

MODIFICATION RECOMMENDATION FORM



RECOMMENDATION TO CER BY EIRGRID OF MODIFICATION TO GRID CODE.

ABSTRACT / TITLE OF MODIFICATION	Demand Side Units (DSU)
MODIFICATION NUMBER	MPID 214
RECOMMENDED AT GCRP MEETING NUMBER	29
LIST OF GRID CODE SECTION(S) AFFECTED BY PROPOSED MODIFICATION:	<p>Glossary The proposed changes allow for a DSU to have an export Capability. The DSU definition has been updated to limit the Demand Side Unit MW Capacity (~ Registered Capacity) of an Individual Demand Site within an Aggregated Demand Site to 10 MW.</p> <p>Planning Code Information that must be supplied in the planning time frame by the DSU is contained in PC.A5. Minor changes are required here to tie in with the definition changes in the Glossary.</p> <p>Connection Conditions Minor changes are required here to tie in with the definition changes in the Glossary.</p> <p>Operational Planning, Information Exchange, Operational Testing, Monitoring, Testing and Investigation Minor changes are required here to tie in with the definition changes in the Glossary.</p> <p>Scheduling and Dispatch Minor changes are required here to tie in with the definition changes in the Glossary.</p>
CURRENT GRID CODE VERSION :	3.5

MODIFICATION DESCRIPTION Overview	<u>The Reason for the Recommended Modification</u>
<p>SUMMARY DESCRIPTION OF:</p> <p>a) THE REASON FOR THE RECOMMENDED MODIFICATION</p> <p>b) HISTORY OF PROGRESSION THROUGH GCRPs, WORKING GROUP AND/OR CONSULTATION</p> <p>c) SUMMARY NOTE OF ANY OBJECTIONS TO THE RECOMMENDED CHANGE FROM GCRP MEMBERS OR CONSULTATION RESPONSES</p> <p>d) OUTCOME OF ANY GCRP MEETING ACTIONS RELATING TO THE RECOMMENDED MODIFICATION</p>	<p>To allow a DSU have an MEC with a maximum value of no greater than 10 MW (or the de minimis threshold as defined in the Trading and Settlement Code).</p> <p><u>History of Progression through GCRPs, Working Groups and or Consultation</u></p> <p>A modification proposal (Mod 04_11) relating to the DSU participation in Single Electricity Market (SEM) was submitted by Fingleton White & Co. (Michael Peters) to the secretariat of the Trading and Settlement Code (T&SC) on 18 January 2011. The title of the modification is “to remove the requirement for a DSU to have an MEC”. The T&SC Modifications Panel recognised that a Grid Code modification would also be required in both the EirGrid and SONI Grid Codes to align with this proposed T&SC modification.</p> <p>On the 6th May 2011 a meeting took place to discuss the proposed T&SC modification and how it may affect the Grid Code. All panel members from the NI Grid Code and the ROI Grid Code were invited to attend along with representatives from the Demand Side Energy industry. Following on from that meeting EirGrid presented a draft proposal to the GCRP # 28 (8th June 2011). At this meeting it was agreed Yvonne Coughlan (TSO), Liam Ryan (Market Operator), Michael Peters (Fingleton White & Co) and Patrick Liddy (Activation Energy) meet to discuss and agree a proposed modification and to present this at the next GCRP meeting. At the GCRP #29 (13th October 2011) EirGrid presented a proposal that had the agreement of all four participants. All GCRP members were in favour of the proposal and recommended that the proposal be sent to the CER for their approval but it was noted that the recommendation should point out that Gráinne O’Shea (ESB PG) had one concern, details are below.</p>

The proposal was also discussed at the JGCRP #8 (13th October 2011) the Chairman explained that the bulk of changes under this item appear in the ROI Grid Code. Dick Lewis (SONI) informed the panel that modifications had also been drafted and tabled at the NI GCRP, although initially it was thought that no changes were necessary in NI, and that had since changed. These changes were discussed and recommended for approval at the NI GCRP. The point was made that due to the different consultation regimes in ROI and NI, the length of time it takes to get approval for Grid Code changes is very different (it is much longer in NI).

The issue of the disconnection between the definitions used in NI and ROI was also raised, although it was noted that there were no practical implications of the change due to the fact that currently there are no capable plant in NI.

The Chairman raised the question of whether the two Grid Codes actually need to be this synchronised; the Panel expressed a general opinion that such synchronisation was necessary. Dick Lewis confirmed that SONI may be able to expedite the necessary changes by the end of November, with any changes to the TSC to be made in December (although the two week consultation period for the TSC was noted).

The Panel agreed that provided that each GCRP separately approves the proposed changes, then the joint sections of the changes would be approved by the JGCRP.

SONI opened their consultation process on the 1st Nov 2011 and this closed on the 18th Nov 2011. SONI received one request for a clarification from iPower. The request did not affect the proposed Grid Code modifications and SONI submitted the proposal to NIAUR on 28th November 2011.

	<p><u>Summary Note of Any Objections to the Recommended Change from GCRP Members or Consultation Responses</u></p> <p>Gráinne O’Shea (ESB PG) expressed concern that the definition for Maximum Down Time is similar to Maximum On Time for a Generation Unit.</p> <p>Yvonne Coughlan (TSO) explained that to re-title Maximum On time to Maximum On Time for a DSU would necessitate systems changes which would have a long lead time. This change will be incorporated as part of a wider review of Grid Code rules for DSU.</p> <p>It was pointed out by the TSO that the definition for Individual Demand Site should refer to Customer and not Demand Customer. The new definition should read:</p> <p>A single premises of a Demand Customer connected to the Transmission System or Distribution System with a Demand Reduction Side Unit MW Capability Capacity. The Individual Demand Site shall have a can have a Maximum Import Capacity Demand Side Unit Export Capacity and shall not have a Maximum Export a Demand Side Unit Import Capacity.</p> <p><u>Outcome of the GCRP Meeting Actions relation to the Recommended Modification</u></p> <p>All members of the ROI GCRP agreed to recommend the proposal to the CER for their approval and to note Gráinne O’Shea’s concern regarding the definition for Maximum Down Time, as outlined earlier.</p>
<p>IMPLICATION OF NOT IMPLEMENTING THE MODIFICATION</p>	<p>DSUs are currently showing an interest in participating in the market and it is timely to review the Grid Code requirements for DSUs.</p>

Proposed Grid Code Modifications – Redline Version

It is proposed to amend the Grid Code by adding in the text highlighted in red and by deleting the text highlighted in blue strikethrough.

Glossary

In the Glossary table of the Grid Code, all existing definitions relating to DSU must be updated to reflect the change to allow an export Capability from the DSU.

Individual Demand Site	A single premises of a Customer connected to the Transmission System or Distribution System with a Demand-Reduction Side Unit MW Capability Capacity . The Individual Demand Site shall have a can have a Maximum-Import Capacity-Demand Side Unit Export Capacity and shall not have a Maximum-Export a Demand Side Unit Import Capacity .
Initial Demand Side Unit Response Reduction	The Demand Side Unit MW Response Demand-Reduction of a Demand-Side-Unit following a Dispatch Instruction from the TSO when the Demand Side Unit MW Response Reduction is at 0 MW for a period greater than 24 hours.
Initial Demand Side Unit Response Reduction Time	The time as specified by the Dispatchable Demand Customer in the Technical Parameter and is the time it takes for the Dispatchable Demand Customer to be able to implement the Initial Demand Side Unit Response Reduction from receipt of the Dispatch Instruction from the TSO .
Demand Side Unit Energy Profile	The estimated consumption in MW demand total Energy requirement for an Individual Demand Site or aggregated for each Individual Demand Site which form part of an Aggregated Demand Site for each Trading Period in the following Optimisation Time Horizon period and which must be submitted to the TSO in the Availability Notice under SDC1.4.1.2.
Demand Reduction-Side Unit MW Availability	The forecasted change in Active Power which can be achieved in one currency zone by a Demand Side Unit for each Trading Period in the following Optimisation Time Horizon period and which must be submitted by the User to the TSO in an Availability Notice under SDC1.4.1.2.

**Demand ~~Reduction~~ Side Unit
MW ~~Capability~~ Capacity**

The ~~reduction Capability in MW Demand~~ maximum change in **Active Power** that can be achieved by a **Demand Side Unit** by totalling the potential increase in on-site **Active Power Generation** and the potential decrease in on-site **Active Power Demand** at each **Individual Demand Site**. ~~that can be achieved by the Demand Side Unit.~~

Demand Side Unit

An **Individual Demand Site** or **Aggregated Demand Site** with a **Demand Side Unit MW ~~Reduction Capability~~ Capacity** of at least 4 MW. The **Demand Side Unit** shall be subject to **Central Dispatch**.

Aggregated Demand Site

A group of **Individual Demand Sites** represented by a **Dispatchable Demand Customer**, which together are capable of a **Demand ~~Reduction~~ Side Unit MW ~~Capability~~ Capacity** equal to or above 4 MW (and which is therefore subject to **Central Dispatch** from the **TSO**). Each **Individual Demand Site** comprising an **Aggregated Demand Site** shall be in one currency zone and shall have a **Demand Side Unit MW Capacity** of no greater than 10 MW. Unless otherwise specified, information submitted in respect of an **Aggregated Demand Site** shall always be at an aggregated level.

**Dispatchable Demand
Customer**

A person who operates a **Demand Side Unit**, with an aggregated **Demand ~~Reduction~~ Side Unit MW ~~Capability~~ Capacity** not less than 4 MW.

Outage

In relation to a **Generation Unit**, a total or partial reduction in **Availability** such that the **Generation Unit** is unavailable to achieve its full **Registered Capacity** in accordance with its **Registered Operating Characteristics**.

In relation to a **Demand Side Unit**, a total or partial ~~reduction~~ change in **Availability** such that the **Demand Side Unit** is unavailable to achieve its full ~~Demand Reduction~~ **Demand Side Unit MW ~~Capability~~ Capacity** in accordance with its submitted **Technical Parameters**.

Availability

At any given time the measure of **Active Power** a **Generation Unit(s)** is capable of delivering to the **Connection Point** and the term "**Availabilities**" shall be construed accordingly. This can be calculated as a gross figure.

In terms of a **Demand Side Unit** the measure at any given time of the ~~Demand Reduction~~ **Active Power** the **Demand Side Unit** is capable of delivering ~~to the Connection Point~~ to the **System**.

Demand Side Unit Export Capacity

The export value (in MW, MVA) nominated by the **Dispatchable Demand Customer** for each **Individual Demand Site** within the **Demand Side Unit**.

Demand Side Unit Import Capacity

The import value (in MW, MVA) nominated by the **Dispatchable Demand Customer** for each **Individual Demand Site** within the Demand Side Unit.

Minimum Down Time

~~In the case of Demand Side Units, the minimum period of time during which Demand Reduction at a Demand Side Unit can be Dispatched.~~

~~In the case of~~ **Generation Units**, the minimum time that must elapse from the time a **Generation Unit De-Synchronises** until the next **Start-Up**.

In the case of **Demand Side Units**, the minimum time that must elapse while the **Demand Side Unit MW Response** is at zero until the next delivery of **Demand Side Unit MW Response**.

Maximum Down Time

~~The maximum period of time during which Demand Reduction at a Demand Side Unit can be Dispatched.~~

In the case of a **Demand Side Unit**, the maximum period of time during which **Demand Side Unit MW Response** can be greater than zero.

Demand Side Unit MW Response

The proportion (in **MW**) of the **Demand Side Unit MW Capacity** that is delivered at a given time following a dispatch instruction from the **TSO**. This value will be zero unless dispatched by the **TSO**.

Planning Code Appendix

In the Planning Code Appendix, section 5, changes are required to include the Capability for the Demand Side Unit to export MW on to the system.

PC.A5: Dispatchable Demand Customers

For each **Dispatchable Demand Customer**, the following information shall be provided:

- (a) Name of **Demand Side Unit**;
- (b) Location of **Demand Site(s)**;
- (c) The name of the **Transmission Station(s)** to which the **Demand Site(s)** is/are normally connected;
- (d) Total **Demand ~~Reduction~~ Side Unit MW ~~Capacity~~ Capability(MW)**;
- (e) **Demand ~~Reduction~~ Side Unit MW ~~Capacity~~ Capability**-available from on-site **Generation** (MW);
- (f) **Demand ~~Reduction~~ Side Unit MW ~~Capacity~~ Capability** available from avoided **Demand** consumption (MW);
- (g) Annual **Demand Side Unit Demand Energy Profile**.

For each **Dispatchable Demand Customer** which represents an **Aggregated Demand Site**, the following additional information shall be provided:

- (h) **Demand ~~Reduction~~ Side Unit MW ~~Capacity~~ Capability** per **Individual Demand Site** (MW);
- (i) **Demand ~~Reduction~~ Side Unit MW ~~Capacity~~ Capability** from **Generation** per **Individual Demand Site** (MW);;
- (j) **Demand ~~Reduction~~ Side Unit MW ~~Capacity~~ Capability** from avoided **Demand** consumption per **Individual Demand Site** (MW);;
- (k) **Demand Side Unit Export Capacity** per **Individual Demand Site** (MW);
- (l) **Demand Side Unit Import Capacity** per **Individual Demand Site** (MW);
- (m) Annual **Demand Side Unit Energy Profile** per **Individual Demand Site**.

Connection Conditions

CC.7.4 Each **Demand Side Unit** shall, as a minimum, have the following capabilities:

- (a) Able to provide **Demand ~~Reduction~~ Side Unit MW Response** between 0 MW and the **Demand ~~Reduction~~ Side Unit MW ~~Capacity~~ Capability**;
- (b) **Max Ramp Up Rate** not less than 1.5% of **Demand ~~Reduction~~ Side Unit MW ~~Capacity~~ Capability** per minute when the **Demand Side Unit** is in **Normal Dispatch Condition**;
- (c) **Max Ramp Down Rate** not less than 1.5% of **Demand ~~Reduction~~ Side Unit MW ~~Capacity~~ Capability** per minute when the **Demand Side Unit** is in **Normal Dispatch Condition**;
- (d) **Minimum Down Time** not greater than 30 minutes for **Demand Side Units**; and
- (e) **Maximum Down Time** not less than 2 hours for **Demand Side Units**.

CC.12 SIGNALS TO BE PROVIDED BY USERS

CC.12.1 Each **User** shall provide such signals and indications in relation to the **User's Plant** and **Apparatus** as are required by the **TSO** (acting reasonably) in accordance with the **Connection Agreement**.

CC.12.2 Signals and indications required to be provided by **Users** will include but shall not be limited to the following:

(l) ~~and (m) and (n)~~ are applicable to **Dispatchable Demand Customers** who represent a **Demand Side Unit**. ~~For each which consists of an Individual Demand Site (for the purposes of testing):~~

~~a. MW and Mvar +/- at alternator terminals of each Generator where applicable;~~

(l) Measured or derived **MW Output** for each **Generator** ~~at the HV terminals of the Grid Connected Transformer~~ at the **Control Facility** of the **Dispatchable Demand Customer**; and

(m) **Demand Reduction Side Unit MW Response** aggregated at the **HV terminals of the Grid Connected Transformer**. **Control Facility** of the **Dispatchable Demand Customer**.

(n), (o) ~~(q) and (r)~~ are applicable to **Dispatchable Demand Customers** who represent a **Demand Side Unit** which consists on an **Aggregated Demand Site**:

~~(n) The aggregated MW and +/- Mvar aggregated at alternator terminals of each Generator where applicable;~~

~~(o) Where requested by the TSO, the MW and Mvar of each Individual Demand Site at the alternator terminals of each Generator where applicable;~~

(n) The aggregated, measured or derived **loss adjusted MW** output for each **Generator Individual Demand Site**, aggregated ~~at the HV terminals of the Grid Connected Transformer where applicable~~ **Control Facility of the Dispatchable Demand Customer**; and

(o) The aggregated **Demand Reduction Side Unit MW Response** aggregated at the **HV terminals of the Grid Connected Transformer** **Control Facility of the Dispatchable Demand Customer**.

Operational Planning

OC2 shall apply to all proposed **Outages** that may affect the ability of a **Generation Unit, Aggregated Generating Unit** and **Demand Side Unit** to achieve, in accordance with its **Registered Operating Characteristics**, either its full **Registered Capacity**, appropriate to each **Registered Fuel**, or its **Demand Reduction Side Unit MW Capacity Capability** as the case maybe.

OC2.2 OBJECTIVE

The primary objective of OC2 is to promote the development and implementation of a co-ordinated **Generation Outage Programme**, consistent with security of supply and requirements for the secure and economic operation of the **Transmission System** and the **Other Transmission System**, and with the needs of **Generators, Generator Aggregators** or **Dispatchable Demand Customers** in respect of **Plant** maintenance requirements and resource limitations.

In order to achieve this objective, OC2 defines:

- (a) the procedure for formal notification of **Outages** by **Generators, Generator Aggregators, and Dispatchable Demand Customers** ~~and Demand Side Aggregators~~ to the **TSO**;

Information Exchange

OC7.2.4.3.6 For **Dispatchable Demand Customers**, the **Control Facility** shall be staffed by a **Responsible Operator(s)** who shall respond to communications from the **TSO** without undue delay (except where otherwise provided for by agreement between the **Dispatchable Demand Customer** and the **TSO**, such agreement not to be unreasonably withheld) and are of suitable experience and training and are authorised to perform functions on behalf of the **Dispatchable Demand Customer** as follows:

- (a) to accept and execute **Dispatch Instructions**;
- (b) to receive and acknowledge receipt of requests, for amongst other matters, operation outside the **Declared** values of **Demand** ~~Reduction-Side Unit MW Availability~~.

OC7.2.4.3.7 The **Responsible Manager** shall be authorised by the **Dispatchable Demand Customer** to perform the following functions on behalf of the **Dispatchable Demand Customer**:

- (a) to make estimates in accordance with **Good Industry Practice** as to the **Demand** ~~Reduction-Side Unit MW Availability~~;
- (b) to make **Declarations** of the **Demand** ~~Side Unit MW Availability~~ for ~~each~~ the **Dispatchable Demand Customer**; and
- (c) to communicate with respect to issues regarding **Outages** of each **Individual** ~~Demand Site~~ **within the Demand Side Unit [DSU]**.

The **Dispatchable Demand Customer** may, from time to time, notify a replacement contact location and personnel which meets the foregoing requirements.

Operational Testing

OC8.1.2 By their nature, **Operational Tests** may impinge on either or both of:

- (a) the **TSO's** responsibilities in respect of the **Transmission System**, including **Dispatch** of generation and **Demand** ~~Reduction-Side Unit MW Availability~~; and
- (b) the operations of **Users** and the quality and continuity of supply of electricity to **Users**.

Monitoring, Testing and Investigation

OC10.4.5.2 Compliance of **Demand Side Units** with **Dispatch Instructions**

The following validation will be performed in real time:

- (i) For a **Demand Side Unit** or **Aggregated Demand Side Unit** which achieves the **Demand Reduction-Side Unit MW Response** only by operating a **Generator** or **Generators**, the **Demand Side Unit** or the **Aggregated Demand Side Unit** shall be deemed compliant if the **SCADA** signal confirms that the increased output of the generation is within 5% of the **Demand Reduction-Side Unit MW Response**.

The following validation will be performed on a needs-be basis and will not be performed in real time:

- (ii) For a **Demand Side Unit** or **Aggregated Demand Side Unit** which achieves the **Demand Reduction-Side Unit MW Response** only by reducing their **Demand**, the **Demand Side Unit** or the **Aggregated Demand Side Unit** shall be deemed to be compliant with the **Dispatch Instruction** if the difference between the **Demand Side Unit Energy Profile** and the metered **Demand** plus the **Demand Reduction-Side Unit MW Response** is within 5%.
- (iii) For a **Demand Side Unit** or **Aggregated Demand Side Unit** which achieves the **Demand Reduction-Side Unit MW Response** by reducing their **Demand** and operating a generator or generators, the **Demand Side Unit** or the **Aggregated Demand Side Unit** shall be deemed to be compliant with the **Dispatch Instruction** if the difference between the **Demand Side Unit Energy Profile** and the metered **Demand** plus the **Demand Reduction-Side Unit MW Response** is within 5%.
- (iv) For **Demand Side Units** which are not **Dispatched** but have been declared **Available** in an **Availability Notice**, the **Demand Side Unit** shall be deemed to be compliant with its declared **Demand Side Unit Energy Profile** if the difference between the **Demand Side Unit Energy Profile** and the metered **Demand** is within 5%.

OC10.7.5.2 In the event that the performance of a **Demand Side Unit** is deemed by the **TSO** in accordance with the provisions of this OC10 to be in non-compliance with its **Operating Characteristics**, including **Demand Side Unit Energy Profile**, or with a **Connection Condition**, then the **TSO** shall notify the **Dispatchable Demand Customer** or the **Aggregator** of the non-compliance and the **Dispatchable Demand Customer** shall take immediate action to remedy such non compliance. The terms of this OC10.7.5 shall be without prejudice to the rights of the **TSO** to **De-energise** the **Demand Site** and **Apparatus** in accordance with the terms of OC9.6.

Scheduling and Dispatch

SDC1.4 PROCEDURESDC1.4.1 Availability NoticeSDC1.4.1.1 Requirement

- (a) Each **User** shall, by not later than **Gate Closure** each day, notify the **TSO** by means of an **Availability Notice** (in such form as the **TSO** may reasonably notify from time to time or in the form published on the **TSO** website) of the **Availability**, available transfer capacity and/or **Demand Reduction-Side Unit MW Availability** (as the case may be) of each of its:
- (i) **CDGUs**;
 - (ii) **Controllable WFPSs**;
 - (iii) **Pumped Storage Plant Demand**;
 - (iv) **Interconnectors** (to be submitted by the **Interconnector Owner**);
 - (v) **Demand Side Units**; or
 - (vii) **Aggregated Generating Units** as the case may be.

SDC1.4.1.2 Content

- (a) The **Availability Notice** shall state the:
- (i) **Availability** of the relevant:
 - **CDGU**; or
 - **Controllable WFPSs**; or
 - (ii) the **Demand Reduction-Side Unit MW Availability** of the **Demand Side Unit** or **Pumped Storage Plant Demand**; or

SDC1.4.3.4 Availability of Demand Side Units

Each **Dispatchable Demand Customer** shall, subject to the exceptions in SDC1.4.3.5, use reasonable endeavours to ensure that it does not at any time declare the **Demand Reduction-Side Unit MW Availability** and the **Demand Side Unit** characteristics of its **Demand Side Unit** at levels or values different from those that the **Demand Side Unit** could achieve at the relevant time. The **TSO** can reject declarations to the extent that they do not meet these requirements.

SDC1.4.3.5 SDC1.4.3.4 shall not apply to the extent:

- (a) it would require the **Dispatchable Demand Customer** to declare levels or values better than **Registered Demand Side Unit MW Capacity** and **Technical Parameters** as submitted under the Planning Code in respect of a **Demand Side Unit**;
- (b) necessary during periods of **Scheduled Outage** or **Short Term Scheduled Outage** or otherwise with the consent of the **TSO**;
- (c) necessary while repairing or maintaining the **Demand Side Unit** or equipment necessary to the operation of the **Demand Side Unit** where such repair or maintenance cannot reasonably, in accordance with **Prudent Utility Practice**, be deferred to a period of **Scheduled Outage** or **Short Term Scheduled Outage**.
- (d) necessary to avoid an imminent risk of injury to persons or material damage to property (including the **Demand Side Unit**);

- (e) it is not lawful for the **Dispatchable Demand Customer** to ~~reduce its Demand~~ **change its Demand Side Unit MW Response** or to operate its **Demand Side Unit**.

SDC1.4.3.6 Changes in Availability:

- (a) Increasing: If a **Generator**, a **Generator Aggregator** or a **Dispatchable Demand Customer** in respect of a **CDGU**, an **Aggregated Generating Unit**, a **Demand Side Unit** or **Pumped Storage Plant** in relation to **Demand**, issues an **Availability Notice** increasing (from zero or otherwise) the level of **Availability** or **Demand Reduction Side Unit MW Availability** from a specified time, such notice shall be construed as meaning that:
- (i) in the case of a **CDGU** and/or **Aggregated Generating Unit**, the **CDGU** and/or **Aggregated Generating Unit** is capable of being synchronised to the **Transmission System** or **Distribution System** at that specified time or increasing its **MW Output** at that specified time as the case may be;
 - (ii) in the case of a **CDGU** which is an **Open Cycle Gas Turbine**, the **CDGU** is capable of being started at that specified time; or
 - (iii) in the case of a **Demand Side Unit**, the **Demand Side Unit** is capable of delivering ~~subsequent~~ a greater **Demand Side Unit MW Response Reduction(s)** at that specified time.

SDC1.4.4.2 Additional Grid Code Characteristics Notice

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

- (d) In relation to each **Demand Side Unit**, the **Demand Side Unit Energy Profile** and the **Initial Demand Side Unit Response Reduction Time**.

SDC1.4.4.4 Other Relevant Data

By not later than **Gate Closure** each day, each **User** in respect of each of its **Plant**, shall in respect of the following **Trading Day** submit to the **TSO** in writing in the form set out on the **TSO** website or in such other form as the **TSO** may reasonably notify to each **User** from time to time), details in relation to the following **Trading Day** of any newly arisen special factors, including abnormal risk to loss, which in the reasonable opinion of the **User** may have a material effect on the likely **MW Output** or **Demand Reduction Side Unit MW Response** of such **Plant** (including, for a **CCGT Installation** in relation to each of the **CCGT Units** therein). The notice shall be consistent with the **User's** obligations under SDC1.4.3.2. The provisions of this paragraph also apply to **Interconnector Owners** in relation to their **Interconnector Filters**.

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

- (ii) as will in aggregate (after taking into account electricity delivered other than from **CDGUs**, **Controllable WFPSs**, **Aggregated Generating Units**, and/or **Interconnector** tranches and variation in **Demand** from **Pumped Storage Plant Demand** and **Demand Side Units**) be sufficient to match at all times (to the extent possible having regard to the **Availability** or **Demand Reduction Side Unit MW Availability** of **CDGUs**, **Controllable WFPSs**, **Pumped Storage Plant Demand**, **Demand Side Units**,

Aggregated Generating Units and **Interconnector** tranches) the forecast aggregated **Demand** (derived under OC1 of the **Grid Code** and the **Other Grid Code**) together with such margin of reserve as the **TSO** working in conjunction with the **Other TSO** shall consider to be appropriate; and

SDC1.4.8.5 After the completion of the **Scheduling** process, but before the issue of **Indicative Operations Schedule**, the **TSO** may consider it necessary to make adjustments to the **MW Output** as determined by the **Scheduling** process. Such adjustments could be made necessary by any of the following factors (and the equivalent factors on the **Other Transmission System** which will be so dealt with separately by the **Other TSO**):

(a) changes to **Availability** or **Demand Reduction-Side Unit MW Availability** and/or **Technical Parameters** of **CDGUs** and/or **Controllable WFPS** and/or **Aggregated Generating Units** and/or **Demand Side Units** notified to the **TSO** after the commencement of the **Scheduling** process;

SDC1.4.8.7 (a) The **Synchronising** and **De-Synchronising** times (and, in the case of **Pumped Storage Plant Demand**, the relevant effective time) shown in the **Indicative Operations Schedule** are indicative only and it should be borne in mind by **Users** that the **Dispatch Instructions** could reflect more or different **CDGU**, **Aggregated Generating Unit** and/or **Controllable WFPS**, **Pumped Storage Plant Demand** and/or **Aggregate Generating Unit** requirements than in the **Indicative Operations Schedule**. The **TSO** may issue **Dispatch Instructions** in respect of any **CDGU** and/or **Aggregated Generating Unit**, **Controllable WFPS**, **Pumped Storage Plant Demand** or **Aggregated Generating Unit** which has not declared an **Availability** or **Demand Reduction-Side Unit MW Availability** of 0 MW in an **Availability Notice**. **Users** with **CDGUs** and/or **Aggregated Generating Units**, **Controllable WFPS**, **Pumped Storage Plant Demand** shall ensure that their units are able to be **Synchronised**, or in the case of **Pumped Storage Plant Demand**, used at the times **Scheduled**, but only if so **Dispatched** by the **TSO** by issue of a **Dispatch Instruction**. **Users** shall, as part of a revision to the **Technical Parameters**, indicate to the **TSO** the latest time at which a **Dispatch Instruction** is required to meet the scheduled **Synchronising** time or in the case of **Pumped Storage Plant Demand**, the **Scheduled** relevant effective time.

(b) The provisions of SDC1.4.8.7(a) shall apply to **Demand Side Units** with the exception that reference to relevant effective time shall be read as a reference to **Initial Demand Side Unit Response Reduction Time**.

Technical Parameter	CDGU				Contr ol WFPS	DSU		Ag g. Ge n	CDG U <10 MW	Pum p Stor ag Dem and
	Therma l	Hydr / En Ltd	Disp. WFP S	Pum p S Gen		Individu al Deman d Site	Aggreg ated Deman d Sites			
Loading Rate Hot (3)	✓				-				✓	
Loading Rate Warm (1)	✓								✓	
Loading Rate Warm (2)	✓								✓	
Loading Rate Warm (3)	✓								✓	
Max Ramp Down Rate (shall be a number greater than zero)						✓	✓			
Max Ramp Up Rate (shall be a number greater than zero)						✓	✓			
Maximum Down Time						✓	✓			
Maximum Generation / Registered Capacity	✓	✓	✓	✓	✓				✓	
Maximum On Time	✓	✓	✓	✓	✓				✓	
Maximum Storage Capacity				✓						
Minimum Down Time						✓	✓			
Minimum Generation	✓	✓	✓	✓	✓				✓	
Minimum off time	✓	✓	✓	✓	✓				✓	
Minimum on time	✓	✓	✓	✓	✓				✓	
Minimum Storage Capacity				✓						✓✓
(Other relevant technical parameters)	✓	✓	✓	✓	✓			✓	✓	
Pumping capacity				✓						✓
Ramp Down Break Point 1	✓	✓	✓	✓	✓			✓	✓	
Ramp Down Break Point 2	✓	✓	✓	✓	✓			✓	✓	
Ramp Down Break Point 3	✓	✓	✓	✓	✓			✓	✓	
Ramp Down Break Point 4	✓	✓	✓	✓	✓			✓	✓	
Ramp Down Rate 1	✓	✓	✓	✓	✓			✓	✓	
Ramp Down Rate 2	✓	✓	✓	✓	✓			✓	✓	
Ramp Down Rate 3		✓	✓	✓	✓			✓		
Ramp Down Rate 4	✓	✓	✓	✓	✓			✓	✓	
Ramp Down Rate 5	✓	✓	✓	✓	✓			✓	✓	
Ramp Up Break Point 1	✓	✓	✓	✓	✓			✓	✓	
Ramp Up Break Point 2	✓	✓	✓	✓	✓			✓	✓	
Ramp Up Break Point 3	✓	✓	✓	✓	✓			✓	✓	
Ramp Up Break Point 4	✓	✓	✓	✓	✓			✓	✓	
Ramp Up Rate 1	✓	✓	✓	✓	✓			✓	✓	
Ramp Up Rate 2	✓	✓	✓	✓	✓			✓	✓	
Ramp Up Rate 3	✓	✓	✓	✓	✓			✓	✓	
Ramp Up Rate 4	✓	✓	✓	✓	✓			✓	✓	
Ramp Up Rate 5	✓	✓	✓	✓	✓			✓	✓	
Short Term Maximisation Capability	✓	✓	✓	✓	✓				✓	
Soak Time Cold (1)	✓	✓	✓	✓	✓				✓	

Technical Parameter	CDGU				Contr ol WFPS	DSU		Ag g. Ge n	CDG U <10 MW	Pum p Stor ag Dem and
	Therma l	Hydr / En Ltd	Disp. WFP S	Pum p S Gen		Individu al Deman d Site	Aggreg ated Deman d 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)	✓								✓	
Synchronous Start-Up Time Cold	✓	✓	✓	✓	✓				✓	
Synchronous Start-Up Time Hot	✓	✓	✓	✓	✓				✓	
Synchronous Start-Up Time Warm	✓								✓	
Target Reservoir Level Percentage				✓						✓
Start of Restricted Range 1	✓	✓	✓	✓	✓				✓	
End of Restricted Range 1	✓	✓	✓	✓	✓				✓	
Start of Restricted Range 2	✓	✓	✓	✓	✓				✓	
End of Restricted Range 2	✓	✓	✓	✓	✓				✓	

Part 1. Technical Parameters

- SDC2.4.2.9 (a) To preserve **System** integrity under emergency circumstances where, for example, **Licence Standards** cannot be met the **TSO** may, however, issue **Dispatch Instructions** to change **CDGU**, **Aggregated Generating Units**, **Demand Side Unit**, **Interconnector transfers** and/or **Pumped Storage Plant Demand MW Output** or **Demand ~~Reduction 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.
- SDC2.4.2.13 (a) Subject to the exception set out below in this SDC2.4.2.13, **Generators** will only **Synchronise** or **de-Synchronise CDGUs** to the **Dispatch Instructions** of the **TSO** or unless it occurs automatically as a result of **Special Protection Schemes** or **Low Frequency Relay** operations. Subject to the exception set out below in this SDC2.4.2.13, **Dispatchable Demand Customers** will only reduce or increase their **Demand ~~Reduction Side Unit MW Response~~** to the **Dispatch Instructions** of the **TSO** or unless it occurs automatically as a result of **Special Protection Schemes** or **Low Frequency Relay** operations.
- (b) **De-Synchronisation** may otherwise only take place without the **TSO's** prior agreement if it is to avoid, in the **Generator's** reasonable opinion, an imminent risk of injury to persons or material damage to property (including the **CDGU**). **Demand Side Units**, who cannot maintain the provision of any **Demand ~~Reduction Side Unit MW Response~~**, may otherwise only take place without the **TSO's** prior agreement if it is to avoid, in the **Dispatchable Demand Customer's** reasonable opinion, an imminent risk of injury to persons or material damage to property (including the **Demand Side Unit**).
- SDC2.A.2.2 The **Dispatch Instruction** given by **Electronic Interface**, telephone, or facsimile transmission will normally follow the form:
- (a) where appropriate, the specific **CDGU** or **User's Plant** to which the instruction applies;
- (b) the **MW Output** (or **Demand ~~Reduction Side Unit MW Response~~**) to which it is instructed;
- SDC2.A.12 **Dispatching a Demand Side Unit to ~~increase or decrease~~ change Demand ~~Reduction Side Unit MW Response~~**
- SDC2.A.12.1 If the time of the **Dispatch Instruction** is 1400 hours, the Unit is Unit 1 and the **Demand ~~Reduction Side Unit MW Response~~** to be achieved is 25 **MW**, the relevant part of the instruction would be, for example:
"Time 1400 hours. Unit 1 25 **MW**"
- SDC2.A.12.2 If the start time is 1415 hours, it would be, for example:
"Time 1400 hours. Unit 1 25 **MW**, start at 1415 hours"
- SDC2.A.13 **Dispatching a Demand Side Unit to an Initial Demand ~~Reduction Side Unit Response~~**
- SDC2.A.13.1 In this instance, for **Demand Side Units**, the **Dispatch Instruction** issue time will always have due regard for the **Initial Demand ~~Reduction Side Unit Response Time~~** declared to the **TSO** by the **Dispatchable Demand Customer** as a **Technical Parameter** or as part of **Additional Grid Code Characteristics Notice** data.
- The instruction will follow the form, for example:
- "Time 1300 hours. Unit 1, **Initial Demand Side Unit Response Reduction** at 1600 hours"

In relation to an instruction to the **Initial Demand Side Unit Response Reduction**, the start time referred to in SDC2.A.12.1 will be deemed to be the time at which **Initial Demand Side Unit MW Response Reduction** is to take place.