

## GC0102 EU Connection Codes GB Implementation – Mod 3

Industry parties are invited to respond to this consultation expressing their views and supplying the rationale for those views, particularly in respect of any specific questions detailed below.

Please send your responses by **5pm on Thursday 9<sup>th</sup> November 2017** to [grid.code@nationalgrid.com](mailto:grid.code@nationalgrid.com). Please note that any responses received after the deadline or sent to a different email address may not receive due consideration by the Workgroup.

Any queries on the content of the consultation should be forwarded to [grid.code@nationalgrid.com](mailto:grid.code@nationalgrid.com) with subject clearly stating 'GC0102 Consultation Query'

<b>Respondent:</b>	Alastair Frew
<b>Company Name:</b>	ScottishPower Generation Ltd
<b>Please express your views regarding the Workgroup Consultation, including rationale.</b>  <b>(Please include any issues, suggestions or queries)</b>	<p><i>For reference, the Grid Code objectives are:</i></p> <ul style="list-style-type: none"> <li>i. To permit the development, maintenance and operation of an efficient, coordinated and economical system for the transmission of electricity</li> <li>ii. To facilitate 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)</li> <li>iii. Subject to sub-paragraphs (i) and (ii), 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</li> <li>iv. 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</li> <li>v. To promote efficiency in the implementation and administration of the Grid Code arrangements</li> </ul>

## Standard Workgroup Consultation questions

Q	Question	Response
1	Do you believe that GC0102 Original Proposal, or any potential alternatives for change that you wish to suggest, better facilitates the Grid Code Objectives?	In principle yes as it implements European Law.
2	Do you support the proposed implementation approach?	Yes
3	Do you have any other comments?	As the SOGL Article 54 also deals with compliance it would be better to ensure that this proposal is also compliant with this article to avoid this have to reopened and changed in the near future.
4	Do you wish to raise a WG Consultation Alternative Request for the Workgroup to consider?	<i>If yes, please complete a WG Consultation Alternative Request form, available on National Grid's website, <a href="http://www2.nationalgrid.com/uk/industry-information/electricity-codes/grid-code/modifications/forms-and-guidance/">http://www2.nationalgrid.com/uk/industry-information/electricity-codes/grid-code/modifications/forms-and-guidance/</a> and return to the Grid Code inbox at <a href="mailto:grid.code@nationalgrid.com">grid.code@nationalgrid.com</a></i>

## Specific GC0102 Consultation Questions

Q	Question	Response
5	Do you have any comments on the structure of the proposed relationship between the D Code, G59 and G83, and G98 and G99? In particular which of the three options in Section 3.2 of this consultation do you support and why?	<p>The structural arrangements seem acceptable but there needs to be a more detailed look at the remaining legal text DCRP7 as how it actually discharges compliance requirements to existing generators.</p> <p>Support option 1 as type A splits easily in the two types of generator, however the higher end of Type A does not fit well either in G99 nor the G-code. I would also go further and say the type A requirements should be removed from the G-code and the G-code should just refer to G98.</p>

6	Do you agree with the organization of G99 and how it applies to the different Types of generation? Do you have any alternative suggestions for structure?	Yes, but the only section which does not fit well into the structure is appendix C as it contains technical requirements whereas all the other technical requirements are in the text, but I suppose this is a result of the strange G-code structure which also does this from which it has been copied .
7	Do you agree with the current view of how the Grid and Distribution Codes (and G98 and G99) will be applied to installations where new PGMs are installed alongside existing pre-RfG equipment? (see page 11)	Yes
8	Do you agree on the introduction of a Preliminary Operation Notification relating to the Compliance process for Transmission connected Type B and Type C PGMs? (See <i>Workgroup discussions section</i> )	Agree with principle of issuing written approval but question why a consistent approach cannot be applied to all types, see answer to question 15.
9	Do you agree with the retaining of the current GB arrangements for automatic connection and reconnection and the logic for it? If not, what alternative should be proposed? (see section 4.1.2.2)	Yes
10	Do you consider any parts of the proposed compliance, simulation or testing requirements for distribution-connected generators to be disproportionately onerous? (See section 5.2.5)	This a major change for embedded generators who had minimal requirements before but this now matches them with G-code connected generators.
11	Do you agree it is appropriate to drop the designation Large and Small from the Distribution Code as proposed in section 3.3.1 of this consultation? Do you believe it is appropriate to drop the designation Large, Medium and Small from the Grid Code?	Yes  Note that there are still some references G99 6.1.3.1 large is include G99 13.9.4 Embedded Medium

12	Do you have any comments on the draft requirements for fault recording equipment for distribution-connected Type C PGMs as drafted in Section 13.11 and Appendix C3 of G99?	Ignoring the fact this is a very expensive piece of kit to be purchased by a Type C generator. The next obvious question is why are the DNOs changing any settings of equipment which is not theirs.
13	Do you agree that it is appropriate to include storage in G98 and G99, noting that as storage is explicitly excluded from the RfG, the technical requirements that arise solely from the RfG are not applied to storage in G09 and G99?	Yes as these requirements appear to be extremely minimal and are more safety related.
14	Do you agree that it is appropriate to include Type A PGMs <800W in capacity in G99, noting that those technical requirements that emanate from the RfG are not applied to PGMs <800W?	Should this be G98? On the bases of potential safety issues it is appropriate to have very basic requirements onto anything which is being connected.

15	If you do not consider the proposed solution to sufficiently harmonise the connection requirements for new parties connecting to the transmission and distribution networks, how would you propose this to be addressed? (See <i>Workgroup discussions section</i> )	<b>Proposed overall compliance process for new generators as summarised as table 1</b>								
Summary of Proposed Compliance Procedures for New Generators										
		Type A		Type B		Type C		Type D		
		G-code	D-code	G-code	D-code	G-code	D-code	G-code	D-code	
Notification period for site energisation								ECP.5.4 28 days	G99 19.2.5 28 days	
Permission Required for Site energisation requirement								ECP.5.1 EON	G99 19.2.6 EON	
Notification Period prior to connecting machine		ECP.6.2A 7 days	G99 16.2.1 ASAP	ECP.6.2B 28 days	G99 17.2.2 28 days	ECP.6.2B 28 days	G99 18.2.2 28 days	ECP.6.2 28 days	G99 19.3.1 28 days	
Permission Required to Connect Machine to network		ECP.6.4(c) NGET letter of acknowledgement	G99 16.2.3 DNO approval	ECP.6.1.B PON	G99 17.3.1 Written confirmation from the DNO	ECP.6.1.B PON	G99 18.3.1 Written confirmation from the DNO	ECP.6.1 ION	G99 19.3.1 ION	
Notification period prior to testing		no limit specified	G99 16.3.2 16 days	ECP.6.8B 28 days	G99 17.2.5 28 days	ECP.6.8B 28 days	G99 18.2.5 28 days	ECP.6.8 28 days	G99 19.3.11 28 days	
Submission of commissioning data no later than since connecting	no limit specified	G99 16.2.5 28 days	no limit specified	no limit specified	no limit specified	no limit specified	ECP.6.6.1 24 months	G99 19.3.6.1 24 months		
Permission required for Final Generator Operation	None	None	ECP.7.1 FON	G99 17.4.3 FON	ECP.7.1 FON	G99 18.4.3 FON	ECP.7.1 FON	G99 19.4.3 FON		
The process for all users appears similar however there are notable differences in documentation. Starting at the beginning of the process only type D appear to need the site energised a to allow this an EON will be issued, the questions is it correct that only Type D need pre-energisation of the site? To connect a Type B, C or D there seems to be agreement that all users need to submit 28 days' notice, however it should be noted this is a third of the duration proposed by ENTSO-E in the Key Organizational Roles, Requirements and Responsibilities (KORRR) consultation of 3 months, although as currently drafted the TSO can select shorted periods. The area which appears to have the biggest differences between requirements for users is permission to connect a machine to the network, however the requirement is basically the same it that written permission is required whether it is an ION, PON or written confirmation, the question is are these standard forms and do they need to be different? There appears to be a standard 28 day period for requesting testing for types B, C & D generators with only type A only needing 16 day. The area with the most significant difference is the time permitted to complete the connection process with only Type A & D with specified limits which then raises the question should Types B & C generators be allowed to remain connected potentially indefinitely with just connection permission?										
The main question is for type B, C & D is could they all use the same process and standard forms?										
Other process related question G99 19.2.5 requires certain users to following grid code processes who then issues the EON, ION & FON TSO or DNO?										

## Proposed Compliance Requirements as summarised as table 2

Summary of Proposed Compliance Requirements									
Grid Code Reference	Type A		Type B		Type C		Type D		G99 Reference
	G-code	D-code	G-code	D-code	G-code	D-code	G-code	D-code	
ECP.A.5 Compliance Testing of Synchronous Power Generating Modules									B.5 Compliance Testing of Synchronous Power Generating Modules
ECP.A.5.2 Excitation System Open Circuit Step Response Tests			Yes	Yes	Yes	Yes	Yes	Yes	B.5.2 Excitation System Open Circuit Step Response Tests
ECP.A.5.3 Open & Short Circuit Saturation Characteristics			Yes	Yes	Yes	Yes	Yes	Yes	B.5.3 Open & Short Circuit Saturation Characteristics
ECP.A.5.4 Excitation System On-Load Tests			Yes	Yes	Yes	Yes	Yes	Yes	B.5.4 Excitation System On-Load Tests
ECP.A.5.5 Under-excitation Limiter Performance Test			Yes	Yes	Yes	Yes	Yes	Yes	B.5.4.3 Under-excitation Limiter Performance Test
ECP.A.5.6 Over-excitation Limiter Performance Test			Yes	Yes	Yes	Yes	Yes	Yes	B.5.4.4 Over-excitation Limiter Performance Test
ECP.A.5.7 Reactive Capability			Yes	Yes	Yes	Yes	Yes	Yes	B.5.5 Reactive Capability
ECP.A.5.8 Governor and Load Controller Response Performance									B.5.6 Governor and Load Controller Response Performance
ECP.A.5.8.4 Preliminary Governor Frequency Response Testing			Yes	No	Yes	No	Yes	No	
ECP.A.5.8.7 (i) Frequency response volume tests as per ECP.A.5.8.			Yes	No	Yes	No	Yes	No	
ECP.A.5.8.7 (ii) System islanding and step response tests ECP.A.5.8.			Yes	Yes	Yes	Yes	Yes	Yes	B.5.6.4 (ii) System islanding and step response tests
ECP.A.5.8.7 (iii) Frequency response tests in LFSM-O			Yes	Yes	Yes	Yes	Yes	Yes	B.5.6.4 (i) Frequency response tests in LFSM-O
ECP.A.5.8.7 (iii) Frequency response tests in LFSM-U			Yes	No	Yes	Yes	Yes	Yes	B.5.6.4 (i) Frequency response tests in LFSM-U
ECP.A.5.9 Compliance with ECC.6.3.3 Functionality Test			Yes	Yes	Yes	Yes	Yes	Yes	B.5.7 Compliance with Output power with falling frequency Test
ECP.A.6 COMPLIANCE TESTING OF POWER PARK MODULES									B.6 Compliance Testing of Power Park Modules
ECP.A.6.2 Pre 20% (or <50MW) Synchronised Power Park Module Basic Voltage Control Tests			Yes	Yes	Yes	Yes	Yes	Yes	B.6.2 Pre 20% Synchronised Power Park Module Basic Voltage Control Tests
ECP.A.6.3 Power Park Modules with Maximum Capacity ≥100MW Pre 70%			No	No	No	No	Yes	No	
ECP.A.6.4 Reactive Capability Test			Yes	Yes	Yes	Yes	Yes	Yes	B.6.3 Reactive Capability Test
ECP.A.6.5 Voltage Control Tests			Yes	Yes	Yes	Yes	Yes	Yes	B.6.4 Voltage Control Tests
ECP.A.6.6 Frequency Response Tests									B.6.5 Frequency Response Tests
ECP.A.6.6.4 Preliminary Governor Frequency Response Testing			Yes	No	Yes	No	Yes	No	
ECP.A.6.6.7 (i) Frequency response volume tests as per ECP.A.5.8.			Yes	No	Yes	No	Yes	No	
ECP.A.6.6.7 (ii) System islanding and step response tests as ECP.A.5.8.			Yes	Yes	Yes	Yes	Yes	Yes	B.6.5.7 (ii) System islanding & step response tests
ECP.A.6.6.7 (iii) Frequency response tests in LFSM-O			Yes	Yes	Yes	Yes	Yes	Yes	B.6.5.7 (i) Frequency response tests in LFSM-O
ECP.A.6.6.7 (iii) Frequency response tests in LFSM-U			Yes	Yes	Yes	Yes	Yes	Yes	B.6.5.7 (i) Frequency response tests in LFSM-U
ECP.A.6.7 Fault Ride Through Testing			Yes	Yes	Yes	Yes	Yes	Yes	B.6.6 Fault Ride Through Testing
ECP.A.6.8 Reactive Power Transfer / Voltage Control Tests for Offshore			Yes	No	Yes	No	Yes	No	
ECP.A.7 COMPLIANCE TESTING FOR HVDC EQUIPMENT									
ECP.A.7.2 Reactive Capability Test			Yes	No	Yes	No	Yes	No	
ECP.A.7.4 Voltage Control Tests			Yes	No	Yes	No	Yes	No	
ECP.A.7.5 Frequency Response Tests			Yes	No	Yes	No	Yes	No	
ECP.A.7.5.4 Preliminary Frequency Response Testing			Yes	No	Yes	No	Yes	No	
Boxes highlighted in yellow show differences between G-code & D-code									

The above table summarises the differences in application between to the G-code and D-code requirements except for an area in G99 19.2.2 which states “If the Generator is licenced it should follow the procedures in the Grid Code” as it is not clear exactly going forward who this statement applies too. Is it saying if a new embedded power station is being built by an existing Generator who is already licenced which connects to the 132kV system, independent of size, must automatically comply with the G-code?

This table was initially being produced to show the different requirements between G-code and D-code connected generators, however it quickly highlighted that these are a lot more common than expected. This appears to be the result of the G-code is applying all compliance tests to all types of generator, whether they are applicable or not, and the D-code has copied these requirements with minimum

corrections. An example of the is LFSM-U for synchronous generators where the G-code apply the test requirements to Type B and the D-code correctly does not, however this was not continued in the D-code for Power Park Modules. There are a number of areas such as the excitation system and frequency response tests, where the compliance testing appears to be the same for all types of generator but the actual requirements are different between a Type B and the Types C & D.

As most of the existing technical requirements of the G-code have now been copied into the D-code the only area of difference between G-code and D-code connections appears to frequency response volume testing which only applies to all G-code connected sites regardless of size, this still appears to be a significant requirement being applied to smaller operators who happen to be G-code connected..

**Proposed procedures for dealing with Compliance Issues Arising in a Generator after it has been commissioned as summarised as table 3**

Summary of Proposed procedures for dealing with Compliance Issues Arising in a Generator after it has been commissioned																
	Type A				Type B				Type C				Type D			
	Existing		New		Existing		New		Existing		New		Existing		New	
	G-code	D-code	G-code	D-code	G-code	D-code	G-code	D-code	G-code	D-code	G-code	D-code	G-code	D-code	G-code	D-code
Issue identified	n/a															
Period of investigation	n/a	non	non	non	CP8.4 56 days	non	non	non	CP8.4 56 days	non	non	non	CP8.4 56 days	non	ECP8.4 56 days	G99 19.5.3 56 days
Issue not fixed within investigation period	n/a	non	non	non	CP8 LON issued	non	non	non	CP8 LON issued	non	non	non	CP8 LON issued	non	ECP8 LON issued	G99 19.5 LON issued
Maximum duration of LON	n/a	non	non	non	CP.8.5.2 12 months	non	non	non	CP.8.5.2 12 months	non	non	non	CP.8.5.2 12 months	non	ECP.8.5.2 12 months	G99 19.5.4.2 12 months
Derogation	n/a	non	non	non	Need to apply	non	non	non	Need to apply	non	non	non	Need to apply	non	Need to apply	Need to apply

The application of compliance requirements after a Generator has been commissioned has only been reviewed in terms of the RFG, however the electricity transmission system operation (SOGL) also includes references to compliance in Article 54 and more specifically in paragraph 4."Upon request from the TSO or DSO, pursuant to Article 41(2) of Regulation (EU) 2016/631 and Article 35(2) of Regulation (EU) 2016/1388, the SGU shall carry out compliance tests “ . Whilst the SOGL may not be included in this work it seem sensible to ensure this work does comply rather than in future having to go back over all this work to implement the SOGL. The key issues is the SOGL allows for the Relevant System Operator to request retesting of SGU when an issue relating to compliance arises and in this occasion a SGU is any new or existing Type B, C & D generator. Looking at the table all existing Grid connected generators are covered along with all new type D generators which all follow the same LON process, the question is should this process just be applied to all the rest?

16	G98 and G99 include specific requirements for power quality, harmonic compliance etc. Do you believe it should be possible to use other international standards or requirements to achieve these ends such that these specific requirements can be dropped from these documents? An explanation of your views would be useful.	
17	Do you agree that the explanation of type testing, both full and partial, and the inclusion of equipment certificates, is sufficiently clear and unambiguous in G99 drafting? Please make any suggestions that could add clarity.	G99 4 Terms and Definitions possible clarification as follows "Where Equipment Certificate(s) as defined in EU 2016/631 cover all or part of the relevant compliance points, <b>then</b> the Equipment Certificate(s) <b>shall be accepted as demonstrating</b> compliance without need for further evidence for those aspects within the scope of the Equipment Certificate."
18	The application of new technical requirements to non-type tested generation connecting to distribution networks will give rise to new processes etc. Please comment on how comprehensive the coverage of this is in the current drafting of G99 and please suggest any improvements	See answer to question15.
19	Do you have any views on how the data and information required and articulated within G99 can or should relate to the Distribution Data Registration Code in the Distribution Code?	No
20	Do you believe that this modification helps to promote transparency across the Industry and if not which areas should be improved? (see <i>Workgroup discussions section</i> )	Yes

## Legal drafting questions

Q	Question	Response
21	The Proposed draft Grid Code legal text contains a number of comments incorporating both internal and workgroup comments. Please feel free to provide further comment on the documents (Annex 1-5)	ECP.1.1 (i) Type A the text "followed by NGET and any User" possible change to "followed by NGET and any <b>Type A Power Generating Module</b> "  ECP.1.1 (ii) Type B or C the text "followed by NGET and any Generator"



		<p>possible change to “followed by NGET and any <b>Type B or B Power Generating Module</b>”</p> <p>ECP.1.1 (iii) Type D the text in each of the first 3 paragraphs “followed by NGET and any User to” possible change to “followed by NGET and any <b>Type D Power Generating Module</b> to”</p> <p>ECP.4.2. proposed text clarification” The provisions contained in CPECP.5 to CPECP.7 detail the process to be followed in order for the User’s Plant and Apparatus (including OTSUA) to become operational. This process includes <b>for energisation an EON, for connection either a PON (types B &amp; C Power Generating Modules) or an ION (Type C Power Generating Modules) and for final certification a FON.</b></p> <p>ECP.4.3 &amp; 4.3.1 “Medium Power Stations” are still referred to is this correct?</p> <p>ECP.A.5.1.9 states “NGET <b>will</b> permit relaxation from the requirement ECP.A.5.2 to ECP.A.5.9 where an Equipment Certificate for the Synchronous Power Generating Module”, whereas G99 B.5.1.9 states “ The <b>DNO may</b> permit relaxation from the requirement B.5.2 to B.5.9 where <b>Manufacturers Information</b> for the <b>Synchronous Power Generating Module</b>”, why are these different and can they be made consistent. Other minor point G99 only does not go up to B.5.9.</p> <p>ECP.A.5.3.1 has the text “CP.6.4” not “ECP.6.4”.</p> <p>ECP.A.5.4.2 and G99 B.5.4.2. Looking in G99 B.5.4.2 it refers directly to ECP.A.5.4.2 as opposed including the text, however ECP.A.5.4.3 also refers to PSS testing but is not referenced in G99 B.5.4.2, but then when you look in ECP.A.5.4.3 the first 4 tests appear to be applicable to ECP.A.5.4.1 and G99 B.5.4.1.</p> <p>ECP.A.5.5.4 The Under-excitation Limiter will normally be tested at low active power output (minimum stable operating level) and at maximum Active Power output (Maximum Capacity). Why has the “minimum stable operating level”</p>
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	<p>reference been added to the original OC5.A.2.5.4 text? Also G99 B.5.4.3.4 has minimum generation and is still using the term Registered Capacity.</p> <p>G99 B.5.4.3.5 Still has references to Registered Capacity.</p> <p>ECP.A.5.7.1 and G99 B.5.5.1 Reactive Power capability this has changed from the OC5.A.2.7.1 simple test operation of “the Generating Unit at 0.85 power factor lagging for 1 hour and 0.95 power factor leading for 1 hour.” Why is there now a requirement for MAXIMUM leading and lagging capacity to be demonstrated as opposed to a compliance test requesting the required capacity to be demonstrated and using the values from ECC.6.3.2.2 of 0.95 lead &amp; 0.95 lag for type B and from ECC.6.3.2.3 of 0.92 lead &amp; 0.92 lag for types C &amp; D? Also why has the maximum and minimum generation requirements been added?</p> <p>ECP.A.5.7.2 and G99 B.5.5.2 “In the case of an Embedded Synchronous Power Generating Module where distribution network considerations restrict the Synchronous Power Generating Module Reactive Power Output then the maximum leading and lagging capability will be demonstrated without breaching the host network operators limits.” whilst I accept this is the current text in OC5.A.2.7.2 how are generators actually expected to do this? Or this this supposed allow limited testing only up to the network limits and if this is the case should the wording not be more like that in OC5.A.3.4.3” In the case of an Embedded Synchronous Power Generating Module where distribution network considerations restrict the Synchronous Power Generating Module Reactive Power Output <b>NGET will only require demonstration within the acceptable limits of the Network Operator</b> <del>then the maximum leading and lagging capability will be demonstrated without breaching the host network operators limits.”</del></p> <p>ECP.A.5.7.4 and G99 B.5.5.4 “Where the Generator is recording the voltage and Reactive Power at the Synchronous Power Generating Module terminals and the voltage, Active Power and Reactive Power at the HV connection point</p>
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	<p>shall be included. The results shall be supplied in an electronic spreadsheet format.” The original OC5.A.2.7.4 was a general request for generator information if they had it, now the wording of ECP.A.5.7.4 and G99 B.5.5.4 seems to be written that if a generator happens to be recording generator data they have to also record connection point data, which might not be the case. I think this need to rewritten such as to be requesting only the available data as follows  “Where the Generator is recording <b>either</b> the voltage and Reactive Power at the Synchronous Power Generating Module terminals <del>and</del> <b>or</b> the voltage, Active Power and Reactive Power at the HV connection point <del>shall be included</del>. <b>All the available</b> results from <b>either or both</b> shall be supplied in an electronic spreadsheet format.”</p> <p>ECP.A.5.8.4 why have tests H and I been added to the original OC5.A.2.8.4 preliminary tests?</p> <p>ECP.A.6.1.9 states “NGET <b>will</b> permit relaxation from the requirement ECP.A.6.2 to ECP.A.6.8 where an Equipment Certificate for the Synchronous Power Generating Module”, whereas G99 B.6.1.9 states “ The <b>DNO may</b> permit relaxation from the requirement B.6.2 to B.6.8 where <b>Manufacturers Information</b> for the <b>Synchronous Power Generating Module</b>”, why are these different and can they be made consistent.</p> <p>ECP.A.6.4.3 this section for network restrictions on an Embedded Generator has not been included in G99 B.6.3 it was include for synchronous generators.</p> <p>ECP.A.6.4.5 and B.6.3.3 have had the minimum operated MW level increased to 60% where it used to be 50% in OC5.A.3.4.5 why? Also most of the test duration times have changed more specifically tests (i) &amp; (ii) durations have been reduced from 60 to 30 minutes, test (iii) has increased from 5 to 30 minutes and tests (iv) &amp; (v) have increased from 5 to 60 minutes again why?</p> <p>ECP.A.6.6.4 why have tests H and I been added to the original OC5.A.2.8.4 preliminary tests? G99 B.6.5.4 Preliminary Frequency Response Testing</p>
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	<p>G99 has no text.</p> <p>ECP.A.6.7 and B.6.6 Fault Ride Through Testing whilst accepting this does currently appear in OC5.A.3.7, I would query the safety of carrying these tests on site using temporally installed equipment. Have any of these tests actually taken place or do these requirements not actually start applying until 1 December 2017. This test seem very similar to the sudden short circuit test applied to synchronous generators which in most case carried out in factories under controlled conditions, however for large site built hydro generators this has to be done on site. When this test is carried out on site temporary equipment is installed and then subjected to very high currents which can be problematic.</p> <p>ECP.A.7.2.3 Embedded HVDC System Owners where are these dealt with in distribution code?</p> <p>ECP.A.7.2.5 HVDC reactive power test durations have change so they are all 60minutes from the original OC5.A.4.2.5 values where only tests (i) &amp; (ii) were 60 minutes and all the rest were 5 minutes long, why?</p> <p>ECP.A.7.5.4 why have tests H and I been added to the original OC5.A.4.5.4 preliminary tests?</p> <p>ECP.A.7.5. Figure 1 – Frequency response volume tests why have all the MLP2, MLP3 and MLP5 test been dropped from the original OC5.A.4.5.</p> <p>ECC.6.3.17.1.3 has the phase 6 line down “dynamic stability assessment studies undertaken by NGET in coordination with the Relevant Transmission Licensee to identify the stability limits“ is this correct are these studies not done by the Relevant Transmission Licensee. Also in the last sentence possible clarification “The selection of the control parameter settings shall be agreed <del>with</del> <b>between</b> NGET in coordination with the Relevant Transmission Licensee between the relevant TSO and the HVDC System Owner”.</p> <p>ECC.6.3.17.2.1 last sentence possible change “If adverse interaction is identified, the studies shall</p>
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		<p>identify possible mitigating actions to be implemented to ensure compliance with the requirements of the <b>ECC6.1.9 Grid Code</b></p> <p>ECC.6.3.17.2 change text to “Interaction between HVDC Systems or other <b>Users' Plant and Apparatus</b> <del>Plant and equipment</del>”</p> <p>ECC.6.3.17.2.2 proposed text change and question what level of participation is expected from others? “The studies shall be carried out by the connecting HVDC System Owner with the participation of all other <b>Users'</b> <del>parties</del> identified by NGET”</p> <p>ECC.6.3.17.2.3 possible change “All <b>Users'</b> <del>parties</del> identified by NGET as relevant to <del>each</del> <b>the</b> Connection <del>Point</del>, including the Relevant Transmission Licensee's”</p> <p>ECC.6.3.17.2.6 mitigating actions the wording from connection application prior to agreement in GSR018 Annex 4 I think is better and propose modifying to “<b>User and The Company shall agree</b> any necessary mitigating actions identified by the studies carried out <b>as follows the site specific requirements and the works, including any Transmission Reinforcement Works and/or User Works, required to ensure that all Sub-Synchronous Oscillations are sufficiently damped</b>”</p> <p>ECC.6.3.17.2.7 do not agree with this being included this appears to allow NGET to put other Users' plant at risk, who is taking responsibility if system needs to operate to ECC6.1.9.</p>
22	Do you have any views on the structure of the Grid Code drafting for System Management and Compliance? (Annex 1-5)	No
23	Are there are any areas in the Grid Code or Distribution Code drafting which you do not believe reflect the requirements of the RfG or HVDC Codes and, if so, why do you believe they are deficient? (Annex 1-9)	No

24	Please make any other comments on the legal text drafting for the Distribution Code, G98 and G99 using the appropriate templates issued with this consultation.	
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