

Modification proposal:	<b>Distribution Code DCRP/21/04 – G12 Issue 4 Amendment 2 - Requirements for the Application of Protective Multiple Earthing to Low Voltage Networks</b>		
Decision:	The Authority <sup>1</sup> has decided to approve <sup>2</sup> this modification		
Target audience:	Distribution licensees, Distribution Code Review Panel, distribution network users and other interested parties		
Date of publication:	17 January 2022	Implementation date:	17 January 2022

## Background

Energy Networks Association (ENA) Engineering Recommendation (EREC) G12<sup>3</sup> is an Annex 2 document to the Distribution Code<sup>4</sup> which provides recommendations for the application of protective multiple earthing (PME) to low voltage networks. It is incorporated within the Distribution Code as part of the code’s technical requirement. The current version (EREC G12 Issue 4) came into effect in February 2014.

Since the implementation of the last amendment (EREC G12 Issue 4 Amendment 1) in February 2016, there has been significant public policy support for the long term shift from internal combustion engine vehicles towards electric vehicles (EV). The associated increase in numbers of EVs is highly likely to result in large scale installation of on street electric vehicle charging points (EVCP) to meet growing demand. In line with this, the ENA has proposed an update to the guidance in the EREC G12 document to include a section on EVCPs which are street electrical fixtures<sup>5</sup> or connected to street electrical fixtures.

<sup>1</sup> References to the “Authority”, “Ofgem”, “we” and “our” are used interchangeably in this document. The Authority refers to GEMA, the Gas and Electricity Markets Authority. The Office of Gas and Electricity Markets (Ofgem) supports GEMA in its day to day work. This decision is made by or on behalf of GEMA.

<sup>2</sup> This document is notice of the reasons for this decision as required by section 49A of the Electricity Act 1989.

<sup>3</sup> [http://dcode.org.uk/assets/uploads/ENA\\_EREC\\_G12\\_Issue\\_4\\_Amendment\\_1\\_2015\\_.pdf](http://dcode.org.uk/assets/uploads/ENA_EREC_G12_Issue_4_Amendment_1_2015_.pdf).

<sup>4</sup> [http://www.dcode.org.uk/assets/uploads/DCode\\_v45\\_20200612.pdf](http://www.dcode.org.uk/assets/uploads/DCode_v45_20200612.pdf)

<sup>5</sup> A permanent fixture which is or is intended to be connected to a supply of electricity and which is in, on, or is associated with a highway.

## The modification proposal

The proposed EREC G12 Issue 4 Amendment 2 would modify the requirements for earthing of EVCPs connected to street electrical fixtures, taking into account, the use of neutral disconnection devices. In addition, the annex document has been imported into the latest ENA engineering document template and necessary editorial changes carried out to ensure compliance with relevant conventions and formatting. The major proposed changes include:

- A new Section 6.2.16 to include specific requirements for EVCPs connected to street electrical fixtures. This includes the use of “open neutral” disconnection devices.
- Update to the section numbers from 6.2.16 onwards to align with the addition of a new section at 6.2.16.
- Significant changes to clause numbering to conform to the latest ENA engineering document template.

This modification proposal was subject to a consultation between 9 April 2021 and 7 May 2021. Twelve responses to the consultation were received which overall, were supportive of the proposed changes. Several issues were also raised in the responses, most of which were addressed by the Distribution Code Review Panel (DCRP) in Appendix 3 of the final report – the stakeholder consultation feedback summary.

We received the Final Report for DCRP/21/04<sup>6</sup> from the DCRP on 16 August 2021, but could not properly form an opinion on the modification proposal based on the information submitted. We therefore directed that the Final Report be revised and resubmitted, to address a key issue raised in the consultation feedback. This relates to whether Distribution Network Operators (DNOs) have the legal capacity to apply the requirements of section 6.2.16 of EREC G12 which demands that customers build their installations to different specifications depending on the installation use case. We also requested the DCRP to present a detailed assessment of the proposed amendment against the Distribution Code Objectives and to provide clarity on situations requiring installation of additional form of protection with examples of where it is not reasonably practicable to install a TT system<sup>7</sup>.

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<sup>6</sup> Distribution Code proposals, final reports and representations can be viewed at: <http://www.dcode.org.uk/areas-of-work/> and <http://www.dcode.org.uk/consultations/>

<sup>7</sup> A system having one point of the source of energy directly earthed, the exposed-conductive-parts of the installation being connected to earth electrodes electrically independent of the earth electrodes of the source.

We engaged with the Health and Safety Executive (HSE) via email on their view on the proposed EREC G12 Issue 4 Amendment 2 and received a response from them informing us that they have no comments.

The revised Final Report was resubmitted to us on 23 November 2021. In addressing the issues raised by us in our send back letter<sup>8</sup>, the DCRP provided details of their assessment of the proposed modification against the Distribution Code objectives.

In the revised EREC G12 document, the panel identified EVCP installations which form part of a Class 1 construction street electrical fixture supplied at single phase or unbalanced 3-phase as special situations where the consumer must utilise an additional or alternative form of protection to PME. This is because there will be frequent extended contact between such EVCP and members of the public in all weather conditions when connecting and disconnecting vehicles to the charge point. TT system earthing arrangement was identified as a suitable alternative earthing arrangement, which will remove the potential risk caused by the rise of voltage on a consumer's earth terminal in the event of an open neutral condition. A TT system removes the risks associated with an open neutral on the 3-phase mains cable servicing a street electrical fixture as well as an open neutral on a single phase service cable to the street electrical fixtures. On the other hand, an open neutral detection and earth disconnection device only removes the risks associated with an open neutral on a single phase service cable to the street electrical fixture and therefore should only be used where it is not reasonably practicable to install a TT system. Examples of situations where it is not reasonably practicable to install a TT system were added to the EREC G12 document.

Text in the EREC G12 was modified to demonstrate that the proposed code modification does not seek to dictate how a customer's installation is designed, installed and maintained. The DCRP highlighted that while BS 7671 section 722<sup>9</sup> permits the protection against a neutral fault condition to be provided by the use of a protective device which responds to an open neutral condition, it is an installation standard not a product standard. As there is currently no product standard in existence, the DCRP referred to the duties placed on the Distributor by the

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<sup>8</sup> The Authority send back letter can be accessed at: [Distribution Code DCRP/21/04 - Revision of Engineering Recommendation \(EREC\) G12 Issue 4 | Ofgem](#).

<sup>9</sup> <https://www.bsigroup.com/en-GB/industries-and-sectors/construction-and-building/requirements-for-electrical-installations-iet-wiring-regulations/>

Electricity Safety, Quality and Continuity Regulations 2002 (ESQCR) s24(4) and 25(2)a to ensure that where an open neutral detection and earth disconnection device is used, the device is suitable for its purpose in protecting members of the public, from the risks associated with the rise of voltage on the street electrical fixture, in the event of an open neutral condition.

### **Distribution Code Review Panel (DCRP)<sup>10</sup> comments and licensee recommendation**

At the DCRP Panel meeting on 3 June 2021, a majority of the DCRP considered that the modification proposal would better facilitate the Distribution Code objectives and therefore recommended its approval. Following the Authority send back decision, the DCRP revised the modification and submitted the revised version to us on 23 November 2021. The DCRP consider that objectives (a) and (d) are better facilitated by the modifications and that it has a neutral impact on objectives (b) and (c).

### **Our decision**

We have considered the issues raised by the modification proposal and in the Final Report dated 23 November 2021. We have considered and taken into account the responses to the consultation on the modification proposal which are included in the Final Report.<sup>11</sup> We have concluded that:

- implementation of the modification proposal will better facilitate the achievement of the applicable objectives of the Distribution Code;<sup>12</sup> and
- approving the modification is consistent with our principal objective and statutory duties.<sup>13</sup>

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<sup>10</sup> The DCRP is established in accordance with SLC 21 of the Electricity Distribution Licence.

<sup>11</sup> Distribution Code proposals, final reports and representations can be viewed at: <http://www.dcode.org.uk/areas-of-work/> and <http://www.dcode.org.uk/consultations/>

<sup>12</sup> As set out in Standard Condition SLC 21.4 of the Electricity Distribution Licence available at: <https://epr.ofgem.gov.uk/Content/Documents/Electricity%20Distribution%20Consolidated%20Standard%20Licence%20Conditions%20-%20Current%20Version.pdf>

<sup>13</sup> The Authority's statutory duties are wider than matters which the Panel and licensees must take into consideration and are largely provided for in statute, principally in this case the Electricity Act 1989.

## **Reasons for our decision**

We consider this modification proposal will better facilitate Distribution Code objectives (a) and (d) and has a neutral impact on objectives (b) and (c).

### ***(a) permit the development, maintenance, and operation of an efficient, co-ordinated, and economical system for the distribution of electricity***

The modification provides clarity on special situations where consumers must utilise additional alternative forms of protection to PME, in installation of EVCPs as street electrical fixtures or connection to street electrical fixtures.

### ***(d) promote efficiency in the implementation and administration of the Distribution Code.***

The added section to the EREC G12 document provides guidance on the use of open neutral detection and earth disconnection devices at EVCPs to protect the quality, continuity and reliability of electricity distribution.

## **Decision notice**

In accordance with SLC 21.11 of the Electricity Distribution Licence, the Authority hereby directs that the modification to the Distribution Code set out in the Final Report to the Authority of 23 November 2021 be made.

**Niall McDonald**  
**Principal Engineer**

Signed on behalf of the Authority and authorised for that purpose