nationalgrid

Stage 01: Modification Proposal

Grid Code

GC0117:

Mod Title: Improving transparency and consistency of access arrangements across GB by the creation of a pan-GB commonality of PGM requirements.

What stage is this document at?

01	Modification Proposal
02	Workgroup Report
03	Code Admin Consultation
04	Draft Final Modification Report
05	Report to the Authority

Purpose of Modification:

This modification will set out within the Grid Code the common GB obligations in the EU Connection Codes as they relate to the specification of certain items by certain obligated party or parties.

The Proposer recommends that this modification should be: assessed by a Workgroup to form the final proposals for the mod and then proceed to Workgroup Consultation.

This modification was raised *on* ***20 June 2018*** *and* will be presented by the Proposer to the Panel on ***28 June 2018*****.** The Panel will consider the Proposer's recommendation and determine the appropriate route.

High Impact: None

Medium Impact: Transmission Owners (including OFTOs and Interconnectors), Distribution Network Operators, Transmission System Users System Operator and Generators

Low Impact: None

Contents

Any Questions?

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Timetable

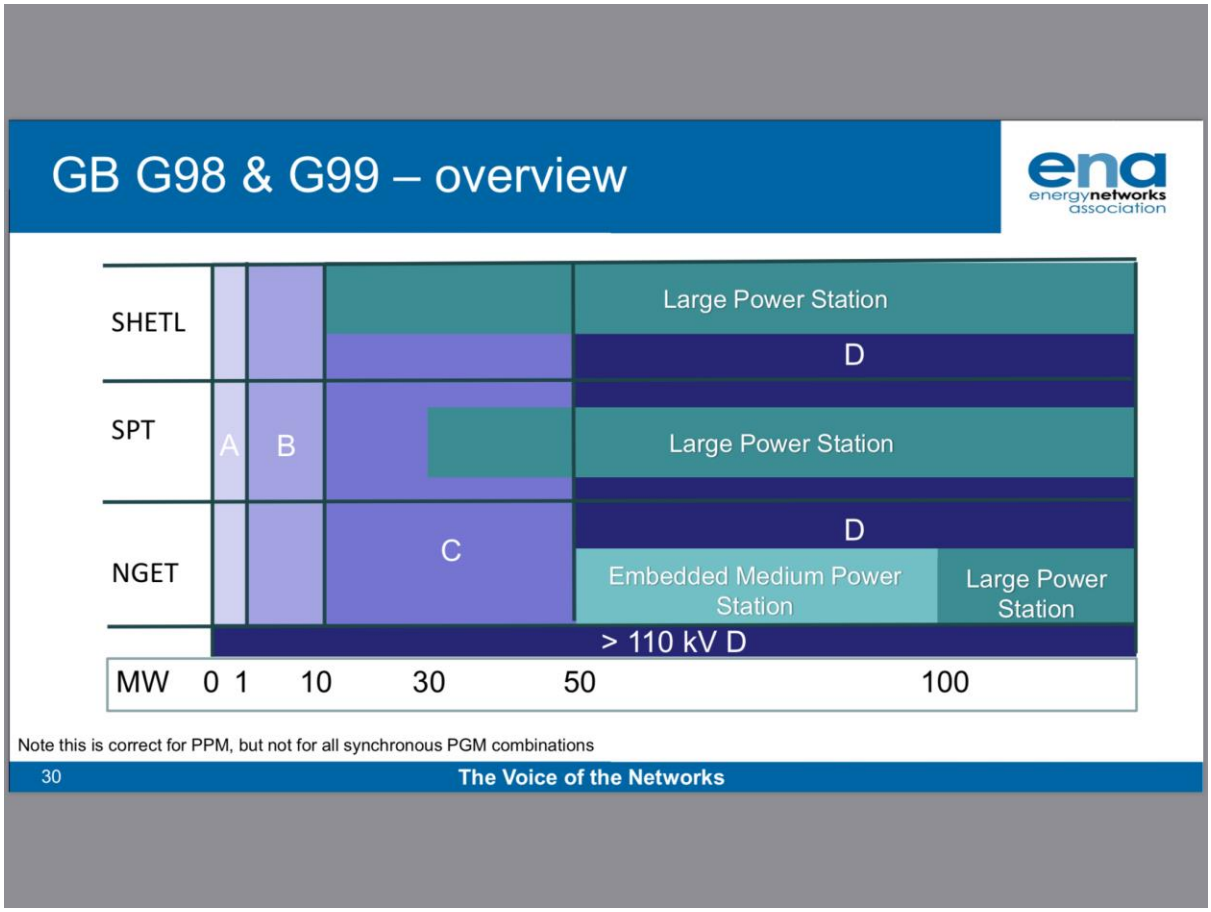
The Code Administrator will recommend a timetable for approval at the Grid Code Panel meeting on 28 June 2018.	
Workgroup Meeting 1	
Workgroup Meeting 2	
Workgroup Meeting 3	
Workgroup Report presented to Panel	
Code Administration Consultation Report issued to the Industry	
Draft Final Modification Report presented to Panel	
Modification Panel decision	
Final Modification Report issued the Authority	
Decision implemented in Grid Code	

1 Summary

Defect

The Grid Code does not currently apply a consistency of access arrangements across GB and, as such, does not assist the creation of a pan-GB market for power generating module (PGM) technology, by increasing the commonality of PGM requirements.

This was illustrated in a presentation[1] at a recent workshop hosted by ENA in Glasgow:



This shows that there are, for example, three different sets of requirements applicable to a Type C generator depending on where in GB it is connected. Similarly, there are two different sets of requirements applicable to a Type D generator in England and Wales, depending on whether its capacity is above or below 100 MW.

The additional requirements that currently apply to the same generator 'Type' (e.g. Type C or Type D) within the single GB synchronous area are contrary to the spirit and purpose of the European Network Codes and will continue to lead to unintended consequences that do not benefit the consumer or enhance the efficient and effective operation of the System.

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1 http://www.dcode.org.uk/assets/uploads/ENA_RFG_Breifing_slides_including_G98_and_G99_launch_event_final_c.pdf

For example, the current baseline arrangement appear to lead to the unintended consequence of deliberate under-sizing of generators to fit below an arbitrary MW threshold which varies depending on where in GB the plant is located, leading to a loss of economy of scale and particularly for renewable generation, a reduced ability to efficiently exploit the available energy resource, which ultimately is reflected in a higher cost of production and a greater cost to end consumers.

It has also, anecdotally, had other potentially perverse outcomes, such as of the dearth of small-scale thermal generation being built in recent times in Scotland. This, in turn, is leading to knock-on effects from lack of synchronous generation on the embedded system (e.g. lower fault level, system inertia).

What

The Grid Code will need to be amended to apply a single, harmonised, common minimum requirement, across GB for generators of Types (B?) C and D by removing the need for multiple Large (Medium) and Small category of power station across GB

Why

Guidance from BEIS and Ofgem was to apply the new EU requirements within the existing GB regulatory frameworks. This would provide accessibility and familiarity to GB parties, as well as putting in place a robust governance route to apply the new requirements in a transparent and proportionate way.

Recital (27) of the RfG[2] also sets out that:

"*The regulatory authorities, Member States and system operators should ensure that, in the process of developing and approving the requirements for network connection, they are harmonised to the extent possible, in order to ensure full market integration*." [emphasis added]

How

With the support of the industry, we will use this modification to finalise the solution to apply the EU Connection Codes requirements, before consulting with the wider industry and submitting to Ofgem for a decision.

[2] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32016R0631&from=EN

2 Governance

Given the materiality, complexity and wide-ranging impact of the changes proposed in this Modification, the Proposer believes that self-governance or fast track governance arrangements are not appropriate in this case.

This modification should:

- be assessed by a Workgroup

3 Why Change?

This Proposal is one of a number of Proposals which seek to implement relevant provisions of a number of new EU Network Codes/Guidelines which have been introduced in order to enable progress towards a competitive and efficient internal market in electricity.

Some EU Network Codes/ Guidelines are still in development and these may in due course require a review of solutions developed for those Network Codes/ Guidelines that come into force beforehand. The full set of EU Network Codes/ Guidelines are:

- Regulation 2015/1222 – Capacity Allocation and Congestion Management (CACM) which entered into force 14 August 2015
- Regulation 2016/1719 – Forward Capacity Allocation (FCA) which entered into force 17 October 2016
- *Regulation 2016/631 - Requirements for Generators (RfG) which entered into force 17 May 2016*
- *Regulation 2016/1388 - Demand Connection Code (DCC) which entered into force 7 September 2016*
- *Regulation 2016/1447 - High Voltage Direct Current (HVDC) which entered into force 28 September 2016*
- Transmission System Operation Guideline (TSOG) - entry into force anticipated Summer 2017
- Emergency and Restoration (E&R) Guideline - entry into force anticipated Autumn 2017

The RfG (EU) Network Code was drafted to facilitate greater connection of renewable generation; improve security of supply; and enhance competition to reduce costs for end consumers, across EU Member States.

The code specifically sets out, in Recitals (3) and (27), the need for *harmonised* technical standards for the connection of new generation.

Significant work to progress GB understanding of these codes and consider the approach for implementation has been undertaken in Grid Code/Distribution Code groups such as GC0100, GC0101 and GC0102.

However, this has not considered applying a consistency of access arrangements across the whole GB system which would assist the creation of a pan-GB market for power generating module (PGM) technology, by increasing the commonality of PGM requirements.

Applying a consistency of access arrangements across GB "…*should help improve competition between manufacturers and make it cheaper to build PGM technology, thus reducing costs for consumers*"[3] as neither manufactures or generators will need to develop / specify different requirements for the same sized

[3] Ofgem decision letters, dated 15th May 2018, for GC0100, GC0101, GC0102 and the Distribution Code GC0102/DCRP change.

plant depending on whether they are connecting in Carlisle, Glasgow or Perth; a distance of circa 150 miles (from Carlisle to Perth); or between Carlisle and Penzance, a distance of circa 450 miles.

Furthermore, achieving "…*harmonise systems across the ~~internal~~ [GB] energy market should help make it easier and more efficient to operate the electricity system, by introducing a common, clear set of requirements which every new connection to the electricity network will need to meet*.[4]"

Implementation of this change "*… should also help facilitate competition in the generation of electricity by improving transparency and consistency of access arrangements across different electricity systems in ~~Europe~~ [GB]. This removes a potential barrier to entry and allows market participants to trade between Member States more easily by ensuring that there is a level playing field in terms of connection requirements, thus improving competition in generation*"[5] [emphasis added] as generation plant of the same size will treated in a non-discriminatory manner across the whole of the GB system.

The "*European Regulations [such as the RfG] intend to deliver a harmonised set of rules for the operation of the electricity sector in Europe. The European Regulations aim to help ensure security of supply, facilitate the decarbonisation of the energy sector and create a competitive, pan-European market which benefits consumers*[6]."

This Modification aims "*to introduce commonality and reduce complexity of arrangements across ~~member states~~ [GB]. This should improve the security and efficiency of the system as a whole and encourage further harmonisation thereby providing a clear and predictable framework from which to operate by. This, in turn, should encourage increased standardisation of equipment and specifications across the whole of ~~the EU~~ [GB] and lead to improved economies of scale and increased interconnection driving improved security of supply. We therefore consider that ~~both~~ [the] modification~~s~~ will promote the security and efficiency of the electricity generation, transmission and distribution systems*.[7]"

[4] Ofgem decision letters, dated 15th May 2018, for GC0100, GC0101, GC0102 and the Distribution Code GC0102/DCRP change.
[5] Ofgem decision letters, dated 15th May 2018, for GC0102 and the Distribution Code C0102/DCRP change.
[6] Ofgem decision letters, dated 15th May 2018, for GC0100, GC0101, GC0102 and the Distribution Code GC0102/DCRP change.
[7] Ofgem decision letters, dated 15th May 2018, for GC0100, GC0101, GC0102 and the Distribution Code GC0102/DCRP change.

4 Code Specific Matters

Technical Skillsets

- Understanding of the GB regulatory frameworks (particularly Grid Code)
- High level understanding of the EU Network Codes/ Guidelines and their potential impact
- Operational/technical understanding of equipment which are bound by these codes
- Where appropriate, knowledge of the obligations and operational processes of GB Network Operators and the GB National Electricity Transmission System Operator

Reference Documents

Network Code on Requirements for Grid Connection of Generators (RfG) legal text:

https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32016R0631&from=EN

5 Solution

A single, common, harmonised solution would apply across the whole of GB.

Currently, there are up to three different applications of 'Large', 'Medium'[8] and 'Small' depending simply on to which of the three onshore TO systems a generator connects. Further details on what these are can found below by reference to the current (16th May 2018 version) of the Grid Code.

As noted in Section 1, with the support of the industry, we will use this modification to finalise the solution to apply the EU Connection Codes requirements, before consulting with the wider industry and submitting to Ofgem for a decision.

Given the above, there appears to be six broad options of what a **single**, common, harmonised solution could look like by replacing the existing Small / (Medium[9]) / Large with a single threshold: including:

1. Applying the present 'North of Scotland' threshold of 10 MW in the 'South of Scotland' and England & Wales;
2. Applying the present 'South of Scotland' level threshold of 30 MW in the 'North of Scotland' and England & Wales;
3. Applying the present England & Wales level threshold of 50 MW in the 'South of Scotland' and the 'North of Scotland'; or
4. Applying the level based on the RfG Types (B?) C and D thresholds; or
5. Applying the level based on other figures than those associated with the four options above.
6. A further option variation could be centred around removing all references to 'Small', 'Medium' and 'Large'.

For the avoidance of doubt, this proposal would only relate to '*New*' generation connections and not to '*Existing*' generation connections (based on the definitional approach of '*New*' and '*Existing*' contained in the RfG).

However, where, in accordance with Article 4(1) of the RfG, an *Existing* Type C or Type D has been modified to such an extent that its connection agreement must be substantially revised then it shall, at the same time its connection agreement is so revised / amended (if applicable), be re-classified according to the proposed solution from its E*xisting* 'Small', ('Medium') or 'Large' level to the *New* 'Small', ('Medium') or 'Large' level.

Thus, for example, if hypothetically Option 1 were implemented then an existing 40MW plant in England & Wales which would currently be classified as 'Small' would, if their plant were 'substantially modified' (as per Article 4(1)), be reclassified as 'Large' once their connection agreement was revised / amended. Conversely, if, in similar circumstances, Option 3 were adopted, then an

[8] 'Medium' is used in England and Wales, but not in Scotland (north or south).
[9] As noted, 'Medium' is currently a term used in E&W only. If option 3 were adopted then, as part of the solution, the 'Medium' term – and threshold - would also be applied in Scotland as part of the single, harmonised, common approach across GB.

equivalent 40MW plant in the North of Scotland would become ‘Small’ (from their current ‘Large’ classification).

[Current, baseline, Grid Code definition[10] of ‘Small’, ‘Medium’ and ‘Large’.]

Small Power Station

A **Power Station** which is

(a) directly connected to:

(i) **NGET’s Transmission System** where such **Power Station** has a **Registered Capacity** of less than 50MW; or
(ii) **SPT’s Transmission System** where such **Power Station** has a **Registered Capacity** of less than 30MW; or
(iii) **SHETL’s Transmission System** where such a **Power Station** has a **Registered Capacity** of less than 10 MW; or
(iv) an **Offshore Transmission System** where such **Power Station** has a **Registered Capacity** of less than 10MW; or,

(b) **Embedded** within a **User System** (or part thereof) where such **User System** (or part thereof) is connected under normal operating conditions to:
(i) **NGET’s Transmission System** and such **Power Station** has a **Registered Capacity** of less than 50MW; or
(ii) **SPT’s Transmission System** and such **Power Station** has a **Registered Capacity** of less than 30MW; or
(iii) **SHETL’s Transmission System** and such **Power Station** has a **Registered Capacity** of less than 10MW; or,

(c) **Embedded** within a **User System** (or part thereof) where the **User System** (or part thereof) is not connected to the **National Electricity Transmission System**, although such **Power Station** is in:
(i) **NGET’s Transmission Area** and such **Power Station** has a **Registered Capacity** of less than 50MW; or
(ii) **SPT’s Transmission Area** and such **Power Station** has a **Registered Capacity** of less than 30MW; or
(iii) **SHETL’s Transmission Area** and such **Power Station** has a **Registered Capacity** of less than 10MW;

For the avoidance of doubt a **Small Power Station** could comprise of **Type A**, **Type B**, **Type C** or **Type D Power Generating Modules**.

Medium Power Station

A **Power Station** which is

(a) directly connected to **NGET’s Transmission System** where such **Power Station** has a **Registered Capacity** of 50MW or more but less than 100MW;
or,
(b) **Embedded** within a **User System** (or part thereof) where such **User System** (or part thereof) is connected under normal operating conditions to **NGET’s Transmission System** and such **Power Station** has a **Registered Capacity** of 50MW or more but less than 100MW;
or,

10 https://www.nationalgrid.com/sites/default/files/documents/04_GLOSSARY_DEFINITIONS_I5R22_0.pdf

(c) **Embedded** within a **User System** (or part thereof) where the **User System** (or part thereof) is not connected to the **National Electricity Transmission System**, although such **Power Station** is in **NGET's Transmission Area** and such **Power Station** has a **Registered Capacity** of 50MW or more but less than 100MW.

For the avoidance of doubt a **Medium Power Station** could comprise of **Type A**, **Type B**, **Type C** or **Type D Power Generating Modules**.

Large Power Station

A **Power Station** which is

(a) directly connected to:
(i) **NGET's Transmission System** where such **Power Station** has a **Registered Capacity** of 100MW or more; or
(ii) **SPT's Transmission System** where such **Power Station** has a **Registered Capacity** of 30MW or more; or
(iii) **SHETL's Transmission System** where such **Power Station** has a **Registered Capacity** of 10MW or more; or
(iv) an **Offshore Transmission System** where such **Power Station** has a **Registered Capacity** of 10MW or more; or,

(b) **Embedded** within a **User System** (or part thereof) where such **User System** (or part thereof) is connected under normal operating conditions to:
(i) **NGET's Transmission System** and such **Power Station** has a **Registered Capacity** of 100MW or more; or
(ii) **SPT's Transmission System** and such **Power Station** has a **Registered Capacity** of 30MW or more; or
(iii) **SHETL's Transmission System** and such **Power Station** has a **Registered Capacity** of 10MW or more; or,

(c) **Embedded** within a **User System** (or part thereof) where the **User System** (or part thereof) is not connected to the **National Electricity Transmission System**, although such **Power Station** is in:
(i) **NGET's Transmission Area** where such **Power Station** has a **Registered Capacity** of 100MW or more; or
(ii) **SPT's Transmission Area** where such **Power Station** has a **Registered Capacity** of 30MW or more; or
(iii) **SHETL's Transmission Area** where such **Power Station** has a **Registered Capacity** of 10MW or more;

For the avoidance of doubt a **Large Power Station** could comprise of **Type A**, **Type B**, **Type C** or **Type D Power Generating Modules**.

6 Impacts and Other Considerations

i. The Grid Code will bear the primary impact of the EU Connection Code modification. Some consequential changes are possible in the STC code, the Distribution Code and BSC.

ii. The Transmission/Distributions connections processes will need to be slightly altered to ensure they accommodate the new EU requirements as set out in the modified Grid Code.

iii. No system changes are anticipated as a result of implementing the EU Connection Codes

Does this modification impact a Significant Code Review (SCR) or other significant industry change projects, if so, how?

The EU Network Codes/ Guidelines implementation is being undertaken as a substantial programme of work within the GB industry. However, this modification does not impact on any on-going SCR.

Consumer Impacts

This modification facilitates the implementation of consistent technical standards across the EU for the connection of new generation.

7 Relevant Objectives

Impact of the modification on the Relevant Objectives:	
Relevant Objective	**Identified impact**
To permit the development, maintenance and operation of an efficient, coordinated and economical system for the transmission of electricity The proposed solution will harmonise systems across the internal and, in particular the GB, energy market which should help make it easier and more efficient to operate the electricity system, by introducing a common, clear set of requirements which every new connection to the electricity network will need to meet.	**Positive**
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) Implementation of the proposed solution should help facilitate competition in the generation of electricity by improving transparency and consistency of access arrangements across different electricity systems in GB. This removes a potential barrier to entry and allows market participants to trade between Member States more easily by ensuring that there is a level playing field in terms of connection requirements, thus improving competition in generation. The proposed solution should assist the creation of a pan-European and pan-GB market for power generating module (PGM) technology, by increasing the commonality of PGM requirements. This should help improve competition between manufacturers and make it cheaper to build PGM technology, thus reducing costs for consumers.	**Positive**
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 The proposed solution aims to introduce commonality and reduce complexity of arrangements across Member States, and within GB in particular. This should improve the security and efficiency of the system as a whole. This should materialise through increased standardisation of equipment and specifications across the whole of the EU and GB in particular. In turn this should lead to improved economies of scale and increased interconnection driving improved security. We therefore consider that this modification will promote the security and efficiency of the electricity generation, transmission and distribution systems.	**Positive**

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 These European Regulations are directly applicable to GB without having to be transposed into our national laws or regulatory frameworks. European Regulations also take precedence in the legal "hierarchy of laws" over domestic law (i.e. if a domestic law is incompatible with a European Regulation, it is the European law which takes precedence). The proposed solution seeks to ensure that the Grid Code is consistent with these European Regulations.	**Positive**
To promote efficiency in the implementation and administration of the Grid Code arrangements The application of a single, harmonised, common minimum requirement across the whole GB system will produce efficiency in the implementation and administration of the Grid Code arrangements as it avoid the costs, risks and inefficiencies associated with operating to three separate arrangements today.	**Positive**

8 Implementation

This modification should be implemented as soon as is practicable.

9 Legal Text

Not yet agreed.

10 Recommendations

Panel is asked to:

- Refer this proposal to a Workgroup for assessment.