

THE GRID CODE

**REVISION 13
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C O N T E N T S

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(PREFACE      which does not form      (PF))
(              part of the Grid Code      )
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OPERATING CODES (OC)

(REVISIONS which does not form (R))
(part of the Grid Code)

PREFACE

1. The benefits of the interconnection of individual **Power Stations** and the supply of electricity from such interconnected **Systems** to discrete **Demand centres** have long been enjoyed worldwide.
2. **High Voltage** interconnected **Systems** or 'Grids,' as they have come to be known, confer on electricity supply the readily realisable advantages of increased security of supply and greater economy arising from the immediate accessibility of the required mix of generation at any time.
3. These advantages are made possible only when the interconnected **System** is subject to overall surveillance and control irrespective of ownership and operation of the individual constituent parts of it. Many of the larger **Systems** rely on the execution of that control by delegating control on a regional basis to sub-control centres thus establishing a hierarchical mode of operation where the regional control centres report to and receive instructions from a central command centre.
4. The ownership of assets and corporate structures of electricity undertakings throughout the world are as varied and numerous as the interconnected **Systems** themselves but the elements of centralised generation scheduling, despatch and on-line control of the **High Voltage** transmission **System** are invariably the same. Moreover, the extent to which **Systems** are planned and designed against a unified **System Demand** forecast is also comparable worldwide despite the many and varied organisational structures of the body or bodies involved in the process.
5. In England and Wales the National Grid comprises a network of **High Voltage** transmission **Plant** and **Apparatus** interconnecting the major sources of electricity generation and the major **Demand centres**. Subject to **System** constraints the Grid allows electricity to be supplied to **Customers** from wherever it can be produced. To fulfil this objective requires a certain standard for **Plant** and **Apparatus** as well as centralised co-ordination of all those **Users** who benefit from the existence of the Grid.

6. Electricity cannot, of course, be stored in bulk until it is needed but has to be generated in the correct quantities at virtually the moment it is required otherwise the supply voltage and frequency will deviate outside fairly narrow limits with both undesirable and harmful effects. As a result it is necessary to forecast Demand on a daily basis so that the minute-by-minute operation of Power Stations can be scheduled. It is also necessary to forecast Demand in the longer term to programme the building of new Power Stations and the development of the Grid.
7. Centralised control of the electricity supply System in England and Wales has been implemented from the earliest days of the 132kV National Grid when, in the early 30's, the principal purpose for the interconnection was to increase security and reduce spare generating plant capacity owned and operated by the many disparate Municipalities and private power companies throughout Great Britain.
8. With Nationalisation in the post-war years came centralised System design with the additional duty placed upon the Grid of transmitting power in bulk from comparatively remote sites. This gave rise to the introduction of the 275kV Grid in the early 50's followed by the development of the 400kV Grid during the following decade. Both these developments underlined the need for centralised System control and Scheduling and Despatch of generation despite the very different structure of the Industry compared with pre-war years.
9. The re-structuring of the industry and its privatisation brings yet another change with the setting up of 12 Distribution Companies which are able to purchase electrical energy not only from the three main generating companies (National Power, PowerGen and Nuclear Electric) but also from those independent Generators who offer competitive terms for the output of their Generating Units and from External Pool Members. Whilst most but not all of the electricity will be transmitted across the NGC Transmission System, the interconnected System as a whole must continue to be centrally co-ordinated and this will be accomplished by the National Grid Company (NGC).

10. At the time of restructuring the industry the 400kV and 275kV NGC Transmission System comprised approximately 6800 route km of overhead lines and 530 route km of underground cables with connections to Scottish Power and Electricite de France. It is interconnected with Generators and Public Electricity Suppliers at some 170 points. The maximum Demand met on the NGC Transmission System was almost 46.8GW for the Winter 1989/90.
11. The operating procedures and principles governing NGC's relationship with all Users of the NGC Transmission System, be they Generators, Suppliers or Non-Embedded 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.
12. The Grid Code is designed to permit the development, maintenance and operation of an efficient, co-ordinated and economical NGC Transmission System, to facilitate competition in the generation and supply of electricity and is conceived as a statement of what is optimal (particularly from a technical point of view) for all Users and NGC itself in relation to the planning, operation and use of the NGC Transmission System. It seeks to avoid any undue discrimination between Users and categories of Users.
13. 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 for NGC to undertake the planning and development of the NGC Transmission System;
 - (b) Connection Conditions, which specify the minimum technical, design and operational criteria which must be complied with by NGC at Connection Sites and by Users connected to or seeking connection with the NGC Transmission System or by Generators (other than in respect of Minor Independent Generating Plant) connected to or seeking connection to a User's System;

- (c) an **Operating Code**, which is split into a number of sections and deals with **Demand forecasting (OC1)**; the co-ordination of the outage planning process in respect of **Generating Plant, the NGC Transmission System and User Systems** for construction, repair and maintenance (**OC2**); the specification of different types of reserve, the provision of certain types of data and the issue of a **Weekly Operational Policy (OC4)**; testing and monitoring of **Users (OC5)**; different forms of reducing **Demand (OC6)**; the reporting of scheduled and planned actions, and unexpected occurrences such as faults (**OC7**); the co-ordination, establishment and maintenance of **Isolation and Earthing** in order that work and/or testing can be carried out safely (**OC8**); certain aspects of contingency planning (**OC9**); the provision of written reports on occurrences such as faults in certain circumstances (**OC10**); the procedures for numbering and nomenclature of **HV Apparatus** at certain sites (**OC11**); and the procedures for the establishment of **System Tests (OC12)**;
- (d) a **Scheduling and Despatch Code**, which is split into three sections and deals with the submission of **Offer Prices from Generators and External Pool Members**, and of certain other information, and the preparation of an indicative **Generation Schedule** indicating which **Generating Plant and Generation Trading Blocks** may be instructed the following day (**SDC1**); the issue of **Despatch instructions**, and the receipt and issue of certain other information (**SDC2**); and the procedures and requirements in relation to **System Frequency control (SDC3)**;
- (e) a **Data Registration Code**, which sets out a unified listing of all data required by NGC from **Users**, and by **Users** from NGC, 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 include provisions relating to the establishment of a **Grid Code Review Panel** and other provisions of a general nature.

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

GLOSSARY AND DEFINITIONS

(G & D)

1. In the Grid Code the following words and expressions shall, unless the subject matter or context otherwise requires or is inconsistent therewith, bear the following meanings:

Act The Electricity Act 1989.

Active Energy The electrical energy produced, flowing or supplied by an electric circuit during a time interval, being the integral with respect to time of the instantaneous power, measured in units of watt-hours or standard multiples thereof, ie:

1000 Wh	= 1 kWh
1000 kWh	= 1 MWh
1000 MWh	= 1 GWh
1000 GWh	= 1 TWh

Active Power The product of voltage and the in-phase component of alternating current measured in units of watts and standard multiples thereof, ie:

1000 Watts	= 1 kW
1000 kW	= 1 MW
1000 MW	= 1 GW
1000 GW	= 1 TW

Active Power Excursion A change in the level of Active Power.

Additional Scheduling Data The data set out in Appendix A3 to SDC1.

Affiliate

In relation to any person, any holding company or subsidiary of such person or any subsidiary of a holding company of such person, in each case within the meaning of Section 736, 736A and 736B of the Companies Act 1985 as substituted by section 144 of the Companies Act 1989 and, if that latter section is not in force at the **Transfer Date**, as if such section were in force at such date.

Agreed Final Demand Programme

The demand programme relating to **Demand Trading Blocks** agreed between NGC and each **Externally Interconnected Party** by 1700 hours (or as subsequently amended as provided in SDC2).

Amber Warning

A warning issued by NGC to Users who may be affected when NGC knows there is a risk of widespread and serious disturbance to the whole, or a part of, the NGC Transmission System.

Ancillary Service

A **System Ancillary Service** and/or a **Commercial Ancillary Service**, as the case may be.

Ancillary Services Agreement

An agreement between a **User** and NGC for the payment by NGC to that **User** in respect of the provision by such **User** of **Ancillary Services**.

Annual Average Cold Spell (ACS) Conditions

A particular combination of weather elements which gives rise to a level of peak **Demand** within an **NGC Financial Year** which has a 50% chance of being exceeded as a result of weather variation alone.

Apparent Power

The product of voltage and of alternating current measured in units of voltamperes and standard multiples thereof, ie:

1000 VA = 1 kVA
1000 kVA = 1 MVA

Apparatus

Other than in OCS, means all equipment in which electrical conductors are used, supported or of which they may form a part. In OCS it means High Voltage electrical circuits forming part of a System on which Safety Precautions may be applied to allow work and/or testing to be carried out on a System.

Area Manager

A manager appointed by NGC whose management unit is a geographical area embracing part of the NGC Transmission System.

Authorised Electricity Operator

Any person (other than NGC in its capacity as operator of the NGC Transmission System) who is authorised under the Act to generate, transmit or supply electricity.

Automatic Voltage Regulator (AVR)

A continuously acting automatic excitation system to control a Generating Unit terminal voltage.

Authority for Access

An authority which grants the holder the right to unaccompanied access to sites containing exposed HV conductors.

Auxiliaries

Any item of Plant and/or Apparatus not directly a part of the boiler plant or Generating Unit, but required for the boiler plant's or Generating Unit's functional operation.

Auxiliary Diesel Engine

A diesel engine driving a Generating Unit which can supply a Unit Board or Station Board, which can start without an electrical power supply from outside the Power Station within which it is situated.

Auxiliary Gas Turbine

A Gas Turbine Unit, which can supply a Unit Board or Station Board, which can start without an electrical power supply from outside the Power Station within which it is situated.

Availability Declaration

A submission by each Generator in respect of each of its Centrally Despatched Generating Units and its CD CCGT Modules and by each External Pool Member in respect of each of its Generation Trading Blocks, to NGC stating whether or not such Generating Unit or CD CCGT Module or Generation Trading Block, as the case may be, is proposed by that Generator to be available for generation in respect of the next following (or as the case may be, the then existing Availability Declaration Period) Availability Declaration Period and, if so, the Offered Availability, in respect of any time period during such Availability Declaration Period.

Availability Declaration Period

The period beginning at 2100 hours on the day before a Schedule Day and ending at 1200 hours on the day following the Schedule Day next following.

Average Conditions

That combination of weather elements within a period of time which is the average of the observed values of those weather elements during equivalent periods over many years (sometimes referred to as normal weather).

Back-Up Protection

Protection equipment or system which is intended to operate when a system fault is not cleared in due time because of failure or inability of the Main Protection to operate or in case of failure to operate of a circuit-breaker other than the associated circuit breaker.

Base Load Unit

A Centrally Despatched Generating Unit or CD CCGT Module which under normal operating conditions would run continuously over any 24 hour period, which may be at steady output.

Black Start

The procedure necessary for a recovery from a Total Shutdown or Partial Shutdown.

Black Start Capability

An ability in respect of a Black Start Station, for at least one of its Centrally Despatched Generating Units or CCGT Units to Start-Up from Shutdown and to energise a part of the System and be Synchronised to the System upon instruction from NGC, within two hours, without an external electrical power supply.

Black Start Stations

Power Stations which are registered, pursuant to the Supplemental Agreement with a User, as having a Black Start Capability.

Black Start Test

A Black Start Test carried out by a Generator with a Black Start Station, on the instructions of NGC, in order to demonstrate that a Black Start Station has a Black Start Capability.

Boiler Time Constant

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

British Standards ("BS")

Those standards and specifications approved by the British Standards Institution.

BS Station Test

A Black Start Test carried out by a Generator with a Black Start Station while the Black Start Station is disconnected from all external alternating current electrical supplies.

<u>BS Unit Test</u>	A Black Start Test carried out on a Centrally Despatched Generating Unit or a CCGT Unit, as the case may be, at a Black Start Station while the Black Start Station remains connected to an external alternating current electrical supply.
<u>Business Day</u>	Any week day (other than a Saturday) on which banks are open for domestic business in the City of London.
<u>Cancelled Start</u>	A response by a Generator to an instruction from NGC cancelling a previous instruction to Synchronise to the System or come to Hot Standby, before Synchronisation has been completed or Hot Standby reached.
<u>Caution Notice</u>	A notice conveying a warning against interference.
<u>Ceiling Price</u>	The Value of Lost Load.
<u>CENELEC</u>	European Committee for Electrotechnical Standardisation.
<u>Central Despatch</u>	The process of Scheduling and issuing direct instructions by NGC referred to in paragraph 1 of Condition 7 of the Transmission Licence.
<u>Centrally Despatched Generating Unit</u>	A Generating Unit (other than a CCGT Unit) within a Generating Plant.
<u>Centrally Despatched CCGT Module or CD CCGT Module</u>	A CCGT Module, which for the avoidance of doubt, may be a Range CCGT Module, within a Generating Plant.
<u>CD CCGT Module Matrix</u>	Bears the meaning set out in paragraph 6 under the heading "Availability Declaration" in Part 1 of Appendix A1 to SDC1.

CD CCGT Module
Planning Matrix

A matrix in the form set out in Appendix 4 of OC2 showing the combination of CCGT Units within a CD CCGT Module which would be running in relation to any given MW output.

Combined Cycle Gas
Turbine Module or
CCGT Module

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

Combined Cycle Gas
Turbine Unit or
CCGT Unit

A Generating Unit within a CCGT Module.

Commercial Ancillary
Services

Ancillary Services, other than System Ancillary Services, utilised by NGC in operating the Total System if a User (or other person) has agreed to provide them under an Ancillary Services Agreement or under a Supplemental Agreement with payment being dealt with under an Ancillary Services Agreement or in the case of Externally Interconnected Parties or External Pool Members, under any other agreement (and in the case of Externally Interconnected Parties and External Pool Members includes ancillary services equivalent to or similar to System Ancillary Services). A non-exhaustive list of Commercial Ancillary Services is included in CC.8.2.

Committed Project
Planning Data

Data relating to a User Development once the offer for a Master Connection and Use of System Agreement and/or Supplemental Agreement is accepted.

<u>Completion Date</u>	Has the meaning set out in the Supplemental Agreement with each User.
<u>Complex</u>	A Connection Site together with the associated Power Station and/or PES substation and/or associated Plant and/or Apparatus, as appropriate.
<u>Computer Scheduling Programming Study (or "CSPS")</u>	A study used in the preparation of a Generation Schedule and Subsequent Schedules.
<u>Connection Conditions or CC</u>	That portion of the Grid Code which is identified as the Connection Conditions.
<u>Connected Planning Data</u>	Data which replaces data containing estimated values assumed for planning purposes by validated actual values and updated estimates for the future and by updated forecasts for Forecast Data items such as Demand.
<u>Connection Point</u>	A Grid Supply Point or Grid Entry Point, as the case may be.
<u>Connection Site</u>	An NGC Site or User Site, as the case may be.
<u>Contingency Reserve</u>	The margin of generation over forecast demand which is required in the period from 24 hours ahead down to real time to cover against uncertainties in Generating Plant availability and against both weather forecast and Demand forecast errors.
<u>Control Calls</u>	A telephone call whose destination and/or origin is a key on the control desk telephone keyboard at an NGC Control Centre and which has the right to exercise priority over (ie. disconnect) a call of a lower status.

<u>Control Centre</u>	A location used for the purpose of control and operation of the NGC Transmission System or a User System other than a Generator's System.
<u>Control Person</u>	The term used as an alternative to "Safety Co-ordinator" on the Site Responsibility Schedule only.
<u>Control Phase</u>	The Control Phase follows on from the Programming Phase and starts with the issue of the Generation Schedule for the next day and covers the period down to real time.
<u>Control Point</u>	The point from which a Non-Embedded Customer's Plant and Apparatus is controlled or the point from which a Demand Reduction Block is co-ordinated by a Demand Side Bidder, as the case may be.
<u>Control Telephony</u>	The system by which a User's Responsible Engineer/Operator and NGC Control Engineer(s) speak to one another for the purposes of control of the Total System in both normal and emergency operating conditions.
<u>Customer</u>	A person to whom electrical power is provided (whether or not he is the same person as the person who provides the electrical power).
<u>Customer Demand Management</u>	Reducing the supply of electricity to a Customer or disconnecting a Customer in a manner agreed for commercial purposes between a Supplier and its Customer.
<u>Customer Generating Plant</u>	A Power Station or Generating Unit of a Customer to the extent that it operates the same exclusively to supply all or part of its own electricity requirements, and does not export electrical power to any part of the Total System.

Data Registration Code
or DRC

That portion of the Grid Code which is identified as the Data Registration Code.

De-Load

The condition in which a Centrally Despatched Generating Unit or CD CCGT Module has reduced or is not delivering electrical power to the System to which it is Synchronised.

Demand

The demand of MW and MVAR of electricity (i.e. both Active and Reactive Power), unless otherwise stated.

Demand Bidding Site

A site which is registered as a Demand Bidding Site in accordance with the Pooling and Settlement Agreement.

Demand Control

Any or all of the following methods of achieving a Demand reduction:

- (a) Customer Demand Management initiated by Users;
- (b) Customer voltage reduction initiated by Users (other than following an instruction from NGC);
- (c) Customer Demand reduction by Disconnection initiated by Users (other than following an instruction from NGC);
- (d) Customer Demand reduction instructed by NGC;
- (e) automatic low Frequency Demand Disconnection;
- (f) emergency manual Demand Disconnection.

Demand Control Imminent Warning

A warning relating to a Demand reduction under OC6.5 which will be issued by NGC to those PESS (or other Users with User Systems directly connected to the NGC Transmission System with Customers connected to them) who may subsequently receive instructions under OC6.5, and to Generators at their Generating Plant and to Non-Embedded Customers.

Demand Parameters

Those parameters relating to Demand Reduction Blocks listed in Part 3 of Appendix A1 to SDC1 under the heading Demand Parameters

Demand Reduction Block

A notional Generating Unit of a Demand Side Bidder deemed to exist in respect of each Demand Bidding Site.

Demand Reduction Declaration

A statement of availability for MW Demand reduction of a Demand Reduction Block to be submitted by a Demand Side Bidder pursuant to SDC1.4.1A.1.

Demand Side Bidder

A PES, ESI STS or STS (in their capacity as Demand Side Bidder) which has one or more Demand Bidding Sites and of which NGC has been notified by the Settlement System Administrator, such notification (unless otherwise agreed) to include the name of the Supplier, a contact point, the location of the Demand Bidding Site and expected date of commencement.

Demand Trading Block

An amount of Demand which an External Pool Member may agree to take through an External Interconnection.

Despatch

The issue by NGC of instructions for Generating Plant and/or Generation Trading Blocks to achieve specific Active Power (and in relation to Generating Plant, Reactive Power or target voltage) levels within their Generation Scheduling and Despatch Parameters or Generation Trading Block Scheduling and Despatch Parameters, as the case may be, and by stated times.

<u>De-Synchronise</u>	The act of taking a Generating Unit off a System to which it has been Synchronised, by opening any connecting circuit breaker and the term "De-Synchronising" shall be construed accordingly.
<u>Detailed Planning Data</u>	Detailed additional data which NGC requires under the PC in support of Standard Planning Data. Generally it is first supplied once a Supplemental Agreement is entered into.
<u>Director</u>	The Director-General of Electricity Supply appointed for the time being pursuant to section 1 of the Act.
<u>Discrimination</u>	The quality where a relay or protective system is enabled to pick out and cause to be disconnected only the faulty Apparatus.
<u>Disconnection</u>	The physical separation of Users (or Customers) from the NGC Transmission System or a Distribution System as the case may be.
<u>Disputes Resolution Procedure</u>	The procedure described in the Master Connection and Use of System Agreement relating to disputes resolution.
<u>Distorting Load</u>	Load which results in the non-sinusoidal shape of the voltage or current waveform.
<u>Distribution Code</u>	The distribution code required to be drawn up by each Public Electricity Supplier and approved by the Director, as from time to time revised with the approval of the Director.

Distribution System

The system consisting (wholly or mainly) of electric lines which are owned or operated by a Public Electricity Supplier 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 includes any Remote Transmission Assets operated by such Public Electricity Supplier and any Plant and Apparatus and meters owned or operated by the Public Electricity Supplier in connection with the distribution of electricity, but does not include any part of the NGC Transmission System.

Distribution System Entry Point

A point at which a Generating Unit, a CCGT Module or a CCGT Unit, as the case may be, which is Embedded connects to the Distribution System.

Earth Fault Factor

At a selected location of a three-phase System (generally the point of installation of equipment) and for a given System configuration, the ratio of the highest root mean square phase-to-earth power Frequency voltage on a sound phase during a fault to earth (affecting one or more phases at any point) to the root mean square phase-to-earth power Frequency voltage which would be obtained at the selected location without the fault.

Earthing

A way of providing a connection between conductors and earth by an Earthing Device which is either:

- (a) immobilised and Locked in the earthing position. Where the Earthing Device is Locked with a Safety Key, the Safety Key must be secured in a Key Safe and the Key Safe Key must be retained in safe custody: or
- (b) maintained and/or secured in position by such other method which must be in accordance with the Local Safety Instructions of NGC or that User, as the case may be.

<u>Earthing Device</u>	A means of providing a connection between a conductor and earth being of adequate strength and capability.
<u>Elbow Point</u>	The capacity, in a whole number of MW, of a Centrally Despatched Generating Unit or a CD CCGT Module or a Generation Trading Block or a Demand Reduction Block, at which one Incremental Price changes to another Incremental Price.
<u>Electricity Council</u>	That body set up under the Electricity Act, 1957.
<u>Electricity Supply Industry Arbitration Association</u>	The unincorporated members' club of that name formed inter alia to promote the efficient and economic operation of the procedure for the resolution of disputes within the electricity supply industry by means of arbitration or otherwise in accordance with its arbitration rules.
<u>Embedded</u>	Having a direct connection to a Distribution System or the System of any other User to which Customers and/or Power Stations are connected, such connection being either a direct connection or a connection via a busbar of another User or of NGC (but with no other connection to the NGC Transmission System).
<u>Energy Management Centre or EMC</u>	A commercial and, where specified in the Grid Code, an operational interface between a Generator and NGC, which a Generator has notified to NGC.
<u>Engineering Recommendations</u>	The documents referred to as such and issued by the former Electricity Council.
<u>ESI</u>	Electricity Supply Industry.

ESI Standard/Specification Standards and/or specifications sponsored by the Electricity Council to meet the requirements of the ESI.

ESI Second Tier Supplier or ESI STS A holder of a Second Tier Supply Licence other than a holder which is a Customer or Affiliate of such Customer (in each case without its own System and which is not otherwise a User) which buys Energy from the Pool for supply to itself only (or in the case of an Affiliate of such a Customer, to such Customer only) (whether to one location or to a number of locations) (and other than Scottish Power PLC and Scottish Hydro-Electric PLC acting in their capacities as External Pool Members).

Estimated Registered Data Those items of Standard Planning Data and Detailed Planning Data which either upon connection will become Registered Data, or which for the purposes of the Plant and/or Apparatus concerned as at the date of submission are Registered Data, but in each case which for the seven succeeding NGC Financial Years will be an estimate of what is expected.

Event An unscheduled or unplanned (although it may be anticipated) occurrence on, or relating to, a System (including Embedded Independent Generating Plant) including, without limiting that general description, faults, incidents and breakdowns and adverse weather conditions being experienced.

Exciter The source of the electrical power providing the field current of a synchronous machine.

Excitation System The equipment providing the field current of a machine, including all regulating and control elements, as well as field discharge or suppression equipment and protective devices.

Excitation System
No-load Negative
Ceiling Voltage

The minimum value of direct voltage that the Excitation System is able to provide from its terminals when it is not loaded, which may be zero or a negative value.

Excitation System
Nominal Response

Shall have the meaning ascribed to that term in IEC 34-16-1:1991 [equivalent to British Standard BS4999 Section 116.1 : 1992]. The time interval applicable is the first half-second of excitation system voltage response.

Excitation System
On-Load Positive
Ceiling Voltage

Shall have the meaning ascribed to the term 'Excitation system on load ceiling voltage' in IEC 34-16-1:1991 [equivalent to British Standard BS4999 Section 116.1 : 1992].

Excitation System
No-Load Positive
Ceiling Voltage

Shall have the meaning ascribed to the term 'Excitation system no load ceiling voltage' in IEC 34-16-1:1991 [equivalent to British Standard BS4999 Section 116.1 : 1992].

Existing Gas Cooled
Reactor Plant

The following nuclear gas cooled reactor plant (which was commissioned and connected to the Total System at the Transfer Date):-

Dungeness A
Dungeness B
Hinkley Point A
Hinkley Point B
Berkeley
Oldbury-on-Severn
Bradwell
Sizewell A
Heysham 1
Heysham 2
Hartlepool
Trawsfynydd
Wylfa

Expected Demand Reduction
Notice

A notice submitted by each Demand Side Bidder in respect of the following Schedule Day stating the expected MW Demand reduction at the Demand Bidding Site associated with a Demand Reduction Block.

<u>External Interconnection</u>	Apparatus for the transmission of electricity to or from the NGC Transmission System into or out of an External System.
<u>Externally Interconnected Party</u>	A person operating an External System which is connected to the NGC Transmission System by an External Interconnection (which person may or may not also be an External Pool Member).
<u>External Pool Member</u>	A party supplying Active Energy and/or Reactive Energy to, or taking Active Energy and/or Reactive Energy from, the NGC Transmission System through an External Interconnection and which has been or (where appropriate) is to be admitted as a Pool Member in the capacity of a Generator and/or Supplier.
<u>External System</u>	In relation to an Externally Interconnected Party means the transmission or distribution system which it owns or operates and any Apparatus or Plant which connects that system to the External Interconnection and which is owned or operated by such Externally Interconnected Party.
<u>Fault Current Interruption Time</u>	The time interval from fault inception until the end of the break time of the circuit breaker (as declared by the manufacturers).
<u>Fast Start</u>	A start by a Centrally Despatched Generating Unit, or in the case of a CD CCGT Module, by a CD CCGT Module with a Fast Start Capability.
<u>Fast Start Capability</u>	The ability of a Centrally Despatched Generating Unit or a CD CCGT Module to be Synchronised and Loaded up to full Load within 5 minutes.

Final Daytime
Pumping Programme

A programme submitted by NGC Pumped Storage Business to NGC Operations not later than 1700 hours daily indicating the Demand of each Pumped Storage Unit (including intended on and off times) over the period from 0700 hours on the following day (or 0800 hours if the following day is not a Business Day) to 2200 hours on that following day.

Final Generation Outage
Programme

An outage programme as agreed by NGC with each Generator at various stages through the Operational Planning Phase and Programming Phase which does not commit the parties to abide by it, but which at various stages will be used as the basis on which NGC Transmission System Outages will be planned.

Final Night-time Pumping
Programme

A programme submitted by NGC Pumped Storage Business to NGC Operations not later than 2000 hours daily indicating the Demand of each Pumped Storage Unit (including intended on and off times) over the period from 2200 hours the same day to 0700 hours the following day or, if the following day is not a Business Day, 0800 hours.

Final Report

A report prepared by the Test Proposer at the conclusion of a System Test for submission to NGC (if it did not propose the System Test) and other members of the Test Panel.

Five Minute Reserve

That component of the Operating Reserve which is fully available within 5 minutes from the time of Frequency fall or a Despatch instruction pursuant to SDC2, and which is sustainable for a period of four hours.

Flicker Severity
(Short term)

A measure of the visual severity of flicker derived from the time series output of a flickermeter over a 10 minute period and as such provides an indication of the risk of Customer complaints.

Flicker Severity
(Long term)

A value derived from 12 successive measurements of Flicker Severity (Short term) (over a two hour period) and a calculation of the cube root of the mean sum of the cubes of 12 individual measurements, as further set out in Engineering Recommendation P28 as current at the Transfer Date.

Forecast Data

Those items of Standard Planning Data and Detailed Planning Data which will always be forecast.

Frequency

The number of alternating current cycles per second (expressed in Hertz) at which a System is running.

Frequency Sensitive Mode

A Centrally Despatched Generating Unit, CCGT Unit within a CD CCGT Module (or if agreed to be so treated in an Ancillary Services Agreement, a CD CCGT Module) operating mode which will result in Active Power output changing, in response to a change in System Frequency, in a direction which assists in the recovery to Target Frequency, by operating so as to provide Primary Response and/or Secondary Response and/or High Frequency Response.

Fuel Security Code

The document of that title designated as such by the Secretary of State, as from time to time amended.

Full Expected Demand

The expected MWh Demand in the absence of any Demand reduction at the Demand Bidding Site associated with a Demand Reduction Block relating to a Settlement Period as set out in the Demand Reduction Declaration submitted by a Demand Side Bidder pursuant to SDC1.4.1A.1.

<u>Gas Turbine Unit</u>	A Generating Unit driven by a gas turbine (for instance by an aero-engine).
<u>Gas Zone Diagram</u>	A single line diagram showing boundaries of, and interfaces between, gas-insulated HV Apparatus modules which comprise part, or the whole, of a substation at a Connection Site, together with the associated stop valves and gas monitors required for the safe operation of the NGC Transmission System or the User System, as the case may be.
<u>General Conditions or GC</u>	That portion of the Grid Code which is identified as the General Conditions.
<u>Generating Plant</u>	A Power Station subject to Central Despatch.
<u>Generating Plant Demand Margin</u>	The difference between Output Usable and forecast Demand.
<u>Generating Unit</u>	Unless otherwise provided in the Grid Code, any Apparatus which produces electricity, including, for the avoidance of doubt, a CCGT Unit.
<u>Generation Licence</u>	The licence granted to a Generator pursuant to Section 6(1)(a) of the Act.
<u>Generation Offer Prices</u>	A set of prices submitted by a Generator in respect of each of its Centrally Despatched Generating Units and each of its CD CCGT Modules specifying: (i) a Start-Up Price (expressed in £); (ii) a No-Load Price (expressed in £ per hour) and no fewer than one nor more than three positive monotonically increasing Incremental Prices (expressed

in £ per MWh) and, in any case where a Generator submits more than one Incremental Price, the corresponding Elbow Points specifying at what level of generation in a whole number of MW (and in the case of Embedded Centrally Despatched Generating Units and Embedded CD CCGT Modules, applying the conversion factor referred to in the definition of Offered Availability) the first and second such Incremental Price ceases to be applicable, within the range from zero generation to Offered Availability; and

(iii) a Max Gen Price (a positive value expressed in £ per MWh).

Generation Planning Parameters

Those parameters listed in Appendix 2 of OC2.

Generation Schedule

A statement, prepared and issued by NGC under SDC1, of which Centrally Despatched Generating Units, CD CCGT Modules and Generation Trading Blocks may be required to ensure (so far as possible) the integrity of the NGC Transmission System, the security and quality of supply and that there is sufficient generation to meet NGC Demand at all times (to the extent possible) together with an appropriate margin of reserve.

Generation Scheduling and Despatch Parameters

Those parameters listed in Appendix A1 to SDC1 under the heading Generation Scheduling and Despatch Parameters relating to Centrally Despatched Generating Units or CD CCGT Modules, as the case may be.

Generation Trading Block

A notional Centrally Despatched Generating Unit of an External Pool Member.

Generation Trading Block Offer Prices

A set of prices submitted by an External Pool Member in respect of each Generation Trading Block specifying:

- (i) a Start-up Price (expressed in £);
- (ii) a No-Load Price (expressed in £ per hour) and an Incremental Price (expressed in £ per MWh); and
- (iii) a Max Gen Price (a positive value expressed in £ per MWh).

Generation Trading Block Scheduling and Despatch Parameters

Those parameters listed in Appendix A1 to SDC1 relating to Generation Trading Blocks.

Generator

A person who generates electricity under licence or exemption under the Act (other than Scottish Power PLC and Scottish Hydro-Electric PLC acting in their capacities as External Pool Members).

Generator Performance Chart

A diagram which shows the MW and MVAR capability limits within which a Generating Unit will be expected to operate under steady state conditions.

Good Industry Practice

The exercise of that degree of skill, diligence, prudence and foresight which would reasonably and ordinarily be expected from a skilled and experienced operator engaged in the same type of undertaking under the same or similar circumstances.

Governor Deadband

The total magnitude of the change in steady state speed (expressed as a range of Hz ($\pm x$ Hz) where "x" is a numerical value) within which there is no resultant change in the position of the governing valves of the speed/load Governing System.

Grid Code Review Panel
or Panel

The panel with the functions set out in GC.4.

Grid Entry Point

A point at which a Generating Unit or a CCGT Module or a CCGT Unit, as the case may be, which is directly connected to the NGC Transmission System connects to the NGC Transmission System.

Grid Supply Point

A point of supply from the NGC Transmission System to Public Electricity Suppliers or to other Users with User Systems with Customers connected to them or Non-Embedded Customers.

High Frequency Response

An automatic reduction in Active Power output in response to an increase in System Frequency above the Target Frequency (or such other level of Frequency as may have been agreed in an Ancillary Services Agreement). This reduction in Active Power output must be in accordance with the provisions of the relevant Ancillary Services Agreement which will provide that it will be released increasingly with time over the period 0 to 10 seconds from the time of the Frequency increase on the basis set out in the Ancillary Services Agreement and fully achieved within 10 seconds of the time of the Frequency increase and it must be sustained at no lesser reduction thereafter.

High Voltage or HV

A voltage exceeding 650 volts.

HV Generator Connections

Apparatus connected at the same voltage as that of the NGC Transmission System, including Users' circuits, the higher voltage windings of Users' transformers and associated connection Apparatus.

Hot Standby

A condition of readiness to be able to synchronise and attain an instructed output in a specified

timescale that must be maintained by Generating Plant.

HP Turbine Power Fraction

Ratio of steady state mechanical power delivered by the HP turbine to the total steady state mechanical power delivered by the total steam turbine at Registered Capacity.

IEC

International Electrotechnical Commission.

IEC Standard

A standard approved by the International Electrotechnical Commission.

Implementing Safety Co-ordinator

The Safety Co-ordinator implementing Safety Precautions.

Incident Centre

A centre established by NGC or a User as the focal point in NGC or in that User, as the case may be, for the communication and dissemination of information between the senior management representatives of NGC, or of that User, as the case may be, and the relevant other parties during a Joint System Incident in order to avoid overloading NGC's, or that User's, as the case may be, existing operational/control arrangements.

Incremental Price

The marginal price (ie. incremental price for each MWh produced or foregone as the case may be) between zero and the first Elbow Point and between Elbow Points on the Willans Line (ie. for all MW values up to and including that Elbow Point).

Independent Generating Plant

A Power Station not subject to Central Despatch.

Instructor Facilities

An outstation instruction panel which gives sixteen way telegraph instructions with an audible alarm and acknowledge facilities to return