GC0100: Code Admin Consultation Responses

Grid Code Administrator Consultation Response Proforma

GC0100 – EU Connection Codes GB Implementation – Mod 1

Industry parties are invited to respond to this consultation expressing their views and supplying the rationale for those views, particularly in respect of any specific questions detailed below.

Please send your responses by **5pm on 2 February 2018** to Grid.Code@nationalgrid.com. Please note that any responses received after the deadline or sent to a different email address may not receive due consideration.

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Respondent:	*Andy Vaudin* *andrew.vaudin@edfenergy.com*
Company Name:	*EDF Energy*
	For reference the applicable Grid Code objectives are: *(i) to permit the development, maintenance and operation of an efficient, coordinated and economical system for the transmission of electricity;* *(ii) to facilitate competition in the generation and supply of electricity (and without limiting the foregoing, to facilitate the national electricity transmission system being made available to persons authorised to supply or generate electricity on terms which neither prevent nor restrict competition in the supply or generation of electricity);* *(iii) subject to sub-paragraphs (i) and (ii), to promote the security and efficiency of the electricity generation, transmission and distribution systems in the national electricity transmission system operator area taken as a whole;* *(iv) to efficiently discharge the obligations imposed upon the licensee by this license and to comply with the Electricity Regulation and any relevant legally binding decisions of the European Commission and/or the Agency; and* *(v) To promote efficiency in the implementation and administration of the Grid Code arrangements.*

1. Do you believe GC0100 or its alternative solution better facilitates the Applicable Grid Code Objectives? Please include your reasoning	Both options implement EU regulations. The original proposal is preferred based on the system security and operability justifications in the workgroup report for proposing lower banding thresholds.
2. Do you support the proposed implementation approach? If not, please provide reasoning why.	Yes.
3. Do you have any other comments?	None

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Respondent:	*Bernard Gospel (Technical Secretary)*
Company Name:	*The Association of Manufacturers of Power generating Systems (AMPS)* *The Association for Decentralised Energy (ADE)* *Joint Submission*
	For reference the applicable Grid Code objectives are: *(i) to permit the development, maintenance and operation of an efficient, coordinated and economical system for the transmission of electricity;* *(ii) to facilitate competition in the generation and supply of electricity (and without limiting the foregoing, to facilitate the national electricity transmission system being made available to persons authorised to supply or generate electricity on terms which neither prevent nor restrict competition in the supply or generation of electricity);* *(iii) subject to sub-paragraphs (i) and (ii), to promote the security and efficiency of the electricity generation, transmission and distribution systems in the national electricity transmission system operator area taken as a whole;* *(iv) to efficiently discharge the obligations imposed upon the licensee by this license and to comply with the Electricity Regulation and any relevant legally binding decisions of the European*

	Commission and/or the Agency; and *(v) To promote efficiency in the implementation and administration of the Grid Code arrangements.*
1. Do you believe GC0100 or its alternative solution better facilitates the Applicable Grid Code Objectives? Please include your reasoning	The original better facilitates the Grid Code objectives than the WACM. The 10MW band B-C threshold enables separation of reciprocating generation in band B from turbines in band C, thus permitting the setting of the FRT parameter Uret to levels that are economically achievable by the respective technologies.
2. Do you support the proposed implementation approach? If not, please provide reasoning why.	Yes
3. Do you have any other comments?	The setting of Uret to the highest permissible level for band B synchronous generators is crucial to the small synchronous generator industry as lower values are impractical and uneconomic to support.

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Respondent:	*Greg Middleton MSc Principal Engineer* *Greg.middleton@deepseaplc.com* *01723 890099*
Company Name:	*Deep Sea Electronics Plc*
	For reference the applicable Grid Code objectives are: *(i) to permit the development, maintenance and operation of an efficient, coordinated and economical system for the transmission of electricity;* *(ii) to facilitate competition in the generation and supply of electricity (and without limiting the foregoing, to facilitate the national electricity transmission system being made available to persons authorised to supply or generate electricity on terms which neither prevent nor restrict competition in the supply or generation of electricity);* *(iii) subject to sub-paragraphs (i) and (ii), to promote the security and efficiency of the electricity generation, transmission and distribution systems in the national electricity transmission system operator area taken as a whole;* *(iv) to efficiently discharge the obligations imposed upon the licensee by this license and to comply with the Electricity Regulation and any relevant legally binding decisions of the European Commission and/or the Agency; and* *(v) To promote efficiency in the implementation and*

	administration of the Grid Code arrangements.
1. Do you believe GC0100 or its alternative solution better facilitates the Applicable Grid Code Objectives? Please include your reasoning	The original better facilitates the Grid Code objectives than the WACM. The 10MW band B-C threshold enables separation of reciprocating generation in band B from turbines in band C, thus permitting the setting of the FRT parameter Uret to levels that are economically achievable by the respective technologies.
2. Do you support the proposed implementation approach? If not, please provide reasoning why.	Yes
3. Do you have any other comments?	The setting of Uret to the highest permissible level for band B synchronous generators is crucial to the small synchronous generator industry as lower values are impractical and uneconomic to support.

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Respondent:	*Please insert your name and contact details* *Steve Cox* *Steve.cox@enwl.co.uk*
Company Name:	*Electricity North West*
	For reference the applicable Grid Code objectives are: *(i) to permit the development, maintenance and operation of an efficient, coordinated and economical system for the transmission of electricity;* *(ii) to facilitate competition in the generation and supply of electricity (and without limiting the foregoing, to facilitate the national electricity transmission system being made available to persons authorised to supply or generate electricity on terms which neither prevent nor restrict competition in the supply or generation of electricity);* *(iii) subject to sub-paragraphs (i) and (ii), to promote the security and efficiency of the electricity generation, transmission and distribution systems in the national electricity transmission system operator area taken as a whole;* *(iv) to efficiently discharge the obligations imposed upon the licensee by this license and to comply with the Electricity Regulation and any relevant legally binding decisions of the European Commission and/or the Agency; and*

	(v) To promote efficiency in the implementation and administration of the Grid Code arrangements.
1. Do you believe GC0100 or its alternative solution better facilitates the Applicable Grid Code Objectives? Please include your reasoning	Yes
2. Do you support the proposed implementation approach? If not, please provide reasoning why.	Yes
3. Do you have any other comments?	None

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Respondent:	Alastair Frew
Company Name:	ScottishPower Generation
	For reference the applicable Grid Code objectives are: *(i) to permit the development, maintenance and operation of an efficient, coordinated and economical system for the transmission of electricity;* *(ii) to facilitate competition in the generation and supply of electricity (and without limiting the foregoing, to facilitate the national electricity transmission system being made available to persons authorised to supply or generate electricity on terms which neither prevent nor restrict competition in the supply or generation of electricity);* *(iii) subject to sub-paragraphs (i) and (ii), to promote the security and efficiency of the electricity generation, transmission and distribution systems in the national electricity transmission system operator area taken as a whole;* *(iv) to efficiently discharge the obligations imposed upon the licensee by this license and to comply with the Electricity Regulation and any relevant legally binding decisions of the European Commission and/or the Agency; and* *(v) To promote efficiency in the implementation and administration of the Grid Code arrangements.*

1. Do you believe GC0100 or its alternative solution better facilitates the Applicable Grid Code Objectives? Please include your reasoning	We believe alternative WACM1 is better as per reasoning given in WACM1 proposal.
2. Do you support the proposed implementation approach? If not, please provide reasoning why.	Yes
3. Do you have any other comments?	No

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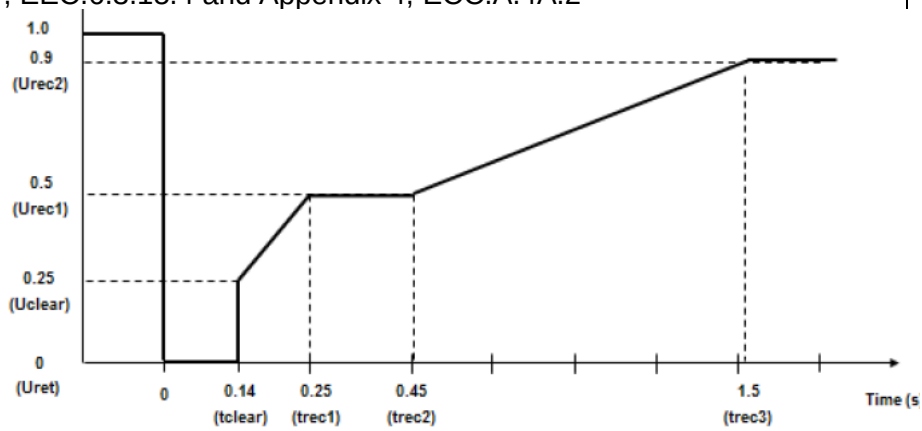
Respondent:	*Andrejs Svalovs, andrejs_svalovs@ge.com*
Company Name:	*GE Power*
	For reference the applicable Grid Code objectives are: *(i) to permit the development, maintenance and operation of an efficient, coordinated and economical system for the transmission of electricity;* *(ii) to facilitate competition in the generation and supply of electricity (and without limiting the foregoing, to facilitate the national electricity transmission system being made available to persons authorised to supply or generate electricity on terms which neither prevent nor restrict competition in the supply or generation of electricity);* *(iii) subject to sub-paragraphs (i) and (ii), to promote the security and efficiency of the electricity generation, transmission and distribution systems in the national electricity transmission system operator area taken as a whole;* *(iv) to efficiently discharge the obligations imposed upon the licensee by this license and to comply with the Electricity Regulation and any relevant legally binding decisions of the European Commission and/or the Agency; and* *(v) To promote efficiency in the implementation and administration of the Grid Code arrangements.*
1. Do you believe GC0100 or its alternative solution better facilitates the Applicable Grid Code Objectives? Please	Yes, for the national implementation of the Connection Codes

include your reasoning	
2. Do you support the proposed implementation approach? If not, please provide reasoning why.	Yes
3. Do you have any other comments?	FRT, EEC.6.3.15.4 and Appendix 4, ECC.A.4A.2  Figure ECC.6.3.15.4 - Voltage against time curve applicable to **Type D Syn** It is our understanding that the bold line in Figure ECC.6.3.15.4 shows the definite voltage profile at a Grid Entry Point for the time range 0-140ms; the profile after 140ms has a different meaning, namely a grid response to a fault which the plant should withstand. This is supported by Figure EA.4.2(a). Would it be more profitable to mark the definite voltage profile and the limiting grid response components in a different way for easer understanding. Maximum Capacity or Pmax in G&D In regards to the Combined Cycle Power Plant, a reference to Pmax is not absolutely clear, as the CC output depends on the ambient conditions. Please clarify how the ambient conditions are considered for this definition as applies to combined cycle.

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Respondent:	*Dr. Isaac Gutierrez* *Senior Electrical Engineer* *Telephone number work: 01416143104* *Mobile: 07761693652* *Email: igutierrez2@scottishpower.com*
Company Name:	*Scottishpower Renewable ltd (UK)*
	For reference the applicable Grid Code objectives are: *(i) to permit the development, maintenance and operation of an efficient, coordinated and economical system for the transmission of electricity;* *(ii) to facilitate competition in the generation and supply of electricity (and without limiting the foregoing, to facilitate the national electricity transmission system being made available to persons authorised to supply or generate electricity on terms which neither prevent nor restrict competition in the supply or generation of electricity);* *(iii) subject to sub-paragraphs (i) and (ii), to promote the security and efficiency of the electricity generation, transmission and distribution systems in the national electricity transmission system operator area taken as a whole;* *(iv) to efficiently discharge the obligations imposed upon the licensee by this license and to comply with the Electricity Regulation and any relevant legally binding decisions of the European Commission and/or the Agency; and*

	(v) To promote efficiency in the implementation and administration of the Grid Code arrangements.
1. Do you believe GC0100 or its alternative solution better facilitates the Applicable Grid Code Objectives? Please include your reasoning	Yes
2. Do you support the proposed implementation approach? If not, please provide reasoning why.	No, timescales for implementation of the modifications are being rushed and a grace period shall be implemented so developers that are in contract negotiations with manufacturer of generating equipment now are not penalised later with additional cost in order to meet the new Grid Code requirements
3. Do you have any other comments?	No

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Respondent:	*Dr. Tim Ellingham* *Connections Manager* *RWE Supply and Trading, RWE Generation* *Windmill Hill* *Swindon* *SN5 6PB*
Company Name:	**RWE Generation UK**
	For reference the applicable Grid Code objectives are: *(i) to permit the development, maintenance and operation of an efficient, coordinated and economical system for the transmission of electricity;* *(ii) to facilitate competition in the generation and supply of electricity (and without limiting the foregoing, to facilitate the national electricity transmission system being made available to persons authorised to supply or generate electricity on terms which neither prevent nor restrict competition in the supply or generation of electricity);* *(iii) subject to sub-paragraphs (i) and (ii), to promote the security and efficiency of the electricity generation, transmission and distribution systems in the national electricity transmission system operator area taken as a whole;* *(iv) to efficiently discharge the obligations imposed upon the licensee by this license and to comply with the Electricity Regulation and any relevant legally binding decisions of the European*

	Commission and/or the Agency; and *(v) To promote efficiency in the implementation and administration of the Grid Code arrangements.*

1. Do you believe GC0100 better facilitates the Applicable Grid Code Objectives? Please include your reasoning

In its current form the proposed modification does not facilitate the Grid Code objectives in efficiently discharging the obligation imposed by legally binding decisions of the European Commission.

2. Do you support the proposed implementation approach? If not, please provide reasoning why.

Context:
This modification will set out within the Grid Code the following compliance obligations in the EU Connection Codes:

1. Scope and applicability of the RfG, DCC and HVDC requirements for GB users
2. Set the four Type (A-D) MW banding levels for GB, as required in RfG
3. Set the GB Fast Fault Current Injection parameters, as set out in RfG
4. Set the GB Fault ride through requirements, as set out in RfG and HVDC

RWE believes that on the grounds of inconsistency with the EU Regulation definitions; this code cannot be fully appraised on implementation approach. Specifically, RWE believes that the following definitions require significant amendment prior to the code entering into UK legislation.

1 Code applicability following plant modification

1.1 APPLICATION TO EXISTING POWER-GENERATING MODULES

The following is the core text from the Requirements for Generators (EU) 2016/631

Article 4

Application to existing power-generating modules

1. Existing power-generating modules are not subject to the requirements of this Regulation, except where:

(a) a type C or type D power-generating module has been modified to such an extent that its connection agreement must be substantially revised in accordance with the following procedure:

(i) power-generating facility owners who intend to undertake the modernisation of a plant or replacement of equipment impacting the technical capabilities of the power-generating module shall notify their plans to the relevant system operator

in advance;

(ii) if the relevant system operator considers that the extent of the modernisation or replacement of equipment is such that a new connection agreement is required, the system operator shall notify the relevant regulatory authority or, where applicable, the Member State; and

(iii) the relevant regulatory authority or, where applicable, the Member State shall decide if the existing connection agreement needs to be revised or a new connection agreement is required and which requirements of this Regulation shall apply; or

(b) a regulatory authority or, where applicable, a Member State decides to make an existing power-generating module subject to all or some of the requirements of this Regulation, following a proposal from the relevant TSO in accordance with paragraphs 3, 4 and 5.

2. For the purposes of this Regulation, a power-generating module shall be considered existing if:

(a) it is already connected to the network on the date of entry into force of this Regulation; or

(b) the power-generating facility owner has concluded a final and binding contract for the purchase of the main generating plant by two years after the entry into force of the Regulation. The power-generating facility owner must notify the relevant system operator and relevant TSO of conclusion of the contract within 30 months after the entry into force of the Regulation.

Looking at it in step-wise fashion:

1. Existing power-generating modules are not subject to the requirements of this Regulation

Where Existing power-generating modules are defined as:

2. For the purposes of this Regulation, a power-generating module shall be considered existing if:

(a) it is already connected to the network on the date of entry into force of this Regulation; or

This encompasses a station already connected but let's look at the exception:

, except where:

(a) a type C or type D power-generating module has been modified to such an extent that its connection agreement must be substantially revised in accordance with the following procedure:

It is not clear what constitutes a substantially revised connection agreement, but this may be a misleading term given the prescribed procedure:

(i) power-generating facility owners who intend to undertake the modernisation of a plant

or replacement of equipment impacting the technical capabilities of the power-generating module shall notify their plans to the relevant system operator in advance;

Any work, as described, needs to be notified to the SO.
The SO now has to evaluate the modification:

(ii) if the relevant system operator considers that the extent of the modernisation or replacement of equipment is such that a new connection agreement is required, the system operator shall notify the relevant regulatory authority or, where applicable, the Member State; and

The SO only has the ability to decide whether a **new** connection agreement is needed and not if a revised one is needed. A plant modification to an existing plant would not need a new connection agreement, therefore, the matter will not make it to the regulatory authority (Ofgem) for them to decide, and even if it did, a new connection agreement would still not be needed and it is highly improbable, and challengeable, that the regulatory authority would decide that one is. To reiterate, if a no new connection agreement is required then the matter of complying with RfG is over and does not need to be passed to the regulatory authority.
If it is decided that a new connection agreement is likely, then the SO has to refer to the regulatory authority.

(iii) the relevant regulatory authority or, where applicable, the Member State shall decide if the existing connection agreement needs to be revised or a new connection agreement is required and which requirements of this Regulation shall apply; or

Now the regulatory authority decides on what happens to the connection agreement and what, if any, element of the RfG apply.
However, in the proposed implementation of the RfG into the Grid Code (GC0100 to 0102) this process has been denied to the regulatory Authority (OFGEM) by introducing the term of Substantial Modification and its associated definition:

Substantial Modification	A **Modification** in relation to modernisation or replacement of the **User's Main Plant and Apparatus**, which, following notification by the relevant **User** to **NGET**, results in substatantial [sic] amendment to the **Bilateral Agreement** and which need not have a **Material Effect** on **NGET** or a **User**.

Substantial Modification is used in the determination of whether the system User is a GB Code User or an EU Code User. The determination should be based on the need of a new Connection Agreement and not a substantial modification of the Connection Agreement. The decision as to whether a user is a GB or EU Code User is to be determined by the Regulatory Authority after the relevant SO has decided a new Connection Agreement is required. By introducing the term 'Substantial Modification' National Grid have given themselves the power of judging whilst circumventing the requirement to engage the Regulatory Authority/Ofgem.

1.1.1 DEFINITION OF GB CODE USER

GB Code User	A **User** in respect of:- (a) A **Generator** or **OTSDUA** who's **Main Plant and Apparatus** is connected to the **System** before 17 May 2019, or who had concluded **Purchase Contracts** for its **Main Plant and Apparatus** before 17 May 2018, or whose **Plant and Apparatus** is not the subject of a **Substantial Modification** which is effective on or after 17 May 2019. (b) A **DC Converter Station** owner whose **Main Plant and Apparatus** is connected to the **System** before 28 September 2019, or who had concluded **Purchase Contracts** for its **Main Plant and Apparatus** before 28 September 2018, or whose **Plant and Apparatus** is not the subject of a **Substantial Modification** which is effective on or after 28th September 2019. (c) A **Network Operator** or **Non Embedded Customer** whose **Main Plant and Apparatus** was connected to the **System** before 7 September 2018 or who had placed **Purchase Contracts** for its **Main Plant and Apparatus** before 7 September 2018 or has not **Substantially Modified** their **Plant and Apparatus** after 7 September 2018.

We believe there are two issues with this definition:

1. The test of Substantial Modification is redundant due to the reasons already raised and 'whose **Plant and Apparatus** is not the subject of a **Substantial Modification**' should be replaced 'whose **Plant and Apparatus** is not the subject to a new **Connection Agreement**'
2. The use of 'or' before the statement in (1.) above:

   ', or whose Plant and Apparatus'
   should be changed to an 'and' otherwise by being connected to the System before 17 may 2019 will always make you a GB code user regardless of a new Connection Agreement

To be clear, GB Code user would now read:

A **User** in respect of:-

(a) A **Generator** or **OTSDUA** who's **Main Plant and Apparatus** is connected to the **System** before 17 May 2019, or who had concluded **Purchase Contracts** for its **Main Plant and Apparatus** before 17 May 2018; and whose **Plant and Apparatus** is not subject to a new **Connection Agreement** which is effective on or after 17 May 2019.

1.1.2 DEFINITION OF EU CODE USER

EU Code User	A **User** who is any of the following:- (a) A **Generator** in respect of a **Power Generating Module** (excluding a **DC Connected Power Park Module**) or **OTSDUA** (in respect of an AC **Offshore Transmission System**) whose **Main Plant and Apparatus** is connected to the **System** after 17 May 2019 and who concluded **Purchase Contracts** for its **Main Plant and Apparatus** after 17 May 2018 (b) A **Generator** in respect of any **Type C** or **Type D Power Generating Module** which is the subject of a **Substantial Modification** which is effective on or after 17 May 2019. (c) A **Generator** in respect of any **DC Connected Power Park Module** whose **Main Plant and Apparatus** is connected to the **System** after 28 September 2019 and who had concluded **Purchase Contracts** for its **Main Plant and Apparatus** after 28 September 2018. (d) A **Generator** in respect of any **DC Connected Power Park Module** which is the subject of a **Substantial Modification** which is effective on or after 28 September 2019. (e) An **HVDC System Owner** or **OTSDUA** (in respect of a DC **Offshore Transmission System** including a **Transmisison** [sic] **DC Converter**) whose **Main Plant and Apparatus** is connected to the **System** after 28 September 2019 and who had concluded **Purchase Contracts** for its **Main Plant and Apparatus** after 28 September 2018. (f) An **HVDC System Owner** or **OTSDUA** (in respect of a DC **Offshore Transmission System** including a **Transmisison** [sic] **DC Converter**) whose **HVDC System** or DC **Offshore Transmission System** including a **Transmission DC Converter**) is the subject of a **Substantial Modification** on or after 28 September 2019. (g) A **User** which the **Authority** has determined should be considered as an **EU Code User**.

Here we see Substantial Modification being applied as a test where, as mentioned before, the test is if a new Connection Agreement is required. EU Code User should therefore be along the lines of:

A **User** who is any of the following:-

…

(b) A **Generator** in respect of any **Type C** or **Type D Power Generating Module** which is subject to a new **Connection Agreement** which is effective on or after 17 May 2019.

…

3. Do you have any other comments?

In order to better facilitate the conditions of EC directives we propose a change to the Definitions and Glossary legal text for **EU Code User** and **GB Code User** as follows:

GB Code User	A **User** in respect of:- (a) A **Generator** or **OTSDUA** who's **Main Plant and Apparatus** is connected to the **System** before 17 May 2019, or who had concluded **Purchase Contracts** for its **Main Plant and Apparatus** before 17 May 2018, and which is not subject to a new **Connection Agreement** which is effective on or after 17 May 2019. (b) A **DC Converter Station** owner whose **Main Plant and Apparatus** is connected to the **System** before 28 September 2019, or who had concluded **Purchase Contracts** for its **Main Plant and Apparatus** before 28 September 2018, or whose **Plant and Apparatus** is not subject to a new **Connection Agreement** which is effective on or after 28th September 2019. (c) A **Network Operator** or **Non Embedded Customer** whose **Main Plant and Apparatus** was connected to the **System** before 7 September 2018 or who had placed **Purchase Contracts** for its **Main Plant and Apparatus** before 7 September 2018 and is not subject to a new **Connection Agreement** in relation to their **Plant and Apparatus effective** after 7 September 2018.

EU Code User	A **User** who is any of the following:- (a) A **Generator** in respect of a **Power Generating Module** (excluding a **DC Connected Power Park Module**) or **OTSDUA** (in respect of an AC **Offshore Transmission System**) whose **Main Plant and Apparatus** is connected to the **System** after 17 May 2019 and who concluded **Purchase Contracts** for its **Main Plant and Apparatus** after 17 May 2018 (b) A **Generator** in respect of any **Type C** or **Type D Power Generating Module** which is subject to a new **Connection Agreement** which is effective on or after 17 May 2019. (c) A **Generator** in respect of any **DC Connected Power Park Module** whose **Main Plant and Apparatus** is connected to the **System** after 28 September 2019 and who had concluded **Purchase Contracts** for its **Main Plant and Apparatus** after 28 September 2018. (d) A **Generator** in respect of any **DC Connected Power Park Module** which is subject to a new **Connection Agreement** which is effective on or after 28 September 2019. (e) An **HVDC System Owner** or **OTSDUA** (in respect of a DC **Offshore Transmission System** including a **Transmission DC Converter**) whose **Main Plant and Apparatus** is connected to the **System** after 28 September 2019 and who had concluded **Purchase Contracts** for its **Main Plant and Apparatus** after 28 September 2018. (f) An **HVDC System Owner** or **OTSDUA** (in respect of a DC **Offshore Transmission System** including a **Transmission DC Converter**) whose **HVDC System** or DC **Offshore Transmission System** including a **Transmission DC Converter**) is the subject to a new **Connection Agreement** on or after 28 September 2019. (g) A **User** which the **Authority** has determined should be considered as an **EU Code User**.

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Respondent:	*Paul Youngman* *paul.youngman@Drax.com*
Company Name:	*Drax Power Limited*
	For reference the applicable Grid Code objectives are: *(i) to permit the development, maintenance and operation of an efficient, coordinated and economical system for the transmission of electricity;* *(ii) to facilitate competition in the generation and supply of electricity (and without limiting the foregoing, to facilitate the national electricity transmission system being made available to persons authorised to supply or generate electricity on terms which neither prevent nor restrict competition in the supply or generation of electricity);* *(iii) subject to sub-paragraphs (i) and (ii), to promote the security and efficiency of the electricity generation, transmission and distribution systems in the national electricity transmission system operator area taken as a whole;* *(iv) to efficiently discharge the obligations imposed upon the licensee by this license and to comply with the Electricity Regulation and any relevant legally binding decisions of the European Commission and/or the Agency; and* *(v) To promote efficiency in the implementation and administration of the Grid Code arrangements.*

1. Do you believe GC0100 or its alternative solution better facilitates the Applicable Grid Code Objectives? Please include your reasoning	The original GC0100 better satisfies the applicable grid code objectives. It satisfies objective (iv) to the extent that it introduces into the Grid code EU Regulation 2016/631. The modification can also be seen as enabling aspects of Objective (i) and (iii) relating to the efficient maintenance and operation of the system and enhancing aspects of security of supply. It is debatable that the provisions and method of implementation will satisfy and enhance competition (ii) or that the chosen option of a wider implementation scope, rather than a narrow minimum implementation meets the efficiency criteria in section (v)
2. Do you support the proposed implementation approach? If not, please provide reasoning why.	We offer qualified support of the proposals. From workgroup discussion it is clear that the proposer has included all changes mandated by the regulation to ensure compliance, and also defined some additional requirements and parameters that are not mandated. We feel it may have been more efficient to implement an enabling mod that would implement the EU requirements narrowly, and then separately define elements that may need to be enhanced in the national codes.
3. Do you have any other comments?	No comment given.

Grid Code Administrator Consultation Response Proforma

GC0102 – EU Connection Codes GB Implementation – Mod 3

Industry parties are invited to respond to this consultation expressing their views and supplying the rationale for those views, particularly in respect of any specific questions detailed below.

Please send your responses by **5pm on 2 February 2018** to Grid.Code@nationalgrid.com. Please note that any responses received after the deadline or sent to a different email address may not receive due consideration.

These responses will be included in the Report to the Authority which is drafted by National Grid and submitted to the Authority for a decision.

Respondent:	*Alan Creighton*
Company Name:	*Northern Powergrid*
	For reference the applicable Grid Code objectives are: *(i) to permit the development, maintenance and operation of an efficient, coordinated and economical system for the transmission of electricity;* *(ii) to facilitate competition in the generation and supply of electricity (and without limiting the foregoing, to facilitate the national electricity transmission system being made available to persons authorised to supply or generate electricity on terms which neither prevent nor restrict competition in the supply or generation of electricity);* *(iii) subject to sub-paragraphs (i) and (ii), to promote the security and efficiency of the electricity generation, transmission and distribution systems in the national electricity transmission system operator area taken as a whole;* *(iv) to efficiently discharge the obligations imposed upon the licensee by this license and to comply with the Electricity Regulation and any relevant legally binding decisions of the European Commission and/or the Agency; and* *(v) To promote efficiency in the implementation and administration of the Grid Code arrangements.*
1. Do you believe GC0102 or its	Our comments relate generally to GC0100,

alternative solution better facilitates the Applicable Grid Code Objectives? Please include your reasoning	GC0101 and GC0102. We believe that the Original proposals better facilitate the GCode objectives (i), (ii) and (iii) as they facilitate the implementation of the EU RfG network code in an open and transparent manner.
2. Do you support the proposed implementation approach? If not, please provide reasoning why.	Yes
3. Do you have any other comments?	We have two observations related to the draft code changes: **Glossary and Definitions** included as GC0100. There are some changes which are DCC related rather than RfG related; it is inappropriate to include these in a RfG focussed change. Of particular concern is the definition of a GB Code User. The proposed definition of a GB Code User c) A **Network Operator** or **Non Embedded Customer** whose **Main Plant and Apparatus** was connected to the **System** before 7 September 2018 or who had placed **Purchase Contracts** for its **Main Plant and Apparatus** before 7 September 2018 or has not **Substantially Modified** their **Plant and Apparatus** after 7 September 2018. Should be changed to: c) A **Network Operator** or **Non Embedded Customer.** **DRC**. Schedule 11 page 68 is unclear whether DNOs are required to report the number of Generation Units or PGMs installed at a Power Station.

Grid Code Administrator Consultation Response Proforma

GC0100 – EU Connection Codes GB Implementation – Mod 1

Industry parties are invited to respond to this consultation expressing their views and supplying the rationale for those views, particularly in respect of any specific questions detailed below.

Please send your responses by **5pm on 2 February 2018** to Grid.Code@nationalgrid.com. Please note that any responses received after the deadline or sent to a different email address may not receive due consideration.

These responses will be included in the Report to the Authority which is drafted by National Grid and submitted to the Authority for a decision.

Respondent:	*Rob Wilson* *Robert.wilson2@nationalgrid.com* *07799 656402*
Company Name:	*National Grid*
	For reference the applicable Grid Code objectives are: *(i) to permit the development, maintenance and operation of an efficient, coordinated and economical system for the transmission of electricity;* *(ii) to facilitate competition in the generation and supply of electricity (and without limiting the foregoing, to facilitate the national electricity transmission system being made available to persons authorised to supply or generate electricity on terms which neither prevent nor restrict competition in the supply or generation of electricity);* *(iii) subject to sub-paragraphs (i) and (ii), to promote the security and efficiency of the electricity generation, transmission and distribution systems in the national electricity transmission system operator area taken as a whole;* *(iv) to efficiently discharge the obligations imposed upon the licensee by this license and to comply with the Electricity Regulation and any relevant legally binding decisions of the European Commission and/or the Agency; and* *(v) To promote efficiency in the implementation and*

	administration of the Grid Code arrangements.
1. Do you believe GC0100 or its alternative solution better facilitates the Applicable Grid Code Objectives? Please include your reasoning	National Grid as the GB SO supports the original proposal for the RfG banding thresholds in GC0100 which better facilitates the applicable objectives. An assessment of the original proposal against the Grid Code objectives is as follows: *i. To permit the development, maintenance and operation of an efficient, coordinated and economical system for the transmission of electricity* Positive. In developing this code modification the task of the workgroup has been to find a balance between the costs that will be incurred by owners of equipment in complying with a more onerous specification and the benefit to the system in avoiding operational costs that would otherwise be incurred in providing support due to the connection of less capable equipment. This is also the aim of the European Network Codes as stated by ENTSO-E and is particularly important given the development of the system and the shift in the generation portfolio from larger, centrally despatched units to smaller and embedded renewable generation. *ii. To facilitate competition in the generation and supply of electricity (and without limiting the foregoing, to facilitate the national electricity transmission system being made available to persons authorised to supply or generate electricity on terms which neither prevent nor restrict competition in the supply or generation of electricity)* Positive. Ofgem have made clear during the workgroup proceedings that their decisions will be based on evidence in both directions – ie that where choices are made these are based on a tipping point being reached where the costs of choosing more onerous settings is evidenced to outweigh the operational benefit. Evidence supporting the National Grid proposal is provided in the report. *iii. Subject to sub-paragraphs (i) and (ii), to promote the security and efficiency of the electricity generation, transmission and distribution systems in the national electricity transmission system operator area taken as a whole* Positive, as stated above, in making balanced

	choices for the overall benefit of the end consumer. *iv. To efficiently discharge the obligations imposed upon the licensee by this license and to comply with the Electricity Regulation and any relevant legally binding decisions of the European Commission and/or the Agency; and* Positive. This modification is required to implement elements of the 3 European Connection Codes forming part of the suite of European Network Codes resulting from the EU 3rd Package legislation (EC 714/2009). *v. To promote efficiency in the implementation and administration of the Grid Code arrangements* Neutral. So as noted, the GC0100 original proposal better facilitates objectives (i)-(iv) and is neutral against objective (v). Providing that this was evidenced, the alternative proposal for the type or banding thresholds could fulfil the same objectives. However, while National Grid's original proposal sets out the system benefits, no incremental costs to generators have been identified in setting the banding thresholds to the original rather than alternative values hence there is no rationale to choose the alternative rather than original values and the original is therefore a more efficient solution against each of objectives (i) – (iv). The original is also a better harmonised solution with other member states and existing GB thresholds and better facilitates the connection of small scale generation whilst providing greater total system benefits. Finally, in progressing the work on RfG parameters it was found necessary to provide demarcation between smaller reciprocating engines (mainly diesel generators) and larger gas turbines to avoid compromising a class of generator by setting an unachievable value of post-fault retained voltage. The B/C threshold of 10MW achieves this whilst also maintaining operational support hence the need for a B/C threshold of 10MW.
2. Do you support the proposed implementation approach? If not, please provide reasoning why.	Yes.

3. Do you have any other comments?	No.