

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:

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** or **Controllable PPM** the figure (expressed in **MW** as at the **Connection Point** and at the direct connection with the **Distribution System**) stated in accordance with SDC1.4.1.1(a) to be the capability of the **CDGU** or **Controllable PPM** to generate (and in the case of an **ESPS** or consume) electricity during that period. In relation to all **CDGUs** including an **Open Cycle Gas Turbine CDGU** and/or a **CCGT Installation**, the **Availability** declared by a **Generator** shall correspond to the maximum generation of electricity which that **Generator's CDGU** can achieve during that period. In relation to all **CDGUs**, the **Availability** declared by a **Generator** shall correspond to the level of generation of electricity up to and including the **Contracted Capacity** (for **PPA CDGUs** other than **PPA Open Cycle Gas Turbines**) or **Contracted Capacity (Peak)** (for **PPA Open Cycle Gas Turbines**) or **Registered Capacity** (for non-**PPA** plant) which that **CDGU** can achieve during that period;
- (b) for **Demand Side Units**, the **Demand Side Unit MW Capacity** (expressed in **MW** as at the **Connection Point** and at the direct connection with the **Distribution System**) 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.

Central Dispatch

The process of **Scheduling** and issuing **Dispatch Instructions** in relation to **CDGUs, Pumped Storage Plant Demand, Energy Storage Power Stations, Demand Side Units** and/or **Interconnectors** direct to a **Control Facility** by the **TSO** pursuant to the **Grid Code**. In particular:

All **Dispatchable PPMs** 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**.

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 PPM** including **Energy Storage Power Stations, Hydro Unit** and **Pumped Storage Plant** in respect of its **Pumped Storage Generation**.

Commissioning/ Acceptance Test

Testing of a **CDGU, Controllable PPM, 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 PPM, 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.

Dispatch

The issue by the TSO of instructions to a **Generator, Pumped Storage Generator, Energy Storage Generator, Interconnector Owner, Demand Side Unit Operator or Generator Aggregator** in respect of its **CDGU, Pumped Storage Plant Demand, , Demand Side Unit, Aggregated Generating Units or Interconnector** 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** 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** and/or **Pumped Storage Plant Demand** “**Instruct**” and “**Instructed**” shall be construed accordingly.

Maximum Storage Quantity

The maximum amount of **Energy (MWh)** that can be produced from the reservoir of a **Pumped Storage Generator or Energy Storage Power Station** for a **Trading Day**.

Minimum Storage Quantity

The minimum amount of **Energy (MWh)** that must be produced from the reservoir of a **Pumped Storage Generator or Energy Storage Power Station** for a **Trading Day**.

Ramp Down Rate

The maximum rate of decrease in a **Generating Unit’s Output**. The **Ramp Down Rate** applies over the output range from its **Contracted Capacity** (for **PPA CDGUs** other than **PPA Open Cycle Gas Turbines**) or **Contracted Capacity (Peak)** (for **PPA Open Cycle Gas Turbines**) or **Registered Capacity** (for non-PPA plant) to **Minimum Generation** or from its **Maximum Export Capacity** to **Maximum Import Capacity** in the case of an **Energy Storage Power Station**. The rate of change may not depend 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.

Ramp Up Rate

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** (for **PPA CDGUs** other

than **PPA Open Cycle Gas Turbines**) or **Contracted Capacity (Peak)** (for **PPA Open Cycle Gas Turbines**) or **Registered Capacity** (for non-**PPA** plant) or from its **Maximum Import Capacity** to **Maximum Export Capacity** in the case of an **Energy Storage Power Station**. The rate of increase may not depend 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.

Registered Minimum Output

Shall have the meaning set out in the **TSC**.

Storage Cycle Efficiency

For a **Pumped Storage Generator**, a percentage value calculated from the level of **Generation** provided by the release of defined quantity of water from the upper reservoir to the lower reservoir through the **Unit's** turbine(s) divided by the level of **Demand** required to pump the same defined quantity of water from the lower reservoir to the upper reservoir.

For an **Energy Storage Power Station**, a percentage value calculated from the level of **Generation** provided by the discharge of a defined quantity of charge from the **ESU** divided by the level of **Demand** required to store the same defined quantity of charge.

CONNECTION CONDITIONS

Part I

TECHNICAL CRITERIA FOR PPMS CONNECTED TO THE TRANSMISSION SYSTEM

- CC.S2.1.11.4
- (a) **PPMs** that are **Energy Storage Power Stations** that cannot switch to **Generation** during a **Low Frequency** event shall be capable of automatic low frequency demand disconnection where the steady state **System Frequency** falls below 49.5 Hz for a sustained period of more than 1 minute.
 - (a) Such **PPMs** that are **Energy Storage Power Stations** shall be made subject to automatic **Low Frequency Demand** disconnection at the **TSO's** direction, only when the **Energy Storage Power Station** is acting as **Demand**.
 - (b) The specific performance requirements of the automatic low **Frequency Demand Disconnection** scheme for such **Energy Storage Power Stations** shall be specified and agreed with the **TSO**.
 - (c) The automatic low **Frequency Demand Disconnection** scheme shall allow for operation from a nominal AC input to be specified by the **TSO**, and shall meet the following functional capabilities:
 - (i) **Frequency** range: where the steady state **System Frequency** falls below 49.5 Hz for a sustained period of more than 1 minute;
 - (ii) Operating time: no more than 150 ms after triggering the **Frequency** setpoint;
 - (iii) **Voltage** lock-out: blocking of the functional capability shall be possible when the **Voltage** is within a range of 30 to 90 % of reference 1 p.u. **Voltage**; and
 - (iv) Provide the direction of **Active Power** flow at the point of **Disconnection**.

Part II

TECHNICAL CRITERIA FOR PPMS CONNECTED TO THE DISTRIBUTION SYSTEM

- CC.S2.2.5.4
- (a) **PPMs** that are **Energy Storage Power Stations** that cannot switch to **Generation** during a **Low Frequency** event shall be capable of automatic low frequency demand disconnection where the steady state **System Frequency** falls below 49.5 Hz for a sustained period of more than 1 minute.
 - (d) Such **PPMs** that are **Energy Storage Power Stations** shall be made subject to automatic **Low Frequency Demand** disconnection at the **TSO's** direction, only when the **Energy Storage Power Station** is acting as **Demand**.
 - (e) The specific performance requirements of the automatic low **Frequency Demand Disconnection** scheme for such **Energy Storage Power Stations** shall be specified and agreed with the **TSO**.
 - (f) The automatic low **Frequency Demand Disconnection** scheme shall allow for operation from a nominal AC input to be specified by the **TSO**, and shall meet the following functional capabilities:

- (v) **Frequency** range: where the steady state **System Frequency** falls below 49.5 Hz for a sustained period of more than 1 minute;
- (vi) Operating time: no more than 150 ms after triggering the **Frequency** setpoint;
- (vii) **Voltage** lock-out: blocking of the functional capability shall be possible when the **Voltage** is within a range of 30 to 90 % of reference 1 p.u. **Voltage**; and
- (viii) Provide the direction of **Active Power** flow at the point of **Disconnection**.

APPENDIX A

PLANNING DATA REQUIREMENTS FOR USERS (OTHER THAN THE DNO) CONNECTED TO THE TRANSMISSION SYSTEM ONLY

PC.A2.3.2 Power Station Data Requirements

- (a) Point of connection to the **Transmission 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 **PPMs** shall be assumed to be zero unless a different value is notified by the **User**, e.g. **Registered Minimum Output** for **ESPSs**) and, where relevant, **Maximum Generation**.
- (c) In the case of **Wind Farm Power Stations**, a diagram that shows for the **Wind Farm Power Station** wind speed and direction against electrical output in **MW**, in “rose” format.
- (d) In the case of **PPMs** that are not **WFPS**, an equivalent diagram to that in PC.A2.3.2(c), in relation to the input resource of that **PPM**.
- (e) Maximum auxiliary **Demand (Active Power and Reactive Power)**.
- (f) 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.
- (g) Operating regime of **Generating Units** not subject to **Central Despatch** (e.g. continuous, intermittent, peak-logging).

PART 2

PC.A3 DETAILED PLANNING DATA

PC.A3.3 GENERATING UNIT AND POWER STATION DATA

PC.A3.3.3 Generating Unit Parameters

- (a) Rated terminal voltage (kV);
- (b) Rated MVA_i;
- (c) Rated **MW**_i;
- (d) **Minimum Generation (MW)** or **Registered Minimum Output**;
- (e) Short circuit ratio_i;
- (f) Direct axis synchronous reactance_i;
- (g) Direct axis transient reactance_i;
- (h) Direct axis sub-transient reactance_i;
- (i) Direct axis transient time constant_i;
- (j) Direct axis sub-transient time constant_i;
- (k) Quadrature axis synchronous reactance_i;
- (l) Quadrature axis transient reactance_i;
- (m) Quadrature axis sub-transient reactance_i;
- (n) Quadrature axis transient time constant_i;
- (o) Quadrature axis sub-transient time constant_i;
- (p) Stator time constant_i;
- (q) Stator resistance_i;
- (r) Stator leakage reactance_i;
- (s) Turbogenerator inertia constant (**MWsec/MVA**), or, for generators comprised within a **PPM, Plant** inertia constant (**MWsec/MVA**);
- (t) Other than for generators comprised within a **PPM**, rated field current; and
- (u) Other than for generators comprised within a **PPM**, 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.

OPERATING CODE NO. 4

DEMAND CONTROL

OC4.4.8 **Automatic Load Shedding**

OC4.4.8.2 The **Demand** including **Energy Storage Power Stations** acting as **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.

SCHEDULING AND DISPATCH CODE NO.1

UNIT SCHEDULING

SDC1.1 INTRODUCTION

SDC1.1.2 SDC1 sets out the procedure used by the **TSO** to develop unit commitment **Schedules** in respect of **CDGU's**, **Controllable PPMs** and **Demand Side Units** including the requirements for **Users** to submit data to support this procedure:

- (a) **Availability**: the submission by a **User** to the **TSO** of an **Availability Notice** in respect of each of its:
 - (i) **CDGUs** (which for the avoidance of doubt comprise, **Generating Units** subject to **Central Dispatch**, **CCGT Installations**, **Hydro Units**, **Pumped Storage Generation**, **Energy Storage Power Stations** (but not **Pumped Storage Plant Demand**) and **Dispatchable PPMs**);
 - (ii) **Pumped Storage Plant Demand**;
 - (iii) **Interconnector Availability** (in the case of the **Interconnector Owner**);
 - (iv) **Demand Side Units**;
 - (v) in the case of **Generator Aggregators**, its **Aggregated Generating Units**; and
 - (vi) **Controllable PPMs**.
- (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 **System Support Services** capability;
- (c) **Commercial Offer Data**: the notification of **Commercial Offer Data** in accordance with the **TSC**;
- (d) **Physical Notifications**: the declaration by a **User** to the **TSO** of **Physical Notifications** data in accordance with the **TSC**;
- (e) **Interconnector Schedule Quantities**: the declaration by a **Scheduling Agent** to the **TSO** of **Interconnector Schedule Quantities** in accordance with the **TSC**;
- (f)
- (f) **Revisions/Re-declarations**: revisions / **Re-declarations** by **Electronic Interface** or by other form as the **TSO** may reasonably notify to each **User** from time to time of any real time changes in the information

submitted in an **Availability Notice**, **Additional Grid Code Availability Notice**, **Technical Parameters Notice**, **Additional Grid Code Characteristics Notice**, **Commercial Offer Data** notification and **Physical Notifications** as provided for this in SDC1

(g) **Indicative Operations Schedules**: the periodic production and issuing by the TSO of **Indicative Operations Schedules** as required under SDC1.4.8.9 as a statement of which:

- (i) **CDGUs;**
- (ii) **Pumped Storage Plant Demand;**
- (iii) **Interconnectors;**
- (iv) **Demand Side Units;**
- (v) **Aggregated Generating Units;** and/or
- (vi) **Controllable PPMs**

may be required.

SDC1.3 **SCOPE**

SDC1.3.1 SDC1 applies to the TSO and to the following Users:

- (a) **Generators** with regard to their:
CDGUs; and
Controllable PPMs
- (b) **Pumped Storage Generators** with regard to their **Pumped Storage Plant Demand;**
- (c) In respect of the submission of **Availability Notices** under SDC1.4.1, **Interconnector Owners** with regard to their **Interconnectors;**
- (d) In respect of the submission of **Interconnector Schedule Quantities** under SDC1.4.4.6, **Scheduling Agents** with regard to the scheduling of imports and exports across each **Interconnector** they have been nominated to schedule;
- (e) **Demand Side Unit Operators** in relation to their **Demand Side Units;** 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 the **Gate Closure 1** 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 changes to the **Availability** and/or **Demand Side Unit MW Availability** (as the case may be) of each of its:
 - (i) **CDGUs**;
 - (ii) **Controllable PPMs**;
 - (iii) **Pumped Storage Plant Demand**;
 - (iv) **Interconnectors** (to be submitted by the **Interconnector Owner**);
 - (v) **Demand Side Units**; or
 - (vi) **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.
- (d) As a general requirement, the **User** shall ensure that the data in any **Availability Notice** or any revision thereto is consistent with its obligations under SDC1.4.3.2 and SDC1.4.3.4.

SDC1.4.1.2 Content

- (a) The **Availability Notice** shall state the **Availability** of the relevant **CDGU, Controllable PPM, Interconnector, Demand Side Unit, Energy Storage Power Station or Pumped Storage Plant Demand** as the case may be, (including, in the case of a **CCGT Installation**, the **Availability** of each of the **CCGT Modules** within it) for each **Imbalance Settlement Period** in the time up to an including the end of the relevant **Trading Day** (subject to revision under SDC1.4.3.6). A new **Availability Notice** will supersede the previous one in relation to **Availability** for **Imbalance Settlement Periods** which are covered by the new one.
- (b) (b)

(c) In respect of **Interconnectors**, the **Availability Notice** shall state the physical capability of the **Interconnector**, and shall take account of any further restrictions placed by any relevant agreement or the provisions of any licence in respect of the **Interconnector**, but shall not otherwise take account of any expected transmission constraints or other aspects of the operation of the Transmission System or an **External System**. A new **Availability Notice** will supersede the previous one in relation to **Availability** for **Imbalance Settlement Periods** which are covered by the new one.

(c) In the case of a **Generator Aggregator**, the **Availability Notice** shall state the **Availability** of its **Aggregated Generating Units** as a whole.

(d)

SDC1.4.3.3A SDC1.4.3.2 shall not apply for a **CDGU, Controllable PPM, Aggregated Generating Unit** or **Pumped Storage Plant Demand** that is disconnected during any one of the following:

(a) any **TSO** scheduled **Annual Maintenance Outage** or portion thereof on the **Outturn Availability Connection Asset**. Lasting up to and including a maximum of five days in total in a calendar year; or

(b) where work to the Transmission System is being carried out that is driven by the relevant **CDGU, Controllable PPM, Aggregated Generating Unit**, or **Pumped Storage Plant Demand** or driven by works related to the **Connection Agreement** of the relevant **CDGU, Controllable PPM, Aggregated Generating Unit**, or **Pumped Storage Plant Demand**. This does not include work carried out related to another Generating Unit with a different **Connection Point** but a shared asset.

The relevant **CDGU, Controllable PPM, Aggregated Generating Unit**, or **Pumped Storage Plant Demand** shall declare **Availability** at a value of zero during any one or more of (a) or (b) above, as advised by the **TSO**.

SDC1.4.4.1 **Technical Parameters**

(a) (i) By not later than the **Gate Closure 1**, each **User** shall in respect of each:

- **CDGU;**
- **Controllable PPM;**
- **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 relevant **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) Subsequent revisions to the **Technical Parameters Notice** may be submitted according to the technical offer data submission provisions as set out in the **TSC**. If there is a change to the data submitted under the **TSC**, the **User** shall notify the **TSO**.
 - (iv) As a general requirement, the **User** shall ensure that the data in any **Technical Parameters Notice**, or any revision thereto is consistent with its obligations under SDC1.4.3.2 and SDC1.4.3.4.
- (b) Flexibility:
- (i) In the case of any **Technical Parameters** as to which the **User** should, acting in accordance with **Prudent Operating 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**, that any of the data submitted under SDC1.4.4.1 changes.

(c) **Changes to Technical Parameters**

A **User** must, as soon as reasonably practicable after it becomes aware of a change in its **Technical Parameters** in real time, submit, via **Electronic Interface** or in such other form as the **TSO** may reasonably notify each **User** from time to time, a declaration of its actual real time **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, as soon as

reasonably practicable after it becomes aware of a change to the information in a **Technical Parameters Notice** and subject to SDC1.4.3, (in the case of data submitted under SDC1.4.4.1 by means of a **Technical Parameters Notice**) submit a **Re-declaration** to that **Technical Parameters Notice** via **Electronic Interface** or in such other form as the **TSO** may reasonably notify to each **User** from time to time.

- (d) **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 1**. Revised **Energy Limits** for **Hydro Units** may be submitted at any time up until 11.00 hours on the **Trading Day** in writing per unit basis.

- (e) **Default Technical Parameters:**

Insofar as any data submitted or deemed to have been submitted on any particular day in any **Technical Parameters Notice** (such notice not being relevant to an **Interconnector Owner**) 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**.

Insofar as not submitted or revised, the applicable **Standing Technical Offer Data** for **Technical Parameters** shall apply for the next following **Trading Day**.

Energy Limits for Hydro Units: In respect of **Hydro Units**, the **Energy Limit** that applied to the previous **Trading Day** will be used.

SDC1.4.4.5 **Commercial Offer Data**

- (a) Each:
- **Generator;**
 - **Energy Storage Generator;**
 - **Pumped Storage Generator;**
 - **Demand Side Unit Operator; 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 (if applicable), **Commercial Offer Data** in accordance with the **TSC**.

(b) 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**.

(c) Amendments to **Commercial Offer Data** shall be in accordance with the **TSC**.

(d) Default **Commercial Offer Data**:

Insofar as not submitted or revised , **Commercial Offer Data** shall be deemed in accordance with the **TSC**.

SDC1.4.4.6 **Physical Notifications and Interconnector Schedule Quantities**

- (a) Each:
- **Generator**;
 - **Energy Storage Generator**;
 - **Pumped Storage Generator**;
 - **Demand Side Unit Operator**; and
 - **Generator Aggregator**,

shall in respect of:

Each of its **CDGUs**;

Each of its **Pumped Storage Plant Demand**;

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 (if applicable), **Physical Notifications** by **Gate Closure 1** for the corresponding **Trading Days** in accordance with the **TSC**. **Physical Notifications** shall be technically feasible. **Users** shall ensure that the

accuracy of **Physical Notifications** is commensurate with **Prudent Operating Practice**.

- (b) Prior to **Gate Closure 2**, **Physical Notifications** submitted in accordance with SDC1.4.4.6(a) shall be amended by the **User** (or **Intermediary** if applicable) to align with changes to their expected **Active Power Generation** or **Active Power Demand**. A new **Physical Notification** will supersede the previous one in relation to a **Physical Notification** for **Imbalance Settlement Periods** or parts thereof which are covered by the new one. At **Gate Closure 2**, **Physical Notifications** for the relevant **Imbalance Settlement Period** become **Final Physical Notifications** for that **Imbalance Settlement Period**. **Final Physical Notifications** may not be amended.
- (c) Each **Generator** may, in respect of their **Controllable PPM** submit **Physical Notifications** in accordance with the provisions of SDC1.4.4.6(a) and SDC1.4.4.6(b).
- (d) Each **Scheduling Agent** shall in respect of each **Interconnector** they have been nominated to schedule, submit to the **TSO**, **Interconnector Schedule Quantities** by **Gate Closure 1** for the corresponding **Trading Days** in accordance with the **TSC**. Prior to **Gate Closure 2** for each **Imbalance Settlement Period** (or an alternative later time advised from time to time by the **TSO** acting in accordance with **Prudent Operating Practice** but not later than the start of the **Imbalance Settlement Period**), **Scheduling Agents** shall submit further **Interconnector Schedule Quantities** in accordance with the **TSC** to reflect trading in intraday markets. At **Gate Closure 2** for an **Imbalance Settlement Period** (or an alternative later time advised from time to time by the **TSO** acting in accordance with **Prudent Operating Practice** but not later than the start of the **Imbalance Settlement Period**), further **Interconnector Schedule Quantities** may not be submitted for that **Imbalance Settlement Period**.
- (e) Notwithstanding the obligations in SDC1.4.4.6(a) and SDC1.4.4.6(b), a value of zero will be deemed in all **Imbalance Settlement Periods**, or parts thereof, for which **Physical Notifications** data or **Interconnector Schedule Quantities** data has not been submitted.
- (f) If a **User** has submitted proposals for a test to the **TSO** and subsequently receives approval for the test from the **TSO**, the **User** (or their **Intermediary**, if applicable) shall submit **Physical Notifications** for the unit under test in accordance with the **TSC** to identify the time periods during which their units are under test. The **User** shall ensure that the **Physical Notifications** submitted in respect of a unit under test align with the approved test start time, test **MW Output** profile (or **Demand Unit MW Response** profile in the case of **Demand Side Units**) and test end time.

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 PPM, 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 Indicative Operations Schedules

The provisions of SDC1.4.8.2 and SDC1.4.8.8 shall, with respect to **PPA Generation**, be read in conjunction with the provisions of SDC1.B.3.2 and SDC1.B.3.3 respectively.

SDC1.4.8.1 **Indicative Operations Schedules** will be compiled 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 PPM** 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 the Republic of Ireland may be required to operate and their expected **MW Output**. The **TSO** in conjunction with the **Other TSO** will periodically update the **Indicative Operations Schedules**.

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 **Imbalance Settlement Period** 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 PPMs, Pumped Storage Plant Demand, Demand Side Units, Aggregated Generating Units or Interconnector** power transfer to **Schedule and Dispatch** in relation to their **Price Sets** at values that differ from those indicated by **Physical Notifications** and **Interconnector Schedule Quantities**, as required to deliver the objectives set out in SDC1.2(a), SDC1.2(b) and SDC1.2(c). The **Merit Order** for increasing **MW Output** above the level indicated in **Physical Notifications** and **Interconnector Schedule Quantities** will be on the basis of ascending prices so that once committed the **CDGU, Controllable PPM, Pumped Storage Plant Demand, Demand Side Unit, Aggregated Generating Unit Price Set** or bid-offer data from an **External System Operator** at the head of the **Merit Order** will be that which

has the lowest price per **MWh**, and that at the foot of the **Merit Order** shall be the one with the highest price per **MWh**. Each **CDGU, Controllable PPM, Pumped Storage Plant Demand, Demand Side Unit, Aggregated Generating Units** and/or bid-offer data from an **External System Operator** shall appear in the **Merit Order** for each **Price Set** submitted.

The **Merit Order** for dispatching **MW Output** to a level below that indicated in **Physical Notifications** and **Interconnector Schedule Quantities** will be on the basis of descending prices so that the **CDGU, Controllable PPM, Pumped Storage Plant Demand, Demand Side Unit, Aggregated Generating Unit Price Set** or bid-offer data from an **External System Operator** at the head of a **Merit Order** will be that which has the highest price per **MWh**, and that at the foot of a **Merit Order** shall be the one with the lowest price per **MWh**. Each **CDGU, Controllable PPM, Pumped Storage Plant Demand, Demand Side Unit, Aggregated Generating Units** or bid-offer data from an **External System Operator** shall appear in the **Merit Order** for each **Price Set** submitted.

SDC1.4.8.4 Taking account of and applying the factors referred to in SDC1.4.8.3, **Indicative Operations Schedules** shall be compiled by the **TSO** in conjunction with the **Other TSO** to **Schedule** such **CDGUs, Controllable PPM, Pumped Storage Plant Demand, Demand Side Units, Aggregated Generating Units** and/or such **Interconnector** power transfers, and equivalent units or power transfers of equivalent units in the Republic of the Ireland, which have been declared **Available** in an **Availability Notice** (and the equivalents on the **Other Transmission System**):

- (i) in accordance with the applicable **Merit Order**
- (ii) as will in aggregate (after taking into account electricity delivered other than from **CDGUs, Controllable PPMs, Aggregated Generating Units**, and/or **Interconnector** power transfers 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 Side Unit MW Availability** of **CDGUs, Controllable PPMs, Pumped Storage Plant Demand, Demand Side Units, Aggregated Generating Units** and **Interconnector** power transfers) 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, strict adherence to **Merit Order** may not necessarily be feasible.

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;

these factors may mean that a **CDGU, Controllable PPM, Pumped Storage Plant Demand, Demand Side Unit, Aggregated Generating Unit** and/or **Interconnector** transfers is/are chosen other than in accordance with the profile described in **Physical Notifications** (the **Active Power** profile derived from **Interconnector Schedule Quantities** in respect of **Interconnectors**) and amended in line with **Merit Order** to a greater degree than would be the case when merely taking into account 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** and **Energy Storage Power Station**, 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 PPM, Pumped Storage Plant Demand**, and/or **Aggregate Generating Unit** requirements than in the **Indicative Operations Schedule**. With the exception of an **Energy Storage Power Station**, the TSO may issue **Dispatch Instructions** in respect of any **CDGU** and/or **Aggregated Generating Unit, Controllable PPM, Pumped Storage Plant Demand**, or **Aggregated Generating Unit** which has not declared an **Availability** or **Demand Side Unit MW Availability** of 0 MW in an **Availability Notice**. **Users** with **CDGUs** and/or **Aggregated Generating Units**, or **Controllable PPM** shall ensure that their units are able to be **Synchronised**, or in the case of **Pumped Storage Plant Demand** and **Energy Storage Power Station**, 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** or **Energy Storage Power Station**, 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 **Demand Side Unit Notice Time**.

SDC1.4.8.8 Content of **Indicative Operations Schedules**

The information contained in the **Indicative Operations Schedule** will indicate, where appropriate, on an individual **CDGU, Controllable PPM, Pumped Storage Plant Demand, Demand Side Unit, Aggregated Generating Units** and /or **Interconnector** basis, the period and **Loading** for which it is **Scheduled** during the

relevant **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**. 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 initial **Indicative Operations Schedule** for a **Trading Day** will be published for access by **Users** (or where in relation to a **CDGU** the **User** does not have access to where it would be published, shall, subject to agreement with the **TSO** (such agreement not to be unreasonably withheld or delayed), be sent by the **TSO** to that **User**) by 1600 hours on the day preceding the relevant **Trading Day**. However, if on any occasion the **TSO** is unable to meet these times, the **TSO** also reserves the right to extend the timescale for the issue of the initial **Indicative Operations Schedules** to the extent necessary. Following the issue of the initial **Indicative Operations Schedule** preceding the relevant **Trading Day**, the **TSO** will issue revised **Indicative Operations Schedules** to reflect updated information from the **Scheduling** process.(b) **Indicative Operations Schedules** issued by the **TSO** may comprise several schedules covering short term, medium term or long term timeframes where long term covers the period up to 48 hours immediately following real time.
- (c) The **TSO** may issue **Dispatch Instructions** to **Users** in respect of **CDGUs**, **Controllable PPMs**, **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 **Synchronous Start Up Time** for the relevant **CDGUs** and/or **Controllable PPMs**, **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 PPMs** 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.

SDC1.4.8.11

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 PPMs** and/or **Pumped Storage Plant Demand** and/or **Demand Side Units** and/or **Aggregated Generating Units** by not later than **Gate Closure 1** for the relevant **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

[illegible]

Technical Parameter	CDGU				Control PPM	DSU		Agg. Gen			Pump Storage Demand
	Thermal	Hydr/ En Ltd	Disp. PPM	Pump S Gen	-	Indiv. Demand Site	Agg. Demand Sites				-
Load Up Break Point Warm (1)	✓										
Load Up Break Point Warm (2)	✓										
Loading Rate Cold (1)	✓	✓	✓	✓	✓						
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 Quantity			✓	✓							
Minimum Down Time						✓	✓				
Minimum Generation	✓	✓	✓	✓	✓						
Minimum Off Time	✓	✓	✓	✓	✓	✓	✓				
Minimum On Time	✓	✓	✓	✓	✓						
Minimum Storage Quantity			✓	✓							✓✓
Off to Generating Time			✓								
Off to Spin Pump Time											
(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	✓	✓	✓	✓	✓			✓			

Technical Parameter	CDGU				Control PPM	DSU		Agg. Gen			Pump Storage Demand
	Thermal	Hydr/ En Ltd	Disp. PPM	Pump S Gen	-	Indiv. Demand Site	Agg. Demand Sites				-
Ramp Up Break Point 1	✓	✓	✓	✓	✓			✓			
Ramp Up Break Point 2	✓	✓	✓	✓	✓			✓			
Ramp Up Break Point 3	✓	✓	✓	✓	✓			✓			
Ramp Up Break Point 4	✓	✓	✓	✓	✓			✓			
Ramp Up Rate 1	✓	✓	✓	✓	✓			✓			
Ramp Up Rate 2	✓	✓	✓	✓	✓			✓			
Ramp Up Rate 3	✓	✓	✓	✓	✓			✓			
Ramp Up Rate 4	✓	✓	✓	✓	✓			✓			
Ramp Up Rate 5	✓	✓	✓	✓	✓			✓			
Registered Minimum Output				✓	✓						
Short Term Maximisation Capability	✓	✓	✓	✓	✓						
Short Term Maximisation Time	✓	✓	✓	✓	✓						
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)	✓										
Spin Pump to Pumping Energy Time											✓
Synchronous Start-Up Time Cold	✓	✓	✓	✓	✓						
Synchronous Start-Up Time Hot	✓	✓	✓	✓	✓						
Synchronous Start-Up Time Warm	✓										
Target Charge level Percentage			✓ ESPS Gen-Only								
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

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 PPA CDGUs
The maximum reserve capability for each category of reserve	All non-PPA 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
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
Time between De-Synchronising different	All CDGUs, except Aggregated Generating

Variable	Applies to
CDGUs in a Power Station which, in the case of Coolkeeragh Power Station only, shall be stated for both paired and single CDGUs .	Units

SCHEDULING AND DISPATCH CODE NO. 2

CONTROL SCHEDULING AND DISPATCH

SDC2.1 INTRODUCTION

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 PPMs** including **Energy Storage Power Stations**);
- (b) **Pumped Storage Generators** in respect of their **Pumped Storage Plant Demand**;
- (c) **Interconnector Owners** in respect of their **Interconnectors**;
- (d) **Demand Side Unit Operators** in respect of their **Demand Side Units**; and
- (e) **Generator Aggregators** in respect of their **Aggregated Generating Units**.

Controllable PPMs are not currently subject to **Dispatch Instructions**. However, remote signals sent by the TSO to **Controllable PPMs** in order to limit **Active Power** output may be utilised by the MO as **Dispatch Instructions** in accordance with the TSC.

SDC2.3 SCOPE

SDC2.3.1 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) **Demand Side Unit Operators** in relation to their **Demand Side Units**; and
- (e) **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) **Interconnector Schedule Quantities, Final Physical Notifications** (or **Physical Notifications** in circumstances where **Dispatch Instructions** must be issued before **Gate Closure 2**);
- (b) the **Availability Notices**;
- (c) the **Merit Order** as derived under SDC1;
- (d) the other factors to be taken into account under SDC1 and which were used by the TSO to compile the **Indicative Operations Schedule**; and
- (e) 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 **Demand Side Unit Operators** 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.

SDC2.4.2 **Dispatch Instructions**

SDC2.4.2.1 **Introduction**

As far as is reasonably practicable, **Dispatch Instructions** will normally be issued at any time following **Gate Closure 2** in respect of the relevant **Imbalance Settlement Periods**. 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 **Gate Closure 2**.

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 **Demand Side Unit Operator** 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**.

SDC2.4.2.4 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**;
- (b)
 - (i) **Mvars**: the individual **Reactive Power** output from **CDGUs** at the **Generator Terminals** or **voltage** levels (at instructed **MW** level) at the **Connection Point** which will be maintained by the **CDGU**.
 - (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) [not used]
- (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.
- (d) Special Protection Scheme: an instruction to switch into or out of service a **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**, or testing at the request of a **Generator** in relation to a **PPA CDGU** under **OC11.8**, testing at the request of a **User** in relation to **User's Equipment** other than a **PPA CDGU** under **OC11.13** or **Commissioning/Acceptance Testing** under the **CC**;
- (h) System Tests: an instruction in relation to the carrying out of a **System Test** as required under **OC10**;
- (i) Maximisation: in the case of a **CDGU** which is subject to an agreement with the **TSO** for the provision of **Maximisation** (or where it is otherwise agreed) 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) **Dispatch Instruction Test Flags:** **Dispatch Instruction Test Flags** shall be applied to **Dispatch Instructions** in respect of new or amended test proposals submitted by a **Generator** after **Gate Closure 2** has already occurred for the relevant **Imbalance Settlement Periods** (since **Final Physical Notifications** cannot be amended) and the **Generator** could not have reasonably foreseen the need for the new or amended test request before **Gate Closure 2** for the relevant **Imbalance Settlement Period**. The **Dispatch Instruction Test Flag** shall be applied to the portion of the **Dispatch Instruction** which diverges from **Physical Notifications** submitted by a **Generator** in respect of a test proposal which has been approved by the **TSO**. The part of a **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;
- (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.

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** 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.
- (b) The reduction by a **Generator** of the **MW Output** of one of its **CDGUs** under **SDC3.6.1** shall be deemed to have followed a **Dispatch Instruction** issued by the **TSO**.
- (c) (i) In the event of a temporary loss of the **TSO Control Centre** as described under OC7, 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** 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**.

- (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**.

SDC2.4.2.9

- (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 Side Unit MW Response** 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**).

SDC2.4.3

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**.

DATA REGISTRATION CODE

DRC3 SCOPE

The **Users** to which the DRC applies are:

- (a) **Generators;**
- (b) **Pumped Storage Generators** in respect of **Pumped Storage Plant Demand;**
- (c) **Interconnector Users;**
- (d) **Interconnector Owners;**
- (e) **Demand Side Unit Operators;**
- (f) **Generator Aggregators;**
- (g) **Suppliers;** and
- (h) **Large Demand Customers.**

DRC6 DATA TO BE REGISTERED

DRC6.1 Schedules 1 to 8 attached cover the following data areas:

DRC6.1.2 SCHEDULE 2 - **GENERATION PLANNING PARAMETERS, RESPONSE CAPABILITY DATA, AND SDC1 DATA.** Comprising the **Generating Plant, Controllable PPM** and **Dispatchable PPM** parameters required for **Operational Planning** studies, response capability data in connection with **Operating Reserve** and certain data required under SDC1 in respect of **CDGUs, Pumped Storage Plant Demand, Interconnectors, Interconnector Units, Demand Side Units, Aggregated Generating Units** and **Controllable PPM.**

Comprising electrical parameters relating to **Plant** and **Apparatus** connected to the **NI System.**

DRC6.2 The **Schedules** applicable to the following categories of **User** are as follows:

Generators with Generating Plant:	Sched 1,2,3,5,7 & 8
Generators with Independent Generating Plant:	Sched 1,3,4,5,7 & 8
Generators with Controllable PPMs or Dispatchable PPMs (including Energy Storage Power Stations):	Sched 1, 2, 3, 5, 7 & 8
All Users connected directly to the NI System:	Sched 5,7 & 8
All Users connected directly to the NI System with Demand	

(including Generators with respect to Demand at directly connected Power Stations and Demand Side Unit Operators in respect of Demand Side Units):	Sched 2,5,6,7 & 8
Suppliers:	Sched 4 & 7
Interconnector Owners:	Sched 2 & 3
Interconnector Users:	Sched 2 (Para 6 only)

SCHEDULE 1

DATA REGISTRATION CODE

GENERATING UNIT AND POWER STATION TECHNICAL DATA

POWER STATION NAME:

DATE:

DATA DESCRIPTION	UNITS	DATA CAT.	GENERATING UNIT OR POWER STATION DATA							
			G1	G2	G3	G4	G5	G6	G7	STN
<u>GENERAL POWER STATION DATA</u> Point of connection to the NI System in terms of geographical and electrical location and System voltage	-	SPD	-	-	-	-	-	-	-	
Capacity of Power Station in MW sent out for R.C., Min. Gen. (assumed to be zero in the case of PPMs unless a different value is notified by the User) and, where relevant Max. Gen.	MW	SPD	-	-	-	-	-	-	-	
In the case of Wind Farm Power Stations , a diagram that shows for the Wind Farm Power Station wind speed and direction against electrical output in MW , in “rose” format. In the case of PPM that are not WFPS , an equivalent diagram relating to the input resource of that PPM .		SPD								
Maximum auxiliary Demand (Active Power and Reactive Power)	MW Mvar	SPD SPD	- -	- -	- -	- -	- -	- -	- -	
Where Generating Units form part of a User's System , the number of such Units together with their total capacity. If required by the TSO , details of the Generating Units together with their energy output profile.		SPD								
Operating regime of Generating Units not subject to Central Dispatch (e.g. continuous, intermittent, peak lopping).		SPD								
<u>GENERAL GENERATING UNIT DATA</u> Prime mover type		SPD								-
Generating Unit type	MVA	SPD								
Generating Unit rating and terminal voltage	KV	SPD								-
Generating Unit rated power factor		SPD								-
Registered Capacity sent out	MW	SPD								-
Max.Gen. and Min.Gen. capability sent out	MW	SPD								-
Registered Minimum Output (Energy Storage Power Station)	MW	SPD								-
Reactive Power capability (both leading and lagging) at the lower voltage terminals of the Generator Transformer for Max.Gen. , normal Full Load and normal minimum Load .	Mvar	SPD								
Maximum Auxiliary Demand	MW Mvar	SPD								
Inertia constant	MW sec MVA	SPD								

ABBREVIATIONS:

SPD

=

Standard Planning Data

Min Gen

=

Minimum Generation

% on MVA

=

& on Rated MVA

% on 100

=

% on 100 MVA

DPD

=

Detailed Planning Data

Max Gen

=

Maximum Generation

RC

=

Registered Capacity

OC1,SDC1,etc

=

Grid Code for which data is required

DATA DESCRIPTION	UNITS	DATA CAT	GENERATING UNIT OR POWER STATION DATA							
			G1	G2	G3	G4	G5	G6	G7	STN
Short circuit ratio		SPD								-
Direct axis transient reactance	% on MVA	SPD								-
Direct axis sub-transient time constant	S	SPD								-
Generator Transformer rated MVA, positive sequence reactance and tap change range	MVA % on MVA +%/-%	SPD								-
Sustained Load Diagram	Diagram	SPD								-
In relation to the generators comprised within a PPM , such General Generating Unit Data equivalent to that listed above as the TSO shall reasonably require.		SPD								
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 other relevant information.	List	SPD								
<u>Auxiliary Demand</u> The normal Generating Unit -supplied auxiliary Load for each Generating Unit at rated MW output	MW	DPD								-
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	MW	DPD	-	-	-	-	-	-	-	
<u>Generating Unit parameters</u> Rated terminal voltage	kV	DPD								-
Rated MVA	MVA	DPD								-
Rated MW	MW	DPD								-
Min.Gen.	MW	DPD								-
Registered Minimum Output (Energy Storage Power Station)	MW	DPD								-
Short circuit ratio		DPD								-
Direct axis synchronous reactance	% on MVA	DPD								
Direct axis transient reactance	% on MVA	DPD								-
Direct axis sub-transient reactance	% on MVA	DPD								-

Direct axis transient time constant	S	DPD								-
Direct axis sub-transient time constant	S	DPD								-
DATA DESCRIPTION	UNITS	DATA CAT	GENERATING UNIT OR POWER STATION DATA							
			G1	G2	G3	G4	G5	G6	G7	STN
Quadrature axis synchronous reactance	% on MVA	DPD								-
Quadrature axis transient reactance	% on MVA	DPD								-
Quadrature axis sub-transient reactance	% on MVA	DPD								-
Quadrature axis transient time constant	S	DPD								-
Quadrature axis sub-transient time constant	S	DPD								-
Stator time constant	S	DPD								-
Stator resistance		DPD								-
Stator leakage reactance	% on MVA	DPD								-
Turbogenerator inertia constant, or, for generators comprised within a PPM , Plant inertia constant	MWsec/MVA	DPD								-
Other than for generators comprised within a PPM , rated field current	A	DPD								-
Other than for generators comprised within a PPM , field current (amps) open circuit saturation curve for Generating Unit terminal voltages ranged from 50% to 120% of rated value in 10% steps as derived from appropriate manufacturers' certificates	A	DPD								-
<u>Parameters for Generating Unit Step-Up Transformers</u>										
Rated MVA	MVA	DPD								-
Voltage ratio		DPD								-
Positive sequence reactance (at max., min. & nominal tap)	% on MVA	DPD								-
Positive sequence resistance (at max., min. & nominal tap)	% on MVA	DPD								-
Zero phase sequence reactance	% on MVA	DPD								-
Tap changer range	+%/-%	DPD								-
Tap changer step size	%	DPD								-
Tap changer type: on Load or off circuit	on/off	DPD								-

<u>Power Station Transformer Parameters</u>										
Rated MVA	MVA	DPD								-
Voltage ratio		DPD								-
Zero sequence reactance as seen from the higher voltage side	% on MVA	DPD								-
<u>Excitation control system parameters (not for PPMs)</u>										
DC gain of excitation loop		DPD								-
Rated field voltage		DPD								-
Maximum field voltage		DPD								-

DATA DESCRIPTION	UNITS	DATA CAT.	GENERATING UNIT OR POWER STATION DATA							
			G1	G2	G3	G 4	G5	G 6	G7	STN
Minimum Field Voltage		DPD								
Max. rate of change of field voltage (rising)	V/sec	DPD								-
Max. rate of change of field voltage (falling)	V/sec	DPD								-
Details of excitation loop described in block diagram form showing transfer functions of individual elements	Diagram	DPD								-
Dynamic characteristics of over-excitation limiter		DPD								-
Dynamic characteristics of under-excitation limiter		DPD								-
<u>Governor Parameters (for Reheat Steam Turbine Units)</u>										
H.P. governor average gain	MW/Hz	DPD								-
Speeder motor setting range	Hz	DPD								-
H.P. governor valve time constant	S	DPD								-
H.P. governor valve opening limits		DPD								-
H.P. governor valve rate limits		DPD								-
Reheater time constant (active energy stored in reheater)	S	DPD								-
IP governor average gain	MW/Hz	DPD								-
IP governor setting range	Hz	DPD								-
IP governor valve time constant	S	DPD								-
IP governor valve opening limits		DPD								-
IP governor valve rate limits		DPD								-
Details of acceleration sensitive elements in HP and IP governor loop		DPD								-
Governor block diagram showing transfer functions of individual elements	Diagram	DPD								-
<u>Governor Parameters (for Non-Reheat Steam Turbine Units and Gas Turbine Units)</u>										
Governor average gain	MW/Hz	DPD								-
Speeder motor setting range		DPD								-
Time constant of steam or fuel governor valve		DPD								-

DATA DESCRIPTION	UNITS	DATA CAT.	GENERATING UNIT OR POWER STATION DATA							
			G1	G2	G3	G4	G5	G6	G7	STN
Governor valve opening limits	S Diagram	DPD								
Governor valve rate limits		DPD								-
Time constant of turbine		DPD								-
Governor block diagram		DPD								-
<u>Governor parameters (for PPMs)</u>										
Generator torque/speed controller(s) (if any)		DPD								
Generator blade angle controller(s) (if any)		DPD								
Generator power limitation function(s) (if any)		DPD								
<u>Plant Flexibility Performance</u>										
Rate of Loading following weekend shutdown (Generating Unit and Power Station)	MW/m	DPD								
Rate of Loading following overnight shutdown (Generating Unit and Power Station)	MW/m	DPD								
Block Load following Synchronising , or, in the case of PPMs , generating whilst connected to the NI System	MW	DPD								
Rate of Deloading from normal rated MW	MW/m	DPD								
Regulating range	MW	DPD								
Load rejection capability while still Synchronised , or, in the case of PPMs , generating whilst still connected to the NI System and generating, and able to supply Load	MW	DPD								

NOTE:
 Users are referred to Schedule 5 which sets down data required for all **Users** directly connected to the **NI System**, including **Power Stations**.

SCHEDULE 2

DATA REGISTRATION CODE

GENERATION PLANNING PARAMETERS, RESPONSE CAPABILITY DATA AND SDC1 DATA

Part 1 of this schedule contains the **CDGU and Controllable PPM** or **Dispatchable PPMs Generation Planning Parameters** required by the **TSO** to facilitate studies in **Operational Planning** timescales. It also contains the response capability data for **CDGUs**.

Part 2 of this schedule contains the data required with respect to **CDGUs, Pumped Storage Plant Demand, Interconnectors, Interconnector Units, Demand Side Units, Aggregated Generating Units** and/or **Controllable PPM** to be supplied by **Users** by **Gate Closure** pursuant to SDC1. Many of these parameters are the same as those required in Part 1, but the data supplied under Part 1 will not be used for real time operation.

Power Station: _____

Part 1 - Generation Planning Parameters

DATA DESCRIPTION	UNITS	DATA CAT.	GENERATING UNIT OR POWER STATION DATA							
			G1	G2	G3	G4	G5	G6	G7	STN
<u>Generation Planning Parameters for CDGUs</u>										
The minimum notice required to Synchronise a Generating Unit from De-synchronisation	Mins	OC2								-
The minimum time between Synchronising different Generating Units in a Power Station	Mins	OC2								
The minimum block Load requirements on Synchronising		OC2								
Maximum Generating Unit Loading rates from Synchronising for the following conditions:										
hot	MW/ min	OC2								-
Warm	MW/ min	OC2								-
cold	MW/ min	OC2								-
Minimum time off Load		OC2								
Maximum Generating Unit Deloading rates for the following conditions:										
Hot	MW/ min	OC2								-
warm	MW/ min	OC2								-
cold	MW/ min	OC2								-

Part 2: Availability, Technical Parameters Data and other data required under SDC1

The following information is required daily by not later than **Gate Closure** to cover the next following **Trading Day** in relation to each **CDGU**, **Pumped Storage Plant Demand**, **Interconnector**, **Interconnector Units** (only in relation to paragraph 6 below), **Demand Side Unit**, **Aggregated Generating Unit** and/or **Controllable PPM**. In so far as the **Availability** data is not so submitted, the data to have been submitted in respect of the last **Imbalance Settlement Period** of the current **Trading Day** will be deemed to have been resubmitted. Any further revisions to this data are required to be notified to the **TSO** when they become known.

1 Availability

Each **User** must notify the **TSO** by means of an **Availability Notice** of the **Availability** of each of its **CDGUs** (and in the case of a **CCGT Installation**, the **CCGT Modules** within it), **Pumped Storage Plant Demand**, **Interconnectors**, **Demand Side Units**, **Aggregated Generating Units** and/or **Controllable PPM**.

The **Availability Notice** shall state the **Availability** of the relevant **CDGU** for each **Imbalance Settlement Period** in the following **Trading Day** (subject to revision under SDC1.4.5.1 (a)).

In addition, **Users** other than **Aggregators** and **Demand Side Unit Operators** must submit an **Additional Grid Code Availability Notice** under SDC1.4.2 by no later than **Gate Closure** each day. The information contained in an **Additional Grid Code Availability Notice** broadly relates to a **CDGU's** different **Availabilities** depending on which fuel a **CDGU** is firing on (for a **CDGU** that is capable of firing on different fuels), the **Availability** of each **CCGT Module** within a **CCGT Installation** and to the various long-term constraints (such as fuel and emissions constraints) which can affect the **Availability** of a **CDGU**.

2. Technical Parameters

For each **CDGU**, **Controllable PPM**, **Dispatchable PPM**, **Demand Side Unit**, **Aggregated Generating Unit** and **Pumped Storage Plant Demand**, the **Technical Parameters** listed in the table set out in Appendix A to SDC1 and copied below. The factors applicable to a particular **Plant** are indicated with a tick.

Technical Parameter	CDGU				Control PPM	DSU		Agg. Gen			Pump Storage Demand
	Thermal	Hydr/ En Ltd	Disp. PPM	Pump S Gen	-	Indiv. Demand Site	Agg. Demand Sites				-
Block Load Cold	✓	✓	✓	✓	✓						
Block Load Hot	✓										
Block Load Warm	✓										
Storage Cycle Efficiency			✓	✓							
Demand Side Unit =Notice						✓	✓				
Deload Break Point	✓	✓	✓	✓	✓						
Demand Side Unit MW Availability						✓	✓				
Demand Side Unit MW Response Time						✓	✓				
De-Loading Rate 1	✓	✓	✓	✓	✓						
De-Loading Rate 2	✓	✓	✓	✓	✓						
Dwell Time Up 1	✓	✓	✓	✓	✓						
Dwell Time Up 2	✓	✓	✓	✓	✓						
Dwell Time Up 3	✓	✓	✓	✓	✓						
Dwell Time Down 1	✓	✓	✓	✓	✓						
Dwell Time Down 2	✓	✓	✓	✓	✓						

[illegible]

Technical Parameter	CDGU				Control PPM	DSU		Agg. Gen			Pump Storage Demand
	Thermal	Hydr/ En Ltd	Disp. PPM	Pump S Gen	-	Indiv. Demand Site	Agg. Demand Sites				-
Maximum Down Time						✓	✓				
Maximum Generation / Registered Capacity	✓	✓	✓	✓	✓						
Maximum On Time	✓	✓	✓	✓	✓						
Maximum Storage Quantity			✓	✓							
Minimum Down Time						✓	✓				
Minimum Generation	✓	✓	✓	✓	✓						
Minimum Off Time	✓	✓	✓	✓	✓	✓	✓				
Minimum On Time	✓	✓	✓	✓	✓						
Minimum Storage Quantity			✓	✓							✓✓
Off to Generating Time			✓								
Off to Spin Pump Time											
(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	✓	✓	✓	✓	✓			✓			
Ramp Up Rate 2	✓	✓	✓	✓	✓			✓			
Ramp Up Rate 3	✓	✓	✓	✓	✓			✓			
Ramp Up Rate 4	✓	✓	✓	✓	✓			✓			
Ramp Up Rate 5	✓	✓	✓	✓	✓			✓			
Registered Minimum Output				✓	✓						
Short Term Maximisation Capability	✓	✓	✓	✓	✓						
Short Term Maximisation Time	✓	✓	✓	✓	✓						
Soak Time Cold (1)	✓	✓	✓	✓	✓						

Technical Parameter	CDGU				Control PPM	DSU		Agg. Gen			Pump Storage Demand
	Thermal	Hydr/ En Ltd	Disp. PPM	Pump S Gen	-	Indiv. Demand Site	Agg. Demand Sites				-
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)	✓										
Spin Pump to Pumping Energy Time											✓
Synchronous Start-Up Time Cold	✓	✓	✓	✓	✓						
Synchronous Start-Up Time Hot	✓	✓	✓	✓	✓						
Synchronous Start-Up Time Warm	✓										
Start of Restricted Range 1	✓	✓	✓	✓	✓						
End of Restricted Range 1	✓	✓	✓	✓	✓						
Start of Restricted Range 2	✓	✓	✓	✓	✓						
End of Restricted Range 2	✓	✓	✓	✓	✓						

Users should also refer to SDC1.4.5.2 for the submission of revised **Technical Parameters** data.

3. Additional Grid Code Characteristics

The following data are required to be submitted by each **User**, with the exception of **Aggregators**, direct to the **TSO**:

1. Individual **CCGT Module** 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** within it.

2. In the case of a **CDGU** capable of firing on different fuels, an **Additional Grid Code Characteristics Notice** in respect of any additional fuel for the **CDGU**, each containing the information set out in the **Technical Parameters** for each fuel and each marked clearly to indicate to which fuel it applies.
3. In the case of **Interconnector Owners**, **Interconnector** data, including but not limited to the **Availability** of **Interconnector Filters**.
4. In relation to each **Demand Side Unit**, the **Demand Profile** and the **Initial Demand Reduction Time**.
5. Where there is a **System Support Services Agreement** in place, the **System Support Services** which are **Available**.
6. The parameters listed in the table in Part 2 of Appendix A to SDC 1 and copied below, where relevant to a **User**.
7. 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 **Imbalance Settlement Period**.

The table contained in Part 2 of Appendix A to SDC1 and referred to at paragraph 6 above is copied below:

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
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	All CDGUs , except Aggregated Generating

Variable	Applies to
Fuel.	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

Users should also refer to SDC1.4.5.2 for the submission of revised **Additional Grid Code Characteristics** data.

4. **Reserve capability**

Each **Generator** and **Generator Aggregator** shall submit reserve capability data in accordance with SDC1.4.4.3 and, in the case of **PPA Generation**, Appendix B to SDC1.

5. **Other Relevant Data**

For each **Plant** which has been declared **Available** in an **Availability Notice** (and, in the case of a **CCGT Installation**, **CCGT Modules** within):

- (i) any newly arisen special factors which in the reasonable opinion of the **User** may have a material effect on the likely **Output** or **Demand Reduction** of such **Plant** (and, in the case of a **CCGT Installation**, **CCGT Modules** therein) or, in the case of an **Interconnector**, the **Availability** of the **Interconnector Filters**; and
- (ii) any temporary changes, and their likely duration, to the Registered Data of such **Plant** (and, in the case of a **CCGT Installation**, **CCGT Modules** therein) (other than those already notified under the foregoing provisions of this Part II of Schedule 2).

6. **Commercial Offer Data**

Each **Generator**, **Pumped Storage Generator** (in respect of **Pumped Storage Plant Demand**), **Interconnector User** (in respect of an **Interconnector Unit**), **Demand Side Unit Operator** and **Generator Aggregator** shall submit **Commercial Offer Data** to the TSO (either directly or by means of an **Intermediary**) by **Gate Closure** for the following **Trading Day** in accordance with the TSC. Specific requirements for **Energy Limited Generating Units** and **Pumped Storage Plants** are listed in SDC1.4.4.5.

SCHEDULE 8

DATA REGISTRATION CODE

DATA SUPPLIED BY THE TSO TO USERS

GRID CODE PROVISION	DATA DESCRIPTION
CC9.1.3/CC9.1.4	<u>Site Responsibility Schedules/Ownership Diagrams</u> The TSO shall, in respect of each connection 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 (NI) 1991, prepare: (i) a Site Responsibility Schedule; and (ii) an Ownership Diagram. <u>Operational Planning</u>
OC2.6.2(c)(i)	The TSO shall, by the end of September in each calendar year, provide each Generator in writing with a Provisional Outage Programme showing the CDGUs, Controllable PPMs or Dispatchable PPMs (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.
OC2.6.3(c)(i)/ OC2.6.3(f)(i)	The TSO shall, by the end of June in Year 1, provide each Generator in writing with a draft Final Outage Programme showing the CDGUs, Controllable PPMs or Dispatchable PPMs (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 shall, by the end of September, notify any further changes by the issue of a Final Outage Programme.
OC2.6.7.3	The TSO's express formal permission must be obtained by a Generator prior to withdrawing a CDGU, Controllable PPMs or Dispatchable PPMs (or Generating Unit(s) therein) or item of Power Station Equipment for a Planned Outage, which permission shall specify: (i) the identity of the CDGU, Controllable PPMs or Dispatchable PPMs (or Generating Unit(s) therein) and/or Power Station Equipment and MW concerned; (ii) the duration of the Outage; and (iii) the Start Date and Start Time.
OC2.7.1	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	If there is a deficit indicated in any day, the TSO and the Other TSO shall jointly issue a System Capacity Shortfall Warning.
OC2.8.2	The TSO will, by the end of September in each calendar year, notify each Generator in writing of those aspects of the draft NI System Outage plan which may affect such Generator operationally, including proposed start dates and end dates of relevant NI System Outages. The TSO will also inform each Large Demand Customer with a Demand greater than 10 MW of the aspects of the plan which may affect it.
OC2.8.5(a)(ii)	The TSO will, by 11.00 hours each Thursday during the Programming Phase, notify each Generator in writing of those aspects of the NI System Outage plan which may affect it operationally, including proposed start dates and end dates of relevant NI System Outages. The TSO will also inform each Large Demand Customer with a Demand greater than 10 MW of the aspects of the plan which may affect it.
	Indicative Operations Schedule

GRID CODE PROVISION	DATA DESCRIPTION
SDC1.4.8.9	The TSO will issue the Indicative Operation Schedule each day to each Generator with CDGUs, Controllable PPMs or Dispatchable PPMs, each Pumped Storage Generator with respect to their Pumped Storage Plant Demand, each Interconnector Owner with regard to their Interconnectors, each Demand Side Unit Operator in relation to their Demand Side Units, provided that all the necessary information from these Users was made available by not later than Gate Closure. Initial Planning Data
PC6.4.1	Initial planning data to be submitted on the TSO website including the following information: (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.

DATA TO BE SUPPLIED BY THE TSO IN CONNECTION WITH APPLICATIONS FOR CONNECTION TO THE NI SYSTEM OR USE OF THE DISTRIBUTION SYSTEM AND ALL ISLAND TRANSMISSION NETWORKS.

1. The **TSO Licence** requires the **TSO** to produce a **Transmission System Statement** (save where the **TSO** is relieved of such obligations by the **Authority**) which provides a means by which **Users** and intending **Users** of the **Transmission System** are able to assess opportunities for connecting to and using the **Transmission System**. The **TSO's** obligations in this respect are described more fully in PC5.
2. The **TO Licence** requires the **DNO** to produce a **Distribution System Statement** (save where the **DNO** is relieved of such obligations by the **Authority**) which provides a means by which **Users** and intending **Users** of the **Distribution System** are able to assess opportunities for connecting to and using the **Distribution System**. The **DNO's** obligations in this respect are described more fully in PC5.
3. The **TSO Licence** also imposes upon the **TSO** certain obligations to offer to enter into an agreement for a new or modified connection to the **NI System** or for use of the **Distribution System** and **All Island Transmission Networks**. In the case of a new or modified connection, the intending **User's Plant** and **Apparatus** must comply with the requirements of the CC. Where a **User** or intending **User** requires more detailed information concerning the requirements for a particular connection, that **User** may obtain such information pursuant to CC6.1, CC.S1.1 and CC.S2.