

GSR036 Annex 3: Assessment against EU Network Codes

This report demonstrates that the amendment proposed under GSR036, which reinstates a $\pm 10\%$ voltage operating range at 275 kV, is compliant with assimilated European Union law as it applies in Great Britain. This includes the retained requirements of Regulation (EU) 2016/631 (RfG), Regulation (EU) 2016/1447 (HVDC), Regulation (EU) 2016/1388 (DCC) and Regulation (EU) 2017/1485 (SOGL).

The Proposer considers that approval of GSR036 provides a clear and appropriate basis for the SQSS at this time. Any prospective Electricity Agreement is expected to apply dynamic alignment on a forward-looking basis only. There are currently no agreed or publicly available drafts of revised EU Requirements for Generators against which reversal or anticipatory change could be assessed.

Accordingly, while GSR036 reinstates pre-2017 GB SQSS arrangements that were previously amended to reflect EU positions prevailing at that time, the modification remains valid under the current framework. Consideration of any future alignment beyond this position would fall outside the scope of GSR036, which is limited to assessing and implementing this specific amendment.

The requirements of RfG, DCC and HVDC were implemented into the Grid Code in 2018, with voltage operating ranges consolidated in ECC.6.1.4, which sets nominal voltage operating capability of $\pm 10\%$ for systems between 110 kV and 300 kV on an unlimited duration basis. For voltages above 300 kV, operation is permitted between -10% and $+5\%$ without time restriction and between $+5\%$ and $+10\%$ for up to 15 minutes. Accordingly, for a nominal voltage of 275 kV, operation up to $+10\%$ for an unlimited period is explicitly permitted (see tables below), and no conflict arises for power-generating modules, either under the RfG, DC-connected power park modules or remote-end HVDC systems.

These voltage ranges align with those set out in Article 27 and Tables 1 and 2 of Annex II of SOGL, which specify identical per-unit voltage ranges at the connection point, with Article 27(3) confirming that the voltage base for per-unit notation is to be defined by each System Operator, consistent with the Grid Code approach. The Grid Code position is further supported by pre-2018 GB arrangements, under which CC.6.1.4 already permitted



±10% operation at 275 kV, and by the NGET Relevant Electrical Standard TS1, which establish continuous voltage capability consistent with that range.

While SOGL Article 27(4) allows wider voltage ranges by agreement with users for limited periods, GSR036 does not rely on such provisions and does not extend beyond the ±10% threshold, unless agreed between the relevant parties under the Grid Code (in ECC.6.1.4 / CC.6.1.4), thereby avoiding undue tripping risk and complexity.

On this basis, the assessment concludes that GSR036 does not give rise to any inconsistency with retained EU network code requirements and remains compliant with EU-derived obligations applicable to generators and HVDC systems in Great Britain.

Great Britain ¹ RfGs Table 6.1	0,90 per-unit (pu)-1,10 pu	Unlimited
Great Britain ² RfGs Table 6.2	0,90 pu-1,05 pu	Unlimited
	1,05 pu-1,10 pu	15 minutes
Great Britain ³ HVDC Annex III Table 4	0,90 pu-1,10 pu	Unlimited
Great Britain ⁴	0,90 pu-1,05 pu	Unlimited
	1,05 pu-1,10 pu	15 minutes

¹ Subject to Article 5, Table 2, Determining Significance: Requirements for Generators Article 16 Table Limits for thresholds for type B, C and D power-generating modules 166, Table 6.1 and 6.2 minimum time periods during which a power-generating module must be capable of operating for voltages deviating from the reference 1 pu value at the connection point without disconnecting from the network, where the voltage base for pu values is from 110 kV to 300 kV. [Regulation - 2016/631 - EN - EUR-Lex](#)

² Article 5 Table 2, Requirements for Generators Article 16 Table 6.1 and Table 6.2 minimum time periods during which a power-generating module must be capable of operating for voltages deviating from the reference 1 pu value at the connection point without disconnecting from the network where the voltage base for pu values is from 300 kV to 400 kV. [Regulation - 2016/631 - EN - EUR-Lex](#)

³ Requirements for HVDC systems Article 18, Minimum time periods an HVDC system shall be capable of operating for voltages deviating from the reference 1 pu value at the connection points without disconnecting from the network. This table applies in case of pu voltage base values at or above 110 kV and up to (not including) 300 kV. [Regulation - 2016/1447 - EN - EUR-Lex](#)

⁴ Requirements for HVDC systems, voltage limits Article 18, Minimum time periods an HVDC system shall be capable of operating for voltages deviating from the reference 1 pu value at the connection points without disconnecting from the network. This table applies in case of pu voltage base values from 300 kV to 400 kV (included). [Regulation - 2016/1447 - EN - EUR-Lex](#)

Great Britain ⁵ DCC Regulation	0,90 pu-1,10 pu	Unlimited
Great Britain ⁶ DCC Regulation	0,90 pu-1,05 pu	Unlimited
	1,05 pu-1,10 pu	15 minutes

Synchronous area ⁷	Voltage range
Great Britain Annex II Table I SOGL	0,90 pu-1,10 pu

Synchronous area ⁸	Voltage range
Great Britain Annex II Table II SOGL	0,90 pu-1,05 pu

References

- [European Commission, Regulation 2016/631 on Requirements for Generator Connection](#)
- [European Commission, Regulation 2016/1388 on Requirements for Demand Connection](#)
- [European Commission, Regulation 2016/1447, 2016](#)
- [European Commission, Regulation 2017/1485, System Operator Guidelines, 2017.](#)

⁵ Requirements for Demand Connection Article 13.1, Annex II table I minimum time periods during which a transmission-connected demand facility, a transmission-connected distribution facility or a transmission-connected distribution system has to be capable of operating for voltages deviating from the reference 1 pu value at the connection point without disconnecting from the network where the voltage base for pu values is at or above 110 kV and up to (not including) 300 kV. [Regulation - 2016/1388 - EN - EUR-Lex](#)

⁶ Requirements for Demand Connection, Article 13.1, Annex II Table II, minimum time periods during which a transmission-connected demand facility, a transmission-connected distribution facility or a transmission-connected distribution system has to be capable of operating for voltages deviating from the reference 1 pu value at the connection point without disconnecting from the network, where the voltage base for pu values is from 300 kV to 400 kV (including). [Regulation - 2016/1388 - EN - EUR-Lex](#)

⁷ SOGL, Table 1, Annex II, Article 27. Voltage ranges at the connection point between 110 kV and 300 kV. [Regulation - 2017/1485 - EN - EUR-Lex](#)

⁸ SOGL, Table 2 Annex II, Article 27. Voltage ranges at the connection point between 300 kV and 400 kV. [Regulation - 2017/1485 - EN - EUR-Lex](#)

