

Draft Final Modification Report

**GC0142 - Adding Non-Standard Voltages to the Grid
Code**

Nisar Ahmed, Code Administrator Representative

GC0142 Background

A previous modification (GSR021) to include 220kV assets into the SQSS was rejected by Ofgem in July 2016. This was for the following reasons:

- There were concerns regarding the original proposal having only considered the addition of 220kV as a nominal voltage and did not cover future technological advancements or subsequent new voltage rates.
- The original proposal was also not detailed enough to differentiate how both on, and offshore voltages were reported in chapter 6 and chapter 10 of the SQSS.

This modification now seeks to expand the Grid Code to clarify the requirements that will be placed on equipment at non- standard voltages. For reference, currently 400kV, 275kV and 132kV are voltages typically referred to within the Grid Code. This means that any other nominal voltage specifications and requirements are not defined in code.

The proposed changes to the Grid Code should ensure that current and future voltages within the transmission network have clear specification and performance requirements. By including specifications for voltages in such a way that will enable consistency for both the Grid Code and the SQSS.

The same solution will be applied to SQSS via GSR026.

GC0142 – Authority Decision

The Final Modification Report was sent to the Authority on 21 September 2020.

Their decision from the Authority was a **send back** requiring further work.

The Authority had reviewed the proposed changes and identified a number of instances where references to specific nominal voltages remain in the Grid Code. These are Grid Code Planning Code clauses PC.A.2.2.2, PC.A.2.2.3 and PC.A.6.2.1(f), and Grid Code Operating Code clauses OC3.4.1 and OC5.5.4.

The Authority has discussed the issue with the modification proposer, National Grid ESO, who agree that to fulfil the intent of the proposal the above Grid Code clauses should also have been amended such that they no longer refer to specific nominal voltages.

GC0142 – Panel Decision

The Code Administrator requested direction from the Grid Code Review Panel on 29 October 2020.

Panel agreed that the changes were typographical and therefore it was deemed not necessary to issue this for another Code Administrator Consultation. Panel instructed the ESO to make the required changes to the legal text and for this to be circulated ahead of a special Panel meeting in November 2020 to conduct another recommendation vote (DFMR stage).

Ask of the Panel

**The Panel is invited by the Independent
Chair to:**

- Undertake the Recommendation Vote for GC0142

GC0142 - Code Administrator Consultation – Legal Text

Title of the issue. Grid Code Reference	Details proposed	ESO Response
PC.A.2.2.2 PC.A.2.2.3 PC.A.6.2.1(f)	Refer to Supergrid Voltage and 132kV, there is therefore a gap between >200kV and 132kV. I understand that reference to Supergrid voltage and 132kV under Schedule 5 are changed under this proposal, however these parts mirror PC.A.2.2 - should the changes not be made there too?	Agree- these should have been picked up in the modification. Suggest to add in each of these 3 points at 'or greater' 132kV Example: (f) the following data is required on all transformers operating at Supergrid Voltage throughout Great Britain and, in Scotland and Offshore , also at 132kV or greater (including OTSUA): three or five limb cores or single phase units to be specified, and operating peak flux density at nominal voltage;

GC0142 - Code Administrator Consultation – Legal Text

Title of the issue. Grid Code Reference	Details proposed	ESO Response
Tables under OC5.5.4 (reactive capability)	specify reactive capability testing, stating reactive power output measurements under steady state conditions should be consistent with Grid Code requirements i.e. +/-5% at 400kV, 275kV and 132kV and lower voltages - should this be amended to exclude reference to the specific nominal voltages?	<p>Agree- to have these changed in the modification. Although the 'ie' is provided for illustration but it would be better to say :</p> <p>Measurements of the Reactive Power output under steady state conditions should be consistent with Grid Code requirements i.e. fully available within the voltage range $\pm 5\%$ at all 400kV, 275kV and 132kV and lower voltages.</p>

GC0142 - Code Administrator Consultation – Legal Text

Title of the issue. Grid Code Reference	Details proposed	ESO Response
OC3.4.1 (system incident reporting)	references explicit nominal voltages (400kV and 275kV or 132kV) for incident reporting - should this not be amended to a voltage range (i.e. >275kV and between 275kV and 132kV).	<p>This is an issue caused through base lining through GC0105 in May. Agree that this should be changed.</p> <p>iii) a fault on the National Electricity Transmission System which:</p> <p>A. could be linked to the known or reported tripping of 250MW or more as reported in (i) above; and/or</p> <p>B. (as detailed in section CC6.1.4) is linked to a change in the Transmission System voltage of more than</p> <p>I. 300kV or greater 400kV: > +/-5% for >15min; or</p> <p>II. 132kV up to 300kV 275kV or 132kV: > +/- 10% for >15min;</p>

GC0142 - Code Administrator Consultation – Legal Text

Title of the issue. Grid Code Reference	Details proposed	ESO Response
PCA.2.2.5.1	<p>Another check of the Grid Code identified this with a single reference to 132kV. Suggestion to amend this alongside the other updates (this was not picked up by Ofgem – but by Alan)</p> <p>Are panel content to include this too?</p>	<p>In addition, for all interconnecting transformers between the User's Supergrid Voltage System and the User's Subtransmission System throughout Great Britain and, in Scotland and Offshore, also for all interconnecting transformers <i>operating at 132kV or greater</i> between the User's 132kV System and the User's Subtransmission System (and any OTSUA) the User shall supply the following information:-</p>

GC0142 - Next Steps

- **Ask of Panel:** Recommendation Vote
- Final Modification Report to be issued
- Timetable below:

Stage gate	Date
Circulation of Final Modification Report for Panel review ahead of submission to Authority (5 working days)	17 November 2020
Final Modification Report submitted to Authority for decision	24 November 2020
Anticipated Decision from Authority (25 working days)	December 2020 (<i>decision by Authority to be made on the same date for GSR026 and GC0142</i>)
Implementation date	As directed by Ofgem

Appendix 1 - GC0142 Code Administrator Consultation (for information only)

The Code Administrator Consultation was issued on 13 July 2020 for 1 calendar month with a closing date of 14 August 2020.

3 responses were received from the following industry parties:

- NGENSO
- Northern Power Grid
- Scottish Power Renewables

On whether or not the Original better facilitates the Grid Code Objectives than the Baseline.

All three respondents were supportive of the Original solution and that the changes provide additional clarity for Users connected to parts of the transmission system operating at other than a current standard GB voltage. Therefore, it would allow the clear application of the Grid Code to equipment that may be connected in the future at novel voltages.

Appendix 1 - GC0142 Code Administrator Consultation (for information only)

On supporting the proposed implementation approach.

All respondents supported the implementation approach and that it will align with the implementation of the changes proposed in GSR026 (SQSS).

However, Scottish Power Renewables (SPR) is concerned that if the non-standard voltages are included in TGN(E) 288, projects cost will increase as it could be the case for offshore windfarm connecting through an HVDC link or any other project where TGN (E) applies.

NGESO recognise that there could be impacts to TGN and other Electrical Standards such as those found in Annex 1 of the General Conditions. However, it was agreed that this was out of scope for this modification. The voltage ranges have been defined to accommodate the EU requirements and the GB requirements of the Grid Code and make them more resilient where possible.

Legal text changes

1 respondent cited 6 issues with the legal text. These have been assessed by the Proposer and they have clarified their position with the respondent – this is set out below:

Close



Trisha McAuley

Independent Chair, GCRP