of **Additional Grid Code Characteristics Notice** data.

The instruction will follow the form, for example:

"Time 1300 hours. Unit 1, **Synchronise** at 1600 hours"

In relation to an instruction to **Synchronise**, the start time referred to in SDC2.A.2.2 will be deemed to be the time at which **Synchronisation** is to take place.

SDC2.A.4.1.2 Unless a **Loading** programme is also given at the same time it will be assumed that the **CDGU(s)** are to be brought to **Minimum Generation** and on the **Generator** reporting that the unit has **Synchronised** a further **Dispatch Instruction** will be issued.

SDC2.A.4.1.3 When a **Dispatch Instruction** for a **CDGU** to **Synchronise** is cancelled (ie. a **Cancelled Start**) before the unit is **Synchronised**, the instruction will follow the form, for example:

"Time 1400 hours. Unit 1, cancel **Synchronising** instruction"

SDC2.A.4.2 **CDGUs De-Synchronising**

SDC2.A.4.2.1 The **Dispatch Instruction** will normally follow the form, for example:

"Time 1300 hours. Unit 1, **Shutdown**"

If the instruction start time is for 1400 hours the form will be, for example:

"Time 1300 hours. Unit 1, **Shutdown**, start at 1400 hours"

Both the above assume **De-Loading Rate** at declared **Technical Parameters**. Otherwise the message will conclude with, for example:

"... and **De-Synchronise** at 1500 hours"

SDC2.A.5 **Frequency Control**

SDC2.A.5.1 All the above **Dispatch Instructions** will be deemed to be at the instructed **Target Frequency**, i.e. where a **CDGU** is in the **Frequency Sensitive Mode** instructions refer to target **MW Output** at **Target Frequency**. **Target Frequency** changes will always be given to the **Generator** by telephone or **Electronic Interface** and will normally only be 49.95, 50.00, 50.05Hz.

*The adjustment of **MW Output** of a **CDGU** for **System Frequency** other than an average of 50 Hz, shall be made in accordance with the current **Declared** value of **Governor Droop** for the **CDGU**.*

[Note: Please note that the clause in italics is applicable to the EirGrid Grid Code only.]

SDC2.A.5.2 **CDGUs** required to be **Frequency** insensitive will be specifically instructed as such. The **Dispatch Instruction** will be of the form for example:

"Time 2100 hours. Unit 1, to **Frequency** insensitive mode"

SDC2.A.5.3 **Frequency Control** instructions may be issued in conjunction with, or separate from, a **Dispatch Instruction** relating to **MW Output**.

SDC2.A.6 Emergency/***Emergency*** **Load** Drop

The **Dispatch Instruction** will be in a pre-arranged format and normally follow the form, for example:

"Time 2000 hours. Emergency **Load** drop of "X"**MW** in "Y" minutes"

[Note: Emergency is a defined term in the EirGrid Grid Code but not in the SONI code.]

SDC2.A.7 **Voltage Control** Instruction

[Note: Voltage is used as a defined term in the EirGrid code but not in the SONI Code.]

In order that adequate **System** *voltage/**Voltage*** profiles are maintained under normal and fault conditions a range of **Voltage Control** instructions will be utilised from time to time, for example:

(a) Operate to target voltage/***Voltage*** of 117 kV;

(b) Maximum production or absorption of **Reactive Power** (at current instructed **MW Output)**

(c) Increase reactive output by 10 **Mvar** (at current instructed **MW Output**);

*(d) Change **Reactive Power** to 100 **Mvar** production or absorption;*

*(e) Increase **CDGU Generator** step-up transformer tap position by [one] tap or go to tap position [x];*

*(f) For a **Simultaneous Tap Change**, change **CDGU Generator** step-up transformer tap position by one [two] taps to raise or lower (as relevant) **System Voltage**, to be executed at time of telegraph (or other) **Dispatch Instruction**.*

*(g) Achieve a target **Voltage** of 210 kV and then allow to vary with **System** conditions; and*

*(h) Maintain a target **Voltage** of 210 kV until otherwise instructed. Tap change as necessary."*

*In relation to **Mvar Dispatch** matters, **Mvar** production is an export onto the **System** and is referred to as "lagging **Mvar**", and **Mvar** absorption is an import from the **System** and is referred to as "leading **Mvar**".*

*It should be noted that the excitation control system constant **Reactive Power** level control mode or constant **Power Factor** output control mode will always be disabled, unless agreed otherwise with the **TSO**.*

[Note: Please note that the provisions in italics above apply to the EirGrid Grid Code only.]

SDC2.A.8 Instruction to change fuel

When the **TSO** wishes to instruct a **Generator** to change the fuel being burned in the operation of one of its **CDGUs** from one **Dispatched Fuel** (or fuel) to another (for example from 1% sulphur oil to 3% sulphur oil), the **Dispatch Instruction** will follow the form, for example:

"Time 1500 hours. Unit 2 change to 3% fuel at 1700 hours".

SDC2.A.9 Instruction to change fuel for a dual firing **CDGU**

When the **TSO** wishes to instruct a **Generator** to change the fuel being burned in the operation of one of its **CDGUs** which is capable of firing on two different fuels (for example, coal or oil), from one **Designated Fuel** (or fuel) to another (for example, from coal to oil), the instruction will follow the form, for example:

"Time 1500 hours. Unit 1 generate using oil at 1800 hours".

SDC2.A.10 **Maximisation Instruction** to **CDGUs**

When the **TSO** wishes to instruct a **Generator** to operate a **CDGU** at a level in excess of its **Availability** in accordance with SDC2.4.2.4(i), the instruction will follow the form, for example:

"**Maximisation Instruction**. Time 1800 hours. Unit GT2 to 58 **MW**."

*SDC2.A.11 **Emergency Instruction***

*If a **Dispatch Instruction** is an **Emergency Instruction** the **Dispatch Instruction** will be prefixed with the words. This is an **Emergency Instruction.** It may be in a pre-arranged format and normally follow the form, for example:*

*This is an **Emergency Instruction.** Reduce **MW Output** to "X"MW in "Y" minutes, **Dispatch Instruction** timed at 2000 hours.*

[Note: Please note that the above paragraph applies to the EirGrid Grid Code only.]

SDC2.A.12 **Dispatching** a **Demand Side Unit** to increase or decrease **Demand Reduction**

SDC2.A.12.1 If the time of the **Dispatch Instruction** is 1400 hours, the Unit is Unit 1 and the **Demand Reduction** to be achieved is 25 **MW**, the relevant part of the instruction would be, for example:

"Time 1400 hours. Unit 1 to 25 **MW**"

SDC2.A.12.2 If the start time is 1415 hours, it would be, for example:

"Time 1400 hours. Unit 1 to 25 **MW**, start at 1415 hours"

SDC2.A.12.3 **Max Ramp Up** and **Max Ramp Down Rates** are assumed to be in accordance with **Technical Parameters** and **Additional Grid Code Characteristics Notice** data unless otherwise stated. If different **Max Ramp Up** and **Max Ramp Down Rates** are required, the time to be achieved will be stated, for example:

"Time 1400 hours. Unit 1 to 25 **MW** by 1420 hours"

SDC2.A.13 **Dispatching** a **Demand Side Unit** to an **Initial Demand Reduction**

SDC2.A.13.1 In this instance, for **Demand Side Units**, the **Dispatch Instruction** issue time will always have due regard for the **Initial Demand Reduction Time** declared to the **TSO** by the **Dispatchable Demand Customer** as a **Technical Parameter** or as part of **Additional Grid Code Characteristics Notice** data.

The instruction will follow the form, for example:

"Time 1300 hours. Unit 1, **Initial Demand Reduction** at 1600 hours"

In relation to an instruction to the **Initial Demand Reduction**, the start time referred to in SDC2.A.12.1 will be deemed to be the time at which **Initial Demand Reduction** is to take place.

SDC2 - APPENDIX B

[Note: This Appendix applies to the EirGrid Grid Code only.]

Dispatch Instructions for Generator Reactive Power

SDC2.B.1 *The **Mvar Output** of any **CDGU** in respect of which a **Dispatch Instruction** is given under SDC2.4.2.4(b) shall, in accordance with its declared **Technical Parameters**, be adjusted to the new target **Mvar** level so **Instructed**, within, a tolerance of +/- 2% of the target or +/- 2 **Mvar**, whichever is greater. The **Reactive Power** output of a **CDGU** shall not be adjusted (other than under **AVR** action) except in response to a **Dispatch Instruction** from the **TSO**.*

SDC2.B.2 ***Generators** having achieved the new target **Mvar Output**, should not attempt to sustain this level of **Mvar Output** as the **System Voltage** varies but should, rather, allow the **Reactive Power** output to vary under **AVR** control in accordance with the then applicable **Declarations of Ancillary Service** capabilities and **Technical Parameters**.*

SDC2.B.3 *While a **Reactive Power Dispatch Instruction** shall normally specify a new **Mvar** target for a **CDGU**, the **TSO** may also from time to time instruct **Generators** to perform one or more tap changes on the generator step-up transformer of a **CDGU**. The **Dispatch Instructions** for tap changes may be a **Simultaneous Tap Change Instruction** whereby the tap change shall be effected by the **Generator** in response to a **Dispatch Instruction** from the **TSO** issued simultaneously to relevant **Power Stations**. The **Dispatch Instruction**, which is normally preceded by advance warning, shall be effected within 1 minute of receipt from the **TSO** of the **Dispatch Instruction**.*

SDC2.B.4 ***Dispatch Instructions** in relation to **Reactive Power** may include target voltage levels to be achieved by the **CDGU** on the **Transmission System** at **Grid Connection Point** (or on the **User System** at the **User System Entry Point** in the case of an **Embedded Generator**, namely on the higher voltage side of the **Generator** step-up transformer). Where a **CDGU** is **Instructed** to a specified target voltage, the **Generator** shall achieve that target within a tolerance of 1 kV by tap changing on the **Generator** step-up transformer unless otherwise agreed with the **TSO**. Under normal operating conditions, once this target voltage level has been achieved, the **Generator** shall not tap change again without prior consultation with and agreement of the **TSO**.*

SDC2.B.5 *Under certain conditions such as low **System Voltage**, a **Dispatch Instruction** to maximum **Mvar** production at **Instructed MW Output** may be given and the **Generator** shall take appropriate action to maximise **Mvar** production unless constrained by plant operational limits or safety grounds relating to personnel or plant.*

SDC2.B.6 *Under certain conditions such as high **System Voltage**, a **Dispatch Instruction** to maximum **Mvar** absorption at **Instructed MW Output** may be given and the **Generator** shall take appropriate action to maximise **Mvar** absorption unless constrained by plant operational limits or safety grounds relating to personnel or plant.*

SDC2.B.7 *The excitation system, unless otherwise agreed with the **TSO**, shall be operated only in its constant terminal voltage mode of operation with var limiters in service, with any constant **Reactive Power** output control mode or constant **Power Factor** output control mode always disabled, unless agreed otherwise with the **TSO**.*

SDC2.B.8 *A **Dispatch** Instruction relating to **Reactive Power** will be implemented without delay and, notwithstanding the provisions of SDC2.4.2.12 and subject as provided in this Appendix B will be achieved not later than 2 minutes after the **Dispatch Instruction** time, or such longer period as the **TSO** may **Instruct**.*

SDC2.B.9 *Where **Dispatch Instructions** relating to **Active Power** and **Reactive Power** are given together, and to achieve the **Reactive Power** output would cause the **CDGU** to operate outside **Technical Parameters** as a result of the **Active Power Dispatch Instruction** being met at the same time, then the adjustment of the **Reactive Power** output may be delayed until the operating limits no longer prevent the change. In any case the **Active** and **Reactive Power Dispatch Instruction** shall be followed without undue delay.*

SDC2.B.10 *In circumstances where the **TSO** issues new **Dispatch Instructions** in relation to more than one **CDGU** at the same **Power Station** at the same time tapping will be carried out by the **Generator** one tap at a time either alternately between (or in sequential order, if more than two), or at the same time on, each **CDGU**, as the case may be.*

SDC2.B.11 *Where the **Dispatch Instructions** require more than two taps per **CDGU** and that means that the **Dispatch Instructions** cannot be achieved within 2 minutes of the time of the **Dispatch Instructions** (or such longer period at the **TSO** may have Instructed), the **Dispatch Instructions** shall each be achieved with the minimum of delay after the expiry of that period;*

SDC2.B.12 *On receiving a new **MW Dispatch Instruction**, no tap changing shall be carried out to change the **Mvar Output** unless there is a new **Mvar Dispatch Instruction**.*

SDC2.B.13 *Where a **Dispatch Instructions** to **Synchronise** is given, or where a **CDGU** is **Synchronised** and a **MW Dispatch Instruction** is given, a **Mvar Dispatch Instruction** consistent with the **CDGU's** relevant parameters may be given. In the absence of a **Mvar Dispatch Instruction** with an instruction to **Synchronise**, the **Mvar Output** should be 0 **Mvar**.*

SDC2.B.14 *Where a **Dispatch Instructions** to **De-Synchronise** is given, a **Mvar Dispatch Instruction**, compatible with shutdown, may be given prior to **De-Synchronisation** being achieved. In the absence of a separate **Mvar Dispatch Instruction**, it is implicit in the **Dispatch Instructions** to **De-Synchronise** that **Mvar** output should at the point of synchronism be 0 **Mvar** at **De-Synchronisation**.*

SDC2.B.15 *A **Dispatch Instruction** relating to **Reactive Power** may be given in respect of **CCGT Units** within a **CCGT Installation** where running arrangements and/or **System** conditions require, in both cases where connection arrangements permit.*

SDC2.B.16 *On receipt of a **Dispatch Instruction** relating to **Reactive Power**, the **Generator** may take such action as is necessary to maintain the integrity of the **CDGU** (including, without limitation, requesting a revised **Dispatch Instruction**), and shall contact the **TSO** without delay.*

SDC2.B.17 *Under **System** fault conditions it is possible for **AVR** action to drive **Reactive** Power output for a **CDGU** outside of its **Declared Operating Characteristic** limits. The **Generator** shall immediately inform the **TSO** of the situation. However if the **Generator** reasonably believes that the situation may be dangerous to personnel or **Plant**, then limited action may be taken to improve the situation.*

SDC2 - APPENDIX C

Dispatch Instructions for different fuels

[Note: Please note that this appendix applies to the SONI Grid Code only.]

SDC2.C.1 *In addition to instructions relating to the **Dispatch** of **Active Power, Dispatch Instructions** in relation to **CDGUs** may include:*

(a) *the **Declared Fuel** (or fuel) to be used by the **Generator** in operating the **CDGU**. In the case of a **CDGU** capable of firing on different fuels, the **Dispatch Instruction** may also specify the **Designated fuel** (or fuel) to be used by the **Generator**. If no **Declared Fuel** (or fuel) and/or, where relevant, fuel is contained in the **Dispatch Instruction**, then the most recently instructed fuel will apply. The part of a **Dispatch Instruction** which specifies a change in the fuel to be burned by the **Generator** shall be known as a "**Dispatched** fuel **Notice**". The **TSO** may, however, use a separate **Dispatched** fuel **Notice** and which may be issued separately from any **Dispatch Instruction**, containing the above information. These provisions apply to a **PPA CDGU**. If a fuel has been notified for a **CDGU** other than a **PPA CDGU**, the fuel may be specified;*

(b) *in the case of a **PPA CDGU** only, the **Generator** may (subject to the following provisions of this paragraph (b)), in complying with a **Dispatch Instruction** burn a fuel other than the fuel specified in the **Dispatch Instruction**.*

SDC2 - APPENDIX D

[Note: Please note that this appendix applies to the SONI Grid Code only.]

PPA Generation Provision

SDC2.A.D.1 *In relation to SDC2.4.2.9(b), in the case of **PPA Generation**, the provision of GC13.5 shall be imported into (and for the purposes of the **TSO Licence** and the **NIE Licence**, requested as forming part of SDC2.4.2.9(b)).*

SDC2.A.D.2 *In the case of **PPA Generation**, references to "**Maximisation**" in the Grid Code shall be read as being references to "Peak" or "Peaking" in the **Power Station Agreements** and the **Generating Unit Agreements**.*

ANNEX I

Explanatory Note of differences between SDC2 in the SONI Grid Code and EirGrid Grid Code

This annex is an explanatory note only and does not form part of the Grid Code.

1. General Differences in wording

The table below summarises the general differences in wording between the form of SDC2 in the SONI Grid Code and the form of SDC2 in the EirGrid Grid Code, which appear repeatedly throughout SDC2.

Terms used in SONI Grid Code	Equivalent terms used in EirGrid Grid Code (where different)	Reason
System Support Services	Ancillary Service(s)	The existing arrangements for Ancillary Services and System Support Services are continuing until further notice.
CCGT Module	CCGT Unit	This is the phrase currently used to describe the individual parts of a Combined Cycle Plant CCGT Module is an important concept in Northern Ireland and is reflected in many other agreements. EirGrid is keeping the phrase CCGT Unit, as it more closely describes the concept of an individual unit and EirGrid has formerly used CCGT Module to describe the whole CCGT Installation.
voltage	Voltage	"Voltage" is a defined term in the EirGrid Grid Code but not in the SONI Grid Code.
emergency	Emergency	"Emergency" is a defined term in the EirGrid Grid Code but not in the SONI Grid Code.

2. Specific differences in wording between equivalent provisions in both Grid Codes

The table below provides a list of the other specific differences in wording between equivalent provisions of SDC1 in both Grid Codes.

Provision	SONI Grid Code	EirGrid Grid Code	Reason
SDC2.1.2(a)	Reference is made to "but not Pumped Storage Demand" after the words "Pumped Storage Generation".		Reference to these words in the SONI Grid Code is made for clarity reasons.
SDC2.4.2.4(g)	Reference is made to "OC11" and "OC11.8"	Reference is made to "OC10" and "OC8.5" and to the word "Acceptance" after "Commissioning"	These are the respective requirements in relation to testing, monitoring and investigations
SDC2.4.2.4(h)	Reference is made to "OC10"	Reference is made to "OC8.4"	These are the respective

			System Tests requirements
SDC2.4.2.5	Reference is made to "radio telephones" in the list of means of communications of a Dispatch Instruction	No reference is made to "radio telephones" and in addition, after the words "Frequency Relay" the EirGrid Grid Code also refers to "or any other automatic Primary Frequency Control Scheme (excluding governor response)".	These are respective requirements regarding the form of a Dispatch Instruction
SDC2.4.2.5(b)	Reference is made to "SDC3.6.1"	Reference is made to "OC4.3"	These are the respective requirements in relation to actions required in response to high frequency
SDC2.4.2.5(c)(ii)	Reference is made to "OC7"	Reference is made to "OC9"	These are the respective references in respective of temporary losses at the TSOs' Control Centres
SDC2.4.2.8(c)	Reference is made to "OC11.8" and "OC10.4"	Reference is made to "OC8.5" and "OC8.6"	These are the respective requirements in respect of testing and System Tests
SDC2.4.2.8(d)	Reference is made to "OC11.8" and "OC10.4"	Reference is made to "OC8.5" and "OC8.6"	These are the respective requirements in respect of testing and System Tests
SDC2.4.2.10(a)	Reference is made to "radio telephones" in the list of means of communication	No reference is made to "Radio telephones"	The reference to "radio telephones" is specific to the means of communication under the SONI Grid Code.
SDC2.4.2.11(c)	Reference is made to "+15/-5 minutes"	Reference is made to "+/-10 minutes"	These are the respective delays in synchronising times which trigger an obligation on a Generator to notify the TSO of the delay in synchronising times.
SDC2.4.2.12	No reference is made to Dispatch Instructions for Mvars	Reference is made to "or in the case of a Dispatch Instruction for Mvars within two minutes of the instruction" after the words	The EirGrid Grid Code has several specific requirements for the dispatch of

		"in accordance with the instruction"	Generator Reactive Power.
SDC2.4.2.16	Reference is made to "CC.S1.5"	Reference is made to "CC7.3 and SDC2.B.7"	These are the respective requirements for Generating Unit Control arrangements
SDC2.A.2.2	Reference is made to "Designated Fuel" and "Declared Fuel"	Reference is only made to "fuel"	This is due to the PPA specific fuel terminology in the SONI Grid Code

3. Provisions applicable to one Grid Code only

The table below provides a list of the provisions of SDC1 which exist in one Grid Code only.

Provisions used in SONI Grid Code only	**Reason**
SDC2.1.3	This paragraph cross-refers to Appendices C and D which both deal with specific issues applicable to PPA Generation only.
SDC2.4.1.4	This provision is necessary in the SONI Grid Code to specify that specific CCGT requirements contained in the Generating Unit Agreements, Power Station Agreements and System Support Services Agreements prevail over the requirements of the Grid Code in case of inconsistency.
SDC2.4.2.3	This paragraph is necessary to deal with issues specific to PPA Generation, and in particular the fact that for PPA Generation, a Dispatch Instruction may include an automatic instruction of Spinning Reserve.
SDC2.4.2.4(c) – final sentence	This final sentence is specific to the SONI Grid Code as it cross-refers to Appendix C that sets out the different terminology and requirements relating to fuel for PPA Generation.
SDC2.4.2.4(n)	This is a SONI Grid Code only requirement in respect of instructions to change Generator Transformer tap positions
SDC2.A.1 – second paragraph	This is a SONI Grid Code only provision which provides that for PPA CCGT Modules and Units, provisions in the Power Purchase Arrangements and SSSAs prevail over Grid Code requirements where there is an inconsistency.
SDC2 Appendix C	This appendix deals with fuel provisions which apply to PPA Generation only.
SDC2 Appendix D	This appendix deals with additional provisions which apply to PPA Generation only.

Provisions used in EirGrid Grid Code only	
SDC2.4.2.3	This paragraph is necessary in order to deal with the EirGrid specific requirement that a Dispatch Instruction may include an automatic instruction of

	Operating Reserve.
SDC2.4.2.4(b)(iv)	This paragraph is EirGrid specific as it cross-refers to Appendix B which sets out EirGrid specific requirements for Generator Reactive Power Dispatch.
SDC2.A.5.1 – second paragraph	This provision deals with EirGrid specific requirements in respect of MW Output adjustment of a CDGU for System Frequency.
SDC2.A.7 (d) to (h) and final 2 paragraphs	These additional paragraphs deal with EirGrid specific Generator Reactive Power dispatch requirements
SDC2.A.11	This additional paragraph deals with EirGrid specific Dispatch Instructions in relation to emergencies.
SDC2 Appendix B	This appendix deals with the EirGrid specific requirements for the Dispatch of Generator Reactive Power

SCHEDULING AND DESPATCH CODE NO. 3

FREQUENCY CONTROL

SDC3.1 INTRODUCTION

SDC3.1.1 SDC3 sets out the procedure which the **TSO** will use to direct **Frequency Control. NI System Frequency** will be controlled by:-

(a) automatic response from **CDGUs** operating in **Frequency Sensitive Mode**, including **Unit Load Controller** operation;

(b) the **Dispatch** of **CDGUs**;

(c) response from an **Interconnector**; and

(d) **Demand Control**.

SDC3.1.2 The requirements for **Frequency Control** are determined by the consequences and effectiveness of **Scheduling** and **Dispatch** and by the effect of transfers across any **Interconnector** and therefore SDC3 is complementary to SDC1 and SDC2**.**

SDC3.2 OBJECTIVE

The procedure for the **TSO** to direct **Frequency Control** is intended to enable (as far as possible) the **TSO** to meet the statutory requirements of **Frequency Control**.

SDC3.3 SCOPE

SDC3 applies to the **TSO, Suppliers**, **Generators** with regard to their **Generating Plant**, and **Interconnector Owners**.

SDC3.4 PROCEDURE

SDC3.4.1 Automatic Response from **Generating Plant**

SDC3.4.1.1 (a) All **CDGUs** must be capable of operating at all times in **Frequency Sensitive Mode** (including, where applicable, with the **Unit Load Controller** in operation) which term means an automatic incremental or decremental generation response (**Primary Operating Reserve**) to contain the initial **NI System Frequency** change together with a sustained generation response (**Secondary Operating Reserve**) which can contribute to containing and correcting the **NI System Frequency** within the statutory requirements for **Frequency Control**.

(b) All **Synchronised CDGUs** must, unless relieved of the requirement by the **TSO**, operate at all times in **Frequency Sensitive Mode** (including, where applicable, with the **Unit Load Controller** in operation) except where, in the **Generator's** reasonable opinion, it is necessary to cease operation in **Frequency Sensitive**

Mode in order to avoid an imminent risk of injury to persons or material damage to property (including the **CDGU**).

SDC3.4.1.2 A **System Frequency** induced change in the **Active Power** output of **CDGUs** which assists the recovery to target **NI System Frequency** must not be manually overridden by a **Generator** except where it is necessary, in the **Generator's** reasonable opinion, to avoid an imminent risk of injury to persons or material damage to property (including the **CDGU**).

SDC3.4.2 **TSO Dispatch Instructions**

SDC3.4.2.1 When the **TSO** determines it is necessary by having monitored the **NI System Frequency** it will, as part of the procedure set out in SDC2, issue **Dispatch Instructions** in order to seek to regulate **NI System Frequency** to meet the statutory requirements for **Frequency Control**. **CDGUs** will be instructed by the **TSO** to operate at target **NI System Frequency** which will normally be 50.00 Hz plus or minus 0.05 Hz, except in exceptional circumstances as determined by the **TSO.**

SDC3.4.2.2 Any **Dispatch Instruction** to **CDGUs** will refer to the required **CDGU** output at the target **NI System Frequency.**

SDC3.4.3 **Low Frequency Relay** Initiated Response from **Open Cycle Gas Turbine CDGUs**

SDC3.4.3.1 The **TSO** may allocate part of its requirements for **Operating Reserve** to **CDGUs** which are **Open Cycle Gas Turbines** with the capability of **Low Frequency Relay** initiated response for **Start-Up** to a pre-determined output level which have not been **Scheduled** for **Dispatch** in accordance with SDC1, although the **TSO** may, in the event, decide to issue a **Dispatch Instruction** in respect of any such **CDGU** in accordance with SDC2. Alternatively, **CDGUs** which are **Open Cycle Gas Turbines** of this type may be **Scheduled** for **Dispatch** by the **TSO** in accordance with SDC1.

SDC3.4.3.2 The **TSO** will periodically specify, within the range established pursuant to the **Connection Agreement, Low Frequency Relay** settings to be applied to the **CDGUs** pursuant to SDC3.4.3.1 and will instruct the **Low Frequency Relay** initiated response to be placed in and out of service.

SDC3.4.3.3 **Generators** will comply with the **TSO's** instructions issued under SDC3.4.3.2 for **Low Frequency Relay** settings and low **Frequency** initiated response to be placed in or out of service. **Generators** may not alter such **Low Frequency Relay** settings or take low **Frequency** initiated response out of service without the **TSO's** agreement, except where necessary, in the **Generator's** reasonable opinion, to avoid an imminent risk of injury to persons or material damage to property (including the **CDGU**).

SDC3.4.4 **Low Frequency Relay** Initiated Response from **Demand**

Suppliers should note that in allocating its requirements for **Operating Reserve** the **TSO** may take into account **Low Frequency Relay** initiated **Demand Reduction**.

SDC3.5 ACTION REQUIRED BY **GENERATORS** IN RESPONSE TO LOW **FREQUENCY**

SDC3.5.1 (a) If the **NI System Frequency** falls to or below 49.8 Hz, each **Generator** at its **Generating Plant** will be required to check that each of its **CDGUs** is achieving the required levels of response including that required from the **Unit Load Controller**, where applicable, in order to contribute to containing and correcting the low **System Frequency.**

(b) Where the required levels of response are not being achieved appropriate action should be taken by the **Generator** without delay and without receipt of instructions from the **TSO** to achieve the required levels of response, provided local security and safety conditions permit namely, in relation to safety conditions, where this will not, in the **Generator's** reasonable opinion, cause an imminent risk of injury to persons or material damage to property (including the **CDGU**).

(c) In the case of **Gas Turbine Units** instructed for **Low Frequency Relay** initiated response, manual **Start-Up** and/or **Synchronisation** shall be attempted if automatic **Start-Up** and/or **Synchronisation** has failed.

SDC3.5.2 In order that the **TSO** can deal with emergency conditions effectively, it needs as much up to date information as possible and accordingly, the **TSO** will be informed of the action taken as soon as possible after the fall in **NI System Frequency** directly by telephone from the **Generating Plant.**

SDC3.6 ACTION REQUIRED BY **GENERATORS** IN RESPONSE TO HIGH **FREQUENCY**

SDC3.6.1 If **NI System Frequency** rises to or above 50.2 Hz, each **Generator** at its **Generating Plant** will be required to ensure that each of its **CDGUs** has responded in order to contribute to containing and correcting the high **System Frequency** by automatically or manually reducing output by a minimum amount of 2% and by a maximum amount of 5% of **Generating Plant** output per 0.1 Hz deviation of **NI System Frequency** from target **NI System Frequency.**

SDC3.6.2 This reduction will have to be made without reference to the **TSO** and must be maintained until the **NI System Frequency** has returned to **Target Frequency** or receipt of revised **Dispatch Instructions** from the **TSO** under SDC2. In order that the **TSO** can deal with the emergency conditions effectively, it needs as much up to date information as possible and accordingly, the **TSO** must be informed of the action taken as soon as possible after the rise in **System Frequency** directly by telephone from the **Generating Plant.**

SDC3.7 ACTION REQUIRED BY **INTERCONNECTOR OWNERS** IN RESPONSE TO HIGH OR LOW **FREQUENCY**

SDC3.7.1 The **TSO** will make separate arrangements with **Interconnector Owners** to specify the response to be provided by **Interconnector Owners** in the event of high or low **Frequency** in order for the **Interconnector Owners** to contribute to containing and correcting the high or low **System Frequency** as the case may be.

SDC3.8 ELECTRIC TIME

SDC3.8.1 The **TSO** will endeavour (in so far as it is able) to control electric clock time to within plus or minus 10 seconds of **Standard Time** by specifying changes to target **NI System Frequency** and by **Dispatch** taking into account **Merit Order** and forecast **Generating Plant/Demand** margins. Errors greater than plus or minus 10 seconds may be temporarily accepted at the **TSO's** reasonable discretion. The **TSO** will give 15 minutes notice to each **Generator** of variation in target **NI System Frequency.**

GLOSSARY AND DEFINITIONS (GD)

GD1. DEFINED TERMS

In the **Grid Code** the following words and expressions shall, unless the subject matter or the context otherwise requires or is inconsistent therewith, bear the following meanings:

ACS Conditions	Average cold spell conditions.
Additional Conversion Factors	The factors referred to in PCA3.3.12.
Aggregator Systems	A system by which an **Aggregator** controls or operates the plant which is subject to aggregation.
All Island Networks	As defined in the **TSO Licence**
All Island Transmission Networks	As defined in the **TSO Licence**
Apparatus	All equipment in which electrical conductors are used, supported or of which they may form a part.
Authority	The Northern Ireland Authority for Utility Regulation.
Automatic Load Shedding	A **Load** shedding scheme utilised by the **TSO** to prevent **Frequency** collapse or other problems and to restore the balance between generation output and **Demand** on the **NI System**.
Automatic Load Shedding Device	A device for initiating **Load** shedding automatically, such as a **Low Frequency Relay**.
Automatic Voltage Regulator or **AVR**	A continuously acting automatic excitation system to control the voltage of a **Generating Unit** as measured at the **Generator Terminals**.
Availability	In respect of any period (and, in the case of a **PPA CDGU**, in relation to a **Designated Fuel** and, in the case of a **CDGU** other than a **PPA CDGU**, in relation to a fuel), shall mean: (a) for any **CDGU**, **Controllable WFPS** or **Dispatchable WFPS** the figure (expressed in **MW** as at the **Connection Point**) stated in accordance with SDC1.4.1.1(a) to be the capability of the **CDGU**, **Controllable WFPS** or **Dispatchable WFPS** to generate

electricity during that period;

(b) for **Demand Side Units**, the **Demand Reduction** (expressed in **MW** as at the **Connection Point**) stated in accordance with SDC1.4.1.1(a) to be the capability of the **Demand Side Unit** to reduce **Demand** during that period;

(c) for **Aggregated Generating Units**, the aggregated figures (expressed in **MW** as at the **Connection Points** of each individual **Aggregated Generating Unit**) stated in accordance with SDC1.4.1.1(a) to be the capability of the **Aggregated Generating Units** as a whole to generate electricity during that period;

(d) for an **Interconnector**, the figure (expressed in **MW** at Auchencrosh) stated in accordance with SDC1.4.1.1(a) to be the capability of the **Interconnector** to export or import electricity.

"Available" shall be construed accordingly.

Average Cold Spell Demand

The forecast of peak daily **Demand** during average cold spell conditions.

Back-up Fuel

Distillate or heavy fuel oil.

Black Start Capability

The capability of a **Power Station** where at least one of its **CDGUs** or **CCGT Modules** has the ability to **Start-Up** as provided in OC7.4.4.

Black Start Station

A **Power Station** identified pursuant to the relevant **Generator's Connection Agreement** as having the ability for at least one of its **CDGUs** or **CCGT Modules** to **Start-Up** as provided in OC7.4.4.

Any day (other than a Saturday or a Sunday) on which banks are open for business in Belfast but excluding those days which the **TSO** may from time to time notify **Generators** as being days on which normal business will not be conducted at the **TSO's** premises.

Competent Authority	The **Authority**, or any local, national or supranational agency, authority, department, inspectorate, minister, official, court, tribunal or public or statutory person (whether autonomous or not) of the United Kingdom (or the government thereof) or the European Communities which has jurisdiction over the **TSO** and the relevant **Generator** or the subject matter of a **Generating Unit Agreement** or a **Power Station Agreement** between NIE Energy and that **Generator**.
Committed Project Planning Data	Has the meaning set out in PC6.4.3.
Connection Conditions or **CC**	The part of the **Grid Code** which is identified as the **Connection Conditions**.
Connection Point	A point at which a **User's Plant** and/or **Apparatus** connects to the **NI System**, which in the case of an **Interconnector** is the connection point specified in the relevant **Connection Agreement**.
Connection Site	A site containing a **Connection Point**.
Connection/Use of System Charges	The **TSO's** charges to **Users** for connection to and/or use of the **NI System**.
Contingency Reserve	Has the meaning set out in OC3.
Contract Customer	A **Customer** whose terms of supply contain provisions enhancing its security of supply negotiated with **NIE Energy** in accordance with guidelines prepared by **NIE Energy** and approved by the **Authority** from time to time, insofar as such terms of supply include the right to be excluded, insofar as possible, from **Load** shedding.
Contracted Capacity	In relation to a **PPA CDGU**, the **NFL Capacity** of the **CDGU** which is set out in paragraph 2 of schedule 1 to the **Generating Unit Agreement** for that **CDGU** or in the relevant **System Support Services Agreement**, as that **NFL Capacity** may be amended from time to time in accordance with that **Generating Unit Agreement** or the relevant **Power Station Agreement** or **System Support Services Agreement**.
Contracted Capacity (Coal)	In relation to a **PPA CDGU** which is capable of

	firing on two different **Designated Fuels**, the figure (expressed in **MW**) specified as such in paragraph 2 of schedule 1 to the relevant **Generating Unit Agreement** or in the relevant **System Support Services Agreement**.
Contracted Capacity Maximisation	In relation to an **Open Cycle Gas Turbine CDGU** and/or a **CCGT Installation**, the figure (expressed in **MW**) specified as such (if any) in paragraph 2 of schedule 1 to the relevant **Generating Unit Agreement** or in the relevant **System Support Services Agreement**.
Contracted Technical Parameters	In relation to a **PPA CDGU**, the values of **Technical Parameters** which are identical to those parameters set out in schedule 1 to the **Generating Unit Agreement** for that **CDGU**, which are there referred to as "Contracted Operating Characteristics", as those values are amended from time to time in accordance with that Generating Unit Agreement. In the case of a **CDGU** other than a **PPA CDGU**, the values of **Technical Parameters** which are identical to the parameters set out in the relevant **SSS Agreement** and referred to as "SSS Parameters", as those values are amended from time to time in accordance with that **SSS Agreement**.
Control Circuit Load Management	A direct **Load** management arrangement whereby certain separate domestic off peak **Loads** can be controlled by the **TSO** via radio teleswitch.
Control Person	The term used as an alternative to "**Safety Coordinator**" on the **Site Responsibility Schedule** only.
Control Phase	The **Control Phase** follows on from the **Programming Phase** and starts with the issue of the **Indicative Operations Schedule** for the next **Trading Day** and covers the period down to real time.
Conversion Factors	The terms referred to at PC.A3.3.11.
Customer	A person to whom electrical power is provided (whether or not he is the same person as the person who provides the electrical power).
Customer Demand Management	Has the meaning set out in OC4.4.1.

Customer Voltage Reduction

A 3 or 6 per cent reduction of voltage supplied to all or any group of **Customers** on a particular part of the **NI System**.

Data Registration Code or **DRC**

The part of the **Grid Code** which is identified as the **Data Registration Code**.

Declared Fuel

A fuel having the characteristics described in schedule 3 of the relevant **Generating Unit Agreement**.

Delivery Point

Has the meaning ascribed to it in the relevant **Generating Unit Agreement** or, in the case of a **CDGU** other than a **PPA CDGU**, **Controllable WFPS** or **Dispatchable WFPS**, in the relevant **Connection Agreement**.

De-Loaded

The condition in which a **Generating Unit** or **CCGT Installation**, as the case may be, has reduced or is not delivering electrical power to the **System** to which it is **Synchronised** and the terms "**De-Loading**" and "**De-Load**" shall be construed accordingly.

Demand Forecasts

A forecast of **Demand** made pursuant to OC1.

Department

The Department of Enterprise, Trade and Industry.

Design and Operating Requirement

In relation to the **Grid Code**, a **Nominated Generating Unit Agreement** (and/or **Nominated Power Station Agreement**), a **SSS Agreement** and a **Connection Agreement**:

(a) an express requirement of one of those documents as to the installation or operational capability of a specified item of **Plant** and/or **Apparatus**;

(b) a requirement of one of those documents for the existence of procedures necessary to give effect to the matters listed in (a) above; or

(c) an express provision in one of those documents as to any other particular operational requirement.

Designated Fuel	A type of fuel specified in the relevant **Generating Unit Agreement** as being a type of fuel which the **TSO** may instruct a **Generator** to burn in relation to a **CDGU** which is capable of firing both on coal (which may include a mixture of coal and oil) and on oil or on Gas or Distillate, as the case may be.
Dispatch Characteristics	Those characteristics referred to in the relevant Table in Appendix 1 to OC11.
Dispatched Fuel	The **Declared Fuel** which a **Generator** is instructed by the **TSO** in a **Dispatched Fuel Notice** or a **Dispatch Instruction** to use for the operation of a **CDGU** for the time being.
Detailed Planning Data	Data specified in Part 2 of the Appendix to the **Planning Code**.
Development	A modification relating to a **User's Plant** and/or **Apparatus** already connected to the **NI System**.
Disconnect	The act of physically separating **Users**' (and **Customers**') equipment from the **NI System**, and the terms "**Disconnection**" and "**Disconnecting**" shall be construed accordingly.
Distillate	Liquid fuel, as specified in the relevant schedule to a **Generating Unit Agreement**, or where there is no **Generating Unit Agreement**, as agreed with the **TSO**.
Distribution Network Operator (DNO)	The **TO** acting in its capacity as **Distribution System** operator.
Earthing	A way of providing a connection between conductors and earth by an **Earthing Device**.
Earthing Device	A means of providing a connection between a conductor and earth being of adequate strength and capability.
Emergency Manual Disconnection	**Load** shedding carried out at short notice or no notice when a **Regulating Margin** cannot otherwise be achieved.
Energy	The electrical energy produced, flowing or supplied by an electrical circuit during a time interval and being the integral with respect to time of the instantaneous power, measured in units of watt-hours or standard multiples thereof, for

	example:- 1000Wh = 1kWh; 1000 kWh = 1 **MW**h; 1000 **MW**h = 1 GWh.
Energy Allowance	Has the meaning ascribed to that term in the relevant **Generator's Generating Unit Agreement**.
Event	Has the meaning set out in OC5.4.2.
Externally Interconnected Party	The operator of an electrical transmission or distribution system outside Northern Ireland which is connected to the **NI System** by an **Interconnector**.
Fast-start Capability	The ability of an **Open Cycle Gas Turbine Unit** to start-up automatically in pre-determined circumstances as specified in CC.S1.9.4.
Final Outage Programme	The final **Outage** programme in respect of **CDGUs** and/or **Power Station Equipment** prepared by the **TSO** for Year 1 pursuant to OC2.6.3.
Final Report	Has the meaning set out in OC10.A.4.
Flexible Planned Outage	A **Planned Outage** which can at the request of the **TSO** be deferred by a period or advanced by a period (and the period for which it is planned (and therefore excluding any overrun), including the periods for which it may be advanced or deferred, shall be known as the **Flexible Planned Outage Period**).
Force Majeure	Has the meaning ascribed to that term in the relevant **Generating Unit Agreement**.
Forced Outage	An **Outage** of a **CDGU** (including, in the case of a **CCGT Installation**, one or more **CCGT Modules** within it) as provided in OC2 or item of **Power Station Equipment** of which no notice can be given by the **Generator** to the **TSO**.
Frequency	The number of alternating current cycles per second (expressed in Hertz) at which a **System** is running.
Frequency Transient	For the purposes of OC11 and the Metering Code,

	a period when the **NI System Frequency** is at or below 49.5 Hz.
Fuel Rate	Has the meaning ascribed to that term in the relevant **Generator's Generating Unit Agreement**.
Full Load	Maximum electrical output of a **Generating Unit** or **CCGT Installation** measured at the **Connection Point** or, in the case of a **Wind Farm Power Station**, the maximum electrical output of the **Wind Farm Power Station** at the power factor stated in the relevant **Connection Agreement** measured as at the **Connection Point** of the **Wind Farm Power Station** and depending, in the case of a **Generating Unit** which is capable of firing on two different **Designated Fuels**, on which **Designated Fuel** is being used to operate the **Generating Unit** but excluding **Maximum Generation**. In respect of a **PPA CDGU**, the **TSO** may take into account the **Conversion Factors** when **Dispatching** such a **CDGU**.
Fully Available	In relation to a **CDGU**, **Controllable WFPS** or **Dispatchable WFPS** (as the case may be) means **Available** to the **CDGU's Contracted Capacity** (or full output in the case of a **Controllable WFPS** or **Dispatchable WFPS**).
Gas	The gas to be delivered in accordance with arrangements agreed between the **TSO** and the **Generator** from time to time or where there are no such arrangements, gas to fuel a **CCGT Installation**.
General Conditions or **GC**	The part of the **Grid Code** which is identified as the **General Conditions**.
Generating Plant	A **Power Station** subject to **Central Dispatch**
Generating Unit Agreement	An agreement between a **Generator** and **NIE Energy** pursuant to which **NIE Energy** amongst other matters, agrees to purchase from the **Generator** electricity generated by a **CDGU.**
Generation Licence	A licence to generate electricity granted pursuant to Article 10(1)(a) of the **Order**.
Other Relevant Data	The data referred to in SDC1.4.4.4.

Generation Planning Parameters	Those parameters listed in Appendix 2 of OC2.
Generator	A person who generates electricity under a **Licence** or exemption under the **Order** and who is subject to the **Grid Code** either by virtue of a **Licence** or exemption or pursuant to any agreement with the **TSO** or otherwise.
Generator Performance Chart	A diagram which shows the **MW** and **Mvar** capability limits within which a **CDGU** or a **CCGT Module** within a **CCGT Installation** or a **Controllable WFPS** or **Dispatchable WFPS** will be expected to operate under steady state conditions in the formats set out in Appendix 1 to OC2, and which shows in addition, for a **Controllable WFPS** or **Dispatchable WFPS,** wind speed and direction against electrical output in **MW**, in "rose" format.
Generator Transformer	The main transformer for a **CDGU** through which that power passes from the **Generator Terminals** to the **NI System**.
Governor Droop	In relation to the operation of the governor of a **Generating Unit**, the percentage drop in **NI System Frequency** which would cause the **Generating Unit** under free governor action to change its output from zero to **Full Load**.
Governor Droop Test	In relation to a **CDGU** or **CCGT Module** within a **CCGT Installation**, a test of the **Governor Droop**.
Grid Code Review Panel	The panel with the functions set out in GC6.
Grid Entry Point	A point at which a **Generating Unit** or **CCGT Module/CCGT Installation** or **Controllable WFPS** or **Dispatchable WFPS** connects to the **NI System**.
Grid Exit Point	A point at which electricity may be delivered from the **NI System** to a **Customer**.
High Voltage or **HV**	A voltage exceeding 650 volts.
Hot Standby	In relation to a **Generating Unit**, a condition of readiness of the **Generating Unit's** boiler to enable the **Generating Unit** to be **Synchronised** to the **NI System** and attain an instructed output in a specified timescale.

HV Apparatus	**High Voltage** electrical circuits forming part of a **System**.
Implementing Safety Co-ordinator	Has the meaning set out in OC6.4.2.5.
Incident Room	The focal point in the **TSO** or the **User**, as the case may be, for the communication of information between the **TSO** and the senior management representatives of **Users** relating to a **Joint System Incident**.
Independent Generating Plant	A **Power Station** which is not subject to **Central Dispatch** and is not a **Controllable WFPS** or **Dispatchable WFPS.**
Inflexible Planned Outage	A **Planned Outage** the **Start Date** and **Start Time** of which cannot be moved by the **TSO** under OC2.6.4(b) and which accordingly is designated as an **Inflexible Planned Outage** in the relevant **Outage** programme produced pursuant to OC2 (and the period for which it is planned (and therefore excluding any overrun) shall be known as the **Inflexible Planned Outage Period**).
Initial Response Instructor	The device by which the **TSO** can issue a signal by way of **Dispatch** relating to the **Loading** of **CDGUs** from the Grid Control Centre to the **Generating Plant**.
Interim Distribution Code	The code in Northern Ireland of the same name.
Intertripping	A method of tripping a circuit breaker on receipt of a signal initiated from protection at another location.
Investigation	An investigation carried out by the **TSO** pursuant to OC11.7 in relation to **Power Stations** and **User Sites**.
IPRI	The body known, as at the date hereof, as the Industrial Pollution and Radiochemical Inspectorate in Northern Ireland or any successor thereof or other **Competent Authority** exercising the powers of that body.
Isolation	The disconnection of **HV Apparatus** from the remainder of the **System** in which that **HV Apparatus** is situated by means either of an **Isolating Device(s)** in the isolating position or adequate physical separation or sufficient gap or the disablement (by means of switching or

	dismantling) of **Plant** and/or **Apparatus** so that electrical energy cannot pass from the **Apparatus** (or, in the case of **Plant**, from the associated **Apparatus**) to the **HV Apparatus**, other than by an **Isolating Device** and "**Isolated**" shall be construed accordingly.
Isolating Device	A device for the purpose of rendering **Plant** and **HV Apparatus** either **Isolated** or disabled so that electrical energy cannot pass from the **Apparatus** (or, in the case of **Plant**, from the associated **Apparatus**) to the **HV Apparatus**.
Joint Grid Code Review Panel	The Panel with the functions set out in GC7.
Joint System Incident	Has the meaning set out in OC7.6.1.
Lease	A lease entered into between the **TO** and a **Generator** with **PPA CDGUs** in respect of a **Power Station** containing such **CDGUs**.
Licence	A licence granted under the **Order**.
Load Management Arrangements	Arrangements made by agreement between a **Customer** and its **Supplier** whereby the **Customer** agrees to reduce the level of its **Demand** in accordance with that agreement.
Local Safety Instructions	Instructions relating to each **TO Site** and each **User Site** approved by the relevant **TO** or **User's** Manager in accordance with OC6.4.1, setting down the methods of achieving the objectives of the **TO's** or the **User's** (as the case may be) **Safety Rules** to ensure the safety of personnel carrying out work or testing on **Plant** and/or **Apparatus** to which his **Safety Rules** apply and in the case of a **User**, any other document(s) on a **User Site** which contains rules with regard to maintaining or securing the isolating position of an **Isolating Device**, or maintaining a physical separation or sufficient gap, or the disablement (by means of switching or dismantling) of **Plant** and/or **Apparatus** so that electrical energy cannot pass from the **Apparatus** (or, in the case of **Plant**, from the associated **Apparatus**) to the **HV Apparatus**, other than by an **Isolating Device** or maintaining or securing the position of an **Earthing Device**.
Location	The electrical location on a **System**.

Low Frequency Relay	An electrical measuring relay intended to operate when its characteristic quantity **(Frequency)** reaches the relay settings by decrease in **Frequency**.
Low Voltage or **LV**	A voltage not exceeding 250 volts.
Margin	An appropriate **Operational Planning** margin, set by the **TSO**, of generating capacity over that required to meet **Demand**.
Maximum Generation	The operation of a **CDGU** to provide an output in excess of **Contracted Capacity**.
Medium Voltage or **MV**	A voltage exceeding 250 volts but not exceeding 650 volts.
Metering Code or **MC**	That part of the **Grid Code** identified as the **Metering Code**.
Monitoring	Monitoring carried out by the **TSO** pursuant to OC11.5 of **CDGUs**.
Monitoring Notice	A notice issued by the **TSO** to a **Generator** pursuant to OC11.5.3, informing the **Generator** that the **TSO** is **Monitoring** one of its **CDGUs**.
Narrow Tolerance Bands	Those tolerance bands referred to in Column 4 of the relevant Table in Appendix 1 to OC11.
NFL Capacity	The normal **Full Load** capability of a **CDGU** (expressed in **MW** and stated, where relevant, in relation to a **Designated Fuel**) to generate electricity (using, where relevant, that **Designated Fuel**), determined as at the **Connection Point**.
NI Control Centre	A location used for the purpose of control and operation of the **NI System** which, as at the **Transfer Date**, is at Castlereagh House, but which may be moved. Notice will be given to relevant **Users** if a move should take place.
TSO Financial Year	For the purposes of OC1.4.1, means the period from 1st April in each year to 31st March in the next following year.

TO Site	A site owned (or occupied pursuant to a lease, licence or other agreement) by the **TO** in which there is a **Connection Point**. For the avoidance of doubt a site owned by a **User** but occupied by the **TO** as aforesaid, is a **TO Site**.
NI Demand	The **Demand** on the **NI System** less the output of **Independent Generating Plant**.
NIE plc	In relation to the period prior to 1 November 2007 in its then capacity as Transmission and Distribution System operator
NIE Energy	NIE Energy Limited, a company incorporated under the laws of Northern Ireland with registered number NI 27394 whose registered office is situated at 120 Malone Road, Belfast and its successors and permitted assigns;
Nominated Generating Unit Agreement	One of the following **Generating Unit Agreements** entered into between **NIE plc** (and subsequently transferred to **NIE Energy)** and the relevant **Generator** on the **Transfer Date** (which date was 1 April 1992), as amended from time to time:- Agreements in respect of Kilroot Power Station:- Generating Unit No 1 Generating Unit No 2 Gas Turbine Generating Unit GT1 Gas Turbine Generating Unit GT2 Agreements in respect of Ballylumford Power Station:- Generating Unit No 4 Generating Unit No 6 CCGT Unit 10 Generating Unit No 5 CCGT Unit 20 Gas Turbine Generating Unit GT1 Gas Turbine Generating Unit GT2 Agreements in respect of Coolkeeragh Power Station:- Gas Turbine Generating Unit GT8
Nominated Power Station Agreement	One of the following **Power Station Agreements** entered into between **NIE plc (**and subsequently

	transferred to **NIE Energy)** and the relevant **Generator** on the **Transfer Date** (which date was 1 April 1992), as amended from time to time:- Kilroot Power Station Agreement Ballylumford Power Station Agreement Coolkeeragh Power Station Agreement
Non-Synchronous Generating Unit	A **Generating Unit** which is connected but not **Synchronised** to the **NI System** with or without electronic converters either direct or through a rectifier/inverter link.
Large Demand Customer	A **Customer** which has a direct connection to the **Transmission System**:
Notice to Synchronise	A **Dispatch Instruction** given by the **TSO** to a **Generator** requiring a **CDGU** to **Synchronise** to the **NI System**.
Notified Unplanned Outage	An **Outage** which has not been planned in advance under OC2, but of which some notice can be given by the **Generator** to the **TSO**.
Open Cycle Gas Turbine Unit	A **Generating Unit** driven by a gas turbine other than a **CCGT Installation** or **CCGT Module**.
Operating Code or **OC**	That part of the **Grid Code** which is identified as the **Operating Code**.
Operating Margin	**Contingency Reserve** and **Operating Reserve**.
Operating Security Standard	The standard referred to in Condition 21 of the **TSO Licence**.
Operating Reserve	The additional output from **Generating Plant** and/or the reduction in **Demand** which must be realisable in real time operation to respond in order to contribute to containing and correcting any **NI System Frequency** deviation to an acceptable level in the event of a loss of generation or a loss of import from an **Interconnector** or mismatch between generating output and **Demand**.
Operation	Has the meaning set out in OC5.4.1**.**
Operational Effect	Has the meaning set out in OC5.4.3.
Operational Metering	Has the meaning ascribed to it in the MC.

Operational Planning	The process carried out by the **TSO** in accordance with OC2 which involves planning through various timescales, the matching of generating capacity with forecast **NI Demand** together with a reserve of generation to provide the **Margin** taking into account **Outages** of **CDGUs** and **Power Station Equipment** and **Outages** of and constraints on parts of the **NI System,** and taking into account the output of **Independent Generating Plant** and **Interconnectors,** in order to maintain the security and integrity of the **NI System**.
Operational Planning Phase	The period from 1 week to the end of the third year ahead of real time operation.
Operational Procedures	Management instructions and procedures, both in support of the **Safety Rules** and for the local and remote operation of **Plant** and/or **Apparatus** at or from a **Connection Site**.
Order	The Electricity (Northern Ireland) Order 1992.
Other Authority	The Commission for Energy Regulation in the Republic of Ireland.
Outage	In relation to a **Generating Unit**, a total or partial reduction in **Availability** in connection with the repair or maintenance of the **Generating Unit** or any associated **Power Station Equipment**, or resulting from a breakdown or failure of the **Generating Unit** or any associated **Power Station Equipment**. In relation to a **Demand Side Unit** or a **Large Demand Customer**'s site, a total or partial reduction in **Demand Reduction** capability in connection with the repair or maintenance of the **Demand Side Unit** or **Large Demand Customer's** unit or any associated equipment or resulting from a breakdown or failure of the **Demand Side Unit** or **Large Demand Customer's** site or any associated equipment. In relation to the **TSO,** the removal for repair or maintenance, or as a result of failure or breakdown, of any part of the **NI System**.
Outage Notice	A notice submitted by a **User** under OC2 notifying the **TSO** of an **Unplanned Notified Outage**.
Overburn Contracted Capacity	In relation to a **CDGU** which is capable of firing

	on two different **Designated Fuels**, the figure (expressed in **MW**, measured as at the **Connection Point**) identified in schedule 1 to the relevant **Generating Unit Agreement** as "**Overburn Contracted Capacity**".
Ownership Diagram	A diagram created pursuant to CC9.1.4 and prepared following the principles set out in Appendix 2 to the CC.
Partial Shutdown	The same as a **Total Shutdown** except that all generation has ceased in a separate part of the **Total System** and there is no electricity supply across any **Interconnector** or **Inter-jurisdictional Tie Line** or other parts of the **Total System** to that part of the **Total System** and, therefore, that part of the **Total System** is shutdown, with the result that it is not possible for that part of the **Total System** to begin to function again without the **TSO's** directions relating to a **Black Start**.
Planned Manual Disconnection	**Load** shedding carried out when it is known in advance that a **Regulating Margin** cannot otherwise be achieved.
Planned Outage	An **Outage** which has been planned in advance of the year in which it is to be taken under **OC2** (and which does not therefore include any overrun of the **Outage**), which may be either a **Flexible Planned Outage** or an **Inflexible Planned Outage**.
Planning Code or **PC**	That part of the **Grid Code** which is identified as the **Planning Code**.
Plant	Fixed and movable items other than **Apparatus**.
Post Event Notice	A notice issued by the **TSO** pursuant to OC11, re-declaring the **Availability** or **Technical Parameters** of a **CDGU**.
Power Islands	Has the meaning set out in OC7.4.6.2.
Power Procurement Manager	**NIE Energy** in its role as **Power Procurement Manager** in accordance with its **Supply Licence**.
Power Station	An installation comprising one or more **Generating Units** (even where sited separately) owned and/or controlled by the same **Generator,** which may reasonably be considered as being

	managed as one **Power Station** or, as the case may be, one **Wind Farm Power Station**.
Power Station Agreement	An agreement so entitled between a **Generator** and **NIE Energy** relating to a **Power Station** of the **Generator** as a whole.
Power Station Equipment	Items of **Plant** in a **Power Station** which are integral to the operation of a **CDGU**, **Controllable WFPS** and/or **Dispatchable WFPS** but which are not used exclusively in the operation of such **CDGU**, **Controllable WFPS** and/or **Dispatchable WFPS**, the **Outage** of which will, or is likely to (when, for example, taken together with other **Power Station Equipment Outages**), reduce the level of **Availability** of a **CDGU**, **Controllable WFPS** and/or **Dispatchable WFPS**.
PPA CDGU	A **CDGU** which is subject to a **Nominated Generating Unit Agreement** as at the **Transfer Date** to the extent it continues to be so subject, which agreement being made between **NIE Energy** on the one hand and Kilroot Power Limited, Premier Power Limited or Coolkeeragh ESB Limited on the other.
PPA CCGT Installation	A **CCGT Installation** which is subject to a **Nominated Generating Unit Agreement** which is an amendment to that at the **Transfer Date** to the extent it continues to be so subject, which agreement being made between **NIE Energy** on the one hand and Premier Power Limited on the other.
PPA Generation	Includes **PPA CDGUs** and **PPA CCGT Installations**.
Preliminary Notice	Has the meaning ascribed to it in OC10.A.1.2.
Preliminary Project Planning Data	Has the meaning set out in PC6.4.2.
Primary Operating Reserve	The automatic response to **NI System Frequency** changes released increasingly from the time of **Frequency** change and fully available by 5 seconds, and, subject to the agreed **Unit Load Controller** adjustment where applicable, must be sustainable for at least 15 seconds.
Programming Phase	The period between the **Operational Planning Phase** and the **Control Phase**.

Proposal Notice	Has the meaning ascribed to it in OC10.4.1.2.
Protected Customer	A **Customer** other than a **Contract Customer** in relation to whom, in accordance with guidelines prepared by its **Supplier** and approved by the **Authority**, **Load Shedding** shall, so far as possible, not be exercised.
Protection	Equipment for detecting abnormal conditions on a **System** and initiating fault clearance and activating alarms and indications.
Provisional Outage Programme	The provisional **Outage** programme in respect of **CDGUs** and/or **Power Station Equipment** prepared by the **TSO** for Years 2 and 3 pursuant to OC2.6.2.
Prudent Operating Practice	In relation to a **User** or the **TSO**, the standard of practice attained by exercising that degree of skill, diligence, prudence and foresight which could reasonably be expected from a skilled and experienced operator engaged in the same type of undertaking under the same or similar circumstances.
Reactive Power or **Mvar**	The product of voltage and current and the sine of the phase angle between them measured in units of volt-amperes reactive and standard multiples thereof, i.e.: 1000 var = 1 kvar 1000 kvar = 1 Mvar
Record of Inter-System Safety Precautions or RISSP	The procedures set out in OC6.4.3.
Registered Capacity	The normal **Full Load** capacity of a **Generating Unit** in **MW** measured as at the **Connection Point** and in relation to a **Wind Farm Power Station,** the normal **Full Load** capacity of the collection of one or more wind turbines, each being a **Generating Unit,** in **MW** measured as at the **Connection Point** of the **Wind Farm Power Station**.
Registered Project Planning Data	Has the meaning set out in PC6.4.4.
Replacement Reserve	The additional **MW** output (and/or reduction in **Demand** required compared to the pre-**Event** output (or **Demand)** which is fully available and

	sustainable from 20 minutes to 4 hours following an **Event**.
Requesting Safety Coordinator	Has the meaning set out in OC6.4.2.5.
Responsible Engineer/Operator	A person nominated by a **User** to be responsible for control of the **User's System**.
Responsible Manager	A manager who has been duly authorised by a **User** or the **TSO** to sign **Site Responsibility Schedules** on behalf of that **User** or the **TSO**, as the case may be.
Re-Synchronisation	The act of achieving the state where the **Frequencies** and phase relationships of parts of the **Total System** are identical.
RISSP-A and **RISSP-B**	Have the meanings set out in OC6.4.3.2.
Rota Load Shedding	Planned **Disconnection** of **Customers** on a rota basis during circumstances when there is a significant shortfall of generation required to meet the total **Demand** for a protracted period.
RTS Notice	Has the meaning ascribed to it in OC2.6.8.1.
Safety Co-ordinator	Has the meaning set out in OC6.4.2.
Safety from the System	That condition which safeguards persons working or testing **HV Apparatus** from the dangers which are inherent in working on items of **HV Apparatus**.
Safety Precautions	Has the meaning set out in OC6.5.1.
Safety Rules	The rules and procedures (as amended or re-stated from time to time) of the **TSO** or a **User** to ensure **Safety From The System**.
Schedule Day	The period from 0000 hours until 2400 hours on the same day.
Schedule Week	The period from 0000 hours on Saturday of any week until 2400 hours on the next following Friday.
Scheduling	The process of compiling an **Indicative Operations Schedule** as set out in SDC1, and the term "**Scheduled**" and like terms shall be construed accordingly.

Secondary Operating Reserve	The additional **MW Output** (and/or reduction in Demand) compared to the pre-incident **Output** (or **Demand**) which is fully available and sustainable over the period from 15 to 90 seconds following an **Event**.
Secretary of State	The Secretary of State for Business, Enterprise and Regulatory Reform.
Short Term Planned Maintenance Outage	
STPM Outage	An **Outage** designated as an **STPM Outage** in or accordance with OC2.6.4(e) (the duration of which shall not, unless the **TSO** in its absolute discretion agrees, exceed 72 hours) but not including any overrun of such **Outage**.
Significant Incident	Has the meaning set out in OC5.4.6.3.
Site	A **User Site**, a **TSO Site** or a **TO Site**, as the case may be.
Site Responsibility Schedule	A schedule prepared by the **TSO** and the **TO** and signed by both parties detailing the division of responsibilities at **Connection Sites** towards the ownership, control, operation and maintenance of **Plant** and **Apparatus** and the safety of personnel at the **Connection Site**. The format, principles and basic procedure to be used in the preparation of **Site Responsibility Schedules** are set down in Appendix 1 to the CC.
Special Actions	Those actions referred to in SDC2.4.3.
Spinning Reserve	The operation of a **CDGU** whereby it lifts **Load** during and sustains it following a **Frequency Transient**.
Spinning Reserve Capability	The ability of a **CDGU** to provide **Spinning Reserve**.
Spinning Reserve Monitor	An on-line monitor which predicts the **Spinning Reserve Capability** of a **CDGU**.
Spinning Reserve Response	The increase in **MW Output** of a machine, with time, that results from its response to a decrease in **System Frequency**.
SSS Agreement	An agreement between the **TSO** and a **Generator**, and in the case of **PPA CDGUs** between the **TSO**

	and **NIE Energy**, for the provision by a **Generator** of **System Support Services**.
Standard Planning Data	Data specified in Part I of the Appendix to the **Planning Code**.
Standard Time	The time derived from the Caesium Atomic Clock at Anthorn, England.
Standing Instruction	An instruction for a specified action notified to a **Generator** in advance by the **TSO** whereby, when the specified circumstances arise (which will be capable of being known by the **Generator**), the **Generator** will take the specified action as though a valid instruction had been issued by the **TSO**.
Start Date	The date on which an **Outage** is to begin.
Start Time	The time at which an **Outage** is to begin.
Start-Up	The action of bringing a **Generating Unit** from **Shutdown** to the speed required by the **Generating Unit** to enable it to be **Synchronised** to a **System**.
Statement on System Capacity	The statement in respect of the **Transmission System** which the **TSO** is required to prepare pursuant to paragraph 1, Condition 33, of the **TSO Licence**, (the "**Transmission System Statement**") or the statement in respect of the **Distribution System** which the **TO/DSO** is required to prepare pursuant to paragraph 5, Condition 32, Chapter 3 of the **TO Licence** (the "**Distribution System Statement**"), as the case may be.
Steam Turbine Unit	A **Generating Unit** driven by a Steam Turbine.
Substation	An assemblage of equipment including any necessary housing for the conversion, transformation or control of electrical power.
Substitute Reserve	The additional **MW** output (and/or reduction in **Demand**) required compared to the pre-**Event** output (or **Demand**) which is fully available and sustainable from 4 hours to 24 hours following an **Event**.
Supplier	A holder of a **Supply Licence**.
Sustained Load Diagram	A schedule setting out the **Sustained Response**

	Capability of a **CDGU** annexed to schedule 8 of the **Generating Unit Agreement** for that **CDGU** and submitted to the **TSO** pursuant to the **PC**.
Sustained Response	Has the meaning set out in OC11.5.5.
Sustained Response Capability	Has the meaning set out in OC11.5.5.
Sustained Response Test	A test carried out by the **TSO** pursuant to the provisions of OC11.6.2.
Synchronised	The condition where an incoming **Generating Unit** or **System** is connected to another **System** so that the **Frequencies** and phase relationships of that **Generating Unit** or **System**, as the case may be, and the **System** to which it is connected are identical and all like terms shall be construed accordingly.
Synchronous Generating Unit	A **Generating Unit** which is connected and **Synchronised** to the **NI System.**
System Operator Agreement (SOA)	The agreement of the same name entered into by the **TSO** and the **Other TSO.**
System Tests	Has the meaning set out in OC10.1.1**.**
Tertiary Operating Reserve band 1	The additional **MW** output required compared to the pre-**Event** output which is fully available and sustainable from 90 seconds to 5 minutes following an **Event**.
Tertiary Operating Reserve band 2	The additional **MW** output required compared to the pre-**Event** output which is fully available and sustainable from 5 minutes to 20 minutes following an **Event**.
Test Co-ordinator	Has the meaning set out in OC10.A.1.1.
Test Panel	A panel, whose composition is detailed in the **Appendix** to OC10, which is responsible for various matters including considering a proposed **System Test** and preparing a **Test Programme**.
Test Programme	Has the meaning set out in OC10.4.4.1.
Test Proposer	Has the meaning set out in OC10.4.1.4.
Testing	Testing carried out by the **TSO** pursuant to OC11.6 of **CDGUs** and **Users' Equipment** and

	the term "**Test**" shall be construed accordingly.
Tolerance Band	The relevant tolerance allowed in **Monitoring** under OC11 of **CDGUs** and/or other items of **User's Equipment** when determining whether **Dispatch Instructions** are being complied with, being either a **Wide Tolerance Band** or a **Narrow Tolerance Band.**
Total Shutdown	The situation existing when all generation has ceased and there is no electricity supply across any **Interconnector** and, therefore, the **Total System** has shutdown with the result that it is not possible for the **Total System** to begin to function again without the **TSO's** directions relating to a **Black Start**.
Total System	Together, the **NI System** and all **User Systems** in Northern Ireland.
Transfer Date	Such date as may be appointed by the Department of Enterprise Trade and Investment by order under Article 69(3) of the **Order**.
Transmission Business	Has the same meaning as Transmissions System Operation Business as set out under Condition 1 of the **TSO Licence**.
Transmission Interface Agreement (TIA)	The agreement of the same name entered into by the **TO** and the **TSO.**
24 Hour Recall	An agreement between the **TSO** and a **Generator** whereby a **CDGU** subject to a **Notified Unplanned Outage** may be recalled by the **TSO** upon giving 24 hours notice to the **Generator**.
Unit Dynamic Model	Has the meaning ascribed to it in OC11.5.5(f) and in schedule 8 of the relevant **Generating Unit Agreement** or in the relevant **SSS Agreement**, as the case may be.
Unit Load Controller	A device which regulates the generation level when the **Generating Unit** is operating in **Frequency Sensitive Mode** to ensure (as far as possible) that it does not exceed or fall short of previously set limits.
Use of System Agreement	An agreement between the **TSO** and a **User** setting out the terms relating to use of the **NI System** and the **Other Transmission System**.

User	A term utilised in various sections of the **Grid Code** to refer to the persons using the **NI System,** as more particularly identified in each section of the **Grid Code** concerned. In the **General Conditions** the term means any person to whom the **Grid Code** applies.
User's Equipment	The **Plant** and/or **Apparatus** owned and/or operated by a **User**.
User Site	A site owned (or occupied pursuant to a lease, licence or other agreement) by a **User** (which in the case of an **Aggregator**, means the combination of the individual **Aggregated Generating Unit** or **Aggregated Demand Side Unit** sites as the case may be) in which there is a **Connection Point**. For the avoidance of doubt, a site owned by **TSO** but occupied by a **User** as aforesaid, is a **User Site**.
User System	Any system owned or operated by a **User** comprising **Generating Units** together with **Plant** and/or **Apparatus** connecting **Generating Units** and/or **Large Demand Customers'** equipment to the **NI System**.
Warning Notice	A notice issued by the **TSO** to a **Generator** pursuant to OC11.5.3, informing the **Generator** that it has failed to comply with a **Dispatch Instruction**.
Wide Tolerance Bands	Those tolerance bands referred to in Column 2 of the relevant Table in Appendix 1 to OC11.
Willans Line	For a throttle governed steam turbine **Generating Unit** the **Willans Line** is the straight line relationship between heat consumption and electrical output with its origin at the no load consumption. For a **CCGT Installation** the **Willans Line** is the composite of the heat consumption and electrical outputs of the several **CCGT Modules** dependent at any time on the operating mode of the **CCGT Installation**.
Wind Farm Power Station or WFPS	A collection of one or more wind turbines owned and/or operated by the same **Generator** and joined

together by a **System** with a single **Connection Point.**

Wind Farm Power Station Settings Schedule or WFPS Settings Schedule

The document of that name setting out in accordance with CC.7.2 certain technical criteria that **Generators** must comply with in respect of their **Wind Farm Power Stations**.

GD2. CONSTRUCTION OF REFERENCES

In the **Grid Code**:

(i) the table of contents and headings are inserted for convenience only and shall be ignored in construing the **Grid Code**;

(ii) unless the context otherwise requires, all references to a particular paragraph, sub-paragraph, Appendix or Schedule shall be a reference to that paragraph, sub-paragraph Appendix or Schedule in or to that part of the **Grid Code** in which the reference is made;

(iii) unless the context otherwise requires, the singular shall include the plural and vice versa, references to any gender shall include all other genders and references to persons shall include any individual, body corporate, corporation, joint venture, trust, unincorporated association, organisation, firm or partnership and any other entity, in each case whether or not having a separate legal personality;

(iv) references to the words "include" or "including" are to be construed without limitation to the generality of the preceding words;

(v) unless there is something in the subject matter or the context which is inconsistent therewith, any reference to an Order in Council or an Act of Parliament or any section of or schedule to, or other provision of an Order in Council or an Act of Parliament shall be construed at the particular time, as including a reference to any modification, extension or re-enactment thereof then in force and to all instruments, orders and regulations then in force and made or deriving from the relevant Order in Council or Act of Parliament;

(vi) references to "in writing" or "written" include typewriting, printing, lithography and other modes of reproducing words in a legible and non-transitory form;

(vii) where the **Glossary and Definitions** refers to any word or term which is more particularly defined in a part of the **Grid Code**, the definition of that part of the **Grid Code** will prevail over the definition in the **Glossary & Definitions** in the event of any inconsistency;

(viii) a cross-reference to another document or part of the **Grid Code** shall not of itself impose any additional or further or co-existent obligation or confer any additional or further or co-existent right in the part of the text where such cross-reference is contained;

(ix) nothing in the **Grid Code** is intended to or shall derogate from the **TSO's** statutory or licence obligations;

(x) a "holding company" means, in relation to any person, a holding company of such person within the meaning of Section 736, 736A and 736B of the Companies Act 1985 as substituted by Section 144 of the Companies Act 1989;

(xi) a "subsidiary" means, in relation to any person, a subsidiary of such person within the meaning of Section 736, 736A and 736B of the Companies Act 1985 as substituted by Section 144 of the Companies Act 1989;

(xii) references to time are to Belfast time; and

(xiii) if any item (including any technical or operational parameter) is defined or determined by reference to a **Generating Unit Agreement**, then for the purposes of applying this **Grid Code** to a **CDGU** that is not the subject of a **Generating Unit Agreement**, the value of the item shall be taken to be:-

(x) as set out in or determined under the **SSS Agreement** (for that **CDGU**);

(y) if paragraph (x) above does not apply, and where the **CDGU** was subject to any **Generating Unit Agreement** which is no longer in force, then as set out in or determined under that **Generating Unit Agreement** as if it were still in effect; and

(z) if paragraph (x) and (y) do not apply, then as agreed between the **TSO** and the **Generator** (both acting reasonably).

Single Electricity Market

Grid Code

NEW or MODIFIED SDC DEFINITIONS

25 September 2007

[Note: Please note that this document was prepared jointly by EirGrid plc and SONI Limited.]

Defined Term	Definition
Active Power ***or MW*** ***[Note: Words in italic apply to the SONI Grid Code only.]***	The product of the components of alternating current and voltage that equate to true power which is measured in units of watts and standard multiples thereof, for example: 1000 Watts = 1 kW; 1000 kW = 1 MW; 1000 MW = 1 GW.
Additional Grid Code Availability Notice	A notice submitted by a **User** to the **TSO** pursuant to SDC1.4.2 relating to additional data on **Availability**.
Additional Grid Code Characteristics Notice	A notice to be submitted to the **TSO** pursuant to SDC1.4.4.2 relating to additional technical data.
Aggregate Interconnector Ramp Rate	The maximum **Ramp Up Rate** for an **Interconnector** or maximum **Ramp Down Rate** as determined by the **TSO**.
Aggregated Demand Site	A group of **Individual Demand Sites** represented by a **Dispatchable Demand Customer**, which together are capable of a **Demand Reduction Capability** equal to or above 4 **MW** (and which is therefore subject to **Central Dispatch** from the **TSO**). Each **Individual Demand Site** comprising an **Aggregated Demand Site** shall be in one currency zone. Unless otherwise specified, information submitted in respect of an **Aggregated Demand Site** shall always be at an aggregated level.
Aggregated Generating Unit	A group of **Generating Units** represented by a **Generator Aggregator**, each of which must not have a **Registered Capacity/*Contracted Capacity*** greater than 10 **MW**. An **Aggregated Generating Unit** with a total **Registered Capacity** of 4 **MW** or more shall be subject to **Central Dispatch**, but one with a total **Registered Capacity** of less than 4 **MW** may only be subject to **Central Dispatch** subject to agreement with the **TSO**. Unless otherwise specified by the **TSO** or otherwise in the **Grid Code**, information submitted in respect of an **Aggregated Generating Unit** shall always be at an aggregated

Defined Term	Definition
	level. ***[Note: the word "Contracted Capacity" applies to the SONI Grid Code only.]***
Aggregated Maximum Export Capacity	In the case of a **Generator Aggregator**, the aggregated value (in **MW,** MVA, kW and/or kVA) provided in each **Connection Agreement** (or connection agreement to the **Distribution System**, as the case may be) for the **Generating Units** for which the **Generator Aggregator** is responsible.
Aggregated Maximum Import Capacity	In the case of a **Dispatchable Demand Customer** in respect of its **Aggregated Demand Site** or a **Generator Aggregator** in respect of its **Aggregated Generating Unit**, the aggregated values (kW and/ or kVA) provided in each **Connection Agreement** (or connection agreement to the **Distribution System**, as the case may be) for the **Individual Demand Sites** or **Generating Units** for which the **Dispatchable Demand Customer** or **Generator Aggregator** is responsible.
Aggregator	Either a **Generator Aggregator** or a **Dispatchable Demand Customer** in respect of an **Aggregated Demand Site**.
Ancillary Service	SONI: *A service, other than the production of electricity, which is used to operate a stable and secure any part of the system in the **Republic of Ireland** including **Reactive Power**, **Operating Reserve**, **Frequency Control** and **Blackstart Capability**.* In EirGrid: *A service, other than the production of electricity, which is used to operate a stable and secure **Power System** including **Reactive Power**, **Operating Reserve**, **Frequency Control** and **Blackstart Capability**.*
Autonomous Generating Units	A **Generating Unit** that is not subject to **Central Dispatch** or subject to **Active Power** control by the relevant **TSO**.
Availability Notice	A notice to be submitted to the **TSO** pursuant to SDC1.4.1.1.
Availability Payments	*A payment made to a **Generator** for making a **Generating Unit** available.* ***[Note: Please note that this definition applies to the SONI Grid Code only.]***
Black Start	The procedure necessary for a recovery from a **Total Shutdown** or **Partial Shutdown**.
Block Load	The level of output that a **Generating Unit** immediately produces following **Synchronisation.** For avoidance of doubt, **Block Load** can

Defined Term	Definition
	equal 0 MW.
Block Load Cold	**Block Load** during a **Cold Start**.
Block Load Hot	**Block Load** during a **Hot Start**.
Block Load Warm	**Block Load** during a **Warm Start**.
Cancelled Start	A response by a **Generator** to an instruction from the **TSO** cancelling a previous instruction to **Synchronise** to the **NI System**.
CCGT Installation	SONI: *A collection of **CCGT Modules** (registered as a **CCGT Installation** under the PC) comprising one or more gas turbines and one or more steam turbines where, in normal operation, the waste heat from the **CCGT Modules** which are gas turbines is passed to the heat exchanger of the associated **CCGT Modules** which are steam turbines from which it is directly supplied to these steam turbines thereby contributing to the overall combined cycle efficiency of the **CCGT Installation**.* EirGrid: *A collection of **Generation Units** comprising one or more **Combustion Turbine Units** and one or more **Steam Units** where, in normal operation, the waste heat from the **Combustion Turbine Units** is passed to the water/steam system of the associated **Steam Unit** or **Steam Units** and where the component **Generation Units** within the **CCGT Installation** are directly connected by steam or hot gas lines which enable those **Generation Units** to contribute to the efficiency of the combined cycle operation of the **CCGT Installation**.*
CCGT Installation Matrix	The matrix which must be submitted by a **Generator** under the **Planning Code** and which is used by the **TSOs** for **Scheduling** and **Dispatch** purposes under the **SDCs** as a "look up" table determining which ***CCGT Module/CCGT Unit*** will be operating at any given **MW Dispatch** level subject to any updated **Availability** information submitted by a **Generator** to a **TSO** under **SDC1**. ***[Note: The term "CCGT Module" will apply to the SONI Grid Code and the term "CCGT Unit" will apply to the EirGrid Grid Code.]***
CCGT Module	*A **Generating Unit** within a **CCGT Installation**.* ***[Note: Please note that this term will apply to the SONI Grid Code.]***
CCGT Unit	*A **Generating Unit** within a **CCGT Installation*** *.**[Note: Please note that this term will apply to the EirGrid Grid Code.]***

Defined Term	Definition
Central Dispatch	The process of **Scheduling** and issuing **Dispatch Instructions** in relation to **CDGUs, Pumped Storage Plant Demand, Demand Side Units, Aggregated Generating Units** and/or **Interconnectors** direct to a **Control Facility** by the **TSO** pursuant to the **Grid Code.** In particular: • All **Dispatchable WFPSs** shall be subject to **Central Dispatch**; • All other **Power Stations** with a **Registered Capacity** of above 10 **MW** shall be subject to **Central Dispatch**; • *All other **Power Stations** with a **Registered Capacity** of 10 **MW** or less can agree with the **TSO** to be subject to **Central Dispatch**; **[Note: This bullet point applies to the SONI Grid Code only.]*** • *All other **Power Stations** with a **Registered Capacity** of 10 MW or less shall be subject to **Central Dispatch**, however can elect whether to comply with SDC1.4.4.5 relating to the submission of **Commercial Offer Data** **[Note: This bullet point applies to the EirGrid Grid Code only.]***
Centrally Dispatched Generating Unit (CDGU)	A **Generating Unit** within a **Power Station** subject to **Central Dispatch**, which comprises, unless specified otherwise in relation to a particular use of the term a **Thermal Plant** including a **CCGT Installation**, a **Dispatchable WFPS**, **Hydro Unit** and **Pumped Storage Plant** in respect of its **Pumped Storage Generation**.
Cold Start	Any **Synchronisation** of a **Generating Unit** that has previously not been **Synchronised** for a period of time equal to or longer than its submitted **Warm Cooling Boundary**.
Commercial Offer Data	Data submitted by a **User** or an Intermediary to the **MO** pursuant to the **TSC** in relation to prices and, where applicable, **Nominated Profile** for certain **Users**.
Commissioning/ Acceptance Test	*Testing of a **CDGU**, **Controllable WFPS, Pumped Storage Plant Demand**, **Demand Side Units**, **Aggregated Generating Units**, , **Interconnector** or an item of **User's Equipment** required pursuant to the **Connection Conditions** prior to connection or re-connection in order to determine whether or not it is suitable for connection to the **System** and also to determine the new values of parameters to apply to it following a material alteration or modification of a **CDGU**, **Controllable WFPS, Pumped Storage Plant Demand**, **Demand Side Units**, **Aggregated Generating Units**, , **Interconnector** or of an item of **User's Equipment** and the term "**Commissioning/Acceptance Testing**" shall be construed accordingly.*

Defined Term	Definition
	[Note: This term applies to SONI only]
Commissioning Test	*Testing of a **CDGU**, **Controllable WFPS, Pumped Storage Plant Demand**, **Demand Side Units**, **Aggregated Generating Units**,, **Interconnector** or an item of **User's Equipment** required pursuant to the **Connection Conditions** prior to connection or re-connection in order to determine whether or not it is suitable for connection to the **System** and also to determine the new values of parameters to apply to it following a material alteration or modification of a **CDGU**, **Controllable WFPS, Pumped Storage Plant Demand**, **Demand Side Units**, **Aggregated Generating Units**, **Interconnector** or of an item of **User's Equipment** and the term "Commissioning Testing" shall be construed accordingly.* ***[Note: This term applies to the EirGrid Grid Code only]***
Confirmation Statement	*As defined in the Metering Code.* ***[Note: This definition applies to the SONI Grid Code only.]***
Connection Agreement	*In respect of the **Transmission System**,* the bilateral agreement between the **TSO** and the **User**, which contains the detail specific to the **User**'s connection to the **Transmission System**. *In respect of the **Distribution System**, the bilateral agreement between the **DNO** and the **User**, which contains the detail specific to the **User**'s connection to the **Distribution System**.* ***[Note: Please note that the words in italic apply to the SONI Grid Code only.]***
Constrained Group	A group of **Generating Units** located within a constrained part of the **System** as determined by the **TSO**.
Contracted Capacity	*In relation to a **PPA CDGU,** the **NFL Capacity** of the **CDGU** which is set out in paragraph 2 of Schedule 1 to the **Generating Unit Agreement** for that **CDGU**, as that **NFL Capacity** may be amended from time to time in accordance with that **Generating Unit Agreement,** or the relevant **Power Station Agreement**.* ***[NB: This definition applies to the SONI Grid Code only.]***
Control Facility	A location used for the purpose of **Monitoring**, control and operation of the **User's Plant** and **Apparatus** and for accepting **Dispatch Instructions** via **Electronic Interface**. ***[Note: Please note that this definition was modified from the definition in the EirGrid Grid Code.]***
Controllable WFPS	EirGrid: *A site containing at least one **WTG** which can automatically act upon*

Defined Term	Definition
	*a remote signal from the **TSO** to change its **Active Power** output.* SONI*:* *A **WFPS** first connected to the **NI System** on or after 1 April 2005 whose wind turbines comprise a **Registered Capacity** of 5 **MW** or more.*
Cycle Operating Mode	The **Open Cycle Mode** or combine cycle **Operating Mode** of a **CCGT Installation** which may need to be specified pursuant to a **Dispatch Instruction** under SDC2.4.2.4(j).
Declared Maximisation Capacity	*In relation to a **CDGU**, the **Maximisation Capacity** as declared by a **Generator** in a **Technical Parameters Notice** (or in a revised **Technical Parameters Notice**) to be the impaired **Maximisation Capacity** of the **CDGU** which shall be not greater than its **Contracted Capacity (Maximisation)** nor less than its **Contracted Capacity** (which is **Maximisation Capacity** stated on the assumption that **Availability** is equal to **Contracted Capacity**) or if no figure is so declared, the **Contracted Capacity (Maximisation)** set out in paragraph 2 of schedule 1 to the relevant **Generating Unit Agreement**.* ***[Note: Please that this definition applies to the SONI Grid Code only.]***
Deload Break Point	The point at which due to technical reason a **Generating Unit** may need to pause during its **MW Output** reduction process.
De-Loading Rate	The rate at which a **Generation Unit** or **Generating Unit** (as the case may be) reduces **MW Output** from **Minimum Generation** to zero when it is instructed to cease output. There are up to two possible **De-Loading** rates, which are referred to as **De-Loading Rate 1** and **De-Loading Rate 2**. ***[Note: Please note that the definition was modified from the definition in the EirGrid Grid Code.]***
Demand	SONI: *The amount of electrical power consumed on the **Total System** comprising of **Active** and **Reactive Power** unless otherwise stated.* EirGrid: *The amount of electrical power consumed by the **Power System** comprising of **Active** and **Reactive Power** unless otherwise stated.*
Demand Customer	A person to whom electrical **Energy** is provided by means of a direct connection to the **Transmission System** or by a connection to a **Distribution System**. ***Autoproducers** are to be considered both **Generators** and **Demand***

Defined Term	Definition
	Customers. ***[Note: The part in italics applies to the EirGrid Grid Code only*]**
Demand Profile	The estimated consumption in MW **Demand** for an **Individual Demand Site** or aggregated consumption for each **Individual Demand Site** which form part of an **Aggregated Demand Site** for each **Trading Period** in the following **Optimisation Time Horizon** period and which must be submitted to the **TSO** in the **Availability Notice** under SDC 1.4.1.2.
Demand Reduction	The reduction in MW **Demand** which can be achieved in one currency zone by a **Demand Side Unit** for each **Trading Period** in the following **Optimisation Time Horizon** period and which must be submitted by the **User** to the **TSO** in an **Availability Notice** under SDC1.4.1.2.
Demand Reduction Capability	The reduction capability in **MW Demand** that can be achieved by the **Demand Side Unit**.
Demand Side Unit	An **Individual Demand Site** or **Aggregated Demand Site** with a **Demand Reduction Capability** of at least 4 MW. The **Demand Side Unit** shall be subject to **Central Dispatch**.
De-Synchronising	SONI: *The act of taking a **Generating Unit** off the **NI System**, to which it has been **Synchronised**, and like terms shall be construed accordingly.* EirGrid: *The act of taking a **Generating Unit** off the **Network**, to which it has been **Synchronised**, and like terms shall be construed accordingly.*
Dispatch	The issue by the **TSO** of instructions to a **Generator, Pumped Storage Generator**, **Interconnector Owner**, **Dispatchable Demand Customer** or **Generator Aggregator** in respect of its **CDGU**, **Pumped Storage Plant Demand**, **Demand Side Unit, Aggregated Generating Units** or **Interconnector** tranche pursuant to SDC2 and the term "**Dispatched**" shall be construed accordingly."
Dispatch Instruction	An instruction given by the **TSO** to a **CDGU**, **Demand Side Unit, Interconnector** tranche and/or **Pumped Storage Plant Demand** to that **User's** approved **Control Facility** to change the output, fuel or manner of operation of the **CDGU**, **Demand Side Unit** , **Interconnector** tranche and/or **Pumped Storage Plant Demand**. "**Instruct**" and "**Instructed**" shall be construed accordingly.
Dispatchable Demand	A person who operates a **Demand Side Unit**, with a **Demand**

Defined Term	Definition
Customer	**Reduction Capability** not less than 4 **MW**.
Dispatchable WFPS or DWFPS	A **Controllable WFPS** which must have a **Control Facility** in order to be dispatched via an **Electronic Interface** by the **TSO.**
Distribution System	EirGrid: *The system consisting (wholly or mainly) of electric circuits, transformers and switchgear which are operated by and used for the distribution of electricity from **Grid Supply Points** or **Generating Units** or other entry points to the point of delivery to **Customers** or other **Users** and any **Plant** and **Apparatus** and meters used in connection with the distribution of electricity, but not including any part of the **Transmission System**.* SONI: *The electric lines within the Authorised Area, as defined in the **TSO Licence**, owned by the **Distribution Licensee** (but not, for the avoidance of doubt, any lines forming part of the transmission system or any Interconnector), and any other electric lines which the **Authority** may specify as forming part of the distribution system, including (in each case) any electrical plant and/or meters used in connection with distribution.*
Dwell Time	The duration for which the **Generating Unit** must remain at the **Dwell Time Trigger Point** during a change in its **MW Output** while ramping up or down between **Minimum Generation** and instructed **MW Output.**
Dwell Time Trigger Point	A constant MW level at which a **Generating Unit** must remain while ramping up or down between **Minimum Generation** and instructed **MW Output.** There may be circumstances where more than one parameter applies and this is indicated by adding a number at the end of the parameter.
Electronic Interface	A system, in accordance with the requirements of the **TSO's** data system, at the **Control Facility**, providing an electronic interface between the **TSO** and a **User**, for issuing and receiving instructions, including **Dispatch Instructions**, as provided for in the **Grid Code** and established pursuant to an agreement between the **TSO** and the **User**.
End of Restricted Range	The end point in MW of a **Forbidden Zone**. There may be circumstances where more than one parameter applies and this is indicated by adding a number at the end of the parameter.
End Point of Start Up Period	The time after which the rate of change of the **Generating Unit Output** is not dependent upon the initial **Warmth** of the **Generating Unit**.

Defined Term	Definition
Energy Limit	The target amount of **Energy** to be generated by an **Energy Limited Generating Unit** within the **Trading Day**.
Energy Limit Factor	A factor between zero and one, which is applied to the **Energy Limit** for use in calculating the scheduled **Energy** of **Energy Limited Generating Units** in the period between the end of the **Trading Day** and the end of the **Optimisation Time Horizon** period**.**
Energy Limit Start	06:00 hours on the **Trading Day**.
Energy Limit Stop	06.00 hours on the day following the **Trading Day**.
Energy Limited Generating Unit	A **Hydro Unit** with a limit on the **Energy** it can deliver in a specified time period.
Forbidden Zone	A **MW** range within which a **Generator** cannot operate in a stable manner due to an inherent technical limitation of the machine.
Forecast Minimum Output Profile	The **User**'s forecast of the average level of minimum **MW Output** for a **Pumped Storage Plant** for each **Trading Period** in the **Optimisation Time Horizon**.
Forecast Minimum Generation Profile	The **User's** forecast of the average level of **Minimum Generation** for the **User's Plant** for each **Trading Period** in the **Optimisation Time Horizon**.
Frequency Control	SONI*:* *The control of the **Frequency** on the **Total System.*** EirGrid*:* *The control of the **Frequency** on the **Power System.***
Frequency Sensitive Mode	The operation of a **Generating Unit** whereby its generation level is varied automatically to compensate for variations in the **Frequency** of the **System**.
Fuel Security Code	*The Northern Ireland Fuel Security Code designated by the **Department** as a condition of licences granted under Article 10 of the **Order**.* ***[Note: This definition applies to SONI only.]***
Gas Turbine Unit	*SONI* *A **Generating Unit** fuelled by **Gas** or distillate.* *EirGrid* *A **Generation Unit** driven by gas.*

Defined Term	Definition
Gate Closure	10.00 hours on the day preceding the relevant **Trading Day** to which a notice relates.
Generating Unit	SONI: *Other than in the case of **Wind Farm Power Stations**, a turbine generator within a **Power Station**, together with all **Plant** and **Apparatus** at that **Power Station** up to the high voltage bushings at the **Generator Transformer** which relate exclusively to the operation of that turbine generator (which in the case of a steam turbine will include the boiler and heat exchanger and in the case of a gas turbine will include the gas generator/combustion turbine). In the case of **Wind Farm Power Stations**, a wind turbine generator within a **Wind Farm Power Station**, together with all **Plant** and **Apparatus** (including any step-up transformer) which relates exclusively to the operation of that wind turbine generator. It will be either a **Synchronous Generating Unit** or a **Non-Synchronous Generating Unit**.* EirGrid: *Has the same meaning as **Generation Unit**.*
Generator Aggregator	A person who represents several **Generating Units**, each of which does not have a **Registered Capacity**/***Contracted Capacity*** greater than 10 MW and the combined **Registered Capacity**/***Contracted Capacity*** of which is equal to or greater than 4 **MW**, by in particular preparing notices under SDC1, in relation to those **Generating Units** and receiving **Dispatch Instructions** in relation to those **Generating Units** under SDC2. For the avoidance of doubt, a **Generator Aggregator** cannot aggregate a **Generating Unit** with an output equal to or above 10 **MW**. ***[Note: Please note that "Contracted Capacity" shall be referred to in the SONI Grid Code only.]***
Generator Terminal	The stator terminals of a **Generating Unit**.
Grid Code	Term defined in SONI Grid Code as*:* *The **Grid Code** prepared pursuant to the **TSO's Licence**, as from time to time revised in accordance with the **TSO's Licence**.* Term defined in EirGrid Grid Code as*:* *The code prepared by the **TSO** pursuant to section 33 of the **Act**, and approved by the **Commission**, as from time to time revised, amended, supplemented or replaced with the approval of or at the instance of the **Commission**.*

Defined Term	Definition
Hot Cooling Boundary	The period of time, following **De-Synchronisation** of a **Generating Unit** after which the **Warmth State** transfers from being hot to being warm.
Hot Start	Any **Synchronisation** of a **Generating Unit** that has previously not been **Synchronised** for a period of time shorter than its submitted **Hot Cooling Boundary**.
Hydro Unit	A **Unit** which generates electricity from the movement of water excluding **Pumped Storage**.
Incremental Price	The marginal price at a particular **MW Output**, for increasing **Energy** output (or reducing demand) by 1 **MWh**, once that unit has started to generate **Energy** (or reduce **Demand**, as the case may be).
Indicative Market Schedule	The schedule prepared by the **Market Operator** pursuant to the **TSC**.
Indicative Operations Schedule	The schedule prepared by the **TSO** conjunction with the **Other TSO** pursuant to SDC1.4.8.1.
Individual Demand Site	A single premises of a **Demand Customer** connected to the **Transmission System** or **Distribution System** with a **Demand Reduction Capability**. The **Individual Demand Site** shall have a **Maximum Import Capacity** and shall not have a **Maximum Export Capacity.**
Initial Demand Reduction	The **Demand Reduction** of a **Demand Side Unit** following a **Dispatch Instruction** from the **TSO** when the **Demand Reduction** is at 0 **MW** for a period greater than 24 hours.
Initial Demand Reduction Time	The time as specified by the **Dispatchable Demand Customer** in the **Technical Parameters** and is the time it takes for the **Dispatchable Demand Customer** to be able to implement the **Initial Demand Reduction** from receipt of the **Dispatch Instruction** from the **TSO.**
Interconnector	Electric lines and electric **Plant** used for conveying electricity or provision of **Reserves** from outside both of Northern Ireland and the Republic of Ireland directly to or from a substation or converter station in either Northern Ireland or the Republic of Ireland.
Interconnector Filter	A device within an HVDC **Interconnector** which prevents the transmission of harmonics to the **Transmission System** to which that **Interconnector** is connected and which also provides a means of controlling the **Mvar** flow to and from that HVDC **Interconnector**.
Interconnector Owner	A person who owns an **Interconnector**.
Interconnector User	A **User** importing or exporting electricity through the **Interconnector,** but excluding a residual capacity holder as defined in the **TSC.**
Inter-jurisdictional Tie	The lines, facilities and equipment that connect the transmission

Defined Term	Definition
Line	system of the Republic of Ireland to the transmission system of Northern Ireland.
Interested User	*As defined in the Metering Code.* ***[Note: This definition applies to the SONI Grid Code only.]***
Intermediary	The person representing a **Generating Unit** for the purposes provided for in the **TSC**.
Licence Standards	SONI: *The standards set out or referred to in Condition 20 of the **TSO Licence**.* EirGrid: *The standards set out or referred to in the **TSO Licence**.*
Load	The **Active Power** or **Reactive Power**, as the context requires, generated, transmitted or distributed and all like terms shall be construed accordingly.
Loading Rate	The **Loading Rate Cold**, **Loading Rate Hot** or **Loading Rate Warm** as the case may be.
Load Up Break Point Cold	The break point which defines the shared MW boundary between the two **Loading Rates Cold**. The first **Loading Rate Cold** applies from **Block Load** to the first **Load Up Break Point Cold**, the second **Loading Rate Cold** applies from the first **Load Up Break Point Cold** to the second **Load Up Break Point Cold**, the third **Loading Rate Cold** applies from the second **Load Up Break Point Cold** to the end point of the **Start-Up** period, which should be set equal to the **Minimum Generation**.
Load Up Break Point Hot	The break point which defines the shared MW boundary between the **Loading Rates Hot**. The first **Loading Rate Hot** applies from **Block Load** to the first **Load Up Break Point Hot**, the second **Loading Rate Hot** applies from the first **Load Up Break Point Hot** to the second **Load Up Break Point Hot,** the third **Loading Rate Hot** applies from the second **Load Up Break Point Hot** to the end point of the **Start-Up** period, which should be set equal to the **Minimum Generation**.
Load Up Break Point Warm	The break point which defines the shared MW boundary between the **Loading Rates Warm**. The first **Loading** rate applies from **Block Load** to the first **Load Up Break Point Warm**, the second **Loading Rate Hot** applies from the first **Load Up Break Point Warm** to the second **Load Up Break Point Warm**, the third **Loading Rate Warm** applies from the second **Load Up Break Point Warm** to the end point of the **Start-Up** period, which should be set equal to the **Minimum Generation**.

Defined Term	Definition
Loading Rate Cold	The rate at which a **Generating Unit** increases **Output** from **Block Load** to **Minimum Generation** when it is instructed to **Cold Start**. There may be circumstances where more than one parameter applies and this is indicated by adding a number at the end of the parameter.
Loading Rate Hot	The rate at which a **Generating Unit** increases **Output** from **Block Load** to **Minimum Generation** when it is instructed to **Hot Start**. There may be circumstances where more than one parameter applies and this is indicated by adding a number at the end of the parameter.
Loading Rate Warm	The rate at which a **Generating Unit** increases **Output** from **Block Load** to **Minimum Generation** when it is instructed to **Warm Start**. There may be circumstances where more than one parameter applies and this is indicated by adding a number at the end of the parameter.
Low Frequency Relay	An electrical measuring relay intended to operate when its characteristic quantity (**Frequency**) reaches the relay settings by decrease in **Frequency**. ***[Note: Please note that this definition was taken from the SONI Grid Code.]***
Market Operator	Shall have the meaning set out in the **TSC.**
Max Ramp Down Rate	The maximum **Ramp Down Rate** of a **Demand Side Unit**. In the case of a **Demand Side Unit** which consists of an **Aggregated Demand Site** this shall be the aggregated maximum **Ramp Down Rate** of the **Individual Demand Sites**.
Max Ramp Up Rate	The maximum **Ramp Up Rate** of a **Demand Side Unit**. In the case of a **Demand Side Unit** which consists of an **Aggregated Demand Site** this shall be the aggregated maximum **Ramp Up Rate** of the **Individual Demand Sites**.
Maximisation	SONI: *An increase in **MW Output** above the **Contracted Capacity** up to the level of the **Short Term Maximisation Capability**, and the terms "**Maximise**" and "**Maximised**" shall be construed accordingly.* EirGrid: *An increase in **MW Output** above the **Registered Capacity** up to the level of the Short **Term Maximisation Capability**, and the terms "**Maximise**" and "**Maximised**" shall be construed accordingly.*
Maximisation Instruction	A **Dispatch** instruction issued by the **TSO** to the **Generator** to **Maximise** the **MW Output** of a **Generating Unit.**
Maximum Down Time	The maximum period of time during which **Demand Reduction** at a **Demand Side Unit** can be **Dispatched**.

Defined Term	Definition
Maximum Export Capacity	The value (in **MW,** MVA, kW and/or kVA) provided in accordance with the **User's Connection Agreement.**
Maximum Import Capacity	The values (kW and/ or kVA) provided in accordance with the **User's Connection Agreement**.
Maximum On Time	The maximum time that a **Generating Unit** can run following **Start Up**.
Maximum Storage Capacity	The maximum amount of **Energy** that can be produced from the reservoir of a **Pumped Storage Generator** for a **Trading Day.**
Merit Order	An order, compiled by the **TSO** in conjunction with the **Other TSO** pursuant to SDC 1, of **CDGUs, Controllable WFPSs**, **Demand Side Units**, **Pumped Storage Plant Demand** and **Aggregated Generating Units Price Sets** and/or **Interconnector Price Quantity Pairs** or **Price Quantity Pairs** of equivalent units in *Northern Ireland / the Republic of Ireland.* ***[Note: The SONI Grid Code shall be referring to "the Republic of Ireland" whereas the EirGrid Grid Code will refer to "Northern Ireland".]***
Minimum Demand Regulation (MDR)	That minimum margin of **Active Power** to provide a sufficient regulating margin for adequate **Frequency Control**.
Minimum Down Time	The minimum period of time during which **Demand Reduction** at a **Demand Side Unit** can be **Dispatched**. *(In the case of **Generation Units**, the minimum time that must elapse from the time a **Generation Unit De-Synchronises** before the next **Start-up**).* ***[Note: Words in brackets apply to the EirGrid Grid Code only]***
Minimum off time	EirGrid: *The minimum time that must elapse from the time of a **Generation Unit Shutdown** before it can be instructed to **Start-up.*** SONI: *The minimum time that must elapse from the time of a **Generating Unit Shut Down** before it can be instructed to **Start-Up**.*
Minimum on time	EirGrid: *The minimum time that must elapse from the time of a **Generation Unit Start-up** before it can be instructed to **Shutdown**.*

Defined Term	Definition
	SONI: *The minimum time that must elapse from the time of a **Generating Unit Start-Up** before it can be instructed to **Shut Down**.*
Minimum Storage Capacity	The minimum amount of **Energy** that must be produced from the reservoir of a **Pumped Storage Generator** for a **Trading Day.**
Minimum Generation	The minimum **MW Output** which a **Generating Unit** can generate continuously, registered with the **TSO** under SDC1 as a **Technical Parameter**.
MW Output	*The actual **Active Power** output in MW of a **Generation Unit** at the **Connection Point**. **[Note: Please note that this definition applies to the EirGrid Grid Code only.]***
NI System	*In SONI Code:* *Together, the **Transmission System** and the **Distribution System.*** *In EirGrid (proposed definition):* *Together, the **Other Transmission System** and the distribution system in Northern Ireland.*
No Load Cost	A price which forms part of **Commercial Offer Data** expressed in € or £/hour and which is invariant in the level of **MW Output** and which applies at all times when the level of **MW Output** is greater than zero.
Non-Centrally Dispatched Generating Units (NCDGU)	A **Generating Unit** not subject to **Central Dispatch**.
Nomination Profile	The profile of the **MW Output** intended for a **Generating Unit** in respect of each **Trading Period** in the **Trading Day** as submitted under the **TSC**.
Open Cycle Mode	The mode of operation of a **CCGT Installation** where only the **Gas Turbine Unit** is operational (i.e. without operation of any associated **Steam Turbine Units**).
Open Cycle Gas Turbine Unit	*SONI:* *A **Generating Unit** driven by a gas turbine other than a **CCGT Installation** or **CCGT Module**.* *EirGrid:* *A **Generation Unit** driven by a gas turbine other than a **CCGT Installation** or **CCGT Unit**.*

Defined Term	Definition
Operating Mode	An **Operating Mode** of a **Generating Unit** is a pre-defined method of operating that **Generating Unit**, as agreed between the **TSO** and the **User**.
Optimisation Time Horizon	The time period from and including 06:00 hours on the relevant **Trading Day** up to but not including 12:00 hours on the subsequent **Trading Day**.
Other Grid Code	SONI*:* *The code prepared by the **Other TSO** pursuant to section 33 of the Electricity Regulation Act 1999 of the Republic of Ireland, and approved by the relevant regulatory authority, as from time to time revised, amended, supplemented or replaced with the approval of or at the instance of the relevant regulatory authority.* EirGrid*:* *The code prepared pursuant to the licence to carry out electricity transmission activities granted to the **Other TSO** pursuant to Article 10(1)(b) of the Electricity (Northern Ireland) Order 1992 in Northern Ireland, as from time to time revised in accordance with such licence.*
Other Relevant Data	The data from a **User** referred to in SDC1.4.4.4.
Other TSO	SONI*:* *The holder of a licence granted pursuant to Section 14 of the Electricity Regulation Act 1999 in the Republic of Ireland to operate a **Transmission System.*** EirGrid*:* *The holder of a licence granted pursuant to Article 10(1)(b) of the **Electricity (Northern Ireland) Order 1992** in Northern Ireland to operate a **Transmission System** in the capacity of transmission system operator.*
Other Transmission System	SONI: *The transmission system operated by the **Other TSO** in the Republic of Ireland.* EirGrid: *The transmission system operated by the **Other TSO** in Northern Ireland.*
Output	*The actual **Active Power** output in **MW** of a **Generating Unit** as at the **Connection Point** derived from data measured pursuant to the*

Defined Term	Definition
	Metering Code**. In respect of a **PPA CDGU**, the **TSO** may take into account the **Conversion Factors** when **Dispatching** such a **CDGU**.* ***[This definition applies to the SONI Grid Code only.]
Price Quantity Pairs	**Incremental Prices** and their respective quantity ranges for **Generating Units**, **Demand Side Units**, **Aggregated Generating Units** and **Interconnector** tranches as part of **Commercial Offer Data**.
Price Sets	The **Price Quantity Pairs**, **Start-up Costs**, **Shutdown Costs** and **No Load Costs** submitted by a **User** under SDC1.
Priority Dispatch	The **Dispatch** given priority, as afforded under governing legislation in either jurisdiction.
Pumped Storage Plant Demand	A **Pumped Storage Plant** in its operation of consuming **Energy** by pumping water to an upper reservoir.
Pumped Storage Generation	A **Pumped Storage Plant** in its operation of producing **Energy** by releasing water from an upper reservoir.
Pumped Storage Generator	A **Generator** which owns and/or operates any **Pumped Storage Plant**.
Pumped Storage Plant	A **Generation Plant** that produces **Active Energy** using water from an upper reservoir and consumes **Energy** by pumping water up to the same reservoir.
Ramp Down Break Point	The MW level at which the **Ramp Down Rate** changes. There may be circumstances where more than one parameter applies and this is indicated by adding a number at the end of the parameter.
Ramp Down Rate	SONI: *The maximum rate of decrease in a **Generating Unit's Output**. The **Ramp Down Rate** applies over the output range from its **Contracted Capacity** to **Minimum Generation**. The rate of change is not dependent upon the initial **Warmth** of the plant but may depend on the **MW Output**. There may be circumstances where more than one parameter applies and this is indicated by adding a number at the end of the parameter.* EirGrid: *The maximum rate of decrease in a **Generating Unit's Output** after the **End Of Start-up Period**. The **Ramp Down Rate** applies over the output range from its **Registered Capacity** to **Minimum Generation**. The rate of change is not dependent upon the initial **Warmth** of the plant but may depend on the **MW Output**.There may be circumstances where more than one parameter applies and this is indicated by adding a*

Defined Term	Definition
	number at the end of the parameter.
Ramp Up Break Point	The MW level at which the **Ramp Up Rate** changes. There may be circumstances where more than one parameter applies and this is indicated by adding a number at the end of the parameter.
Ramp Up Rate	SONI: *The maximum rate of increase in a **Generating Unit's Output**. This rate of increase continues until the **Generating Unit** reaches the level of output instructed by the control room operator of its /**Contracted Capacity**. The rate of increase is not dependent upon the initial **Warmth** of the plant but may depend on the **MW Output**. There may be circumstances where more than one parameter applies and this is indicated by adding a number at the end of the parameter.* EirGrid *The maximum rate of increase in a **Generating Unit's Output** after the **End Of Start-up Period**. This rate of increase continues until the **Generating Unit** reaches the level of output instructed by the control room operator of its **Registered Capacity**. The rate of increase is not dependent upon the initial **Warmth** of the plant but may depend on the **MW Output**. There may be circumstances where more than one parameter applies and this is indicated by adding a number at the end of the parameter.*
Re-declaration	Notification to the **TSO** by the **User** of any revisions to data, pursuant to SDC1.4.5.
Regulatory Authority/ Regulatory Authorities	***Regulatory Authority:*** *The authority appointed under legislation to regulate the electricity industry in the respective jurisdiction. In the Republic of Ireland it is the **Commission** and in Northern Ireland it is **NIAUR** (Northern Ireland Authority for Utility Regulation).* ***Regulatory Authorities**: Each **Regulatory Authority** taken together.* ***[Note: Please note that this definition applies to the EirGrid Code only.]***
Regulating Margin	The margin of generating capacity that is **Synchronised** over **Demand** which is required in order to maintain **Frequency Control**.
Reserve Characteristics	SONI: *The **MW** level of reserve available at any given **MW Output** of a **CDGU** as set out in the **Sustained Load Diagram**.* EirGrid: *The MW level of reserve available at any given MW **Output** of a*

Defined Term	Definition
	***CDGU** as set out in the available **Ancillary Service Agreement**.*
Scheduling	The process of compiling an **Indicative Operations Schedule** as set out in SDC1, and the term "**Scheduled**" and like terms shall be construed accordingly.
Scheduling and Dispatch Code (SDC)	The parts of the **Grid Code** which specify the **Scheduling** and **Dispatch** process.
Sections Under Common Governance	In order to support the efficient running of the **Single Electricity Market** certain sections of the **Grid Code** and the **Other Grid Code** are under common governance. Modifications and derogations to these sections of the **Grid Code** will effectively require agreement and direction *from the **Authority** and the **Other Authority**/ from the relevant **Regulatory Authorities*** and the **TSOs**. SDC1 and SDC2 are **Sections Under Common Governance**. ***[Note: Please note that "Authority" and "Other Authority" will be referred to in the SONI Grid Code and "Regulatory Authorities" will be referred to in the EirGrid Grid Code.]***
Short Notice Re-declaration	A **Re-declaration** where changes apply to values relating to **Trading Periods** occurring within 4 hours of receipt by the **TSO** of the **Re-declaration.**
Short Term Maximisation Capability	EirGrid: *The capability of a **Generating Unit** to deliver, for a limited duration of time, **MW Output** greater than its **Registered Capacity.*** SONI: *The capability of a **Generating Unit** to deliver, for a limited duration of time, **MW Output** greater than its **Contracted Capacity**.*
Shutdown	*The condition of a **Generating Unit** where the generator rotor is at rest or on barring.* ***[Note: This term applies to SONI only]***
Shut Down	*The condition of a **Generation Unit** where the generator rotor is at rest or on barring.* ***[Note: This term applies to EirGrid only]***
Shutdown Cost or **Shut Down Cost**	The costs associated with shutting down a **Demand Side Unit**.
Single Electricity Market	The wholesale all-island single electricity market established and

Defined Term	Definition
(SEM)	governed pursuant to the relevant legislation and the **TSC**.
Soak Time Cold	The duration of time for which the **Generating Unit** must remain at the **Soak Time Trigger Point Cold** during a **Cold Start**. There may be circumstances where more than one parameter applies and this is indicated by adding a number at the end of the parameter.
Soak Time Hot	The duration of time for which the **Generating Unit** must remain at the **Soak Time Trigger Point Hot** during a **Hot Start**. There may be circumstances where more than one parameter applies and this is indicated by adding a number at the end of the parameter.
Soak Time Trigger Point Cold	A constant **MW** level at which a **Generating Unit** must remain while loading up between **Block Load** and **Minimum Generation** after a **Cold Start**. There may be circumstances where more than one parameter applies and this is indicated by adding a number at the end of the parameter.
Soak Time Trigger Point Hot	A constant **MW** level at which a **Generating Unit** must remain while loading up between **Block Load** and **Minimum Generation** after a **Hot Start**. There may be circumstances where more than one parameter applies and this is indicated by adding a number at the end of the parameter.
Soak Time Trigger Point Warm	A constant **MW** level at which a **Generating Unit** must remain while loading up between **Block Load** and **Minimum Generation** after a **Warm Start**. There may be circumstances where more than one parameter applies and this is indicated by adding a number at the end of the parameter.
Soak Time Warm	The duration of time for which the **Generating Unit** must remain at that **Soak Time Trigger Point Warm** during a **Warm Start**. There may be circumstances where more than one parameter applies and this is indicated by adding a number at the end of the parameter.
Special Action	Those actions referred to in SDC2.4.3.
Special Protection Scheme	A control or protection scheme to facilitate system operation by the intertripping of circuit breakers or other *control actions/**Control Action***. ***[Note: Control Actions is used as a defined term in the EirGrid Grid Code.]***
Standing Technical Offer Data	Technical offer data provided on registration to the **TSC**, and updated in accordance with the **TSC**, by a **User** of each of its **Units** in accordance with the **TSC**. *For **CDGUs** with a **Registered Capacity** of 10 **MW** or less, this data shall be advised directly to the **TSO**.* ***[Note: The words in italics apply to the EirGrid Grid Code only.]***

Defined Term	Definition
Start of Restricted Range	The start point in MW of a **Forbidden Zone**. There may be circumstances where more than one parameter applies and this is indicated by adding a number at the end of the parameter.
Start-Up Cost	The costs associated with **Start-Ups**.
Synchronous Compensation	The operation of rotating synchronous **Apparatus** for the specific purpose of either the *generation/**Generation*** or absorption of **Reactive Power**. ***[Note: Please note that "Generation" is defined in the EirGrid Grid Code but not the SONI Grid Code.]***
Synchronous Start-Up Time Cold	The time taken to bring a **Generating Unit** to a **Synchronised** state from a **Cold** (**De-Synchronised**) state.
Synchronous Start-Up Time Hot	The time taken to bring a **Generating Unit** to a **Synchronised** state from a **Hot** (**De-Synchronised**) state.
Synchronous Start-Up Time Warm	The time taken to bring a **Generating Unit** to a **Synchronised** state from a **Warm** (**De-Synchronised**) state.
System	SONI: *Any **User System** and/or the **NI System** as the case may be.* EirGrid: *Any **User System** and/or the **Transmission System** as the case may be.*
System Support Services	SONI: *Has the meaning set out in Condition 1 of the **TSO Licence**.* EirGrid: *Those services defined as **System Support Services** in Condition 1 of the **TSO Licence** granted to the **Other TSO**.*
Target Reservoir Levels	Part of the **Commercial Offer Data** for a **Pumped Storage Generating Unit** and means the target level of the reservoir for the end of the **Trading Day**.
Target Reservoir Level Percentage	As defined in the **TSC**.
Target Frequency	SONI: *That **Frequency** determined by the **TSO**, in its reasonable opinion, as the desired operating **Frequency** of the **Total System**. This will normally be 50.00Hz plus or minus 0.05Hz, except in exceptional circumstances as determined by the **TSO**, in its reasonable opinion*

Defined Term	Definition
	when this may be 49.90 or 50.10Hz. EirGrid: *That **Frequency** determined by the **TSO**, in its reasonable opinion, as the desired operating **Frequency** of the **Power System**.*
Technical Parameters	SONI: *Those parameters listed in Appendix A to SDC1.* EirGrid*:* *The technical capabilities, flexibilities and limitations for the operation of a **User's Plant** as registered or declared in accordance with the provisions of the **Grid Code** including those parameters listed in Appendix A to SDC1.*
Technical Parameters Notice	A notification as submitted under SDC1.4.4.1.
Testing	SONI: ***Testing** carried out by the **TSO** pursuant to OC11.6 of **CDGUs** and **Users' Equipment** and the term "**Test**" shall be construed accordingly.* EirGrid: ***Testing** carried out by the **TSO** pursuant to OC10 and/or CC and the term "**Test**" shall be construed accordingly.*
Thermal Plant	A **Generating Unit** that uses any source of thermal **Energy**.
Trading and Settlement Code (TSC)	The Single Electricity Market Trading and Settlement Code adopted by the **Market Operator** and approved by the ***Regulatory Authorities** / by the **Authority** and the **Other Authority**.* ***[Note: Please note that the EirGrid Grid Code defines the term "Regulatory Authority".]***
Trading Day	A 24-hour period combining forty-eight 30 minute **Trading Periods** (except on the clock change days in spring and autumn when the period will be 23 and 25 hours respectively with forty-six and fifty 30 minute **Trading Periods** respectively). Each **Trading Day** commences at 06.00 hours. *For **PPA CDGUs** references to **Trading Day** in the **Scheduling and Dispatch Code** shall be read as if they were references to **Schedule Day** for the purposes of the **Power Station Agreements** and **Generating Unit Agreements**.*
Trading Period	A thirty minute period beginning on each hour or half hour.

Defined Term	Definition
Transmission System	SONI: *The **System** consisting (wholly or mainly) of high voltage electric lines and cables operated by a **TSO** for the purposes of transmission of electricity from one **Power Station** to a sub-station or to another **Power Station** or between sub-stations or to or from any **External Interconnection** including any **Plant** and **Apparatus** and meters owned or operated by the **TSO** or **TO** in connection with the transmission of electricity.* EirGrid: *The **System** consisting (wholly or mainly) of high **Voltage** electric lines and cables operated by a **TSO** for the purposes of transmission of electricity from one **Power Station** to a sub-station or to another **Power Station** or between sub-stations or to or from any **External Interconnection** including any **Plant** and **Apparatus** and meters owned or operated by the **TSO** or **TAO** in connection with the transmission of electricity.*
Transmission System Operator (TSO)	*In EirGrid:* *The holder of the **Licence** granted pursuant to Section 14 of the **Electricity Regulation Act 1999** to operate a **Transmission System.*** *In SONI:* *The holder of the **Licence** granted pursuant to Article 10(1)(b) of the **Electricity (Northern Ireland) Order 1992** to operate a **Transmission System**.*
TSO Licence	A **Licence** authorising a **TSO** to carry out electricity transmission activities, granted either pursuant to Article 10(1)(b) of the Electricity (Northern Ireland) Order 1992 in Northern Ireland or pursuant to section 14 of the Electricity Regulation Act 1999 in the Republic of Ireland.
Under Test Flag	The flag indicating the under test status accorded to certain **Generating Units** by the **TSO** in accordance with the relevant **Grid Code.** Under test in accordance with the **TSC** is subject to the requirements both that the **Market Operator** has verified the status with the **TSO** and that the relevant **Unit** is so permitted as set out in the **TSC**.
Var	A single unit of **Reactive Power**.
Voltage Control	SONI: *The retention of the voltage on the **System** within acceptable limits.*

Defined Term	Definition
	EirGrid: *The retention of the **Voltage** on the **System** within acceptable limits.*
Warm Cooling Boundary	The period of time, which must be greater than that defined by the **Hot Cooling Boundary**, post **De-Synchronisation** of a **Generating Unit** after which the **Generating Unit's Warmth State** transfers from being warm to cold.
Warm Start	Any **Synchronisation** of a **Generating Unit** that has previously not been **Synchronised** for a period of time equal to or longer than its submitted **Hot Cooling Boundary** but shorter than its submitted **Warm Cooling Boundary**.
Warmth	SONI: *The temperature related condition of a **CDGU** which changes according to the length of time since the **CDGU** was last **De-Synchronised**, expressed as various levels of warmth (for example "hot", "warm" and "cold") as may be specified (dependent upon the design of the **CDGU**) in the **Generating Unit Agreement** relating to that **CDGU**.* EirGrid: *The temperature related condition of a **CDGU** which changes according to the length of time since the **CDGU** was last **De-Synchronised**, expressed as various levels of warmth (dependent upon the design of the **CDGU**).*
Warmth State	Either cold, warm or hot, as defined under the timeframes since last **De-Synchronisations** for **Cold Start**, **Warm Start** or **Hot Start** respectively.

Defined Term	Definition
Within-Day Test	SONI: *A **Test** with a total duration of less than 6 hours in any **Trading Day**, where the **Active Power** produced during the total duration of the test is less than:* *(i) 3 times the **Active Power** which would be produced by the **Plant** undergoing a **Test** during 1 hour of operation at the **Plant's Registered Capacity**;or* *(ii) 500MWh* EirGrid: *An **Operational Test** with a total duration of less than 6 hours in any **Trading Day**, where the **Active Energy** produced during the total duration of the test is less than:* *(i) 3 times the **Active Energy** which would be produced by the **Test Proposer's Plant** during 1 hour of operation at the **Plant's Registered Capacity**; or* *(ii) 500MWh.*