









DCRP_17_05_04

Stage 1: Modification Proposal		At what stage is this document in the process?
<h1>DCRP/MP/17/03:</h1> <p>Mod Title - The introduction of harmonised Applicable Electrical Standards in GB to ensure compliance with the EU Connection Codes</p>		<div>01 Modification</div> <div>02 Workgroup Report</div> <div>03 Draft Modification Report</div> <div>04 Final Modification Report</div>
<p>Purpose of Modification:</p> <p>This modification will set out within the Distribution Code the compliance obligations in the EU Connection Codes as they relate to Electrical Standards.</p> <p>Electrical Standards are referred to in the Distribution Code as “Qualifying Standards”.</p>		
	<p>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.</p> <p>This modification was raised 16/10/2017 and will be presented to the Panel on 26/10/2017. The Panel will consider the Proposer’s recommendation and determine the appropriate route.</p>	
	<p>High Impact: <i>None</i></p>	
	<p>Medium Impact: Distribution Network Operators, Independent Distribution Network Operators, Transmission Owners (including OFTOs and Interconnectors), Transmission System Users, System Operator and Generators and Embedded Generators</p>	
	<p>Low Impact: <i>None</i></p>	

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Timetable		 Any questions?
<p><i>Please provide proposer contacts and an indicative timeline. The Code Administrator will update the contents and provide any additional Specific Code Contacts.</i></p>		Contact: David Spillett Code Administrator
		 www.dcode.org
		 020 7706 5124
		Proposer: Garth Graham SSE Generation Ltd
Workgroup Meeting 1	dd month year	dd month year
Workgroup Meeting 2	dd month year	
Workgroup Meeting 3	dd month year	
Workgroup Report presented to Panel	dd month year	
Code Administration Consultation Report issued to the Industry	dd month year	
Draft Final Modification Report presented to Panel	dd month year	
Modification Panel decision	dd month year	
Final Modification Report issued the Authority	dd month year	
Decision implemented in Distribution Code	dd month year	

1 Summary

What

The Distribution Code will need to be amended to set out the new EU standards to which impacted Users will need to comply with. When referencing the Distribution Code this also includes the need to amend any of its annex 1 or 2 qualifying standards.

This will be a combination of completely new requirements inserted into the Distribution Code, or adjustments / continuation / removal of corresponding existing GB requirements to line up with, and not be more stringent than, the requirements in the new EU Network Codes/Guidelines.

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.

This modification needs to be undertaken in timely manner to ensure impacted Users are aware of their compliance obligations - particularly in relation to procurement of equipment, testing and operational requirements. This modification is also therefore, critical to facilitate/demonstrate Member State compliance to these three EU Connection Network Codes (RfG, DCC and HVDC).

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 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.

When the equivalent proposal for the Grid Code (GC0103) was raised by us on 21st July 2017 we set out why we believed that Urgency was required for that proposal (to change the Grid Code). These views remain valid with respect to this Distribution Code. However, in light of the Ofgem decision letter of 30th August 2017¹ rejecting urgency for GC0103 we will not be seeking urgency for this Distribution Code change.

¹ <http://www2.nationalgrid.com/UK/Industry-information/Electricity-codes/Grid-code/Modifications/GC0103/>

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, DCC and HVDC EU Network Codes were 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.

These three codes specifically set harmonised technical standards for the connection of new equipment for generators, demand, and HVDC systems (including DC-Connected Power Park Modules respectively).

Significant work to progress GB understanding of these codes and consider the approach for implementation has been undertaken in Distribution Code/Grid Code issue groups GC0048 (RfG); GC0090 (HVDC); GC0091 (DCC).

However, this 'pre-work' has not considered aspects relating to the Distribution Code Qualifying Standards; although this matter was examined in GC0094 (which was raised on 16th May 2016). This proposal DCRPMP/17/03 builds upon GC0094.

The Distribution Code Qualifying Standards contain the technical specifications, policies and procedures that must be complied with by all Users connected to or seeking connection to the Distribution system.

A list of The current Distribution Code Qualifying Standards can be found in the GB Distribution Code:

http://www.dcode.org.uk/assets/uploads/DCode_v28_May_2017__020517_final.pdf

These Qualifying Standards seek to maintain an appropriate level of reliability and security for the Distribution system. Users are required to meet these requirements for their equipment directly connecting to the Distribution system.

Currently these Qualifying Standards are 'owned' by the DNOs but are governed by the Distribution Code Review Panel and approved by the Authority.

These possible differences and inconsistencies in the current Distribution Code Qualifying Standards within GB could cause difficulty for Users as it takes time and effort to check connection designs against each (different) set. In addition, costs may vary based on these differences which can hinder investment decisions. Users also feel that there is a lack of transparency in the justification for the regional variations and the governance of the change process is inefficient.

In the context of GC0094, industry raised an issue regarding the regional differences in the Grid Code electrical standards and inconsistency in how they apply to the Users at their connection points, and industry advocated having a single set of GB standards wherever possible allowing for specific regional differences.

These items, when combined with the implementation of the three EU Network Codes that relate to connection to the electrical system for generation (RfG) demand (DCC) and HVDC (HVDC) assets, means that there is now a need for a single harmonised GB electrical standards to ensure that the obligations within those EU Network Codes are met.

Given that the obligations in these EU Network Codes apply to 'New' Users (as defined in the respective EU Network Codes) only and not to 'Existing' Users (unless a substantial modification to the Connection Agreement arises in their particular case); and in order to avoid confusion; it is proposed that the Distribution Code Qualifying Standards introduced by this proposal DCRPMP/17/03 would be known as the '*Applicable Qualifying Standards*' and would not be more stringent than the requirements in the EU Network Codes/ Guidelines.

Furthermore, applying the current Distribution Code Qualifying Standards to 'New' Users would, if more stringent than the requirements in the EU Network Codes/ Guidelines, be incompatible with EU law.

For the avoidance of doubt, the existing Distribution Code '*Qualifying Standards*' would remain applicable to 'Existing' Users (only).

However, if an 'Existing' User substantially modified their installation / connection agreement and came under the EU Network Codes/ Guidelines then they too would become obligated to comply with the '*Applicable Qualifying Standards*' only (and not the '*Qualifying Standards*' etc.,) from the appropriate date in their specific case.

4 Code Specific Matters

Technical Skillsets

- ☐ Understanding of the GB regulatory frameworks (particularly Grid Code and Distribution 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

Demand Connection Code legal text:

<http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32016R1388&from=EN>

Requirements for Generators legal text:

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

High Voltage Direct Current legal text:

<http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32016R1447&qid=1494236788524&from=EN>

Distribution Qualifying Standards are listed in Annex 1 or Annex 2 of the GB Distribution Code:

http://www.dcode.org.uk/assets/uploads/DCode_v28_May_2017_020517_final.pdf

5 Solution

Through previous discussions at the GCRP and at the April 2016 GCDF it has been highlighted that there are several ways in which this issue can be resolved, including:

- ☐ Undertake a wider review of the Transmission and Distribution standards together to create a core set of standards. Variations to the standards will be subject to justification. This potentially solves the current issues and any future issues which may arise.

Having considered these potential options; as well as (i) taking account of the requirements arising from the GB implementation of the EU Network Codes/ Guidelines, (ii) the need not to apply more stringent obligations on 'New' Users than the requirements in the EU Network Codes/ Guidelines, and (iii) the discussions held at the GCDF and with the ENA; it is proposed with this Proposal DCRPMP/17/03 that a DCRP Workgroup be set-up to review the current Qualifying Standards and the potential solutions with a view to creating a single harmonised set of electrical standards (including Grid Code Relevant Electrical Standards), to be known as the 'Applicable Electrical Standards', to be applied to all 'New' connections to the GB electrical system depending on whether they are generation, demand or HVDC (based on the scopes of

application set out in the EU Network Codes/ Guidelines, which is explored further below, using a generation example).

These '*Applicable Electrical Standards*' would be incorporated into the Grid and Distribution Codes and any subsequent changes to them would, for the avoidance of doubt, be subject to public consultation and NRA (Ofgem) approval.

Following the creation of the '*Applicable Electrical Standards*' the Grid Code and the Distribution Code would need to be amended appropriately to achieve consistent application across the Transmission and the Distribution systems.

Using the context of generation as an example; at the 6th July 2017 GC0100 Workgroup discussion the Proposer (National Grid) provided a summary table of the RfG technical requirements (see below) as they apply to 'New' connecting generation.

As can be seen, the technical requirements are incremental; building up from Type A to Type B then Type C and finally Type D. Similarly, depending on further Workgroup deliberation, it is possible (probable?) that the '*Applicable Electrical Standards*' will likewise be incremental in the context of generation. For example, it would seem that there would be no need for the Type A related '*Applicable Electrical Standards*' to address Fault Ride Through matters; although this would be required for a Type B (plus C and D) generator.

Technical Requirements	Type A	Type B	Type C	Type D
Operation across range of frequencies	•	•	•	•
Rate of change of System Frequency (ROCOF)	•	•	•	•
Limited Frequency Sensitive Mode Over Frequency (LFSM-O)	•	•	•	•
Output Power with falling Frequency	•	•	•	•
Logic Interface (input port) to cease active power production	•	•	•	•
Conditions for automatic reconnection	•	•	•	•
Operation across range of frequencies	•	•	•	•
Ability to reduce Active Power on instruction		•	•	•
Fault Ride Through and Fast Fault Current Injection		•	•	•
Conditions for automatic reconnection following disconnection		•	•	•
Protection and Control		•	•	•
Operational Metering		•	•	•
Reactive Capability		•	•	•
Active Power Controlability			•	•
Frequency Response including LFSM-U			•	•
Monitoring			•	•
Robustness			•	•
System Restoration / Black Start			•	•
Simulation Models			•	•
Rates of Change of Active Power			•	•
Earthing			•	•
Enhanced Reactive Capability and control			•	•
Voltage Ranges				•
Enhanced Fault Ride Through				•
Synchronisation				•
Excitation Performance				•

6 Impacts & Other Considerations

- i. The Grid Code and Distribution Code will bear the primary impact of the EU Connection Code modifications. Some consequential changes are anticipated in other industry codes for example the STC code especially from HVDC (primarily Section K - Technical, Design and Operational Criteria And Performance Requirements For Offshore Transmission Systems)
- ii. The Transmission/Distributions connections and compliance processes will need to be slightly altered to ensure they accommodate the new EU requirements as set out in the modified Grid Code and Distribution Codes. In particular, Appendix F of the BCA for new generator's will need to be modified to ensure requirements there do not exceed those required within the RfG.
- 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, Demand or HVDC equipment.

7 Relevant Objectives

Impact of the modification on the Relevant Objectives of the Distribution Code:

Relevant Objective	Identified impact
<p>Permit the development, maintenance, and operation of an efficient, coordinated and economical System for the distribution of electricity.</p> <p>The proposed solution will allow the Distribution Network Operators to efficiently apply the EU Network Code/ Guidelines requirements to the Users of the system through the National Industry Codes.</p>	Positive
<p>Facilitate competition in the generation and supply of electricity.</p> <p>The proposed solution will assist the Users of the Distribution system during the connection process.</p> <p>A single harmonised set of electrical standards will also help enable competition in the construction of connection assets.</p> <p>A common set of qualifying standards will also provide a level playing field between generators in different parts of GB compared to the current situation in which a generator in, say, Carlisle has different connection requirements and standards to one in, say, Glasgow and yet another set for one located in, say, Inverness.</p>	Positive
<p>Efficiently discharge the obligations imposed upon DNOs by the Distribution Licence and comply with the Regulation (where Regulation has the meaning defined in the Distribution Licence.) and any relevant legally binding decision of the European Commission and/or Agency for the Co-operation of Energy Regulators.</p> <p>The EU Connection Codes derive from the Third Energy Package legislation which is focused on delivering security of supply; supporting the connection of new renewable plant; and increasing competition to lower end consumer costs.</p> <p>This proposal ensures that harmonised rules for grid connection for power-generating modules, demand and HVDC assets are set out in</p>	Positive

order to provide a clear legal framework for grid connections, facilitate Union-wide trade in electricity, ensure system security, facilitate the integration of renewable electricity sources, increase competition and allow more efficient use of the network and resources, for the benefit of consumers.

Furthermore, this modification ensures GB compliance with EU legislation in a timely manner and does so in a way that is not more stringent than EU law permits.

Promote efficiency in the implementation and administration of the Distribution Code.

Applying harmonised rules for grid connection for power-generating modules, demand and HVDC assets reduces the administrative costs and burden for Users (in being able to seek connection on the basis of a uniform approach) and the DNOs (when assessing compliance) in the administration of the Distribution Code arrangements

Positive

8 Implementation

This modification must be in place to ensure the requirements of the EU Connection Codes are set out in the GB codes *by* two years from the respective Entry into Force dates.

It is therefore crucial that this work is concluded swiftly to allow the industry the maximum amount of time to consider what they need to do to arrange compliance.

9 Legal Text

Not yet agreed.

10 Recommendations

Distribution Code Review Panel is asked to:

☐ Refer this proposal to a Workgroup for continuing the formation of proposals