Modification proposal:	**GSR025: Updating the SQSS to reflect the recent modification to Engineering Recommendation P28 (GSR025)**		
Decision:	The Authority[1] approves[2] the proposed changes to the National Electricity Transmission System Security and Quality of Supply Standards (NETS SQSS)		
Target audience:	National Grid Electricity Transmission PLC, transmission licensees and other interested parties		
Date of publication:	10 December 2020	Implementation date:	1 April 2021

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. EREC P28 is referenced in the NETS SQSS, the Grid Code, and the Distribution 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 EREC P28. This necessitated a review of the EREC P28 Issue 1, which was agreed both by the Distribution Code Review Panel and the Grid Code Review Panel.

The NETS SQSS requires, amongst other things, that the Transmission System is developed and operated such that prior to any faults, following any secured events, and following operational switching, there are no Unacceptable Voltage Conditions. This is achieved by requiring the voltages on the National Electricity Transmission System (NETS) to remain within the ranges specified in Section 6 and Section 10 of the NETS SQSS, and requiring Voltage Step

[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.

Changes on the Onshore Transmission System to not exceed limits specified in Section 6 of the NETS SQSS. Specifically, the limits on Voltage Step Changes for operational switching occurring at intervals of less than 10 minutes are listed in Table 6.5 and Figure 6.1 of the NETS SQSS, and are derived from EREC P28. GSR025 seeks to align the NETS SQSS with EREC P28 Issue 2.

We note that on 9 May 2019 we approved Distribution Code modification DCRP/MP/18/01[3] and Grid Code modification GC0118[4] to implement the changes set out in EREC P28 Issue 2 into the Distribution Code and Grid Code respectively.

The modification proposal

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.

Changes to the minimum time required between two consecutive operations causing a specified Voltage Step Change in EREC P28 require the following changes to the NETS SQSS:

[3] DCRP/MP/18/01: Revision to Engineering Recommendation P28 Ofgem decision link: https://www.ofgem.gov.uk/publications-and-updates/dcrpmp1801-revision-engineering-recommendation-p28

[4] GC0118: Modification to the Grid Code to accommodate the recent Distribution Code modification to Engineering Recommendation P28 Ofgem decision link: https://www.ofgem.gov.uk/publications-and-updates/gc0118-modification-grid-code-accommodate-recent-distribution-code-modification-engineering-recommendation-p28

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- Change the type of event listed in rows 1 and 2 of Table 6.5 of the NETS SQSS, *Voltage Step Change Limits in Planning and Operational Timescales*, such that they refer to operational switching at intervals of 8 minutes rather than 10 minutes.
- Replace figure 6.1 of the NETS SQSS, *Maximum Voltage Step Changes Permitted for Operational Switching*, with a new figure based on Figure B1.2 of the EREC P28 Issue 2.

Industry Consultation

An industry consultation was undertaken, closing 5 January 2019. Two consultation responses were received, both of which supported the modification proposal.

NETS SQSS Panel recommendation

The NETS SQSS Panel considered the proposal and consultation responses at the Panel meeting on 16 January 2019. The Panel recommended that GSR025 be implemented.

Decision notice

This letter sets out the Authority's decision the proposed changes to the NETS SQSS and the reasons for that decision. We have concluded that:

- implementation of the modification proposal will better facilitate the achievement of objective (i) of the NETS SQSS;[5] and
- approving the modification is consistent with our principal objective and statutory duties.[6]

Reasons for our decision

We consider the NETS SQSS modifications proposed in GSR025 better facilitate NETS SQSS objective (i) and have a neutral impact on the other objectives.

[5] The NETS SQSS Industry Governance Framework: https://www.nationalgrideso.com/sites/eso/files/documents/NETS%20SQSS%20Industry%20Governance%20Framework%20v1.0%20%2830-03-12%29.pdf

[6] The Authority's statutory duties are wider than matters which NGET must take into consideration and are detailed mainly in the Electricity Act 1989 as amended.

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(i) facilitate the planning, development and maintenance of an efficient, coordinated and economical system of electricity transmission, and the operation of that system in an efficient, economic and coordinated manner;

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. The changes set out in EREC P28 Issue 2 have been implemented into the Distribution Code (DCRP/MP/18/01) and Grid Code (GC0118). We consider that by aligning the standards related to Voltage Step Change with 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.

Implementation

In this letter we have set out our decision to approve the changes to the NETS SQSS proposed in GSR025. For these changes to take effect we will need to modify the relevant conditions of the Electricity Transmission licence so they refer to the new version of the NETS SQSS. We intend to shortly consult on a new licence modification proposal in order to implement GSR025 from 1 April 2021.

Peter Bingham
Chief Engineer, Systems and Networks
Signed for and on behalf of the Authority

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