

Modification proposal:	Grid Code GC0118: Modification to the Grid Code to accommodate the recent Distribution Code modification to Engineering Recommendation P28 – Voltage fluctuations and the connection of disturbing equipment to transmission systems and distribution networks in the UK		
Decision:	The Authority ¹ directs ² that the proposed modification to the Grid Code be made		
Target audience:	National Grid Electricity Transmission PLC (“NGET”), the Grid Code Review Panel, Grid Code 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 Energy Networks Association (“ENA”), which owns the EREC P28 document, introduced modification proposal DCRP/MP/18/01 at the DCRP. A joint Working Group comprising of DCRP and GCRP stakeholders was set up and the EREC P28 review was progressed under DCRP’s governance. In May 2018, DCRP submitted DCRP/MP/18/01 Final Modification Report to the Authority, which was sent back as the impact on other Codes was not sufficiently considered at the time. This was subsequently addressed by the DCRP and the Distribution Network Licensees raised modification proposal GC0118 for the adoption of EREC P28 Issue 2 in the Grid Code.

DCRP/MP/18/01 is also being considered by us at the same time as GC0118.

The modification proposal

GC0118 was raised by the Distribution Network Licensees and seeks to implement the revised EREC P28 Issue 2 in the Grid Code.

¹ 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.

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

The EREC P28 Issue 2 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.
- Improved definition of voltage step change.
- Improved clarity concerning information requirements for assessment and responsibilities for provision of information.
- Inclusion of transfer coefficients for determining voltage fluctuation contributions from different nodes.
- Additional recommendations for assessing voltage fluctuations caused by renewable energy and low carbon technologies.

A Working Group of GCRP stakeholders was set up to develop and assess the proposal. Grid Code sections CC.6.1.7 and ECC.6.1.7 have been modified to align the technical requirements in the Grid Code and those set out in the new EREC P28 Issue 2. Editorial changes have been made in the other sections to reflect EREC P28’s “Issue 2” where previously references were made to its “Issue 1”.

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.

Grid Code Review Panel recommendation

At the GCRP meeting on 19 December 2018, the GCRP unanimously agreed that GC0118 better facilitates Grid Code objectives and recommended that it should be implemented.

Our decision

We have considered the issues raised by the modification proposal and in the Final Modification Report, dated 22 February 2019 (“FMR”). We have considered and taken into account the responses to the industry consultation on the modification proposal which are included in the FMR³. We have concluded that:

- implementation of the modification proposal will better facilitate the achievement of the objectives of the Grid Code;⁴ and
- approving the modification proposal is consistent with our principal objective and statutory duties.⁵

Reasons for our decision

³ Grid Code proposals, final reports and representations can be viewed on NGET’s website at: <http://www2.nationalgrid.com/UK/Industry-information/Electricity-codes/Grid-code/Modifications/>

⁴ As set out in Standard Condition C14(1)(b) of NGET’s Transmission Licence, available at: <https://epr.ofgem.gov.uk/>

⁵ The Authority’s statutory duties are wider than matters which the Grid Code Panel Review must take into consideration and are detailed mainly in the Electricity Act 1989 as amended.

We consider this modification proposal will better facilitate Grid Code objectives (i), (ii) and (iii), and has a neutral impact on the other objectives.

(i) to permit the development, maintenance and operation of an efficient, co-ordinated and economical system for the transmission of electricity

The EREC P28 Issue 2 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 revised document facilitates improved co-ordination of planning levels for flicker related voltage fluctuations. We consider that by aligning the technical requirements in the Grid Code and those set out in the new EREC P28 Issue 2, this modification proposal will help ensure efficient development and operation of the electricity transmission networks.

(ii) to facilitate competition in the generation and supply of electricity (and without limiting the foregoing, to facilitate the national electricity transmission system being made available to persons authorised to supply or generate electricity on terms which neither prevent nor restrict competition in the supply or generation 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 connection of generation. We consider these type of changes will facilitate competition in the generation market.

(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

The alignment of the Grid Code with EREC P28 Issue 2 harmonises the approach on voltage regulation across transmission and distribution networks, thus promoting clarity and efficiency across the systems.

Decision notice

In accordance with Standard Condition C14 of the Transmission Licence, the Authority hereby directs that Grid Code modification proposal Grid Code GC 0118: 'Modification to the Grid Code to accommodate the recent Distribution Code modification to Engineering Recommendation P28 –Voltage fluctuations and the connection of disturbing equipment to transmission systems and distribution networks in the UK' be made.

Martin Queen
Principal Engineer

Signed on behalf of the Authority and authorised for that purpose