

DATA REGISTRATION CODE (DRC)

GC0096 STORAGE
30 JULY 2019

CONTENTS

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

| <u>Paragraph No/Title</u> | <u>Page Number</u> |
|---|--------------------|
| DRC.1 INTRODUCTION | 3 |
| DRC.2 OBJECTIVE | 3 |
| DRC.3 SCOPE | 3 |
| DRC.4 DATA CATEGORIES AND STAGES IN REGISTRATION | 3 |
| DRC.4.2 Standard Planning Data | 43 |
| DRC.4.3 Detailed Planning Data | 4 |
| DRC.4.4 Operational Data | 4 |
| DRC.5 PROCEDURES AND RESPONSIBILITIES | 4 |
| DRC.5.1 Responsibility For Submission And Updating Of Data | 4 |
| DRC.5.2 Methods Of Submitting Data | 4 |
| DRC.5.3 Changes To Users Data | 5 |
| DRC.5.4 Data Not Supplied | 5 |
| DRC.5.5 Substituted Data | 5 |
| DRC.6 DATA TO BE REGISTERED | 5 |
| SCHEDULE 1 - GENERATING UNIT (OR CCGT MODULE), POWER PARK MODULE AND DC CONVERTER TECHNICAL DATA | 9 |
| SCHEDULE 2 - GENERATION PLANNING PARAMETERS | 3634 |
| SCHEDULE 3 - LARGE POWER STATION OUTAGE PROGRAMMES, OUTPUT USABLE AND INFLEXIBILITY INFORMATION | 4038 |
| SCHEDULE 4 - LARGE POWER STATION DROOP AND RESPONSE DATA | 4341 |
| SCHEDULE 5 - USERS SYSTEM DATA | 4442 |
| SCHEDULE 6 - USERS OUTAGE INFORMATION | 53 |
| SCHEDULE 7 - LOAD CHARACTERISTICS AT GRID SUPPLY POINTS | 56 |
| SCHEDULE 8 - DATA SUPPLIED BY BM PARTICIPANTS | 57 |
| SCHEDULE 9 - DATA SUPPLIED BY THE COMPANY TO USERS | 58 |
| SCHEDULE 10 - DEMAND PROFILES AND ACTIVE ENERGY DATA | 59 |
| SCHEDULE 11 - CONNECTION POINT DATA | 61 |
| SCHEDULE 12 - DEMAND CONTROL | 66 |
| SCHEDULE 13 - FAULT INFEED DATA | 69 |
| SCHEDULE 14 - FAULT INFEED DATA (GENERATORS INCLUDING UNIT TRANSFORMERS AND STATION TRANSFORMERS) | 71 |
| SCHEDULE 15 - MOTHBALLED GENERATING UNIT, MOTHBALLED POWER PARK MODULE, MOTHBALLED DC CONVERTERS AT A DC CONVERTER STATION AND ALTERNATIVE FUEL | |

| | |
|--|--------------------|
| DATA) | 76 |
| SCHEDULE 16 - BLACK START INFORMATION | 82 79 |
| SCHEDULE 17 - ACCESS PERIOD DATA..... | 83 80 |
| SCHEDULE 18 - OFFSHORE TRANSMISSION SYSTEM DATA..... | 84 81 |
| SCHEDULE 19 - USER DATA FILE STRUCTURE | 108 105 |

- DRC.1 INTRODUCTION
- DRC.1.1 The **Data Registration Code ("DRC")** presents a unified listing of all data required by **The Company** from **Users** and by **Users** from **The Company**, from time to time under the **Grid Code**. The data which is specified in each section of the **Grid Code** is collated here in the **RC**. Where there is any inconsistency in the data requirements under any particular section of the **Grid Code** and the **Data Registration Code** the provisions of the particular section of the **Grid Code** shall prevail.
- DRC.1.2 The **DRC** identifies the section of the **Grid Code** under which each item of data is required .
- DRC.1.3 The Code under which any item of data is required specifies procedures and timings for the supply of that data, for routine updating and for recording temporary or permanent changes to that data. All timetables for the provision of data are repeated in the **DRC**.
- DRC.1.4 Various sections of the **Grid Code** also specify information which **Users** will receive from **The Company**. This information is summarised in a single schedule in the **DRC** (Schedule 9).
- DRC.1.5 The categorisation of data into **DPD I** and **DPD II** is indicated in the **DRC** below.
- DRC.2 OBJECTIVE
- The objective of the **DRC** is to:
- DRC.2.1 List and collate all the data to be provided by each category of **User** to **The Company** under the **Grid Code**.
- DRC.2.2 List all the data to be provided by **The Company** to each category of **User** under the **Grid Code**.
- DRC.3 SCOPE
- DRC.3.1 The **DRC** applies to **The Company** and to **Users**, which in this **DRC** means:-
- (a) **Generators** (including those undertaking **OTSDUW** and/or those who own and/or operate **DC Connected Power Park Modules**);
 - (b) **Network Operators**;
 - (c) **DC Converter Station** owners and **HVDC System Owners**;
 - (d) **Suppliers**;
 - (e) **Non-Embedded Customers** ~~(including, for the avoidance of doubt, a **Pumped Storage Generator** in that capacity);~~
 - (f) **Externally Interconnected System Operators**;
 - (g) **Interconnector Users**; ~~and~~
 - (h) **BM Participants**; ~~and~~
 - (i) **Pumped Storage Generators** and **Generators** in respect of **Electricity Storage Modules**.-
- DRC.3.2 For the avoidance of doubt, the **DRC** applies to both **GC Code Users** and **EU Code Users** **User's**.
- DRC.4 DATA CATEGORIES AND STAGES IN REGISTRATION
- DRC.4.1.1 Within the **DRC** each data item is allocated to one of the following three categories:
- (a) **Standard Planning Data (SPD)**

- DRC.5.3 Changes To Users' Data
- DRC.5.3.1 Whenever a **User** becomes aware of a change to an item of data which is registered with **The Company** the **User** must notify **The Company** in accordance with each section of the Grid Code. The method and timing of the notification to **The Company** is set out in each section of the Grid Code.
- DRC.5.4 Data Not Supplied
- DRC.5.4.1 **Users** and **The Company** are obliged to supply data as set out in the individual sections of the **Grid Code** and repeated in the **DRC**. If a **User** fails to supply data when required by any section of the **Grid Code**, **The Company** will estimate such data if and when, in **The Company's** view, it is necessary to do so. If **The Company** fails to supply data when required by any section of the **Grid Code**, the **User** to whom that data ought to have been supplied, will estimate such data if and when, in that **User's** view, it is necessary to do so. Such estimates will, in each case, be based upon data supplied previously for the same **Plant** or **Apparatus** or upon corresponding data for similar **Plant** or **Apparatus** or upon such other information as **The Company** or that **User**, as the case may be, deems appropriate.
- DRC.5.4.2 **The Company** will advise a **User** in writing of any estimated data it intends to use pursuant to DRC.5.4.1 relating directly to that **User's Plant** or **Apparatus** in the event of data not being supplied.
- DRC.5.4.3 A **User** will advise **The Company** in writing of any estimated data it intends to use pursuant to DRC.5.4.1 in the event of data not being supplied.
- DRC.5.5 Substituted Data
- DRC.5.5.1 In the case of PC.A.4 only, if the data supplied by a **User** does not in **The Company's** reasonable opinion reflect the equivalent data recorded by **The Company**, **The Company** may estimate such data if and when, in the view of **The Company**, it is necessary to do so. Such estimates will, in each case, be based upon data supplied previously for the same **Plant** or **Apparatus** or upon corresponding data for similar **Plant** or **Apparatus** or upon such other information as **The Company** deems appropriate.
- DRC.5.5.2 **The Company** will advise a **User** in writing of any estimated data it intends to use pursuant to DRC.5.5.1 relating directly to that **User's Plant** or **Apparatus** where it does not in **The Company's** reasonable opinion reflect the equivalent data recorded by **The Company**. Such estimated data will be used by **The Company** in place of the appropriate data submitted by the **User** pursuant to PC.A.4 and as such shall be deemed to accurately represent the **User's** submission until such time as the **User** provides data to **The Company's** reasonable satisfaction.
- DRC.6 DATA TO BE REGISTERED
- DRC.6.1 Schedules 1 to 19 attached cover the following data areas.
- DRC.6.1.1 Schedule 1 – Power Generating Module, Generating Unit (or CCGT Module), Power Park Module (including DC Connected Power Park Module and Power Park Unit), HVDC System and DC Converter Technical Data.
Comprising **Power Generating Module, Generating Unit** (and **CCGT Module**), **Power Park Module** (including **DC Connected Power Park Module** and **Power Park Unit**) and **DC Converter** fixed electrical parameters.
- DRC.6.1.2 Schedule 2 - Generation Planning Parameters
Comprising the **Genset** parameters required for **Operational Planning** studies.
- DRC.6.1.3 Schedule 3 - Large Power Station Outage Programmes, Output Usable And Inflexibility Information.
Comprising generation and storage outage planning, **Output Usable** and inflexibility information at timescales down to the daily **BM Unit Data** submission.

DRC.6.1.18 Schedule 18 – Generators Undertaking OTSDUW Arrangements

Comprising electrical parameters relating to **OTSDUW Plant and Apparatus** between the **Offshore Grid Entry Point** and **Transmission Interface Point**.

DRC.6.1.19 Schedule 19 – User Data File Structure

Comprising information relating to the **User Data File Structure**.

DRC.6.2 The **Schedules** applicable to each class of **User** are as follows:

| <u>User</u> | <u>Schedule</u> |
|--|-------------------------------|
| Generators with Large Power Stations | 1, 2, 3, 4, 9, 14, 15, 16, 19 |
| Generators with Medium Power Stations (see notes 2, 3, 4) | 1, 2 (part), 9, 14, 15, 19 |
| Generators with Small Power Stations directly connected to the National Electricity Transmission System | 1, 6, 14, 15, 19 |
| Generators undertaking OTSDUW (see note 5) | 18, 19 |
| All Users connected directly to the National Electricity Transmission System | 5, 6, 9 |
| All Users connected directly to the National Electricity Transmission System other than Generators | 10,11,13,17 |
| All Users connected directly to the National Electricity Transmission System with Demand | 7, 9 |
| A Pumped Storage Generator , <u>a Generator in respect of one or more Electricity Storage Modules and an Externally Interconnected System Operator and Interconnector Users</u> | 12 (as marked) |
| All Suppliers | 12 |
| All Network Operators | 12 |
| All BM Participants | 8 |
| All DC Converter Station owners | 1, 4, 9, 14, 15, 19 |

Notes:

- (1) **Network Operators** must provide data relating to **Small Power Stations** and/or **Customer Generating Plant Embedded** in their **Systems** when such data is requested by **The Company** pursuant to PC.A.3.1.4 or PC.A.5.1.4.
- (2) The data in schedules 1, 14 and 15 need not be supplied in relation to **Medium Power Stations** connected at a voltage level below the voltage level of the **Subtransmission System** except in connection with a **CUSC Contract** or unless specifically requested by **The Company**.
- (3) Each **Network Operator** within whose **System** an **Embedded Medium Power Station** not subject to a **Bilateral Agreement** or **Embedded DC Converter Station** not subject to a **Bilateral Agreement** is situated shall provide the data to **The Company** in respect of each such **Embedded Medium Power Station** or **Embedded DC Converter Station** or **HVDC System**.
- (4) In the case of Schedule 2, **Generators**, **HVDC System Owners**, **DC Converter Station** owners or **Network Operators** in the case of **Embedded Medium Power Stations** not subject to a **Bilateral Agreement** or **Embedded DC Converter Stations** not subject to a **Bilateral Agreement**, would only be expected to submit data in relation to **Standard Planning Data** as required by the **Planning Code**.

- (5) In the case of **Generators** undertaking **OTSDUW**, the **Generator** will need to supply **User** data in accordance with the requirements of **Large** or **Small Power Stations** (as defined in DRC.6.2) up to the **Offshore Grid Entry Point**. In addition, the **User** will also need to submit **Offshore Transmission System** data in between the **Interface Point** and its **Connection Points** in accordance with the requirements of Schedule 18.

SCHEDULE 1 – POWER GENERATING MODULE, GENERATING UNIT (OR CCGT MODULE), POWER PARK MODULE, DC CONNECTED POWER PARK MODULE, HVDC SYSTEM AND DC CONVERTER TECHNICAL DATA

PAGE 2 OF 19

POWER STATION NAME: _____

DATE: _____

| DATA DESCRIPTION | UNITS | DATA to RTL | | DATA CAT. | GENERATING UNIT OR STATION DATA | | | | | | |
|--|------------------------|--|----------------|--|---------------------------------|---------|---------|---------|---------|---------|---------|
| | | CUSC Cont ract | CUSC App. Form | | F.Yr. 0 | F.Yr. 1 | F.Yr. 2 | F.Yr. 3 | F.Yr. 4 | F.Yr. 5 | F.Yr. 6 |
| GENERATING STATION DEMANDS: Demand associated with the Power Station supplied through the National Electricity Transmission System or the Generator's User System (PC.A.5.2) | | | | | | | | | | | |
| - The maximum Demand that could occur. - Demand at specified time of annual peak half hour of National Electricity Transmission System Demand at Annual ACS Conditions . | MW MVA MW MVA | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | | DPD I DPD I DPD II DPD II | | | | | | | |
| - Demand at specified time of annual minimum half-hour of National Electricity Transmission System Demand . | MW MVA | <input type="checkbox"/> <input type="checkbox"/> | | DPD II DPD II | | | | | | | |
| (Additional Demand supplied through the unit transformers to be provided below) | | | | | | | | | | | |
| INDIVIDUAL GENERATING UNIT (OR AS THE CASE MAY BE, SYNCHRONOUS POWER GENERATING MODULE OR CCGT MODULE) DATA | | | | | G1 | G2 | G3 | G4 | G5 | G6 | STN |
| Point of connection to the National Electricity Transmission System (or the Total System if embedded) of the Generating Unit or Synchronous Power Generating Module (other than a CCGT Unit) or the CCGT Module , as the case may be in terms of geographical and electrical location and system voltage (PC.A.3.4.1) | Text | <input type="checkbox"/> | ■ | SPD | | | | | | | |
| If the busbars at the Connection Point are normally run in separate sections identify the section to which the Generating Unit (other than a CCGT Unit) or Synchronous Power Generating Module or CCGT Module , as the case may be is connected (PC.A.3.1.5) | Section Number | <input type="checkbox"/> | ■ | SPD | | | | | | | |

Type of **Unit** (steam, **Gas Turbine Combined Cycle Gas Turbine Unit**, tidal, wind, storage type etc.)
(PC.A.3.2.2 (h), PC.A.3.4.4)

□

SCHEDULE 1 – POWER GENERATING MODULE, GENERATING UNIT (OR CCGT MODULE), POWER PARK MODULE, DC CONNECTED POWER PARK MODULE, HVDC SYSTEM AND DC CONVERTER TECHNICAL DATA

PAGE 9 OF 19

| DATA DESCRIPTION | UNITS | DATA to RTL | | DATA CAT. | GENERATING UNIT OR STATION DATA | | | | | | |
|--|-------|--------------------------|----------------|-----------|---------------------------------|----|----|----|----|----|-----|
| | | CUSC Contract | CUSC App. Form | | G1 | G2 | G3 | G4 | G5 | G6 | STN |
| Gas Turbine Units | | | | | | | | | | | |
| (PC.A.5.3.2(d) – Option 2(iii)) | | | | | | | | | | | |
| Inlet Guide Vane Time Constant | sec | <input type="checkbox"/> | | DPD II | | | | | | | |
| Inlet Guide Vane Opening Limits | % | <input type="checkbox"/> | | DPD II | | | | | | | |
| Inlet Guide Vane Opening Rate Limits | %/sec | <input type="checkbox"/> | | DPD II | | | | | | | |
| Inlet Guide Vane Closing Rate Limits | %/sec | <input type="checkbox"/> | | DPD II | | | | | | | |
| (PC.A.5.3.2(d) – Option 2(iii)) | | | | | | | | | | | |
| Fuel Valve Time Constant | sec | <input type="checkbox"/> | | DPD II | | | | | | | |
| Fuel Valve Opening Limits | % | <input type="checkbox"/> | | DPD II | | | | | | | |
| Fuel Valve Opening Rate Limits | %/sec | <input type="checkbox"/> | | DPD II | | | | | | | |
| Fuel Valve Closing Rate Limits | %/sec | <input type="checkbox"/> | | DPD II | | | | | | | |
| (PC.A.5.3.2(d) – Option 2(iii)) | | | | | | | | | | | |
| Waste Heat Recovery Boiler Time Constant | | | | | | | | | | | |
| Hydro Generating Units | | | | | | | | | | | |
| (PC.A.5.3.2(d) – Option 2(iv)) | | | | | | | | | | | |
| Guide Vane Actuator Time Constant | sec | <input type="checkbox"/> | | DPD II | | | | | | | |
| Guide Vane Opening Limits | % | <input type="checkbox"/> | | DPD II | | | | | | | |
| Guide Vane Opening Rate Limits | %/sec | <input type="checkbox"/> | | DPD II | | | | | | | |
| Guide Vane Closing Rate Limits | %/sec | <input type="checkbox"/> | | DPD II | | | | | | | |
| Water Time Constant | sec | <input type="checkbox"/> | | DPD II | | | | | | | |
| Synchronous Electricity Storage Units and Modules | | | | | | | | | | | |
| (PC.A.5.3.2(d) – Option 2(v)) | | | | | | | | | | | |
| Valve Actuator Time Constant | sec | <input type="checkbox"/> | | DPD II | | | | | | | |
| Valve Opening Limits | % | <input type="checkbox"/> | | DPD II | | | | | | | |
| Valve Opening Rate Limits | %/sec | <input type="checkbox"/> | | DPD II | | | | | | | |
| Valve Closing Rate Limits | %/sec | <input type="checkbox"/> | | DPD II | | | | | | | |
| <p>For Synchronous Electricity Storage Modules which are derived from compressed air energy storage systems the above data should be provided. For other Synchronous Electricity Storage Modules data should be supplied as required by The Company in accordance with PC.A.7.</p> <p align="center"><u>End of Option 2</u></p> | | | | | | | | | | | |
| UNIT CONTROL OPTIONS* | | | | | | | | | | | |
| (PC.A.5.3.2(e)) | | | | | | | | | | | |
| Maximum droop | % | <input type="checkbox"/> | | DPD II | | | | | | | |
| Normal droop | % | | | DPD II | | | | | | | |
| Minimum droop | % | | | DPD II | | | | | | | |
| Maximum frequency deadband | ±Hz | | | DPD II | | | | | | | |
| Normal frequency deadband | ±Hz | | | DPD II | | | | | | | |
| Minimum frequency deadband | ±Hz | | | DPD II | | | | | | | |
| Maximum frequency Insensitivity1Normal | ±Hz | | | DPDII | | | | | | | |
| frequency Insensitivity1 | ±Hz | | | DPDII | | | | | | | |
| Minimum frequency Insensitivity1 | ±Hz | | | DPDII | | | | | | | |
| Maximum Output deadband | ±MW | | | DPD II | | | | | | | |
| Normal Output deadband | ±MW | | | DPD II | | | | | | | |
| Minimum Output deadband | ±MW | | | DPD II | | | | | | | |

| | | | | | | | | | | | |
|---|--------|--|--|---------------|--|--|--|--|--|--|--|
| Maximum Output Insensitivity ¹ | ±Hz | | | DPD II | | | | | | | |
| Normal Output Insensitivity ¹ | ±Hz | | | DPD II | | | | | | | |
| Minimum Output Insensitivity ¹ | ±Hz | | | DPD II | | | | | | | |
| Frequency settings between which Unit Load Controller droop applies: | | | | | | | | | | | |
| Maximum | Hz | | | DPD II | | | | | | | |
| Normal | Hz | | | DPD II | | | | | | | |
| Minimum | Hz | | | DPD II | | | | | | | |
| Sustained response normally selected | Yes/No | | | DPD II | | | | | | | |
| ¹ Data required only in respect of Power Generating Modules | | | | | | | | | | | |

SCHEDULE 1 – POWER GENERATING MODULE, GENERATING UNIT (OR CCGT MODULE), POWER PARK MODULE, DC CONNECTED POWER PARK MODULE, HVDC SYSTEM AND DC CONVERTER TECHNICAL DATA

PAGE 10 OF 19

| DATA DESCRIPTION | UNITS | DATA to RTL | | DATA CAT. | POWER PARK UNIT (OR POWER PARK MODULE, AS THE CASE MAY BE) | | | | | | |
|---|---|--------------------------|-------------------------------------|---------------|--|----|----|----|----|----|-----|
| | | CUSC Contract | CUSC App. Form | | G1 | G2 | G3 | G4 | G5 | G6 | STN |
| Power Park Module Rated MVA (PC.A.3.3.1(a)) | MVA | <input type="checkbox"/> | <input checked="" type="checkbox"/> | SPD+ | | | | | | | |
| Power Park Module Rated MW (PC.A.3.3.1(a)) | MW | <input type="checkbox"/> | <input checked="" type="checkbox"/> | SPD+ | | | | | | | |
| *Performance Chart of a Power Park Module at the connection point (PC.A.3.2.2(f)(ii)) | | | | SPD | (see OC2 for specification) | | | | | | |
| * Output Usable (on a monthly basis) (PC.A.3.2.2(b)) | MW | | | SPD | (except in relation to CCGT Modules when required on a unit basis under the Grid Code , this data item may be supplied under Schedule 3) | | | | | | |
| Number & Type of Power Park Units within each Power Park Module (PC.A.3.2.2(k)) | | <input type="checkbox"/> | | SPD | | | | | | | |
| Number & Type of Offshore Power Park Units within each Offshore Power Park String and the number of Offshore Power Park Strings and connection point within each Offshore Power Park Module (PC.A.3.2.2.(k)) | | | | SPD | | | | | | | |
| In the case where an appropriate Manufacturer's Data & Performance Report is registered with The Company then subject to The Company's agreement, the report reference may be given as an alternative to completion of the following sections of this Schedule 1 to the end of page 11 with the exception of the sections marked thus # below. | Reference the Manufacturer's Data & Performance Report | | | SPD | | | | | | | |
| Power Park Unit Model (including Non Synchronous Electricity Storage Units) - A validated mathematical model in accordance with PC.5.4.2 (a) | Transfer function block diagram and algebraic equations, simulation and measured test results | <input type="checkbox"/> | | DPD II | | | | | | | |

SCHEDULE 4 - LARGE POWER STATION DROOP AND RESPONSE DATA

PAGE 1 OF 1

GOVERNOR DROOP AND RESPONSE (PC.A.5.5 ■ CUSC Contract)

The Data in this Schedule 4 is to be supplied by **Generators** with respect to all **Large Power Stations, HVDC System Owners** and by **DC Converter Station** owners (where agreed), whether directly connected or **Embedded**

| DATA DESCRIPTION | NORMAL VALUE | MW | DATA CAT | DROOP% | | | RESPONSE CAPABILITY | | |
|------------------|--|----|----------|--------|--------|--------|---------------------|-----------|----------------|
| | | | | Unit 1 | Unit 2 | Unit 3 | Primary | Secondary | High Frequency |
| MLP1 | Designed Minimum Operating Level or Minimum Regulating Level (for a CCGT Module or Power Park Module, on a modular basis assuming all units are Synchronised) | | | | | | | | |
| MLP2 | Minimum Generation or Minimum Stable Operating Level (for a CCGT Module or Power Park Module, or Power Generating Module on a modular basis assuming all units are Synchronised) | | | | | | | | |
| MLP3 | 70% of Registered Capacity or Maximum Capacity | | | | | | | | |
| MLP4 | 80% of Registered Capacity or Maximum Capacity | | | | | | | | |
| MLP5 | 95% of Registered Capacity or Maximum Capacity | | | | | | | | |
| MLP6 | Registered Capacity or Maximum Capacity | | | | | | | | |

Notes:

- The data provided in this Schedule 4 is not intended to constrain any **Ancillary Services Agreement**.
- Registered Capacity or Maximum Capacity** should be identical to that provided in Schedule 2.
- The Governor Droop should be provided for each **Generating Unit**(excluding **Power Park Units**), **Power Park Module**, **HVDC Converter** or **DC Converter**. The Response Capability should be provided for each **Genset** or **DC Converter**.
- Primary, Secondary** and **High Frequency Response** are defined in CC.A.3.2 and are based on a frequency ramp of 0.5Hz over 10 seconds. **Primary Response** is the minimum value of response between 10s and 30s after the frequency ramp starts, **Secondary Response** between 30s and 30 minutes, and **High Frequency Response** is the minimum value after 10s on an indefinite basis.
- For plants which have not yet **Synchronised**, the data values of MLP1 to MLP6 should be as described above. For plants which have already **Synchronised**, the values of MLP1 to MLP6 can take any value between **Designed Operating Minimum Level** or **Minimum Regulating Level** and **Registered Capacity** or **Maximum Capacity**. If MLP1 is not provided at the **Designed Minimum Operating Level**, the value of the **Designed Minimum Operating Level** should be separately stated.
- For the avoidance of doubt **Transmission DC Converters** and **OTSDUW DC Converters** must be capable of providing a continuous signal indicating the real time frequency measured at the **Transmission Interface Point** to the **Offshore Grid Entry Point** (as detailed in CC.6.3.7(vii) and CC.6.3.7(viii)) to enable **Offshore Power Generating Modules Offshore Generating Units, Offshore Power Park Modules** and/or **Offshore DC Converters** to satisfy the frequency response requirements of CC.6.3.7 or [ECC.6.3.7](#).

SCHEDULE 11 - CONNECTION POINT DATA

PAGE 2 OF 3

| Embedded Generation Data | | | | | | | | | | | |
|--|--|---------------------------|--------|--------|---------|---------|---------|--------|--------|--------|-------------------|
| Connection Point: | | | | | | | | | | | |
| DATA DESCRIPTION | Outturn | Outturn Weather Corrected | F.Yr 1 | F.Yr 2 | F.Yr. 3 | F.Yr. 4 | F.Yr. 5 | F.Yr 6 | F.Yr 7 | F.Yr 8 | DATA CAT |
| <u>Small Power Station, Medium Power Station and Customer Generation Summary</u> | For each Connection Point where there are Embedded Small Power Stations, Medium Power Stations or Customer Generating Stations the following information is required: | | | | | | | | | | |
| No. of Small Power Stations, Medium Power Stations or Customer Power Stations | | | | | | | | | | | PC.A.3.1.4(a) |
| Number of Generating Units within these stations | | | | | | | | | | | PC.A.3.1.4(a) |
| Summated Capacity of all these Generating Units | | | | | | | | | | | PC.A.3.1.4(a) |
| Where the Network Operator's System places a constraint on the capacity of an Embedded Large Power Station | | | | | | | | | | | |
| Station Name | | | | | | | | | | | PC.A.3.2.2(c) |
| Generating Unit | | | | | | | | | | | PC.A.3.2.2(c) |
| System Constrained Capacity | | | | | | | | | | | PC.A.3.2.2(c)(i) |
| Reactive Despatch Network Restriction | | | | | | | | | | | PC.A.3.2.2(c)(ii) |

| | | | | | | | | | | | |
|---|--|--|--|--|--|--|--|--|--|--|---------------|
| Where the Network Operator's System places a constraint on the capacity of an Offshore Transmission System at an Interface Point | | | | | | | | | | | |
| Offshore Transmission System Name | | | | | | | | | | | PC.A.3.2.2(c) |
| Interface Point Name | | | | | | | | | | | PC.A.3.2.2(c) |
| Maximum Export Capacity | | | | | | | | | | | PC.A.3.2.2(c) |
| Maximum Import Capacity | | | | | | | | | | | PC.A.3.2.2(c) |

SCHEDULE 11 - CONNECTION POINT DATA

PAGE 3 OF 3

NOTES:

1. 'F.Yr.' means 'Financial Year'. F.Yr. 1 refers to the current financial year.
2. All **Demand** data should be net of the output (as reasonably considered appropriate by the **User**) of all **Embedded Small Power Stations**, **Embedded Medium Power Stations** and **Customer Generating Plant**. Generation and / or Auxiliary demand of **Embedded Large Power Stations** should not be included in the demand data submitted by the **User**. **Users** should refer to the **PC** for a full definition of the **Demand** to be included.
3. Peak **Demand** should relate to each **Connection Point** individually and should give the maximum demand that in the **User's** opinion could reasonably be imposed on the **National Electricity Transmission System**. **Users** may submit the **Demand** data at each node on the **Single Line Diagram** instead of at a **Connection Point** as long as the **User** reasonably believes such data relates to the peak (or minimum) at the **Connection Point**.

In deriving **Demand** any deduction made by the **User** (as detailed in note 2 above) to allow for **Embedded Small Power Stations**, **Embedded Medium Power Stations** and **Customer Generating Plant** is to be specifically stated as indicated on the Schedule.

4. **The Company** may at its discretion require details of any **Embedded Small Power Stations** or **Embedded Medium Power Stations** whose output can be expected to vary in a random manner (eg. wind power) or according to some other pattern (eg. tidal power)
5. Where more than 95% of the total **Demand** at a **Connection Point** is taken by synchronous motors, values of the **Power Factor** at maximum and minimum continuous excitation may be given instead. **Power Factor** data should allow for series reactive losses on the **User's System** but exclude reactive compensation network susceptance specified separately in Schedule 5.
6. Where a **Reactive Despatch Network Restriction** is in place which requires the generator to maintain a target voltage set point this should be stated as an alternative to the size of the **Reactive Despatch Network Restriction**.

SCHEDULE 12 - DEMAND CONTROL

PAGE 1 OF 2

The following information is required from each **Network Operator** and where indicated with an asterisk from **Externally Interconnected System Operators** and/or **Interconnector Users** and a **Pumped Storage Generator** and Generators in respect of Electricity Storage Modules. Where indicated with a double asterisk, the information is only required from **Suppliers**.

| DATA DESCRIPTION | UNITS | | UPDATE TIME | |
|---|-------|---------------------------|-------------------------------------|------------|
| <u>Demand Control</u> | | | | |
| Demand met or to be relieved by Demand Control (averaging at the Demand Control Notification Level or more over a half hour) at each Connection Point . | | | | |
| Demand Control at time of National Electricity Transmission System weekly peak demand | | | | |
| Amount | MW |)F.yrs 0 to 5 | Week 24 | OC1 |
| Duration | Min |) | | |
| For each half hour | MW | Wks 2-8 ahead | 1000 Mon | OC1 |
| For each half hour | MW | Days 2-12 ahead | 1200 Wed | OC1 |
| For each half hour | MW | Previous calendar day | 0600 daily | OC1 |
| <u>**Customer Demand Management</u> <u>(at the Customer Demand Management Notification Level or more at the Connection Point)</u> | | | | |
| For each half hour | MW | Any time in Control Phase | | OC1 |
| For each half hour | MW | Remainder of period | When changes occur to previous plan | OC1 |
| For each half hour | MW | Previous calendar day | 0600 daily | OC1 |
| **In Scotland, Load Management Blocks For each block of 5MW or more, for each half hour | MW | For the next day | 11:00 | OC1 |

SCHEDULE 12 - DEMAND CONTROL

PAGE 1 OF 2

| DATA DESCRIPTION | UNITS | TIME COVERED | UPDATE TIME | DATA CAT. |
|---|-------|-------------------------|-------------------|--------------|
| *Demand Control or Pump Tripping Offered as Reserve | | | | |
| Magnitude of Demand or pumping load <u>or Electricity Storage charging load</u> which is tripped | MW | Year ahead from week 24 | Week 24 | DPD I |
| System Frequency at which tripping is initiated | Hz | " | " | " |
| Time duration of System Frequency below trip setting for tripping to be initiated | S | " | " | " |
| Time delay from trip initiation to Tripping | S | " | " | " |
| Electricity Storage Module data | | | | |
| <u>Maximum Capacity</u> | MW | " | " | " |
| <u>Import capability</u> | Min | " | " | " |
| <u>Maximum Import Power</u> | MW | " | " | " |
| <u>Registered Import Capability</u> | MW | " | " | " |
| <u>Charge Time</u> | Min | " | " | " |
| <u>Export Capability</u> | Min | " | " | " |
| <u>Discharge time</u> | Min | " | " | " |
| <u>Operating periods</u> | Min | " | " | " |
| Emergency Manual Load Disconnection | | | | |
| Method of achieving load disconnection | Text | Year ahead from week 24 | Annual in week 24 | OC6 |
| Annual ACS Peak Demand (Active Power) at Connection Point (requested under Schedule 11 - repeated here for reference) | MW | " | " | " |
| Cumulative percentage of Connection Point Demand (Active Power) which can be disconnected by the following times from an instruction from The Company | | | | |
| 5 mins | % | " | " | " |
| 10 mins | % | " | " | " |
| 15 mins | % | " | " | " |
| 20 mins | % | " | " | " |
| 25 mins | % | " | " | " |
| 30 mins | % | " | " | " |

| | | | | |
|--|--|--|--|--|
| | | | | |
|--|--|--|--|--|

Notes:

1. **Network Operators** may delay the submission until calendar week 28.
2. No information collated under this Schedule will be transferred to the **Relevant Transmission Licensees** (or **Generators** undertaking **OTSDUW**).

SCHEDULE 14 - FAULT INFEED DATA (GENERATORS INCLUDING UNIT TRANSFORMERS AND STATION TRANSFORMERS)

PAGE 1 OF 5

The data in this Schedule 14 is all **Standard Planning Data**, and is to be provided by **Generators**, with respect to all directly connected **Power Stations**, all **Embedded Large Power Stations** and all **Embedded Medium Power Stations** connected to the **Subtransmission System**. A data submission is to be made each year in Week 24.

Fault infeeds via Unit Transformers

A submission should be made for each **Generating Unit** (including those which are part of a **Synchronous Power Generating Module**) with an associated **Unit Transformer**. Where there is more than one **Unit Transformer** associated with a **Generating Unit**, a value for the total infeed through all **Unit Transformers** should be provided. The infeed through the **Unit Transformer(s)** should include contributions from all motors normally connected to the **Unit Board**, together with any generation (eg **Auxiliary Gas Turbines**) which would normally be connected to the **Unit Board**, and should be expressed as a fault current at the **Generating Unit** terminals for a fault at that location.

| DATA DESCRIPTION | UNITS | F.Yr. 0 | F.Yr. 1 | F.Yr. 2 | F.Yr. 3 | F.Yr. 4 | F.Yr. 5 | F.Yr. 6 | F.Yr. 7 | DATA to RTL | |
|---|----------|------------|------------|------------|------------|------------|------------|------------|------------|--------------------------|-------------------------------------|
| (PC.A.2.5) | | | | | | | | | | CUSC Contract | CUSC App. Form |
| Name of Power Station | | | | | | | | | | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Number of Unit Transformer s | | | | | | | | | | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Symmetrical three phase short-circuit current infeed through the Unit Transformers(s) for a fault at the Generating Unit terminals | | | | | | | | | | | |
| - at instant of fault | kA | | | | | | | | | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| - after subtransient fault current contribution has substantially decayed | kA | | | | | | | | | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Positive sequence X/R ratio at instance of fault | | | | | | | | | | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Subtransient time constant (if significantly different from 40ms) | ms | | | | | | | | | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Pre-fault voltage at fault point (if different from 1.0 p.u.) | | | | | | | | | | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| The following data items need only be supplied if the Generating Unit Step-up Transformer can supply zero sequence current from the Generating Unit side to the National Electricity Transmission System | | | | | | | | | | | |
| Zero sequence source impedances as seen from the Generating Unit terminals consistent with the maximum infeed above: | | | | | | | | | | | |
| - Resistance | % on 100 | | | | | | | | | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| - Reactance | % on 100 | | | | | | | | | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

SCHEDULE 15 – MOTHBALLED POWER GENERATING MODULES, MOTHBALLED GENERATING UNIT, MOTHBALLED POWER PARK MODULE (INCLUDING DC CONNECTED POWER PARK MODULES), MOTHBALLED HVDC SYSTEMS, MOTHBALLED HVDC CONVERTERS, MOTHBALLED DC CONVERTERS AT A DC CONVERTER STATION AND ALTERNATIVE FUEL DATA

PAGE 2 OF 3

ALTERNATIVE FUEL INFORMATION

The following data items for alternative fuels need only be supplied with respect to each **Generating Unit** whose primary fuel is gas including those e which form part of a **Power Generating Module**.

| Power Station | | Generating Unit Name (e.g. Unit 1) | | | | |
|---|-------------------------|------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|
| DATA DESCRIPTION | UNITS | DATA CAT | GENERATING UNIT DATA | | | |
| | | | 1 | 2 | 3 | 4 |
| Alternative Fuel Type (*please specify) | Text | DPD II | Oil distillate | Other gas* | Other* | Other* |
| CHANGEOVER TO ALTERNATIVE FUEL | | | | | | |
| For off-line changeover: | | | | | | |
| Time to carry out off-line fuel changeover | Minutes | DPD II | | | | |
| Maximum output following off-line changeover | MW | DPD II | | | | |
| For on-line changeover: | | | | | | |
| Time to carry out on-line fuel changeover | Minutes | DPD II | | | | |
| Maximum output during on-line fuel changeover | MW | DPD II | | | | |
| Maximum output following on-line changeover | MW | DPD II | | | | |
| Maximum operating time at full load assuming: | | | | | | |
| Typical stock levels | Hours | DPD II | | | | |
| Maximum possible stock levels | Hours | DPD II | | | | |
| Maximum rate of replacement of depleted stocks of alternative fuels on the basis of Good Industry Practice | MWh(electrical) /day | DPD II | | | | |
| Is changeover to alternative fuel used in normal operating arrangements? | Text | DPD II | | | | |
| Number of successful changeovers carried out in the last NGET Financial Year (** delete as appropriate) | Text | DPD II | 0 / 1-5 / 6-10 / 11-20 / >20 ** | 0 / 1-5 / 6-10 / 11-20 / >20 ** | 0 / 1-5 / 6-10 / 11-20 / >20 ** | 0 / 1-5 / 6-10 / 11-20 / >20 ** |

SCHEDULE 15 – MOTHBALLED POWER GENERATING MODULES, MOTHBALLED GENERATING UNIT, MOTHBALLED POWER PARK MODULE (INCLUDING MOTHBALLED DC CONNECTED POWER PARK MODULES), MOTHBALLED HVDC SYSTEMS, MOTHBALLED HVDC CONVERTERS MOTHBALLED DC CONVERTERS AT A DC CONVERTER STATION AND ALTERNATIVE FUEL DATA

PAGE 3 OF 3

| DATA DESCRIPTION | UNITS | DATA CAT | GENERATING UNIT DATA | | | |
|---|---------|----------|----------------------|---|---|---|
| | | | 1 | 2 | 3 | 4 |
| CHANGEOVER BACK TO MAIN FUEL | | | | | | |
| For off-line changeover: | | | | | | |
| Time to carry out off-line fuel | Minutes | | | | | |
| For on-line changeover: | | | | | | |
| Time to carry out on-line fuel changeover | Minutes | | | | | |
| Maximum output during on-line fuel changeover | MW | | | | | |

Notes

1. Where a **Generating Unit** has the facilities installed to generate using more than one alternative fuel type details of each alternative fuel should be given.
2. Significant factors and their effects which may prevent the use of alternative fuels achieving the estimated values provided in this table (e.g. emissions limits, distilled water stocks etc.) should be appended separately.

SCHEDULE 16 - BLACK START INFORMATION

PAGE 1 OF 1

| BLACK START INFORMATION The following data/text items are required from each Generator for each BM Unit at a Large Power Station as detailed in PC.A.5.7. Data is not required for Generating Units that are contracted to provide Black Start Capability , Power Generating Modules Power Park Modules or Generating Units that have an Intermittent Power Source or Electricity Storage Modules <u>which have short cycle times</u> . The data should be provided in accordance with PC.A.1.2 and also, where possible, upon request from The Company during a Black Start . | | | |
|--|----------------------|---------------|--|
| Data Description (PC.A.5.7) (■ CUSC Contract) | Units | Data Category | |
| Assuming all BM Units were running immediately prior to the Total Shutdown or Partial Shutdown and in the event of loss of all external power supplies, provide the following information: | | | |
| a) Expected time for the first and subsequent BM Units to be Synchronised , from the restoration of external power supplies, assuming external power supplies are not available for up to 24hrs | Tabular or Graphical | DPD II | |
| b) Describe any likely issues that would have a significant impact on a BM Unit's time to be Synchronised arising as a direct consequence of the inherent design or operational practice of the Power Station and/or BM Unit , e.g. limited barring facilities, time from a Total Shutdown or Partial Shutdown at which batteries would be discharged. | Text | DPD II | |
| Block Loading Capability: | | | |
| c) Provide estimated Block Loading Capability from 0MW to Registered Capacity of each BM Unit based on the unit being 'hot' (run prior to shutdown) and also 'cold' (not run for 48hrs or more prior to the shutdown). The Block Loading Capability should be valid for a frequency deviation of 49.5Hz – 50.5Hz. The data should identify any required 'hold' points. | Tabular or Graphical | DPD II | |