# SQSS Review Panel – Modification Proposal

# Updating the SQSS to reflect the recent modification to Engineering Recommendation P28

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**Summary**

The NETS SQSS requires 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. To meet this requirement:

- Voltages on the National Electricity Transmission System are required to remain within the ranges specified in Section 6 and Section 10 of the NETS SQSS; and
- Voltage Step Changes on the Onshore Transmission System are required not to exceed the limits specified in Section 6 of the NETS SQSS.

The limitations on Voltage Step Changes for operational switching that occurs at intervals of less than 10min are based on Engineering Recommendation P28 - Voltage fluctuations and the connection of disturbing equipment to transmission systems and distribution networks in the United Kingdom.

Engineering Recommendation (EREC) P28 Issue 1 was first published in 1989 to provide recommended planning limits for voltage fluctuations for connection of equipment to public electricity supply systems in the UK. EREC P28 Issue 1 was primarily concerned with assessment of voltage fluctuations and associated flicker produced by traditional domestic, commercial and industrial loads.

Since EREC P28 Issue 1 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/embedded generation equipment powered by renewable energies and other low carbon technology equipment. These types of modern equipment are capable of causing voltage fluctuations.

Significant developments in Electromagnetic Compatibility (EMC) requirements have also taken place, which are captured in the International Electro-technical Commission (IEC) 6100 series of Standards and technical reports. United Kingdom implementation of these Standards is captured in the various parts of BS EN 61000.

Engineering Recommendation P28 is referenced in the Grid Code, Distribution Code and SQSS. A joint Grid Code and Distribution Code Working Group was established to oversee the revision of Engineering Recommendation P28 Issue 1 and associated modification to requirements for voltage fluctuation in the Distribution Code and the Grid Code and the working group has produced a revised version of Engineering Recommendation P28 i.e. EREC P28 Issue 2 which was submitted to the Authority for approval on 17 May 2018.

In the revision, it has been proposed to align the requirements on the minimum time interval between Voltage Step Changes with that specified in IEC 6100. This alignment will have an impact on the NETS SQSS. Other changes proposed by the revision have no impact on the NETS SQSS.

Therefore, a sequential modification is required to the SQSS to update the reference to the "Minimum time interval between voltage changes" diagram which has been updated in Issue 2 of P28. It is proposed that the new diagram will replace Figure 6.1.

It is proposed that this modification progresses directly to consultation to align with the corresponding Grid Code modification GC0118 which will be progressing to Code Administrator consultation at the same time. Following this, it is proposed that all three modifications are submitted to the Authority at the same time as a complete package.

More information on the proposed modification to the Engineering Recommendation P28 can be found here under the "DCRP/18/01/PC – Closed" tab.

## Users Impacted

***High***

None identified

***Medium***

None identified

***Low***

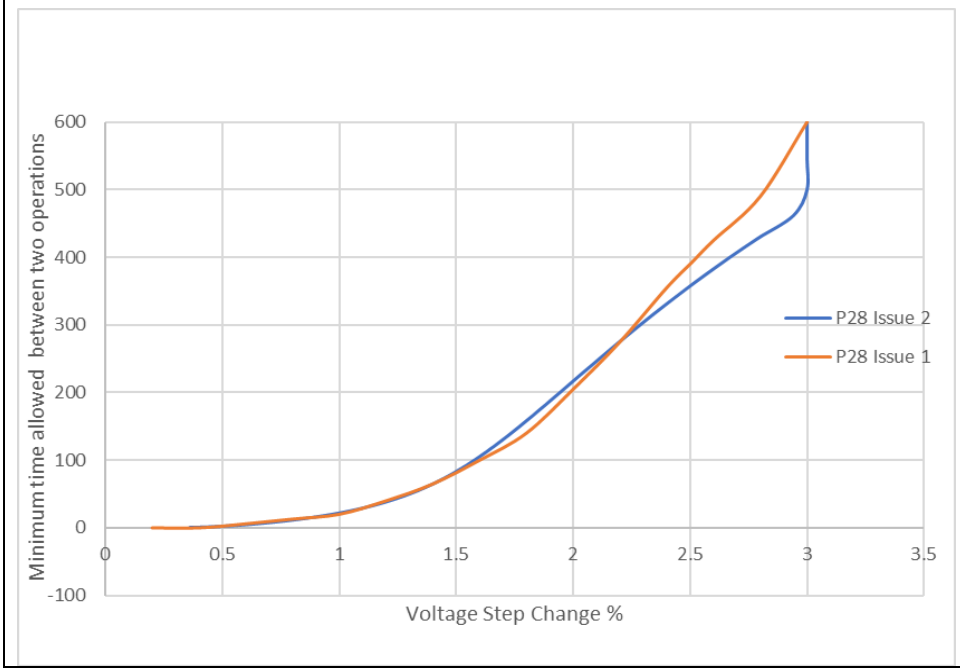
Transmission owners

## Description & Background

More information on the proposed modification to the Engineering Recommendation P28 can be found here under the "DCRP/18/01/PC – Closed" tab.

## Proposed Solution

The minimum time required between two consecutive operations causing a Voltage Step Change of a specific level are shown in Figure 1 below for both P28 Issue 1 and Issue 2.



In order to reflect this change in the NETS SQSS it will be necessary to

- Change the 10 minutes referred to in Row 1 and Row 2 of Table 6.5 of the NETS SQSS to 8 minutes; and
- Replace Figure 6.1 of the NETS SQSS by Figure B.1.2 of the new EREC P28 Issue 2.

The merits of this change are discussed in the P28 Issue 2 proposal and do not form part of this modification.

**Assessment Against SQSS Objectives**

[Will the proposed changes to the SQSS better facilitate any of the SQSS objectives]

***(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;***

Positive. The alignment of all the standards relevant to Voltage Step Changes would ensure that the transmission system is developed in a coordinated manner.

***(ii) ensure an appropriate level of security and quality of supply and safe operation of the National Electricity Transmission System;***

Neutral

***(iii) facilitate effective competition in the generation and supply of electricity, and (so far as consistent therewith) facilitating such competition in the distribution of electricity; and***

Neutral

***(iv) facilitate electricity Transmission Licensees to comply with their obligations under EU law.***

Neutral

**Impact & Assessment**

***Impact on the SQSS***

**Error! Reference source not found.** requires amendments to the following parts of the NETS SQSS:

- Figure 6.1: Maximum Voltage Step Changes Permitted for Operational Switching
- Table 6.5: Voltage Step Change Limits in Planning and Operational

Timescales

***Impact on the National Electricity Transmission System (NETS)***

The proposed modification does not adversely impact the NETS.

***Impact on greenhouse gas emissions***

The proposed modification does not impact greenhouse gas emissions.

***Impact on relevant computer systems***

The proposed modification does not impact relevant computer systems.

***Impact on core industry documents***

It will be necessary to ensure that the relevant Grid Code sections have been updated to ensure full alignment of the requirements amongst P28, the Grid Code, and the NETS SQSS.

***Impact on other industry documents***

The proposed modification does not impact any other industry documents.

| **Supporting Documentation** |
|---|
| Have you attached any supporting documentation: YES<br>If Yes, please provide the title of the attachment: SQSS Industry Consultation – GSR025 Final |

| **Recommendation** |
|---|
| The SQSS Review Panel is invited to:<br><br>Progress this issue to Industry Consultation |