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SQSS Modification Proposal Form

GSR036:

System Access Reform: Review of the voltage limits

Overview: This modification is to review the voltage limits applicable to operational timescales and the potential for provision of some flexibility around them.

Modification process & timetable

1. **Proposal Form**
   06 November 2025
2. **Code Administrator Consultation**
   30 March 2026 – 22 April 2026
3. **Draft Final Modification Report**
   12 May 2026
4. **Final Modification Report**
   04 June 2026
5. **Implementation**
   10 Business Days after Authority decision

Status summary: The Proposer has raised a modification and is seeking a decision from the Panel on the governance route to be taken.

This modification is expected to have a: Medium impact
Transmission Owners (TOs), Transmission System Operators (TSOs), National Energy System Operator (NESO), Distribution Network Operators (DNOs), Non-embedded Customers, Directly Connected Customers, Offshore Transmission Owners (OFTOs), Interconnectors and Generators.

Proposer's recommendation of governance route	Standard Governance modification to proceed to Code Administrator Consultation.	
Who can I talk to about the change?	**Proposer:** Dozie Nnabuife Dozie.Nnabuife@neso.energy 07970004786	**Code Administrator Contact**: Box.SQSS@neso.energy

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What is the issue?

This Proposal seeks to tackle a significant operational challenge currently facing the National Electricity Transmission System (NETS) and the constraints imposed by stringent post-fault voltage limits, specifically on the 200–300kV network. These restrictions have had a tangible impact on day-to-day operations, frequently causing delays to essential network outages, prompting the need for Voltage Event Reports (VERs), and requiring the unnecessary operation of synchronous plants to manage potential voltage excursions. The upper voltage limit was revised in 2017 to comply with European standards by lowering the threshold, but all Great Britain (GB) Transmission Owners (TOs) remain technically able to operate at the earlier, more generous limit of +10% above the nominal voltage. The NETS SQSS Section 6 criteria sets the upper voltage limit, applicable to the 275kV network, too low. It also does not allow any short-term flexibility that could be permitted from time to time if it has no negative impact on the NETS. When the current SQSS voltage limits in Sections 6.3 and 6.4 were approved, they reflected the system conditions and engineering norms of that time. Initially, these limits were considered appropriate because the transmission network operated with lower asset utilisation and conservative planning margins, ensuring stability under all probable contingencies. Consequently, those criteria were adopted as Standards, aligning with international practices and the Grid Code. As the energy landscape evolved, several factors prompted a reassessment. First, the rapid growth of renewables and interconnectors introduced greater variability, requiring more flexible operational approaches. Additionally, economic pressures to optimise outage planning and reduce reinforcement costs highlighted the benefits of conditional flexibility. In 2017, the 275kV upper voltage limit was reduced from 302.5kV (+10%) to 300kV (+9%)[1] . The reason for this change was to align with an International Electrotechnical Commission (IEC) standard rated voltage. The review report concluded this was "expected to have negligible effect on investment or operating costs, or on plant performance."[2]

[1] https://www.neso.energy/industry-information/codes/sqss/modifications/gsr026-adding-non-standard-voltages-sqss

[2] Transmission Acceleration Action Plan, Public Consultation Report, February 2025,

NESO has identified multiple case studies where outages were either rejected due to non-compliant voltages of approximately +10% on the 275kV network or NESO internal voltage reports were issued.

In some cases, outages would need to be agreed by seeking a derogation to the SQSS to facilitate key works, despite the TOs being agreeable to operating their equipment at an increased voltage.

These challenging outages have predominantly been driven by large generators being unavailable, or voltage support equipment on outage alongside key network reinforcement outages. Consequently, these can hold up key projects where the value of delivery of the project would outweigh the risk of the outage on the network.

To address these steps and align with the ambitions of the Clean Power 2030 strategy, this Proposal aims to introduce more flexibility, so that decisions can be based on actual risk and expert judgement, allowing important work to go ahead safely and efficiently.

Why change?

The current system access process is insufficient to support the scale and pace of transmission network development required to meet the Clean Power 2030 and 2050 Net Zero targets. To deliver infrastructure at four times the historical rate, a strategic overhaul is needed. Furthermore, to enhance cost efficiency and align with operational insights, it is proposed to revisit the current limit to restore the 10% threshold.

This modification enables beneficial outages, those that facilitate critical upgrades, without compromising system security.

Reason for changes: Improving outage planning flexibility and efficiency is justified because expanding the permissible post-fault voltage range enables NESO and TOs to accommodate outage combinations that would otherwise be rejected, thereby reducing operational constraints. Moreover, this flexibility mitigates delays caused by voltage-driven limitations, allowing essential works to proceed in a timely manner. Consequently, the system operates more efficiently while maintaining security and supporting coordinated decision-making across affected parties.

- Creating best practise by adapting the SQSS 6.3 and 6.4 limits. The case studies supporting the Proposal show that expanding the post-fault voltage limit to +10% allows outage combinations that would otherwise be rejected to proceed, thereby reducing operational constraints and avoiding delays caused by marginal voltage breaches. Moreover, by preventing VERs and unnecessary corrective

actions, the revised limit enables NESO and TOs to schedule essential works more efficiently while maintaining system security, thus materially enhancing outage-planning flexibility and coordinated operational decision-making.

- Although any financial benefit is expected to be modest, operational evidence indicates that, in some circumstances, a slightly higher post-fault voltage limit at 275 kV reduces reliance on instructing generators to run solely for reactive support. Moreover, case studies demonstrate that marginal voltage headroom frequently prevents avoidable interventions, thereby lowering reactive-power dispatch costs while maintaining system security, especially in lightly loaded overnight conditions where voltage gains are highest.
- Current operational experience indicates that substantial cost savings can be achieved by avoiding the need to instruct generators to run solely for voltage support under certain outage combinations. Moreover, by enabling operation within a more flexible post-fault voltage range, the proposal reduces reliance on costly remedial actions. Consequently, system operation becomes more economical while maintaining security, thereby strengthening the justification for the proposed adjustment to voltage limits.
- In implementing the change, we are aiming to accelerate the development of the transmission network by allowing the TOs to request/take outages when network reinforcement works are identified. If the measures proposed here would be implemented, TOs could have the capability to allow NESO to operate within the relaxed voltage limits for the appropriate duration and time in a manner like how they permit higher thermal ratings via an Operational Capability Limits Record (OCLR).
- This Proposal seeks to improve system resilience through enhanced risk assessment and maintenance measures. By enabling planned outages to proceed safely under constrained conditions, the system retains stability despite equipment unavailability or adverse network configurations, thus strengthening resilience through informed, evidence-based operational judgment.
- As per discussions with TOs, these intended changes should not represent any significant risk in operating the 275kV assets to +10%
- Previously, NESO had to request post fault voltage derogation which the TO had agreed to, in order to deal with a specific outage.

- The above reasons are in alignment with the Transmission Acceleration Action Plan and the wider System Access Reform programme,[3] which has broad industry support and aims to modernise access planning, reduce emergency recalls, and support digital-first delivery.

It is worth noting that whilst the SQSS was updated to reduce the upper 275kV limit to +9%, the Grid Code (CC.6.1.4/ECC.6.14) and Relevant Electrical Specifications for connections to each TOs network still refer to the 1.1pu (303kV) values that equipment should be capable of withstanding.

What is the Proposer's solution?

This Proposal recommends a return to the previous upper limit, offering a practical means of easing operational constraints and supporting critical works, without compromising system security or resilience. Ultimately, restoring the former voltage thresholds aligns with the Clean Power 2030 (CP30) strategy and the ambition to create a more flexible and robust electrical grid. This recommendation is supported by evidence from case studies (**Annex 02**) where outages were rejected due to voltages approaching +10%, and by Security and Quality of Supply Standard (SQSS) review findings which concluded that the original voltage limit had negligible impact on costs or equipment performance. Accordingly, this change is anticipated to remove unnecessary obstacles to network upgrades and project delivery, particularly in situations where the benefits of the work outweigh the risks associated with higher voltage operation.

Therefore, this Proposal suggests reverting the 275 kV upper limit to +10%, subject to agreement with the onshore licensees and application of strict governance safeguards. This change does not undermine security, reflects a risk-based approach that balances reliability, efficiency, and compliance.[4]

The solution is to update the SQSS to allow more flexible, risk-based decision-making for network outages and constraints. The legal text is contained in Annex 1 This will be achieved by:

[3] Transmission Acceleration Plan, 2025, https://www.neso.energy/industry-information/network-access-planning/transmission-acceleration-public-consultation; System Access Reform, 2025, https://www.neso.energy/industry-information/system-access-reform

[4] GSR026: Adding Non- Standard Voltages to the SQSS, 2025, https://www.neso.energy/industry-information/codes/sqss/modifications/gsr026-adding-non-standard-voltages-sqss

- Updating Table 6.3 and Table 6.4 in the SQSS to reflect the revised upper voltage limit for the nominal range which 275kV lies within to +10%.
- The proposed change according to the legal text reads as follows:

Table 6.3 Pre-Fault Steady State Voltage Limits and Targets in Operational Timescales

(a) Voltage Limits on Transmission Networks			
Nominal Voltage	PU Value (1pu relates to the Nominal Voltage)	Minimum (percentage of Nominal Voltage)	Maximum (percentage of Nominal Voltage)
Greater than 300kV	0.95pu-1.05pu	-5% ***Note 6***	+5%
200kV up to 300kV	0.95pu-~~1.09~~1.10pu	-5% ***Note 6***	~~+9%~~ +10%
132kV up to and including 200kV	0.95pu-1.10pu	-5% ***Note 6***	+10%
(b) Voltages to be Achievable at Interfaces to Distribution Networks and Non-Embedded Customers			
Any Nominal Voltage	Target voltages and voltage ranges as agreed with the relevant Distribution Network Operators or Non-Embedded Customers, within the limits of Table 6.4		

Table 6.4 Steady State Voltage Limits and Targets in Operational Timescales

(a) Voltage Limits on Transmission Networks			
Nominal Voltage	PU Value (1pu relates to the Nominal Voltage)	Minimum (percentage of Nominal Voltage)	Maximum (percentage of Nominal Voltage)
Greater than 300kV	0.90pu-1.05pu	-10%	+5% ***Note 7***
200kV up to and including 300kV	0.90pu-~~1.09~~1.10pu	-10%	~~+9%~~ +10%
132kV up to and including 200kV	0.90pu-1.10pu	-10%	+10%
(b) Voltage Limits at Interfaces to Distribution Networks and Non-Embedded Customers			
Nominal Voltage			
132kV	0.90pu-1.10pu	-10%	+10%
At less than 132kV	0.94pu-1.06pu	-6%	+6%

- Adding a note to the relevant tables stating that, under certain circumstances, operating to a higher limit is permitted if agreed with an onshore licensee in

relation to one or more nodes on the onshore licensee's transmission system. Such agreement should specify the affected nodes, the higher limit, the duration, and any restrictions on the conditions which are applicable after a case-by-case analysis.

Legal text

The legal text for this change can be found in **Annex 01**.

What is the impact of this change?

A medium impact on TOs, NESO, DNOs, OFTOs, Interconnectors and Generators. The solution proposed may increase flexibility for NESO and TOs. For DNOs this allows more tailored coordination with the transmission system at key interfaces, supporting more projects and outages scheduling. OFTOs, interconnectors and generators may benefit from fewer outage rejections and accelerated grid connections, as the process prioritises economic and system value while upholding asset integrity.

Proposer's assessment against SQSS Objectives	
Relevant Objective	**Identified impact**
(a) 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** Increasing the post-fault limit to +10% enables previously rejected outages to proceed, thereby accelerating cost-effective upgrades; moreover, avoiding VERs improves reliability and coordinated operational risk management. Faster and more cost-effective upgrades enhance system efficiency, and improved reliability strengthens consumer affordability; moreover, although it is increasing the possibility rather than firmly confirming this is going to happen, coordinated industry practices still reinforce consistent operational risk assessments. From the analysis of the

	cases and their commonalities there is potential for positive which could be confirmed after implementation of this Proposal in the long term.
(b) ensure an appropriate level of security and quality of supply and safe operation of the National Electricity Transmission System;	**Positive** The Proposal is expected to support improved risk assessment, which may contribute to maintaining appropriate levels of system security, quality of electricity supply, and safe operation of the NETS.
(c) facilitate effective competition in the generation and supply of electricity, and (as far as consistent therewith) facilitating such competition in the distribution of electricity; and	**Positive** The modification facilitates a more open and flexible system, making it easier for new and existing companies to compete in generating and supplying electricity. Encourages more competition in electricity generation and supply, making it easier for new entrants to participate, driving innovation and potentially lowering costs for consumers.
(d) facilitate Licensees to comply with any relevant obligations under Assimilated law	**Positive** The modification has a positive impact as it neither alters nor expands licensees' statutory duties under assimilated law. It aligns with EU-derived regulations and the European Electricity Network Codes retained in UK law. Consequently, the modification enhances regulatory coherence while maintaining a neutral compliance position for licensees.

Proposer's assessment of the impact of the modification on the stakeholder / consumer benefit categories	
Stakeholder / consumer benefit categories	**Identified impact**
Improved safety and reliability of the system	**Positive** This modification will improve safety and reliability by allowing essential works and upgrades to be planned and delivered more efficiently, while still maintaining strict assessments and agreed mitigations. This ensures the system remains secure and resilient, reduces unnecessary delays, and supports a reliable electricity supply for consumers. Any increase in operational risk is carefully managed through joint assessment processes.
Lower bills than would otherwise be the case	**Positive** This modification may help lower consumer bills by enabling essential upgrades and maintenance to be delivered more efficiently and with fewer delays. This reduces unnecessary constraint costs and project overruns, leading to a more cost-effective electricity system. Savings from improved planning and flexibility are ultimately passed on to consumers through lower network charges.
Benefits for society as a whole	**Positive** This modification might benefit society by supporting a faster transition to a cleaner, more reliable, and cost-effective electricity system. It enables timely delivery of essential upgrades and new connections, helping to meet climate goals, boost economic growth, and ensure a secure energy supply for everyone. Improved

	planning and flexibility also reduce disruption and costs, delivering broad social and environmental benefits.
Reduced environmental damage	**Positive** This modification may help mitigate climate change by reducing transmission losses associated with unnecessary voltage-control interventions and by enabling faster delivery of network reinforcements that support low-carbon generation. It also strengthens system resilience by providing more flexible voltage management under increasingly variable climate-driven operating conditions.
Improved quality of service	**Positive** This modification will improve quality of service by enabling faster and more reliable delivery of network upgrades and maintenance. This reduces the likelihood of unplanned outages, ensures a more stable electricity supply, and allows consumers to benefit from a higher standard of service. Enhanced planning and flexibility also mean issues can be addressed more proactively, further supporting consistent and dependable service.

When will this change take place?

Implementation date

Target date: Q3 2026

Date decision required by

As soon as possible to achieve implementation in time for roll-out.

Implementation approach

Implementation will need to be co-ordinated and communicated with all affected parties. The process leading the implementation required a robust, coordinated strategy by-design, ensuring effective communication channels and procedural updates between NESO, TOs, DNOs, non-embedded customers, interconnectors, and generators. The joint consensus that is expected from the parties will enable higher voltage limits are safely agreed. Although the changes primarily affect outage planning coordination, they do not automatically require Grid Code amendments; however, if new technical obligations arise, modifications may follow. There is a need to update the codes and technical obligations such as SQSS in operational scales to ensure they remain aligned with emerging industry standards and evolving grid requirements. These updates will help maintain both operational consistency and regulatory compliance as the energy sector continues to transform.

Proposer's justification for governance route

The preferred process is the Standard Governance Code Administrator Consultation (CAC). Broad industry consultation through the CAC route is sufficient for gathering feedback and ensuring transparency, especially since previous feedback through a public consultation had already highlighted the need for futureproofing and consistency during the process[5]. Considering that some voltage values were revised as part of GC026 in 2020[6], the changes proposed here reflect a different scenario in the context of CP30. The Proposal reflects a shift towards harmonising with EU standards and accommodating new voltage levels. The Proposer has suggested this route because the modification is considered straightforward and does not require detailed technical debate. The CAC process allows for a streamlined consultation managed by the Code Administrator, ensuring transparency and compliance with CACoP principles while avoiding the need for a full Workgroup assessment. This approach is appropriate as by returning to pre-2017 norms and raising voltage limits, we ensure correctness and adapt to evolving requirements.

[5] Transmission Acceleration Action Plan, op cit supra, page5

[6] https://www.neso.energy/industry-information/codes/sqss/modifications/gsr026-adding-non-standard-voltages-sqss

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Interactions

☒Grid Code	☐BSC	☒STC	☐CUSC
☐European Network Codes	☐Other modifications	☐Other	

This Proposal is part of a broader programme of work under System Access Reform and is expected to interact with other code modifications. Concurrent changes to the STC and Grid Code are being considered to ensure alignment across the industry's technical and governance frameworks. These interactions are being actively scoped and coordinated to support a consistent and efficient implementation pathway, with warm-up presentations and stakeholder engagement already underway across all relevant Panels.

Acronyms, key terms, and reference material

Acronym / key term	Meaning
BSC	Balancing and Settlement Code
CUSC	Connection and Use of System Code
DNOs	Distribution Network Operators
NESO	National Energy System Operator
OCLR	Operational Capability Limits Record
OFTO	Offshore Transmission Owners
STC	System Operator Transmission Owner Code
SQSS	Security and Quality of Supply Standards
TO	Transmission Owners
TSO	Transmission System Operator

Annex	Content
Annex 01	GSR036 Legal Text
Annex 02	GSR036 Case Studies

References

- Clean Power 2030 Action Plan - GOV.UK
- Electricity Networks Commissioner Companion Report, 2025

- GSR026: Adding Non- Standard Voltages to the SQSS
- System Access Reform | National Energy System Operator Website
- Transmission Acceleration Action Plan, 2025