

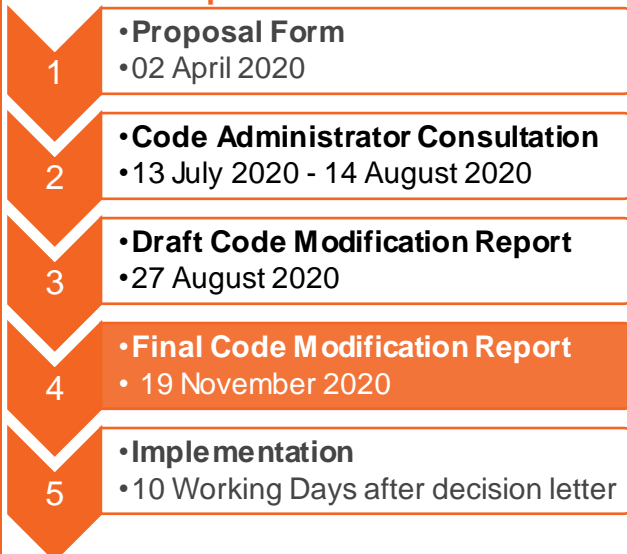
Final Modification Report

GC0142

Adding Non-Standard Voltages to the Grid Code

This Modification is seeking to clarify the requirements that will be placed on equipment at non-standard voltages e.g. 220kV. A separate Modification GSR026 to modify the SQSS is being progressed in parallel.

Modification process & timetable



Have 5 minutes? Read our [Executive summary](#)

Have 20 minutes? Read the full Final Modification Report

Have 30 minutes? Read the full Final Modification Report and annexes

Status summary: Final Modification Report. This Report has been submitted to the Authority for them to decide whether this change should happen.

Panel Recommendation: A Special Grid Code Review Panel was held 16 November 2020 to carry out the recommendation vote following the send back from the Authority on 15 October 2020. The Grid Code Panel unanimously recommended that the Original better facilitates the Grid Code Objectives than the Baseline. Prior to this the recommendation vote was held on 27 August 2020 and the Final Modification report was submitted to the Authority on 21 September 2020.

This modification is expected to have a:	<p>Medium: Any users subject to requirements of the Grid Code installing equipment at novel voltages, who will gain clarity.</p> <p>Low: Users subject to requirements of the Grid Code of equipment at standard voltages who will see no change.</p>
Governance route	The Grid Code Panel agreed that this modification should proceed to Code Administrator Consultation and Ofgem will make the decision on whether it should be implemented.

Who can I talk to about the change?	Proposer: Louise Trodden, National Grid ESO Phone: 07866 165538 Email: louise.trodden@nationalgrideso.com	Code Administrator: Nisar Ahmed, National Grid ESO Phone: 07773043068 Email: Nisar.Ahmed@nationalgrideso.com
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Executive Summary

This modification is running alongside the SQSS modification GSR026¹ and the FMRs for both these modifications are being submitted to Ofgem together. These modifications have been raised in response to a previously rejected SQSS modification GSR021². Both modifications seek to include non-standard voltages which are currently not specified in Grid Code or the SQSS and align them where possible. GSR026 will also align the term 'Supergrid' with the Grid Code.

What is the issue?

The Grid Code currently only references the specification and performance requirements for adding equipment of the following voltages to the Grid: 400kV, 275kV and 132kV. Future technical advancements and equipment of other nominal voltage specifications and requirements are not defined in the Code. 220kV is a common EU transmission voltage. It is possible that this, along with equipment of other common voltages (e.g. 380kV, 110kV) could be connected to the GB system in the near future.

What is the solution and when will it come into effect?

Proposers solution:

To remove references to specific nominal voltages from relevant clauses of the Grid Code, and replace them with a table of voltage ranges, similar to that in the EU codes. This will ensure that current and future voltages within the transmission network have clear specification and performance requirements.

The same solution will be applied to SQSS via GSR026.

Implementation date:

Implementation is expected 10 working days following decision being confirmed.

What is the impact if this change is made?

Who will it impact?

Medium: Any users subject to requirements of the Grid Code installing equipment at novel voltages.

Low: Users subject to requirements of the Grid Code of equipment at standard voltages who will see no change.

¹<https://www.nationalgrideso.com/industry-information/codes/security-and-quality-supply-standards-old/modifications/gsr026-adding>

² <https://www.nationalgrideso.com/codes/security-and-quality-supply-standards/modifications/gsr021-operational-and-planning-criteria>

Interactions

This modification allows for consistency with the changes being proposed to the SQSS under GSR026.

Introduction

This document is the GC0142 **Final Modification Report**. This document outlines;

- **What is the issue?**
- **What is the solution?**
 - Proposer's solution
 - Legal text
- **What is the impact of this change?**
 - Code Administrator Consultation summary
 - Panel recommendation vote
- **When will the change taken place?**
- **Acronym table and reference material**
- **Annexes**

What is the issue?

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.

These assets are currently situated at the Kintyre-Hunterston subsea AC link with two subsea cables between Crossaig on the Kintyre peninsula and Hunterston. The connection to the Onshore transmission system is via two 400/20kV supergrid transformers at Hunterston and via two 200/132kV transformers at Crossaig. Whilst there is currently no user equipment directly affected by the new voltage, 220kV assets are not currently specified within the Grid Code.

This defect remains however, 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.

What is the solution?

Proposer's solution:

This modification will update the Grid Code to ensure that nominal voltages other than those used as standard in GB (132kV, 275kV, 400kV) can be accommodated for equipment connecting to the transmission system.

Legal text

When drafting the legal text, consideration was given to whether there should be modifications to the Connection Conditions (CC) section of the Grid Code and European Connection Conditions (ECC). Changing the CC sections of the Grid Code could aid readers of the code to see the consistency in the texts. However, on reflection those users who have existing connections may see the existing requirements presented differently, causing confusion. Therefore, it is the view of the proposer that we only make the modification applicable to the European Connection Conditions (ECC).

Reviewing the current version of the Grid Code, it became apparent that there were two Electrical Standards which could require a change, these have been highlighted to the TOs for their review. These are indicated below:

<p>The Electrical Standards are as follows:</p> <p>ANNEX TO THE GENERAL CONDITIONS</p>	<p>Current Transformers for Protection and General Use on the 132kV, 275kV and 400kV Systems</p>
<p>The Electrical Standards are as follows:</p> <p>(d) Scottish Electrical Standards for SHETL's Transmission System.</p>	<p>6. NGTS 3.2.3: Metal-Oxide surge arresters for use on 132, 275 and 400kV systems. Issue 2 May 1994.</p> <p>7. NGTS 3.2.4: Current Transformers for protection and General use on the 132, 275 and 400kV systems. Issue 1 September 1992.</p> <p>8. NGTS 3.2.5: Voltage Transformers for use on the 132, 275 and 400 kV systems. Issue 2 March 1994.</p> <p>9. NGTS 3.2.6: Current and Voltage Measurement Transformers for Settlement Metering of 33, 66, 132, 275 and 400kV systems. Issue 1 September 1992.</p>

It is important to note that in ECC6.1.7 Table ECC.6.7.1(b) — Planning levels for flicker, the requirements for systems operating at a nominal voltage between 33kV and 66kV is not clear. The requirements and specification for railway voltages at 25kV (note this is a phase to neutral voltage which would be equivalent to 43kV phase to phase voltage) could be impacted by this. This lack of clarity exists in the present format of the table, and in the revised table for this modification. Given that addressing this would be out of scope of this modifications defect, and that there is currently work ongoing for P24, the view of the Proposer is to review this in the P24 working group for resolution.

It is also of note that, the term ‘Supergrid Voltage’ has been retained as a defined Grid Code term in the revisions to the legal text for Schedule 5. This is a historic term used in the Grid Code for any voltage greater than 200kV. Irrespective of a User being either a GB Code User or an EU Code User, the term “Supergrid Voltage” still refers to voltages greater than 200kV and therefore reference to this term would make no difference to User’s submitting data relating to equipment which operates at a nominal voltage other than 132kV, 275kV or 400kV. The ESO believes that it would not be appropriate to remove the term ‘Supergrid Voltage’ on the basis of i) the potential for unintended consequences which could result from this change ii) its impact on the wider GB codes and iii) its removal has no materiality on the data that Users are required to provide irrespective of the nominal voltage that the equipment is operating at.

The full legal text for this change can be found in Annex 2 of this report.

What is the impact of this change?

Who will it impact?

Current and future parties that are subject to requirements of the Grid Code when connecting to the transmission system and installing equipment of non-standard GB voltages.

What are the positive impacts?

These changes aim to make it clearer for those connecting to the transmission system what performance and specification should be followed at each nominal voltage. Additionally, this modification allows for consistency with the changes being proposed to the SQSS.

What are the negative impacts (if any)?

None identified

Proposer’s Assessment against Code Objectives

Grid Code:

Impact of the modification on the Code objectives:	
Relevant Objective	Identified impact
(a) To permit the development, maintenance and operation of an efficient, coordinated and economical system for the transmission of electricity	Positive
(b) Facilitating effective competition in the generation and supply of electricity (and without limiting the foregoing, to facilitate the national electricity transmission system being made available to persons authorised to supply or generate electricity on terms which neither prevent nor restrict competition in the supply or generation of electricity);	Positive

(c) Subject to sub-paragraphs (a) and (b), to promote the security and efficiency of the electricity generation, transmission and distribution systems in the national electricity transmission system operator area taken as a whole;	Positive
(d) To efficiently discharge the obligations imposed upon the licensee by this license and to comply with the Electricity Regulation and any relevant legally binding decisions of the European Commission and/or the Agency; and	Positive
(e) To promote efficiency in the implementation and administration of the Grid Code arrangements	Neutral

Code Administrator Consultation responses

The Code Administrator Consultation was issued on 13 July 2020 and closed on 14 August 2020 and received 3 responses and there were no late responses. A summary of the responses can be found in the table below, the full responses can be found in Annex 3.

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.

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:

Title of Issue	Details of proposed change by respondent	NGESO response from Proposer
<p>Issue 1: Grid Voltage Variations for Users excluding DC Connected Power Park Modules and Remote End</p>	<p>Should just be 'part' as talking about the part of the NETS that connects to a User system, which would be the same as previous text.</p> <p>The voltage on the 400kV part parts of the National Electricity Transmission System operating at nominal voltages of greater than 300kV at each Connection Site with a User (and in the case of OTSDUW Plant and Apparatus, a Transmission Interface Point, excluding DC Connected Power Park Modules</p>	<p>We can see the logic behind your suggestion and, this could be argued both ways, as in that there is one system but multiple parts in operation. We can raise this in the DFMR and present to Panel.</p>
<p>Issue 2: HVDC Converters ECC.6.1.4.1</p>	<p>Would it not be better to have ranges <132kV, 132kV-300kV, >300kV, this is how most of the rest of the changes are made</p> <p>Looks like an unlimited has been missed from the 4th column for the 110kV up to 300kV</p>	<p>We are not sure what your images are - but, think this is in relation to the ranges? We cannot change this to below 132kV as the normal operating range for below 110kV has different ranges. So for 110kv and below, this drops to 6% as opposed to 10% for 110kV- 300kV. 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. Unlimited missing to be raised in the DFMR and present to Panel.</p>

Title of Issue	Details of proposed change by respondent	NGESO response from Proposer
<p>Issue 3: Fault Clearance Times ECC.6.2.2.2.2</p>	<p>This is not in-line with the changes as you have re-introduced 132kV as a cut-off point, in other places the ranges are <110kV, (>110kV, <300kV), (>300kV), but aligning this would mean changes to how 132kV is treated, which I understand, but I think this is an inconsistent treatment.</p> <p>(ii) 100ms at 275kV for connections operating at a nominal voltage of greater than 132kV and up to 300kV (iii) 120ms at for connections operating at a nominal voltage of 132kV and below</p>	<p>This refers to protection, we have tried to keep the principles of the current Grid Code the same, but just make it more resilient for the future. We do not feel that we need to make any amendments here to add in below 110kV as the lower limit is currently sat at 132kV.</p>
<p>Issue 4: Fault Clearance Times ECC.6.2.2.2.2</p>	<p>to ensure 'and' logic is applied, this should be "132kV and below <i>and</i> where... "</p> <p>On a Power Generating Module (other than a Power Park Unit), HVDC Equipment or OTSDUW Plant and Apparatus and connected to the National Electricity Transmission System at 132 kV and below where only one Main Protection is provided</p>	<p>Can see your point and will add to the DFMR for panel review.</p>

Title of Issue	Details of proposed change by respondent	NGESO response from Proposer
Issue 5: Fault Clearance Times ECC.6.2.2.2.2	<p>refer to comment above on ranges.</p> <p>during the clearance of a fault on the National Electricity Transmission System by breaker fail Protection at a nominal voltage of greater than 132kV 400kV or 275kV or of a fault cleared by Back-Up Protection</p>	<p>This fits back into the previous responses on ranges.</p>
Issue 6: Voltage Fluctuations ECC.6.1.7 Table ECC.6.7.1(b) — Planning levels for flicker	<p>Should it not have a minimum, assuming this would not apply to LV supplies. This would likely be e from 1kV to 33k in the UK to align with the definition of high voltage in law.</p>	<p>Not sure what the image is, however, this has been updated to remove specific voltages to align with the rest of the modification. This table is to be reviewed in the P24 workgroup as there are some gaps in the voltage ranges that is not in scope of this modification.</p>

August 2020 Panel Views

The Grid Code Panel met on 27 August 2020 determine if the changes suggested by Scottish Power Renewables (SPR) were typographical in nature and to carry out their recommendation vote.

The Panel agreed that the changes from Scottish Power Renewables (SPR) were typographical. The Proposer also consulted with the respondent from Scottish Power Renewables to review the comments in more detail.

The Grid Code Panel held a recommendation vote on 27 August 2020 on whether a change should be made to the Grid Code by assessing the proposed change and any alternatives against the code objectives.

The full vote can be found below.

Vote 1 – does the original facilitate the objectives better than the current baseline?

Panel Member: Graeme Vincent (Alternate for Alan Creighton - Network Operator Representative)

Better facilitates GCO (i)?	Better facilitates GCO (ii)?	Better facilitates GCO (iii)?	Better facilitates GCO (iv)?	Better facilitates AGCO (v)?	Overall (Yes/No)
Yes	Yes	Yes	Neutral	Yes	Yes
Voting Statement					
The changes proposed in the modification will provide additional clarity for Users in respect of non-standard GB voltages.					

Panel Member: Alastair Frew - Generator

Better facilitates GCO (i)?	Better facilitates GCO (ii)?	Better facilitates GCO (iii)?	Better facilitates GCO (iv)?	Better facilitates AGCO (v)?	Overall (Yes/No)
Yes	Yes	Yes	Yes	Positive	Yes
Voting Statement					
<p>This modification simplifies the requirements by changing to voltage ranges as opposed to fixed voltages. Whilst the modification does leave a gap in voltage range between 33kV and 66kV related to flicker due to railway supply voltages falling into this band and as it is currently not clear what applies now, this modification cannot deal with this but I do not see an issue leaving this gap to be dealt with by the P24 workgroup who are currently looking at railway supplies.</p> <p>I note the voltage ranges in the SQSS modification GSR026 are different to this modification GC0142 in that GC0142 has continuous range from 132kV to 300kV whilst GSR026 splits this range into 2 parts being 132kV to 200kV and then 200kV to 300kV. I do not see an issue with this as the continuous GC0142 range relates to voltages ranges equipment must be capable of operating within as required by EU regulations, whilst the ranges within GSR026 indicate how the ESO is going to operate the system. As the ESO does not aim to operate the system to the extremes the equipment operating capability these differences do not appear to create a problem.</p> <p>I also note there is a consultation response raising concerns about cost implications if these ranges were to be applied to "TGN(E)288 Limits for Temporary Overvoltage's in England and Wales Network", whilst I do not believe this modification does apply these</p>					

ranges to this TGN it does raise why should there only be requirements for limiting transient overvoltage at 400kV and 275kV (in England in Wales) and should this not apply to other voltages? but as stated I do not believe this applies to TGN(E)288 I do not see an issue.

Panel Member: Christopher Smith - Offshore Transmission Licensee

Better facilitates GCO (i)?	Better facilitates GCO (ii)?	Better facilitates GCO (iii)?	Better facilitates GCO (iv)?	Better facilitates AGCO (v)?	Overall (Yes/No)
Yes	Yes	Yes	Yes	Neutral	Yes
Voting Statement					
<p>The modification clarifies the connection requirements whilst allowing innovation in the supply chain.</p> <p>It also provides Alignment with SQSS changes</p>					

Panel Member: Damian Jackman - Generator

Better facilitates GCO (i)?	Better facilitates GCO (ii)?	Better facilitates GCO (iii)?	Better facilitates GCO (iv)?	Better facilitates AGCO (v)?	Overall (Yes/No)
Yes	Yes	Yes	Yes	Yes	Yes
Voting Statement					
<p>The update resolves the defect and provides a degree of future proofing for new system voltages to be added.</p> <p>It is important to note that a review of the electrical standards was out of scope of this modification and the need to have to update multiple Relevant Electrical Standards highlights the value of having a single set of standards as is the intention of GC0103.</p>					

Panel Member: Sigrid Bolik (Alternate for Guy Nicholson - Generator Representative)

Better facilitates GCO (i)?	Better facilitates GCO (ii)?	Better facilitates GCO (iii)?	Better facilitates GCO (iv)?	Better facilitates AGCO (v)?	Overall (Yes/No)
Yes	Yes	Yes	Yes	Yes	Yes
Voting Statement					

Panel Member: Rob Wilson – National Grid ESO

Better facilitates GCO (i)?	Better facilitates GCO (ii)?	Better facilitates GCO (iii)?	Better facilitates GCO (iv)?	Better facilitates AGCO (v)?	Overall (Yes/No)
Yes	Yes	Yes	Yes	Yes	Yes
Voting Statement					
<p>We support this Proposal for the following reasons: -</p> <p>a) The proposal better facilitates items i) - iii) of the Grid Code Objectives</p> <p>b) The proposal better aligns with the EU Connection Network Code requirements and hence better facilitates Grid Code (iv)</p> <p>c) Whilst broadly neutral, the change does make it clearer to parties what requirements apply to those with non - standard connection voltages and hence makes the Grid Code easier to Administer.</p>					

Panel Member: Robert Longden – Supplier

Better facilitates GCO (i)?	Better facilitates GCO (ii)?	Better facilitates GCO (iii)?	Better facilitates GCO (iv)?	Better facilitates AGCO (v)?	Overall (Yes/No)
Yes	Yes	Yes	Yes	Yes	Yes
Voting Statement					
<p>This proposal provides the required clarity in the Grid Code regarding the treatment of non-standard voltages.</p> <p>It better aligns the Grid Code with EU Connection Network Code requirements</p> <p>It provides a degree of future proofing.</p> <p>It should be implemented.</p>					

Panel Member: Richard Woodward (Alternate for Ross McGhin)

Better facilitates GCO (i)?	Better facilitates GCO (ii)?	Better facilitates GCO (iii)?	Better facilitates GCO (iv)?	Better facilitates AGCO (v)?	Overall (Yes/No)
Yes	Yes	Yes	Neutral	Yes	Yes
Voting Statement					

This modification provides useful efficiency and clarity in the Grid Code drafting to support non-standard voltages. It also provides better alignment to EU arrangements and sets the Grid Code up to be more future-proofed.

Vote 2 – Which option (original proposal or baseline) best meets applicable Grid Code objectives?

The Panel unanimously recommended that the Proposer's solution should be implemented.

Authority Decision on 15 October 2020

The decision from the Authority on 15 October 2020 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 had 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.

October 2020 GCRP Decision on Authority Send Back.

To avoid any delays on the decision for GSR026 (equivalent SQSS modification) and GC0142 - 'Adding Non-Standard Voltages to the Grid Code' the Grid Code Panel decided that GC0142 should go to Draft Modification Report stage due to the modification having non-material changes. Therefore, another Code Administrator Consultation was deemed not necessary. Given that the Authority needed to publish the decision for GC0142 and GSR026 at the same time, a Special Panel meeting for 16 November 2020 was advised by the Code Administrator.

Special Panel Meeting and outcome.

A Special meeting for Grid Code Review Panel was held on 16 November 2020 to conduct another recommendation vote after consideration of the legal text changes required by the Authority.

The following additional changes were made to the 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;

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?	Agree- to have these changed in the modification. Although the 'ie' is provided for illustration but it would be better to say : 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.

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).	This is an issue caused through base lining through GC0105 in May. Agree that this should be changed. iii) a fault on the National Electricity Transmission System which: A. could be linked to the known or reported tripping of 250MW or more as reported in (i) above; and/or B. (as detailed in section CC6.1.4) is linked to a change in the Transmission System voltage of more than I. 300kV or greater 400kV : > +/-5% for >15min; or II. 132kV up to 300kV 275kV or 132kV : > +/- 10% for >15min;

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 operating at 132kV or greater between the User's 132kV System and the User's Subtransmission System (and any OTSUA) the User shall supply the following information:-</p>

The Grid Code Panel held a further recommendation vote on 16 November 2020 on whether a change should be made to the Grid Code by assessing the proposed change against the code objectives.

The full vote can be found below.

Vote 1 – does the original facilitate the objectives better than the current baseline?

Panel Member: Alan Creighton - Network Operator Representative

Better facilitates GCO (i)?	Better facilitates GCO (ii)?	Better facilitates GCO (iii)?	Better facilitates GCO (iv)?	Better facilitates AGCO (v)?	Overall (Yes/No)
Yes	Yes	Yes	Neutral	Yes	Yes
Voting Statement					
The changes proposed in the modification will provide additional clarity for Users in respect of non-standard GB voltages.					

Panel Member: Alastair Frew - Generator

Better facilitates GCO (i)?	Better facilitates GCO (ii)?	Better facilitates GCO (iii)?	Better facilitates GCO (iv)?	Better facilitates AGCO (v)?	Overall (Yes/No)
Yes	Yes	Yes	Neutral	Neutral	Yes
Voting Statement					

As I do not see any of the new changes as materially affecting any parties my comments are the still the same as my original voting statement as follows.

This modification simplifies the requirements by changing to voltage ranges as opposed to fixed voltages. Whilst the modification does leave a gap in voltage range between 33KV and 66kV related to flicker due to railway supply voltages falling into this band and as it is currently not clear what applies now, this modification cannot deal with this but I do not see an issue leaving this gap to be dealt with by the P24 workgroup who are currently looking at railway supplies.

I note the voltage ranges in the SQSS modification GSR026 are different to this modification GC0142 in that GC0142 has continuous range from 132kV to 300kV whilst GSR026 splits this range into 2 parts being 132kV to 200kV and then 200kV to 300kV. I do not see an issue with this as the continuous GC0142 range relates to voltages ranges equipment must be capable of operating within as required by EU regulations, whilst the ranges within GSR026 indicate how the ESO is going to operate the system. As the ESO does not aim to operate the system to the extreme the equipment operating capability these differences do not appear to create a problem.

I also note there is a consultation response raising concerns about cost implications if these ranges were to be applied to "TGN(E)288 Limits for Temporary Over voltages in England and Wales Network", whilst I do not believe this modification does apply these ranges to this TGN it does raise why should there only be requirements for limiting transient overvoltage at 400kV and 275kV (in England in Wales) and should this not apply to other voltages? but as stated I do not believe this applies to TGN(E)288 I do not see an issue.

Panel Member: Christopher Smith - Offshore Transmission Licensee

Better facilitates GCO (i)?	Better facilitates GCO (ii)?	Better facilitates GCO (iii)?	Better facilitates GCO (iv)?	Better facilitates AGCO (v)?	Overall (Yes/No)
Yes	Yes	Yes	neutral	Yes	Yes
Voting Statement					
The modification clarifies the connection requirements whilst allowing innovation in the supply chain.					

Panel Member: Damian Jackman - Generator

Better facilitates GCO (i)?	Better facilitates GCO (ii)?	Better facilitates GCO (iii)?	Better facilitates GCO (iv)?	Better facilitates AGCO (v)?	Overall (Yes/No)
yes	yes	Neutral	Neutral	Neutral	yes

Voting Statement

The solution future-proofs the code by amending the voltages so that it clarifies the requirements for users connecting apparatus using 'non-standard' (by historical practices) voltages.

Panel Member: Guy Nicholson - Generator Representative

Better facilitates GCO (i)?	Better facilitates GCO (ii)?	Better facilitates GCO (iii)?	Better facilitates GCO (iv)?	Better facilitates AGCO (v)?	Overall (Yes/No)
Yes	Yes	Yes	Neutral	Yes	Yes
Voting Statement					
Improves the Grid Code.					

Panel Member: Joseph Underwood - Generator Representative

Better facilitates GCO (i)?	Better facilitates GCO (ii)?	Better facilitates GCO (iii)?	Better facilitates GCO (iv)?	Better facilitates AGCO (v)?	Overall (Yes/No)
Yes	Yes	Yes	Neutral	Yes	Yes
Voting Statement					
The modification allows for greater clarity. Further, it future proofs the Grid Code and may allow for innovative technologies to come forward.					

Panel Member: Rob Wilson – National Grid ESO

Better facilitates GCO (i)?	Better facilitates GCO (ii)?	Better facilitates GCO (iii)?	Better facilitates GCO (iv)?	Better facilitates AGCO (v)?	Overall (Yes/No)
Yes	Neutral	Neutral	Neutral	Neutral	Yes
Voting Statement					
By changing references to the performance requirements of equipment connected at specific voltages to voltage ranges this modification facilitates the future use of equipment at novel voltages. It does not change the requirements on any existing equipment and has been scoped to only extend existing requirements rather than to make any interpretation or changes that would need more detailed consideration.					

Panel Member: Robert Longden – Supplier

Better facilitates GCO (i)?	Better facilitates GCO (ii)?	Better facilitates GCO (iii)?	Better facilitates GCO (iv)?	Better facilitates AGCO (v)?	Overall (Yes/No)
Yes	Yes	Yes	Yes	Yes	Yes
Voting Statement					

Panel Member: Richard Woodward (Alternate for Ross McGhin)

Better facilitates GCO (i)?	Better facilitates GCO (ii)?	Better facilitates GCO (iii)?	Better facilitates GCO (iv)?	Better facilitates AGCO (v)?	Overall (Yes/No)
Yes	Yes	Yes	Yes	Yes	Yes
Voting Statement					
This modification provides useful efficiency and clarity in the Grid Code drafting to support non-standard voltages. It also provides better alignment to EU arrangements and sets the Grid Code up to be more future-proofed.					

Panel Member: Graeme Vincent (Alternate for Steve Cox, Network Operator Representative)

Better facilitates GCO (i)?	Better facilitates GCO (ii)?	Better facilitates GCO (iii)?	Better facilitates GCO (iv)?	Better facilitates AGCO (v)?	Overall (Yes/No)
Yes	Yes	Yes	Yes	Yes	Yes
Voting Statement					
The changes proposed in the modification will provide additional clarity for Users in respect of non-standard GB voltages. Better aligning with the EU Network Connection Code requirements and providing additional future proofing into the Grid Code.					

Vote 2 – Which option (original proposal or baseline) best meets applicable Grid Code objectives?

The Panel unanimously recommended that the Proposer's solution (original) should be implemented.

When will this change take place?

Implementation date:

Implementation should take place 10 days after decision has been finalised.

Implementation approach:

Implementation of this modification will only require minor amendments to the legal text of the Grid Code and with alignment to a similar change being taken forwards in the SQSS under GSR026.

Implementation should occur as standard on completion of the modification and approval by Ofgem. The application should apply to all new and existing equipment but no changes in costs for specifications or system changes are envisaged. SSE have confirmed that the equipment currently installed (Kintyre-Hunterston) can comply with the operational limits specified.

Acronym table and reference material

Acronym	Meaning
ESO	Electricity System Operator
SQSS	Security and Quality of Supply Standard
TO	Transmission Owner

Annexes

Annex	Information
Annex 1	GC0142 Original Proposal Form
Annex 2	Annex 2 – Final Legal Text
Annex 3	Annex 3 – Code Administrator Consultation responses
Annex 4	Annex 4 – Scottish Power Renewables – Legal Text changes