

Modification proposal:	<b>Distribution Code DCRP/MP/18/01: Revision to Engineering Recommendation P28 "Voltage fluctuations and the connection of disturbing equipment to transmission systems and distribution networks in the United Kingdom"</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:	9 May 2019	Implementation date:	23 May 2019

## Background

Engineering Recommendation ("EREC") P28 Issue 1, *Planning Limits for Voltage Fluctuations Caused by Industrial, Commercial and Domestic Equipment in the United Kingdom*, was first published in 1989. This document is included in Annex 1 of the Distribution Code, and is also referenced in the Grid Code. It provides recommended planning limits for voltage fluctuations for connection of equipment to the public electricity supply systems. Since it was first published, the factors affecting development of transmission systems and distribution networks, and equipment connected to them have changed significantly. There has been a shift towards connection of distributed generation equipment powered by renewable energies and other low carbon technology equipment, which are capable of causing voltage fluctuations. Significant developments in electromagnetic compatibility standards have also taken place over this period of time, which needed incorporating in this document. This necessitated a review of the EREC P28 Issue 1, which was agreed both by the Distribution Code Review Panel ("DCRP") and the Grid Code Review Panel ("GCRP").

## The modification proposal

The Energy Networks Association ("ENA"), which owns the EREC P28 document, introduced the modification proposal DCRP/MP/18/01. A joint Working Group comprising of DCRP and GCRP stakeholders was set up and the proposal was progressed under DCRP's governance. The EREC P28 Issue 2 produced by the Working Group constitutes a full technical revision of the Issue 1. The Issue 2 has also been given a new title: *Voltage fluctuations and the connection of disturbing equipment to transmission systems and distribution networks in the United Kingdom*. The scope of EREC P28 has been modified to cover voltage fluctuations that are characterised as Rapid Voltage Changes ("RVC") as well as those that result in flicker. The main changes include:

- Introduction of requirements and planning levels for RVCs.
- Improved definition and clarity of worst case operating conditions to be used in the assessment of voltage fluctuations.
- Inclusion of an intermediate planning level and associated flicker severity limits for supply systems with nominal voltages of 3.3 kV, 6.6 kV, 11 kV, 20 kV and 33 kV.

<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.

- Improved definition of voltage step change.
- Improved clarity concerning information requirements for assessment and responsibilities for provision of information.
- Inclusion of the transfer coefficients for determining voltage fluctuation contributions from different nodes.
- Additional recommendations for assessing voltage fluctuations caused by renewable energy and low carbon technologies.

The requirements in EREC P28 Issue 2 apply to new connections to the public electricity supply system as well as changes to existing connections, in so far as they affect voltage fluctuation. EREC P28 Issue 2 is not intended to be applied retrospectively to existing connections that have been previously assessed under Issue 1 of EREC P28.

### **Distribution Code Review Panel (DCRP)<sup>3</sup> comments and licensee recommendation**

At the DCRP meeting on 7 February 2019, the DCRP unanimously agreed that the modification proposal would better facilitate the Distribution Code objectives and therefore recommended its approval.

Previously, in May 2018, DCRP had submitted a Final Modification Report for this proposal, which was sent back by us as the impact on other Codes had not been sufficiently considered at the time. This was subsequently addressed and the Distribution Network Licences raised a modification proposal GC0118 for the adoption of EREC P28 Issue 2 in the Grid Code. GC0118 is also being considered by us at the same time as DCRP/MP/18/01.

### **Our decision**

We have considered the issues raised by the modification proposal and in the Final Modification Report, dated 25 February 2019 ("FMR"). We have considered and taken into account the responses to the consultation on the modification proposal which are included in the FMR.<sup>4</sup> We have concluded that:

- implementation of the modification proposal will better facilitate the achievement of the applicable objectives of the Distribution Code,<sup>5</sup> and
- approving the modification proposal is consistent with our principal objective and statutory duties.<sup>6</sup>

### **Reasons for our decision**

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

<sup>3</sup> The DCRP is established in accordance with SLC 21 of the Electricity Distribution Licence.

<sup>4</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>5</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>6</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.

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

The modification proposal has considered the changes in electricity generation scenarios and associated technology developments to provide improved clarity on voltage fluctuation requirements for the Users connecting to the public electricity supply systems. The proposal facilitates improved co-ordination of planning levels for flicker related voltage fluctuations. We consider that this will help ensure efficient development and operation of the electricity distribution networks.

***(b) facilitate competition in the generation and supply of electricity***

One of the main drivers behind the review of EREC P28 Issue 1 was to better facilitate connection of distributed generation. Some of the earlier requirements, such as the limits on the magnitude and number of voltage fluctuation events allowed, have been reviewed which are expected to further facilitate the connection of distributed generation. We consider these types of changes will facilitate competition in the generation market.

**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 FMR to the Authority of 25 February 2019 be made. The implementation shall be co-ordinated with the implementation of corresponding modification to the Grid Code.

**Martin Queen**  
**Principal Engineer**

Signed on behalf of the Authority and authorised for that purpose