

## Distribution Code Consultation DCRP/MP/22/02

### Title: Electricity System Restoration Standard – and Distributed Restart.

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**Target Audience:** All current and prospective users of the distribution system, but especially owners and operators of generation and storage of in the range from about 3MW upwards.

**Date Published:** 15<sup>th</sup> May 2023

**Deadline for responses:** 17:00 Friday 16<sup>th</sup> June 2023

#### **Summary:**

This consultation is largely a repeat of the DCRP/MP/22/02, but with modified proposed text in the Distribution Code to match the changes in the Grid Code since the Grid Code GC0156 work group consultation closed at the end of December 2022.

Since the previous DCRP/MP/22/02 consultation the joint DCRP/GCRP working group has been considering the revised proposed Grid Code changes and addressing the comments from the Distribution Code consultation and updating the draft legal text according.

Although nothing fundamental in the proposal has changed however, the detail of the legal text has changed in places. The GCRP is consulting on the revised Grid Code text and the DCRP believes it will be helpful to stakeholders to have the opportunity see the corresponding Distribution Code text at the same time.

This consultation provides an opportunity for further comments on the Distribution Code, G59 and G99 proposed text.

#### **1 Introduction**

This consultation is essentially a repeat of the DCRP/MP/22/02 consultation that ran from 12 December 2022 until 12 January 2023. This modification is a joint modification with the Grid Code Review Panel for Grid Code Modification GC0156.

National Grid Electricity System Operator (NGESO) received 17 responses to the GCRP consultation, which ran from 21 November 2022 until 29 December 2022, many with significant detail, and the DCRP consultation received two responses, again with significant number of comments on the draft legal text. The nature of the responses to the GCRP consultation has resulted in the working group making considerable changes of detail to the Grid Code draft legal text. There is no fundamental changes to the proposals, but significant changes to the text have been made to aid clarity and to resolve other uncertainties. The working group has also updated the Distribution Code, and G59 and G99, again principally to shadow the changes to the Grid Code text, as well as picking up any additional points that arose from the two Distribution Code consultation responses.

## 2 Background

In April 2021, the then Department for Business, Energy and Industrial Strategy (BEIS) released a [policy statement](#) setting out the need to introduce a legally binding target for the restoration of electricity supplies in the event of a National Electricity Transmission System failure. This new policy is called the Electricity System Restoration Standard (ESRS). As a consequence of BEIS's policy statement, Ofgem performed an [initial consultation](#) in April 2021 followed by a [statutory consultation](#) in July 2021 on licence amendments to facilitate the introduction of an ESRS, and to align the regulatory framework for procurement of restoration services with that of other balancing services.

These licence modifications include but are not limited to:

- introducing the definition of “restoration services” in National Grid Electricity System Operator's (NGESO) Transmission Licence Standard Condition C1 and amending the definition of balancing services to include “restoration services”
- replacing all references to “black start” with “Electricity System Restoration” in the Electricity Transmission Licence, including in the ESO's Special Licence Conditions, to align the licence terminology with BEIS's policy
- introduction of updated Special Condition 2.2 of National Grid's Electricity System Operator's Transmission Licence requiring the introduction of an Electricity System Restoration Standard (ESRS) which requires 60% of electricity demand to be restored within 24 hours in all regions and 100% of electricity demand to be restored within 5 days nationally.

NGESO have raised Grid Code modification GC0156 to address the new obligations on them. GC0156 has been raised as a joint GCRP/DCRP modification.

The modification includes altering, updating and clarifying the responsibilities and requirements of NGESO, DNOs, CUSC parties, restoration contractors, transmission licensees, as they all take part in restoration activities. For DNOs and their customers, the key effect is the creating of distribution restoration zones (DRZ) as a new approach to system restoration. The proposal to implement DRZs does require provisions to be included in the Distribution Code and a small number of accommodating changes in EREC G59 and EREC G99.

## 3 The defect

The traditional approach to system restoration in GB is top-down, where black start power stations are instructed to energise dead sections of the transmission system to form a power island. Blocks of demand are then connected under the requirements of a local joint restoration plan (LJRP). LJRPs are a current Grid Code requirement and their invocation occurs in parallel across the transmission system to form a skeleton energised network, thereby allowing further power stations and demand to be restored. Traditionally, black start stations have been drawn from the fleet of coal, hydro, pumped storage and gas power stations with some input from HVDC Interconnectors. Going forward it is recognised that, primarily in terms of thermal plant which are generally carbon based, these providers are reducing in numbers as a result of the drive toward renewable technologies.

The [Distributed Restart Project](#) recognises the growth in embedded generation and from this, the pool of capability that could be used to energise sections of the DNOs' networks to form DRZs. In these scenarios, NGESO would instruct the DNO to activate a planned DRZ which would be defined in an accompanying distribution restoration zone plan (DRZP), similar to an LJRP. The aim is intended to run the traditional black start arrangements via LJRPs in parallel with the DRZs thereby restoring the whole system to normal operation as soon as possible. The DRZP revolves around the new rôles of anchor generator and top up restoration contractor. An anchor generator is an embedded generator with grid forming capability. The anchor generator may be supported by one or more top-up restoration contractors who are capable of providing additional generation input, albeit not necessarily grid forming, or a range of ancillary services to assist with running a stable power island, such as reactive power capability, inertia etc, and even flexible demand. Collectively all of these parties are referred to as restoration contractors.

DRZPs would constitute a formal agreement between NGESO, the DNO and the restoration contractors. The agreement would include the DNO undertaking and completing any necessary enabling works – although currently there is no intention or mechanism to make such arrangements mandatory.

#### **4 Proposed solution**

The implementation of Distributed Restart requires both a technical and commercial framework. The Distributed Restart Project address both of these. It is recommended that this consultation paper is read alongside both the Grid Code GC0156 consultation and the project reports from the project's web pages at the web link in section 3 above.

The commercial and contractual aspects are not within the scope of the Distribution Code Review Panel, and they are being taken forward primarily by NGESO through the current development of the tender process. It is envisaged that the technical requirements set out in the Grid Code and Distribution Code will be backed up by tripartite contracts between NGESO, the DNO and providers of restoration services in DNOs' networks.

The Distribution Code modifications are intended to provide the high-level requirements to enable distributed restart, including the development of a detailed distribution zone restoration plan, for each instance where distributed restart is viable based on a joint NGESO/DNO review of total system requirements, network topology and the availability of potential restoration contractors identified through a shared contractual tender process.

The GC0156 joint working group has met sixteen times since its inception in April 2022. The working group has taken the output from the Distributed Restart Project and from earlier work in GC0148. The working group has produced harmonized Grid Code and Distribution Code text. It is expected that the Grid Code text could be directly applicable to any embedded contractors who are CUSC parties, and the text also directs DNO activities. The Distribution Code text reflects the requirements on the embedded parties who are not CUSC signatories and is likely to be the most accessible and appropriate requirements for them and has the minimum of reliance on technical requirements being included in the tripartite contracts.

It is worth noting that the GC0156 Grid Code modification proposal includes a provision that all CUSC parties shall have 72-hour resilient electricity supplies to their plant so that they can assist in system restoration, whether or not that party is a restoration contractor. There is no equivalent retrospective requirement proposed for distribution connected parties (who are not CUSC parties) unless they elect to enter into a restoration services contract.

The key additions to the Distribution Code are in DPC6, DPC8, DOC2, DOC5 and DOC9.

##### **4.1 Summary of changes since the last consultation**

A summary of the proposed changes to the Distribution Code text since the previous consultation is included here:

1. Slight modification to the definitions to match Grid Code definitions, including changing "restoration service provider" to "restoration contractor."
2. Addition of text (to match the Grid Code) in DPC6 specifying the governor/control device requirements for a restoration contractor's plant.
3. An addition to DOC2 and to DOC2 appendix 3 to trigger appropriate reporting from restoration contractors.
4. Addition of text in DOC5.7.2 to specify remote resynchronization tests where required.
5. The deletion of Distribution Zone Control System tests from DOC5.7.3.8. This matches their removal from the Grid Code. The tests will be developed as part of the ongoing development

of the Relevant Electrical Standard for Distribution Zone Control systems, which is being delivered initially as part of GC0156.

6. Clarification, following that in the Grid Code, in DOCC9.4.6.7 that more than one party has the capability to be an anchor generator, and that the party to fulfil that rôle in a distribution restoration zone plan will be chosen from those available as one of the first actions in activating the plan.
7. Deletion of detail in DOC9.5.3.3 in relation to generation management in a distribution restoration zone. This detail will be contained in each distribution restoration zone plan itself.

The rest of section 4 summarises the proposed changes overall.

#### **4.2 DPC6 amendments**

The requirements on restoration contractors to have 72 hours electricity resilience for their communication, telemetry and essential management have been added into DCP6. These include the requirement to have cyber security to a level consistent with other critical national infrastructure providers.

The high-level control requirements for generation equipment controllers and/or governors for elective restoration contracts has been included, mirroring the Grid Code requirements.

#### **4.3 DPC8 amendments**

A short section of text has been appended to DPC8 detailing the information that is required from restoration contractors active in a DRZP. Information will be required initially when the DRZP is being established, and then either when any relevant information changes, or on demand by the DNO.

#### **4.4 DOC2 amendments**

A requirement has been added for restoration contractors to notify the DNO of changes to the availability of their plant and their ability to operate to their DRZP.

#### **4.5 DOC5 amendments.**

The new testing requirements broadly mirror those in use for LZRPs, but are tailored to the distributed restoration provider context. Again, the proposals for DOC5 follow the corresponding OC5 text in the Grid Code as closely as possible, recognizing the necessary contextual drafting differences between the Grid and Distribution Codes.

#### **4.6 DOC9 amendments**

DOC 9 already has the high-level requirements for LJRPs, but as these generally do not involve embedded parties, the detail is high level and defers to the content of the LJRPs. The DRZP proposal mirrors this approach in terms of the formal establishment of plans, their maintenance and testing. However, given the learning emerging from the Distributed Restoration Project the drafting does provide more high-level structure to the operation of DRZPs than for LJRPs. The DRZPs would need to follow this structure, but the details for each DRZP would need to be developed on an individual basis between NGESO, the other relevant transmission licensees, the DNO and the restoration contractor(s). The high-level structure of operation runs from inception and energization of the dead network through to synchronization to other power islands and/or the restored system and draws heavily on the parallel detail for LJRPs in the Grid Code. The proposals for DOC9 follow the corresponding OC9 text in the Grid Code as closely as possible, recognizing the necessary drafting differences between the Grid and Distribution Codes.

#### **4.7 Other amendments – EREC G99 & EREC G59**

A general statement has been added in Section 2 (scope) noting that some of the more standard requirements of EREC G99 such as loss of mains protection may need to be re-engineered to accommodate restoration contractors whilst operating in an active DRZ and similarly scope for amending the default requirements for earthing are also included.

#### **4.8 Supporting documentation**

Appendix A – the proposed Distribution Code amendments

Appendix B – the proposed EREC G99 amendments

Appendix C – the proposed EREC G59 amendments.

#### **4.9 Implementation**

The proposed text for inclusion in the above documents does not require any specific action from any party, unless parties willingly agree to enter into a contract for the provision of distribution restart services, in which case they would be bound by the requirements of the Distribution Code, as well as the detailed contractual requirements. As such there is no need for an implementation period and the drafted requirements would be applicable from the date that the Authority approves the changes, should the Authority do so.

### **5 Applicable code objectives**

The applicable Distribution Code Objectives are to:

- (a) permit the development, maintenance, and operation of an efficient, co-ordinated, and economical system for the distribution of electricity; and
- (b) facilitate competition in the generation and supply of electricity; and
- (c) efficiently discharge the obligations imposed upon distribution licensees by the distribution licences and comply with the Regulation and any relevant legally binding decision of the European Commission and/or the Agency for the Co-operation of Energy Regulators; and
- (d) promote efficiency in the implementation and administration of the Distribution Code.

### **6 Consultation questions**

1. Do you agree with the general intent of the proposed modification? If not, it would be helpful if you could explain your views.
2. Do you agree that the draft legal text is adequate for the adoption of distributed restart? Please do provide comments on the drafting either as mark up, the response proforma, or any other convenient method.
3. Please state how you think this modification addresses the relevant Distribution Code Objectives.

### **7 Next steps**

Responses to this consultation should be sent to the Distribution Code Review Panel Secretary at [dcode@energynetworks.org](mailto:dcode@energynetworks.org) by [17:00 Friday 16<sup>th</sup> June 2023] on the pro-forma provided expressly for the purpose, or via any other convenient means. Responses after this date may not be considered.

The progress of this modification will depend on responses to this, and the parallel Grid Code Review Panel, consultations, and the possible interaction with GC0156 as described in 1 above. The Grid Code Review Panel and the Distribution Code Review Panel will then decide on the next steps towards implementing this modification.

**For more information, please contact:**

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