Modification	At what stage is this document in the process?
# GC0102/DCRP/Final Modification Report ## Implementation of the EU Network Code - Requirement for Generators	01 Modification 02 DCRP report 03 Public Consultation 04 Final Modification Report

The purpose of this document is to assist the Authority in its decision to implement the proposed modifications to the Distribution Code and to introduce the new documents EREC G98 and EREC G99. The proposed modifications were subject to industry consultation in January 2018. Responses from this consultation show that the industry is in favour of these modifications.

Date of publication: 20 February 2018

Recommendation

The Distribution Licensees and the Distribution Code Review Panel (DCRP) recommends that the proposed modifications are made to the Distribution Code and to introduce ERECs G98 and G99.

	The DNOs recommend that this modification should be: Submitted to the Authority for approval
	High Impact: All future users of the distribution system who wish to connect generation. DNOs
	Medium Impact: None
	Low Impact: None

Contents

Document Control

Version	Date	Author	Change Reference
0.1	7 Feb 2018	MK	DS/0102/1
0.2	11 Feb 2018	MK	DS/0102/2
1.0	15 Feb 2018	MK	DS/0102/3

Timetable

Workgroup Report presented to Panel	26 October 2017
Draft Modification Report issued for consultation	11 January 2018
Consultation Closed	01 February 2018
Final Modification Report available for Panel	08 February 2018
Final Modification Report submitted to Authority	20 February 2018

Any questions?

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1. Executive Summary

1.1. This report covers the implementation of the EU Network Code Requirements for Generators for generation that is to be connected to distribution networks.

1.2. The development of these proposals has been undertaken as joint work by the Distribution Code Review Panel and the Grid Code Review Panel.

1.3. Two new documents, EREC G98 and EREC G99 are proposed to implement the requirements, aiming to make the requirements as straightforward as possible and in a familiar format. EREC G98 and EREC G99 draw heavily on the existing ERECs G83 and G59, which have the same scope, and will be retained for existing generation and that connected up to the RfG compliance date of 17 May 2019. There are consequential changes to the Distribution Code to accommodate these new documents.

1.4. DNOs have consulted widely with stakeholders, and in particular via nine workshops with stakeholders held between October 2017 and February 2018.

1.5. Seven formal sets of comments were received to the formal consultation, none of which was requested to be kept confidential. The comments and the DNOs' responses are attached at Appendix 1

1.6. The Distribution Code Review Panel supports the DNOs in proposing to the Authority the changes to the Distribution Code and the adoption of EREC G98 and EREC G98 as explained in this report.

2. Purpose & Scope of the Working Group

2.1. The Grid and Distribution Code Review Panels have been running areas of joint work implementing the EU Network Codes, with the current focus on the RfG. The work has been split between three joint workgroups (WG), GC0100, GC0101 and GC0102. However all the relevant implications for distribution network stakeholders, and for the distribution documents (ie the Distribution Code and EREC G98 and EREC G99) come together in the GC0102 proposals where the implementation in both the Grid and Distribution Codes has been developed.

2.2. Many of the provisions of the RfG require exact parameters to be set by National Grid – which has been done via consultations in the three WGs above – and to the extent that those parameters etc affect distribution connected generation, have been incorporated in EREC G98 and EREC G99.

2.3. The Grid and Distribution Code Review Panels have consulted jointly on developments in all three WGs progressively throughout 2017.

3. Why change?

3.1. Guidance from BEIS and Ofgem has been to apply the new EU requirements within the existing GB regulatory frameworks. This will 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.

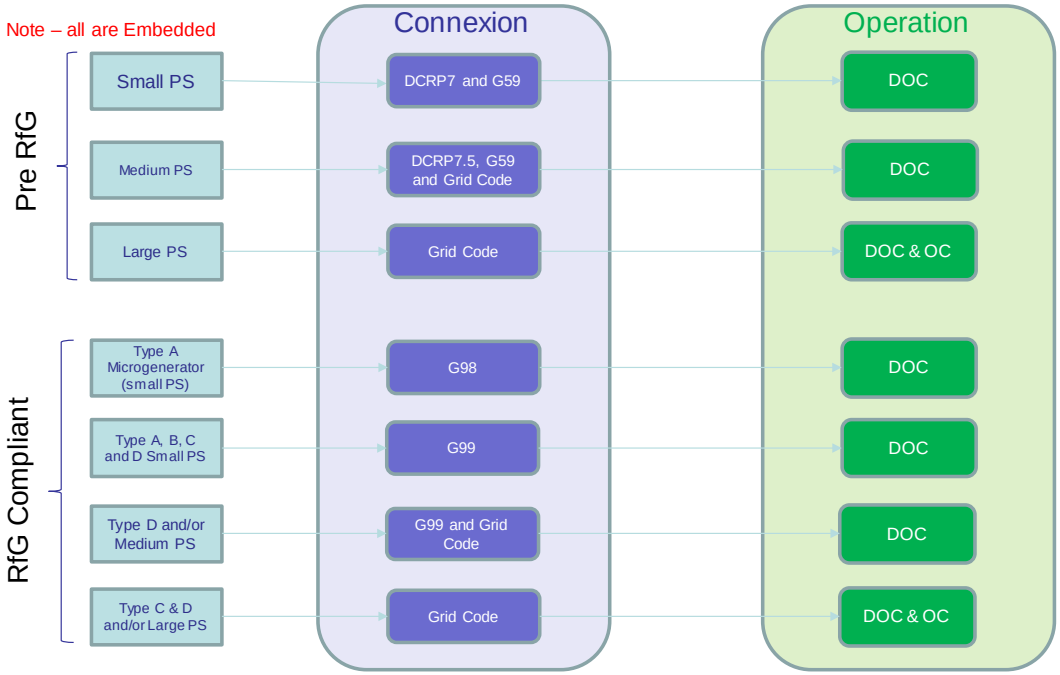
3.2. This modification needs to be undertaken in timely manner to ensure affected users are aware of their compliance obligations - particularly in relation to procurement of equipment, compliance testing and operational requirements. This modification is also therefore, critical to facilitate/demonstrate Member State compliance to the RfG EU Network Code.

4. Workgroup Discussions

4.1. Because the RfG only applies to generating plant commissioned on or after 17 May 2019, it is necessary to differentiate in documentation between generation commissioned before that date with generation commissioned after.

4.2. Clear signposting of the requirements on new and existing users was a key concern of the workgroup and through discussion with stakeholders the following approach was agreed. New generating plant that is required to be RfG compliant will be directed by the Distribution Code to either EREC G98 (for Type-Tested Type A power generating modules) and EREC G99 (for all other power generating modules) for their connexion compliance requirements. Existing power generating modules will continue to be bound by EREC G83 and EREC G59 for their connexion compliance requirements. All power generating modules, existing and new, will need to comply with the Distribution Operating Codes in the Distribution Codes in terms of ongoing system management requirements.

4.3. The relationship is shown in the following diagram:



4.4. As well as WG discussions, the DNOs held workshops for stakeholders on 6 and 10 October, 6, 7, 23, 24 November 2017 and on 4 and 5 January 2018. The feedback from the formal GC0102 consultation in October and the workshops has been used to develop the drafts of the Distribution Code and EREC G98 and EREC G99.

4.5. Stakeholders generally agreed that where possible the GB requirements should be based on international, and particularly European, standards. Initially it was thought that there would be a new EU standard that discharged the EU Network Code requirements. However However this standard is not currently available , and therefore the necessary compliance requirements have been directly implemented in EREC G98 and EREC G99

4.6. The following sections explains the key aspects of the changes to the Distribution Code, and the content of EREC G98 and EREC G99.

4.7. Distribution Code

4.7.1. The principle changes to the Distribution Code are to harmonize certain key definitions with the RfG and with EREC G99 – particularly the use of Power Generating Module, Generating Unit and Power Generating Facility. The terms Small Power Station and Large Power Station have been removed, although the term Medium Power Station has been retained to facilitate appropriate interaction with the Licence Exempt Embedded Medium Power Station requirements in the Grid Code.

4.7.2. DPC7 has been substantially modified. Text in DPC7 that overlaps with text in EREC G59 has been deleted and new text in DPC7 applies the technical requirements of either EREC G59 and DPC7 for existing generation commissioned before 17 May 2019 or EREC G99 requirements only (ie not DPC7) for generation commissioned on or after 17 May 2019. A similar arrangement has been made for EREC G83 and EREC G98.

4.7.3. A small number of changes have been made to DOC 5 in relation to the ongoing compliance testing requirements in the RfG.

4.7.4. The Distribution Data Registration Code has been updated to include frequency parameters for Limited Frequency Sensitive Mode (LFSM) as required by the RfG. This information is also now to be collected on the revised common generation application form.

4.7.5. Guidance Note 2 relating to the application of EREC G59 and EREC G83 has been updated to recognize the existence of EREC G98 and EREC G99.

4.8. EREC G98

4.8.1. EREC G98 has been written to be as close to EREC G83 as possible, but incorporating the RfG requirements, and also basing the requirements on BS EN 50438. It is likely that BS EN 50438 will be superseded by EN 50549 (implementing RfG requirements) in the near future, in which case EREC G98 will need to be updated.

4.8.2. The principle effects of the RfG are to require LFSM, to ensure that the compliance verification information is all contained in an Installation Document, and to make allowance for Equipment Certificates to demonstrate compliance. There is no Equipment Certificate regime in place, but the existing type testing regime will continue whereby manufacturers' information can continue to be used to demonstrate compliance.

4.9. EREC G99

4.9.1. As stated above DNOs and stakeholders have an ambition to use EN 50549 as far as possible to replace GB specific documentation. However a published and RfG compliant EN 50549 is not currently published. EREC G99 has therefore been written to apply the requirements of EREC G59, modified to include RfG requirements, and also to extend the concept of type testing above the current EREC G59 limit of 50kW. Recognizing the likely emergence of Equipment Certificates, there is now no upper limit to the use of type tested products, and accommodation has been made for the assembly of type tested products into complete Power Generating Modules.

4.9.2. Key drafting points developed following stakeholder feedback during the development of EREC G99 include:

(a) EREC G99 covers the requirements of Type A generation modules through to Type D generation modules – and does so in separate chapters for each Type, for both technical requirements and compliance requirements.

(b) LFSM and fault ride through (FRT) have been included in EREC G99 (in sections 11, 12 and 13) and are identical, as far as appropriate, to the requirements being drafted into the Grid Code.

(c) Examples of the combination of generating units of different technologies, both existing and new have been included in section 6.1.5. Understanding what EREC G99 applies to and what EREC G59 applies to, and how generating units should be combined into Power Generating Modules for compliance is a key issue that needs the clarity of these examples.

(d) The requirements for reconnexion after planned or inadvertent disconnexion remain the same as currently – contained in Sections 10.3.3 and 10.3.4 of EREC G99.

(e) The new RfG operational monitoring requirements for new Power Generating Modules of Type B and above will generally be met by DNOs own telemetry. All types will need to fit appropriate control ports to enable the DNO to issue instructions relating to active power output. Type C and D Power Generating Modules will need to fit dynamic system monitoring equipment. These are all new requirements, and the drafting in EREC G99 is trying to balance current and future needs with cost.

(f) There are new requirements for Type B, C and D Power Generating Modules to submit simulation studies as part of the connexion process. Again as far as possible these requirements have been made identical to those for the same Types in the Grid Code.

(g) Stakeholders agree that there is no case to allow for non-type tested generation of less than 16A per phase. Hence all such generation, and also that Power Generating Modules of <800W, will be dealt with exclusively in EREC G98.

(h) Requirements for assembling type tested components into a type tested Power Generating Module have been laid out in section 15 of EREC G99. These do not obviate the need for checks on site to prove functionality, but they are designed to minimise the need for complex site testing as part of the compliance assessment process.

4.10. EREC G99 has been written to extend the philosophy of type testing as far as possible above the current 50kW limit. In doing so it has to span the smaller Type A modules in the sub 50kW range (ie as existing practice in EREC G59) and up to much larger components, possibly used to form Type B, C or D modules. The development of these approaches has benefitted from significant stakeholder feedback during and between the workshops mentioned above.

4.11. The development of the compliance assessment processes in EREC G99 have tried to take and extend the existing EREC G59 approaches and also to be as close to the equivalent Grid Code requirements for identical sized equipment, ie of the same Type.

4.12. For each type, the forms in the EREC G99 Annexes are designed to guide Generators through the connexion process and also to act as the Installation Document for Type A (Annex A3) and supporting compliance information (Annex A2), and the Power Generating Module Document for Types B and C (Annex B2, and Annex C2 and their supporting forms). The drafting also requires the issuing of FONs to Type B and Type C modules. Type D requires the EON, ION, FON process and this is covered in section 19 (and also uses the C2 forms).

4.13. A detailed mapping of the RfG to the GB documentation was undertaken by National Grid and the DNOs, and was included in the consultation papers. No comments were received on it. It has been updated with minor modifications following the updating of EREC G98 and EREC G99 and is included as appendix 5 to this report. Please note that the RfG and HVDC code mapping are complete but DCC code mapping is still work in progress.

4.14. The WG and other stakeholders met by general invitation on 06 February 2018 to discuss the consultation responses and the DNOs' intentions regarding how to treat each point etc. Stakeholders present expressed general contentment with the distribution documents and DNOs' proposals, noting that there are a small numbers of area where future work can immediately be seen to be warranted (see 8.1.2 below).

5. Consultation responses

5.1. Seven formal responses have been received. None of these were marked as confidential and they are attached, along with the DNOs' response to the points raised, as Appendix 1.

5.2. Many of the points raised were issues of clarification and understanding, and notification of editorial corrections etc.

5.3. The substantive comments relate to uncertainty over the exact implementation requirements for LFSM-O for Type B power generating modules, and also fast fault current injection. Both these requirements are the responsibility of National Grid to specify. National Grid has agreed that the Grid Code formulation of these requirements, and consequential drafting in EREC G99, could usefully be reviewed and it is thought that it is probably appropriate to initiate discussion on these topics at the next Grid Code Development Forum. If taken forward as future modifications these will be best undertaken as joint work between the GCRP and DCRP.

5.4. Some respondents also drew attention to the parallel work of DC0079 (RoCoF) and DCRP/18/01/PC (amendments to P28). Both of these modifications have effects on the drafting of EREC G98 and EREC G99. However they will both be progressed as future updates to EREC G98 and G99 as soon as they are formally approved.

5.5. Amendments to EREC P28, which has also just been consulted on, do not cause any direct conflict with ERECs G98 or G99, but text that is written into EREC G99 to cover off deficiencies/gaps in the current EREC P28 could now usefully be dropped and/or amended to harmonize better with EREC P28 issue 2 and avoid duplication. This is a non-urgent modification that again can be made to EREC G99 in due course.

6. Impact & Assessment

Assessment against Distribution Code Objectives

6.1. The proposed amendments would better facilitate the Distribution Code objective:

(i) To permit the development, maintenance and operation of an efficient, coordinated and economical system for the distribution of electricity;

The proposal has a neutral impact on this objective.

(ii) To facilitate competition in the generation and supply of electricity

The proposal has a neutral impact on this objective.

(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; and

The proposal has a neutral impact on this objective.

(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.

The proposal has a positive impact on this objective. Without this change the UK would be in default of its obligations to implement EU law.

Impact on core industry documents

6.2. The proposed modification does not affect any other core industry documents.

Impact on other industry documents

6.3. The proposed modification does not affect any other industry documents.

Implementation

6.4. The workgroup recommends that, the new and amended documents (EREC G98, EREC G99 and the Distribution Code) are published on or before 17 May 2018. The provisions, however, only generally come into effect on 17 May 2019.

7. Distribution Code Review Panel Recommendation

7.1. At its 08 February 2018 meeting the DCRP discussed the RfG inspired changes and agreed that the new documents EREC G98 and EREC G99, and the associated Distribution Code changes, should be recommended by the DNOs to the Authority.

8. Licensees' recommendations

8.1. The DNOs recommend that

8.1.1. The EREC G98 and EREC G99 are approved, and the Distribution Code modified in the form attached to this report

8.1.2. That four topic areas raised by respondents to the consultation are subject to further modifications of EREC G98 and EREC G99 without delay:

8.1.2.1. Jointly with the GCRP, the exact requirements of LFSM-O as applied to smaller Type B reciprocating engine driven synchronous power generating modules;

8.1.2.2. Jointly with the GCRP, review how the existing GB requirements for fast fault current injection are formulated in the Grid Code and EREC G99 to reduce the possibility of confusion in their interpretation;

8.1.2.3. Once Ofgem have reviewed the imminent proposals of DC0079 to modify RoCoF loss of mains protection settings, to make the consequential changes to EREC G99 and EREC G98;

8.1.2.4. Once Ofgem have reviewed the proposed changes to P28, to make appropriate consequential changes to EREC G99.

9. Appendices

9.1. Appendix 1 – Consultation Responses and the DNOs' proposed action with each.

9.2. Appendix 2 – Modified Distribution Code

9.3. Appendix 3 – EREC G98

9.4. Appendix 4 – EREC G99

9.5. Appendix 5 – Mapping Spreadsheet