

## Grid Code Workgroup Consultation Response Proforma

### GC0100 EU Connection Codes GB Implementation – Mod 1

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 2 October 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 addressed to Chrissie Brown at [Christine.brown1@nationalgrid.com](mailto:Christine.brown1@nationalgrid.com)

<b>Respondent:</b>	<i>Garth Graham (garth.graham@sse.com)</i>
<b>Company Name:</b>	SSE
<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 GC0100 Original proposal, or any potential alternatives for change that you wish to suggest, better	<b>ORIGINAL</b>  We do not believe that GC0100 does better facilitate the Grid Code Objectives as it <u>fails to</u> discharge the

	<p>facilitates the Grid Code Objectives?</p>	<p>obligations imposed upon the licensee by its license and to comply with the Electricity Regulation and any relevant legally binding decisions of the European Commission and/or the Agency.</p> <p>As the National Grid presentation to EnergyUK on 23<sup>rd</sup> May 2017 noted, in respect of the three connection codes (RfG, DCC and HVDC), the aim of these Network Codes is to “<i>Set consistent technical requirements across EU for new connections of user equipment (e.g. generation / interconnectors)</i>”. This accords with the recitals of the RfG, DCC and HVDC Network Codes.</p> <p>However, as both the Proposer’s explanations to the Workgroup and the legal text makes clear there is not even to be a set of consistent technical requirements across GB (let alone with the EU) for new connections as a result of GC0100 as, for example, apparently many of these multiple technical requirements are, instead, to be determined by the network operate alone, in a non-open / non-transparent way, and applied differently to each new connection. This non-harmonised approach is inconsistent with the EU Network Codes.</p> <p>Furthermore, the imposition of additional costs (such as the twelve items listed on pages 59-60 of the Workgroup consultation document) will affect cross border trade between Member States as well as within the Member State (between GB and Northern Ireland) and as such will not be in compliance with Article 8(7) of Regulation 714/2009.</p> <p>In addition to not being better in terms of Objective (iv) the GC0100 Original does better facilitate the Grid Code Objectives (ii), (iii) and (v) as it:</p> <p>fails to facilitate competition in the generation and supply of electricity (by not complying with EU law – see above – and imposing additional costs on GB generation);</p> <p>fails to promote security and efficiency in electricity generation (by not complying with EU law – see above); and</p> <p>fails to promote efficiency in the implementation and administration of the Grid Code arrangements (by not</p>
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		<p>complying with EU law – see above).</p> <p><b>POTENTIAL ATLERNATIVE (a)</b></p> <p>For the reasons set out above, given that this potential alternative (as described on page 54 of the Workgroup consultation) is based on the Original then it too <u>fails to</u> better facilitates the Grid Code Objectives in terms, primarily, of (iv) but also (i), (iii) and (v).</p> <p>Nevertheless, in respect of the specific aspect of this potential alternative as regards the level of banding; and taking into account the previous substantial body of evidence provided by Workgroup members and stakeholders as part of the GC048 Workgroup deliberations and consultations; then taken in isolation this aspect would (absent the Original) better facilitate the Grid Code Objectives in terms, primarily, of (ii) competition in the generation and supply of electricity for the reasons provided to the GC048 Workgroup deliberations and consultations.</p> <p><b>POTENTIAL ATLERNATIVE (b)</b></p> <p>We do believe that potential alternative (b) (as described on page 55-62) of the Workgroup consultation) does better facilitate the Grid Code Objectives as it ensures the discharging of the obligations imposed upon the licensee by its license and to comply with the Electricity Regulation and any relevant legally binding decisions of the European Commission and/or the Agency.</p> <p>As the National Grid presentation to EnergyUK on 23<sup>rd</sup> May 2017 noted, in respect of the three connection codes (RfG, DCC and HVDC), the aim of these Network Codes is to “<i>Set consistent technical requirements across EU for new connections of user equipment (e.g. generation / interconnectors)</i>”. This accords with the recitals of the RfG, DCC and HVDC Network Codes.</p> <p>It is clear that this potential alternative (b) seeks to ensure that only those obligations applicable to newly connecting parties that fall within the scope of the EU Network Codes will be implemented into the GB national network codes (such as, but not limited to, the Grid Code and Distribution Code) as required by</p>
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		<p>those EU Network Codes.</p> <p>As detailed on pages 55-62 of the Workgroup consultation document there are clear reasons as to why this is required.</p> <p>In addition to being better in terms of Objective (iv) the potential alternative (b) also better facilitate the Grid Code Objectives (ii), (iii) and (v) as it:</p> <p>as by complying with EU law – see above – and not imposing additional costs (over and above those required by law) on GB generation it facilitates competition in the generation and supply of electricity;</p> <p>as by complying with EU law – see above – and not imposing additional costs (over and above those required by law) on GB generation it promotes security and efficiency in electricity generation; and</p> <p>as by complying with EU law – see above – and not imposing additional costs (over and above those required by law) on GB generation it promotes efficiency in the implementation and administration of the Grid Code arrangements.</p>
2	Do you support the proposed implementation approach?	We note the proposed implementation approach set out in Section 7 and support this.
3	Do you have any other comments?	<p>We note the Workgroup deliberations in respect of the <i>affect on cross border trade</i>.</p> <p>The Workgroup may wish to take due notice of the Commission's guidance in this regard which is available at:</p> <p><a href="http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=URISERV%3A126113">http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=URISERV%3A126113</a></p> <p>It sets out the following:</p> <p><b>"the concept of "trade between EU countries":</b>  <i>the concept of "trade" is not limited to traditional exchanges of goods and services across borders. It is a wider concept, covering all cross-border economic activity including establishment. This interpretation is consistent with the fundamental objective of the Treaty to promote free movement of goods, services, persons and capital. The requirement that there must be an effect on trade "between EU countries" implies that there must be an impact on cross-border economic activity involving at</i></p>

		<p>least two EU countries;</p> <p><b>the notion "may affect":</b> the function of the notion "may affect" is to define the nature of the required impact on trade between EU countries. According to the standard test developed by the Court of Justice, the notion "may affect" implies that it must be possible to foresee with a sufficient degree of probability on the basis of a set of objective factors of law or fact that the agreement or practice may have an influence, direct or indirect, actual or potential, on the pattern of trade between EU countries. In cases where the agreement or practice is liable to affect the competitive structure inside the EU, EU law jurisdiction is established".</p>
4	Do you wish to raise a WG Consultation Alternative Request for the Workgroup to consider?	No.

### Specific GC0100 questions

Q	Question	Response
1	Removing More Stringent Requirements' concerns have been expressed by some Workgroup members that applying more stringent requirement on newly connecting parties (that fall within this scope of the EU Network Codes for generation, demand and HVDC systems) maybe incompatible with EU law. Do you have any views on this topic that could assist the Workgroup when they are considering the topic in due course?	<p>We fully support the concerns set out on pages 55-62 of the Workgroup Consultation as regards the need to remove (from the proposed Original) the more stringent requirements when implementing the EU Network Codes into the GB national network codes (namely the Grid Code and Distribution Code).</p> <p>We note that to date the deliberations within the Workgroup have tended to be focused by those who hold a contrary view on the 'policy' position; namely that those who hold this contrary view (which is primarily network operators) seek to retain the existing status quo obligations set out in both the Grid Code and Distribution Code on new connecting parties who in the future will be encompassed within the scope of the EU Network Codes.</p> <p>However, this is at odds with both the position of BEIS and Ofgem who have both acknowledges that it may be necessary to remove or amend existing GB national network code obligations that conflict with the EU Network Code obligations.</p> <p>This position was most recently reaffirmed by Ofgem in their 30<sup>th</sup> August 2017 letter (in respect of GC0103):</p>

		<p><i>“To ensure the full and timely implementation of the EU Connection Codes, we are therefore encouraging the Grid Code Panel to focus on:</i></p> <p><i>a) bringing forward any new Grid Code provisions made necessary by virtue of the EU Connection Codes; <u>and</u></i></p> <p><i>b) <u>removing or amending any existing Grid Code provisions which may conflict with the EU Connection Codes.</u>”</i> [emphasis added]</p> <p>Whilst we can appreciate that some Workgroup members may hold a contrary view from a ‘policy’ perspective, we note that, in our view, this is a matter of ‘law’ (not ‘policy’) and that no counter legal arguments have been forthcoming.</p> <p>Furthermore, even if such arguments were to come forward we would strongly argue that the Workgroup should, nevertheless, put forward this potential alternative as a formal Alternative so that Ofgem (who are the correct body to consider this matter) are able to determine on this matter of law by choosing between the two (the Original and this potential alternative).</p> <p>Failure to put forward this as a formal Alternative runs the serious risk that Ofgem will either:</p> <p>(a) be unable to determine on GC0100 (and have to send it back); or</p> <p>(b) (depending on the CMP261 deliberations around the legality or otherwise of post send back changes to WACMs) reject the Original proposal, and any other Alternative(s) related to it, as it does not address the ‘more stringent’ matter which is in contravention of EU law.</p> <p>Either of these necessary additional aspects will, if applicable, delay the implementation of the GC0100 solution which is not in the wider interest of all concerned.</p> <p>Notwithstanding any Ofgem decision on GC0100 it should also be noted that all TSOs, DSO and relevant network operators are bound to comply with the applicable EU law even if this is in contravention of any national law provisions (such as, but not limited to, their respective licences or the national network codes including, but not limited to, the Grid Code or Distribution Code). They cannot, for</p>
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		<p>example, rely on any national provisions that place them in contravention of their EU law duties. Newly connecting parties which fall within the scope of the EU Network Codes could, in those circumstances where EU law has been contravened, seek full legal redress against the contravening party or parties in the national and / or EU courts.</p>
2	Are you comfortable with using the EU definition of Maximum Capacity instead of the GB definition of “Registered Capacity”?	<p>As we set out elsewhere in this consultation response, we believe that the EU Network Codes need to be fully implemented into the GB national network codes – which is not what the GC0100 Original does.</p> <p>In this respect we believe that all the definitions within the EU Network Codes (and not just limited to the ‘Maximum Capacity’ definition alone) should be used instead of the GB definitions where both exist.</p>
	<b>Fast Fault Current Injection questions</b>	
3	What are your views on options 1, 2 and 3 as set out in paragraph 4.4 for Fast Fault Current Injection and which option (if any) would you prefer?	<p>We are concerned about proposing technology which is still classified as ‘experimental’ (i.e. ‘VSM’) as a <i>mandatory</i> requirement for generators.</p> <p>We do not feel that the option of synchronous compensators which are proven sources of FFCI has yet been fully explored with accurate costs which reflect making use of <b>existing</b> generators rather than new build synchronous compensators.</p> <p>Intuitively it seems wrong not to investigate how existing large thermal plant and, in particular, embedded thermal rotating plant (that has recently been added to the system to take part in the capacity market) could be incentivised to provide this service when they are otherwise out of merit (e.g by means of retrospectively fitting clutches to enable them to run as synchronous compensators), particularly in light of recent reduction in ‘embedded benefits’.</p> <p>Such a solution is technical demonstrable and if it could be incentivised by competitive tenders with time periods of &gt; 4 years, could provide a cheaper and more certain means of providing FFCI than VSM.</p>
4	Do you have any alternative fast fault current injection solutions noting that the requirement applies to the Converter not the	See our answer to Question 3 above.

	wider Power System?	
5	In considering the three Fast Fault Current Injection options 1, 2 and 3 in paragraph 4.4 do you have any comments in relation to technology readiness, cost implications, and can they be implemented date within the context of product development timescales?	
6	Do you have any evidence to support your views?	<p>Clutches have been fitted to thermal rotating generators up to 300 MW in size and are routinely fitted to peaking plants in the US as a means of adding value by running as a Synchronous Compensator when out of merit.</p> <p>If there was a commercial market in providing FFCI services then it would incentivise manufacturers to design clutches that could be easily retrofitted.</p>
7	Do you have any views on the specific costs related to the additional requirements?	
8	Is the current proposed wording for the remote end HVDC and DC Connected Power park modules sufficient to facilitate future new technology?	
	<b>Banding questions</b>	
9	What are the specific costs related to the additional requirements?	The specific costs related to requiring GB generators to operate to the lower banding thresholds (such as those proposed with the Original) when compared with the banding values set out in the Table 1 (Article 5) of the RfG have already been provided by us in response to the GC048 consultation response. For the sake of brevity we avoid repeating those detailed costings here as we understand the GC0100 Workgroup is already aware of this costing information.
10	Do you have any views on the banding thresholds for the original and those suggest for the possible alternative?	<p>Notwithstanding our comments under Question 1 (applicable objectives) above, we believe that the application of the banding values set out in the Table 1 (Article 5) of the RfG (and shown in yellow highlight on page 46 of the Workgroup Consultation) for a three year period is the pragmatic way forward.</p> <p>It ensures that newly connecting GB generators are not subject to the sub-optimal solution which would arise if the low banding levels proposed with the Original were to be adopted.</p>



11	Can you provide any feedback/comments on the associated legal text?	
	<b>Fault Ride Through</b>	
12	Do you support the fault ride through voltage against time curves If not please state why you disagree, what alternative you would recommend and your justification for any alternative?	We support the proposed FRT curves.
13	Do you have any specific views about the proposal to modify the stage 2 under voltage protection for distributed generation interface protection?	We support in principle the proposed change which avoids the risk of tripping of G59 protection, subject to this not being more stringent than the requirements of the EU Network Codes.
	<b>Other questions</b>	
14	Does the Legal drafting contained in annex 2 and 3 deliver the intent of the solution outlined in section 3?	<p>We <u>do not</u> agree that the draft legal text contained in Annex 2 and 3 delivers the intent of the solution outlined in Section 3.</p> <p>This is because the intent of the GC0100 solution is to ensure that all the requisite applicable articles of the EU Network Codes (RfG, DCC and HVDC) are implemented into the national network codes (namely the Grid Code and Distribution Code).</p> <p>However, there is <u>no evidence</u> provided that clearly maps over each of the EU Network Code obligations (that GC0100 is intended to implemented into the national network codes) to the draft legal text.</p> <p>It was clear from the August Workgroup review of the draft legal text for GC0100 that multiple gaps and inconsistency existed (at that time) between the draft legal text and the delivery of the intent of the solution outlined in Section 3 of the Workgroup consultation. Our review of the latest draft legal text shows that many gaps and inconsistencies still exist.</p> <p>Absent a clear mapping of the EU Network Code articles to the draft legal text we cannot see how either (a) the Workgroup; or (b) stakeholders; or (c) the requisite Code Panel(s); or (d) Ofgem can say that the draft legal text does deliver the solution outlined in Section 3.</p> <p>Notwithstanding the above, we also note that the draft legal text appears to be in direct contravention</p>

		<p>of the EU Network Codes.</p> <p>By way of example, the suggested use of the existing national definitions, amended in part by the EU Network Code requirements, has the unintended (or possibly intended?) consequence that it will not be clear to existing connected parties that, in fact, they are not actually bound by the EU Network Code amended definitions within the Grid Code (or Distribution Code) as this would be applying those EU Network Codes definitions (and associated obligations) to existing connected parties without either (1) a CBA being undertaken or (2) those parties having substantially modified their respective connection agreement(s) which would be in direct contravention of the RfG, DCC and HVDC Network Codes.</p> <p>Another, more specific example (one of many) is the suggested wording of ECC2.1:</p> <p><i><u>“For the purposes of the Grid Code, physical quantities such as current or voltage are not defined terms as their meaning will vary depending upon the context of the obligation. For example, voltage could mean positive phase sequence root means square voltage, instantaneous voltage, phase to phase voltage, phase to earth voltage. The same issue equally applies to current, and it therefore felt that in view of these variations the terms current and voltage should remain undefined with the meaning depending upon the context of the application. <u>The European Connection Codes define requirements of current and voltage but they have not been adopted as part of EU implementation.</u>”</u></i> [emphasis added]</p> <p>As the wording in ECC2.1 acknowledges, there is an EU Network Codes definition for ‘voltage’ (see RfG Article 2 (3)) namely:</p> <p><i>“‘voltage’ means the difference in electrical potential between two points measured as the root-mean-square value of the positive sequence phase-to-phase voltages at fundamental frequency”</i></p> <p>However, despite this, according to ECC2.1 this is not to be adopted for the purposes of GB.</p> <p>Not only is the entirely without merit and in contravention of the defect (as the objective of GC0100 is to implement the EU Network Codes in their entirety) it also begs a number of questions;</p>
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		<p>such as:</p> <p>‘what other parts of the EU Connection Network Codes are also ‘conveniently’ to be ignored (according to the draft legal text) and not adopted as part of GC0100?’;</p> <p>‘what additional parts of the EU Connection Network Codes (not already included in the draft legal text) can also ‘conveniently’ now be ignored and not adopted as part of GC0100?’</p> <p>We were unaware that the implementation of the EU Network Codes within the GB national network codes was to be on the basis of such an ‘a la carte’ approach.</p> <p>This being the case we feel certain that generators, demand facilities and HVDC links newly connecting to the GB network will, likewise, wish to see this ‘a la carte’ approach being applied to other parts of the EU Network Codes when it comes to GB implementation that are ‘convenient’ to them.</p>
15	Do you have any information based on the proposed solution in respect of implementation costs?	Some of the additional implementation costs in respect of the proposed solution are set out on pages 59-60.