

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.

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

Respondent:	Kamran Sharifabadi Dr. Eng. Leading Advisor Power Transmission Technologies Mobile: +47 48099053 Email: kamsh@statoil.com
Company Name:	STATOIL
Please express your views regarding the Workgroup Consultation, including rationale. (Please include any issues, suggestions or queries)	<ul style="list-style-type: none"> We are convinced that public consultations are important. However, in addition to the meetings, we need to ensure a better platform for exchange of information and consultation. The consultations, most of them with very short response time and running through the summer are not helping stakeholders to consolidate their views in more constructive ways.

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 facilitates the Grid Code Objectives?	<ul style="list-style-type: none"> Statoil believes that the issue of <i>fault current injection</i> has not been sufficiently assessed in order to rush for implementing the changes for the ongoing revision of the grid codes. The <i>Requirements for Generators</i> (RfG) network code does not imply any necessary changes to the current reactive current injection of today's UK grid code. The recently updated IGDs (and the new HPoPIPS) suggest the possible need for technological changes to meet stated requirements. But to face such technology changes, the industry requires a basis of verified data, as a result of system studies and firmly established system design criteria. The proposed reactive current injection requirements would exceed today's industry standards, leading to additional costs related

		<p>to increasing the current hardware capabilities, R&D, certification, testing and validation costs. It's worth to mention that specific UK only requirements should not force manufacturers to change their hardware for the rest of the markets as well. Therefore the system operator should consider to incentivise the development of such capabilities under an ancillary services market,</p> <ul style="list-style-type: none"> • Statoil believes that imposing requirements exceeding the industry standards and current technology capabilities must be based on a comprehensive Cost Benefit Analysis. • It is critical to have a common understanding of system needs for scenarios today and in the future. European discussions on power system needs with high renewable penetration levels of variable renewable energy sources and power electronics levels have been focusing on aspects with a time horizon beyond May 2018 to prepare necessary frameworks allowing national TSOs to specify minimum technical requirements. This is currently addressed in the ENTSO-E expert group on fast fault current. We do not understand why for National grid is so imperative to include such requiremenst in the upcoming revision of the grid code. • On the concept of grid forming converter controls, the wind industry believes that TSOs should focus on breaking down the characteristics of being grid forming and developing a framework for defining future requirements. National TSOs should use such frameworks specifying the minimum technical requirements needed at the connection point to maintain system stability. Minimum technical specification should be technology neutral where possible. They should not be translated into specific and/or preferred technical solutions like e.g. Virtual Synchronous Machines. The development of specific technical solutions should be left open for the industry. • To avoid unnecessary system costs, the specification of future system requirements must be based on transparent system studies and firmly established system design criteria. This will result in a common rationale and technical background for new requirements. The result will also be that potential later adjustments will have a much more robust starting point. In general, a more transparent common rationale will also result in a clearer signal to the industry in order to understand what longer-term developments are needed to support future system security
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		<p>while efficiently integrating renewables.</p> <ul style="list-style-type: none"> Scientific system studies modelling the behaviour of network and connected equipment are essential to define proper connection & operation requirements. However, system studies need to be complemented by simulations and real tests to fully understand the potential behaviour of different technologies under all situations (normal, during and after faults). Not doing so risks an under/over estimation of technology performance during times of system stress.
2	Do you support the proposed implementation approach?	NO
3	Do you have any other comments?	
4	Do you wish to raise a WG Consultation Alternative Request for the Workgroup to consider?	

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?	
2	Are you comfortable with using the EU definition of Maximum Capacity instead of the GB definition of "Registered Capacity"?	Yes.
	Fast Fault Current Injection questions	
3	What are your views on options	Option 3

	1, 2 and 3 as set out in paragraph 4.4 for Fast Fault Current Injection and which option (if any) would you prefer?	
4	Do you have any alternative fast fault current injection solutions noting that the requirement applies to the Converter not the 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?	NG should ask the question to Vendors & manufactures of the equipment. We cannot share any of the Vendor material, development plans with a third party e.g. National Grid.
7	Do you have any views on the specific costs related to the additional requirements?	Answer as above (question 6) Statoil, cannot share confidential information.
8	Is the current proposed wording for the remote end HVDC and DC Connected Power park modules sufficient to facilitate future new technology?	NO
	Banding questions	
9	What are the specific costs related to the additional requirements?	NG should ask the question to Vendors & manufactures of the equipment. Statoil cannot share any of the Vendor material, costing or development plans with a third party e.g. National Grid.
10	Do you have any views on the banding thresholds for the original and those suggest for the possible alternative?	
11	Can you provide any feedback/comments on the associated legal text?	
	Fault Ride Through	
12	Do you support the fault ride through voltage against time curves If not please state why you disagree, what alternative you	NO, we don't support the proposal.

	would recommend and your justification for any alternative?	
13	Do you have any specific views about the proposal to modify the stage 2 under voltage protection for distributed generation interface protection?	
	Other questions	
14	Does the Legal drafting contained in annex 2 and 3 deliver the intent of the solution outlined in section 3?	
15	Do you have any information based on the proposed solution in respect of implementation costs?	Yes. But Statoil cannot share any of the Vendor material, CAPEX, development plans with a third party e.g. National Grid.