

Annex 1: Historical Background to Previous Modifications Relevant to GSR036

Purpose and scope

This Annex provides historical background and regulatory context for the proposal to amend the voltage limits set out in Tables 6.3 and 6.4 of the Security and Quality of Supply Standard (SQSS). It summarises relevant prior SQSS modifications in order to explain how approaches to nominal voltage, voltage ranges, and voltage limits have evolved over time, and how that evolution informs the present proposal.

By outlining the intent and outcomes of predecessor modifications—specifically GSR008, GSR021, and GSR026—this Annex establishes the regulatory rationale and drafting approach that underpin successive updates to the SQSS voltage framework. This context is intended to support stakeholders and decision-makers by demonstrating how GSR036 builds on established precedent rather than introducing a novel approach.

Overview of previous SQSS modifications

GSR008, GSR021, and GSR026 represent successive stages in the development of how voltage limits and nominal voltage concepts are addressed within the SQSS.

GSR008 introduced a revision to the planning limits for the 275 kV transmission network by reducing the upper steady-state voltage limit from +10% to +9%. This change reinforced the boundary within which the transmission system is planned, while leaving operational voltage management and permissible voltage deviations to be governed through the Grid Code and associated operational arrangements.

GSR021 subsequently proposed the inclusion of 220 kV as an additional nominal voltage level within the SQSS. The modification recognised that transmission systems operate across voltage bands rather than at fixed, discrete nominal voltages. Although GSR021 was not implemented, it highlighted an important issue regarding how nominal voltage concepts are represented within the SQSS as network configurations evolve.



GSR026 reflected this evolving approach by restructuring the SQSS voltage tables so that voltage limits are expressed by reference to systems operating within defined voltage ranges, rather than by reference to specific nominal voltage levels. GSR026 did not seek to relax voltage limits or widen permissible operating ranges; instead, it clarified the framing of voltage limits within the SQSS planning standard.

Taken together, these modifications illustrate a progression in SQSS drafting while preserving a clear separation between planning standards set out in the SQSS and operational provisions governed through the Grid Code.

Relationship with the Grid Code

The relationship between these SQSS modifications and the Grid Code reflects the need for coordination between planning standards and operational requirements, rather than a direct alignment of numerical voltage thresholds.

Although GSR008 reduced the upper planning limit for 275 kV assets to +9%, that change was informed by asset standards in place at the time, including CEGB document PLMST9 (December 1985), which identified 300 kV as the rated voltage and 289 kV as the maximum working voltage for 275 kV plant. This reduction was not replicated as a specific numerical limit in the Grid Code. Instead, the Grid Code continued to define permissible operational voltage deviations by reference to system conditions, statutory obligations, and equipment capability.

GSR021 did not seek to widen operational voltage ranges. Rather, it highlighted the importance of maintaining coherence between SQSS definitions and the operational framework as transmission system configurations change. Although not approved, the modification reinforced the need for clarity in how voltage concepts are expressed across planning and operational standards.

Relevance to GSR036

GSR036 proposes amendments to the SQSS voltage limits in Tables 6.3 and 6.4 for the 275 kV network by restoring the upper steady-state and post-fault voltage limits to +10%. This proposal reflects current equipment rating documentation, including TS1(RES) Issue 1 (May 2018), which identifies a maximum continuous system voltage of approximately 303 kV for a nominal 275 kV system. Alignment with these ratings has been reviewed and confirmed by the Transmission Owners.



Where voltage limits are defined or adjusted within the SQSS, it remains important to distinguish clearly between operation that falls within the SQSS standard and voltage conditions that constitute non-standard operation. GSR026 did not introduce new assessment or justification processes for voltage conditions outside normal limits; rather, it restructured how voltage limits are framed. Accordingly, appropriate cross-referencing between the SQSS and the Grid Code remains necessary to avoid ambiguity as to when voltage conditions fall outside the standard operating envelope and require management through existing non-standard arrangements.

In this context, GSR036 builds on established precedent by clarifying the standard operating limits within the SQSS while retaining existing Grid Code governance for operation outside those limits. It does not introduce new governance routes, assessment processes, or responsibilities, nor does it alter the established separation between planning standards and operational decision-making.

References

- [United Kingdom Government, Clean Power 2030 Action Plan, 2024](#)
- [Electricity Networks Commissioner Companion Report, 2025](#)
- [GSR026: Adding Non- Standard Voltages to the SQSS, 2025](#)
- [International Electrotechnical Commission 2009, International Electrotechnical Standard, 60038:2009, Standard Voltages, 2009](#)
- [System Access Reform | National Energy System Operator Website, 2025](#)
- [Transmission Acceleration Action Plan, 2025](#)
- [GSR 008, Work Group 4 Report, Fundamental SQSS Review, 2010](#)
- [GSR021: Operational and Planning Criteria for 220 kV Transmission Assets](#)

