Distribution Code Consultation Response Proforma

DCRP/18/09/PC: Storage Fast Track Modifications to G98 and G99

Stakeholders are invited to respond to this consultation, expressing their views or providing any further evidence on any of the matters contained within the consultation document. Stakeholders are invited to supply the rationale for their responses to the set questions.

Please send your responses and comments by **17:00 on11 September 2018** to dcode@energynetworks.org and please title your email 'Consultation Response DCRP/18/09/PC '. Please note that any responses received after the deadline may not receive due consideration by the Working Group.

Any queries on the content of the consultation pro-forma should be addressed to DCode Administrator on 020 7706 5124, or to dcode@energynetworks.org

Respondent	*Claire Weiller/Paige Mullen/Jackie Piero*
Company Name	Nuvve Corp.
No. of DCode Stakeholders Represented	
Stakeholders represented	*Nuvve and customers of vehicle to grid (V2G) services.*
Role of Respondent	Vehicle to grid (distributed asset) aggregator. We Install and aggregate bi-directional electric vehicle to provide behind the meter services and grid services.
We intend to publish the consultation responses on the DCode website. Do you agree to this response being published on the DCode website? [Y/N	Yes

Distribution Code Consultation Response Proforma

	Question		DNOs' response
Q1	Do you agree with the intent of this modification?	Yes	
Q2	Do you have any particular comments on the drafting of the new fast track storage requirements in G98 or G99?	We have a few areas of concern or questions: - The fast track storage drafting in 6.2.2.1 does not explicitly include electric vehicles. When in discharge mode, bi-directional electric vehicles act as a storage resource and as such should be captured in the fast track storage G99/G98 amendments. Can it be clarified explicitly in the drafting that bi-directional electric vehicles acting as storage are eligible for the fast track procedure? - The fast track storage requirements should consider installations where there are multiple connections of type tested G98 on the same premise such as with vehicle to grid charging stations.	Under the Electricity Safety, Quality and Continuity Regulations (2002) any stored energy system that runs in synchronism with the mains is treated as generation, and hence needs to conform to the Distribution Code (and its daughter documents like G98 and G99). As such all the obligations, and rights, applicable to generation and storage would apply to an EV in V2G mode. The fast track process is limited to storage devices (including EVs) of <16A and is intended to limit the burden on single domestic customers. The ENA is currently reviewing the DNOs' processes for EVs both in terms of storage and in more general network interface issues. Your comments will be passed on to those groups, who will have their own engagement with EV stakeholders.
Q3	Do you have any other comments on this proposal?	Over the next three years bi-directional electric vehicle charging stations will be installed in large numbers all over the UK. Even though a station may be type tested to G83 it may not meet the current technical specifications for the fast track applications. By requiring a complex	The answer to these points is as for Q2. The points you make are valid and need to be considered as part of the DNOs' responses overall to the challenge of EVs.

		grid study for multiple type tested G83 storage/generation modules installed on the same site, this will cause long wait times for customers as well as add to a large influx of grid studies on the same type of asset spread all along the distribution grid. In the modifications to the fast track forms it would be very beneficial to consider multiple, identical (type tested G83) electric vehicle charging stations that are able both consumption and generation.	

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Respondent	Nick Ruben
Company Name	Elexon
No. of DCode Stakeholders Represented	
Stakeholders represented	
Role of Respondent	
We intend to publish the consultation responses on the DCode website. Do you agree to this response being published on the DCode website? [Y/N	

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	Question		DNOs' response
Q1	Do you agree with the intent of this modification?		
Q2	Do you have any particular comments on the drafting of the new fast track storage requirements in G98 or G99?	I was reviewing the changes to GC98 and 99 as part of DCRP/18/09/PC and noticed that rather than referring to the capacity of micro generation and storage in kW or kVA, which I'd have thought a more usual way to describe the capacity of a generator, the proposal (6.2.2) refers to a Power Generating Module's total aggregate capacity in terms of amps per phase.	This approach has been carried forward from G83. Originally G83 took as its upper limit a set of international standards on power quality – such that the devices could be type tested -and those standards are defined up to 16A per phase (and subsequently up to 75A per phase, but 16A is appropriate for domestic equipment). Why amps rather than kW? To a first approximation, these devices produce out amps, irrespective of voltage – so they do not really have a kW rating as the kW will depend on the local voltage. Subsequently the 16A has been picked up in the official DTI/HSE guidance to the ESQCR so its effectively in the law as well.
Q3	Do you have any other comments on this proposal?		

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Respondent	*Antony Johnson* *Telephone:- 01926 655466* *E-Mail:- Antony.Johnson@nationalgrid.com*
Company Name	National Grid
No. of DCode Stakeholders Represented	None
Stakeholders represented	Not Applicable
Role of Respondent	Electricity Transmission System Operator
We intend to publish the consultation responses on the DCode website. Do you agree to this response being published on the DCode website? [Y/N	Yes

Distribution Code Consultation Response Proforma

	Question	Response	DNOs' Response
Q1	Do you agree with the intent of this modification?	We agree that G98 and G99 need to be updated to include the requirements for Storage Technologies though have some concerns over the exclusions (largely from a security of supply perspective) listed in G98 (Appendix 1) and G99 (sections 1.2, 11, 12, 13 and Section A.4.2).	This is not an update in terms of the technical requirements for storage – it is only an update to the process to be followed during connexion.
Q2	Do you have any particular comments on the drafting of the new fast track storage requirements in G98 or G99?	As part of Grid Code Workgroup GC0096 (Energy Storage) work has been ongoing to clarify the requirements for Electricity Storage providers in the same way as their generation, HVDC or demand counterparts. Details of this work are available from the following link. https://www.nationalgrideso.com/codes/grid-code/modifications/gc0096-energy-storage As part of this work we have covered both electricity storage equipment which may be part of a new or existing power station or as a standalone connection either to the Transmission System or Distribution System. When the Grid Code workgroup was discussing these issues, it was unclear at that stage as to whether, storage providers should be treated as Generators or some other type of User. In view of this and to make the code as clear as possible, we have introduced the term of "Electricity Storage Facility Owner" who would effectively be treated as User owning or operating a standalone Electricity Storage Facility with one or more Electricity Storage Modules. We note that in the drafting of G98 and G99, storage has been considered under the umbrella of Generation (ie where one or more electricity storage devices forming part of a Power Station would be owned or operated by a Generator). We feel this does work, although it would probably	We are aware of GC0096. The ESQCR (2002) treats storage and generation connected to a distribution system in the same way, so at this point in time DNOs are treating storage identically to generation from a technical compliance point of view -with the exception of the Requirement for Generators Network Code new requirements. That is not to say that some differentiation of treatment might be appropriate in the future – but that would be following further consideration of the issues – and probably, as you suggest, following conclusion of the GC0096 work. The difference in technical requirements between generation and storage follow from the fact that certain technical requirements are specifically excluded from the RfG. To include them in Distribution documents at this time, without further justification, would be "gold plating". Certain other requirements, such as reactive capability, were already in the baseline

		be more explicit if Electricity Storage is defined in its own way (especially in the case of standalone installations) though acknowledge this would be a considerable amount of additional work. As a general comment, reading the definitions and subsequent drafting implies that Electricity Storage devices are biased towards converter based storage technologies such as batteries with treatment towards synchronous technologies such as compressed air energy storage being rather vague. So far as the Grid Code drafting approach is concerned we have considered the requirements for both synchronous and asynchronous storage technologies. Our major area of concern relates to the exclusions listed in G98 (Appendix 1) and G99 (sections 1.2, 11, 12, 13 and Section A.4.2). Some of these requirements for example, fault ride through, fast fault current injection and Limited Frequency Sensitive Mode – Over Frequency which we believe are important from a system security perspective have been excluded. It is also unclear why certain elements within RfG – for example reactive capability (applicable to Type B, C and D Power Generating Modules) are included within the Storage drafting but others (eg fault ride through) have been excluded. Notwithstanding the point that the EU Connection Network Codes explicitly exclude storage, for the Grid Code drafting under GC0096 (as part of the GB Modification) we have treated storage in exactly the same way as its generating counterparts and would expect any storage module of the same size as a Power Generating Module to meet the same requirements, this will become increasingly important in the future, especially with co-located sites. As such, we would propose that once the GC0096 Grid Code modifications are approved, it would be appropriate to adopt similar requirements in G98 and G99.	GB documentation, albeit not to the same level of detail. All this was explained at length to stakeholders during the joint GC0100-0102 process. Nevertheless DNOs recognize that it is sensible to remove these distinctions for storage and would be happy to work with NG to help NG make the case for change. We do not agree with your proposed changes as the text has to cater for storage that is part of a PGM and storage that stands alone.

		More detailed comments:- Page 103 – Section 11.1.1(b) – The current wording does not read well. Should this be corrected to read "(b) **Electricity Storage** devices forming part of a **Type A Power Generation Module~~s~~** within the **Power Generating Facility**. The same comments also applies to Page 109 – Section 12.1.1(b) and Page 121 – Section 13.1.1(b) in respect of Type B, C and D Power Generating Modules.	
Q3	Do you have any other comments on this proposal?	We would propose that once the GC0096 modifications are approved, it would be appropriate to adopt aligned requirements in G98 and G99. This will also ensure as far as possible a proportionate and even-handed treatment of requirements upon generators (as implemented through the Requirements for Generators European Network Code) and on storage applications since this is one of the main considerations of GC0096.	As per the response above we agree that futher consideration of storage is necessary for distribution connexions. The ENA's Storage WG is already looking at these issues.

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Respondent	Tom Chevalier
Company Name	Power Data Associates
No. of DCode Stakeholders Represented	
Stakeholders represented	
Role of Respondent	
We intend to publish the consultation responses on the DCode website. Do you agree to this response being published on the DCode website? [Y/N	

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	Question		DNOs' response
Q1	Do you agree with the intent of this modification?		
Q2	Do you have any particular comments on the drafting of the new fast track storage requirements in G98 or G99?	6.2.2.1 uses the terms "property" and "premises". This is not clear, and they are not defined terms. Confusion can occur through multiple buildings at any one point of connection, such as an outbuilding or garage being regarded as a premises, or a different property. I think the DCODE is interested in an upper limit at the point of connection, so for clarity I would suggest the text to be changed to limit the capacity to per "Connection Point".	A valid point. It would be more appropriate to use the defined term Generator's Installation rather than property – and to make appropriate similar adjustments throughout G99.
Q3	Do you have any other comments on this proposal?		

From: Carter, Sarah <Sarah.Carter@ricardo.com>
Sent: 25 September 2018 20:36
To: Creighton, Alan (Alan.Creighton@northernpowergrid.com)
Cc: Mike Kay; Dcode
Subject: RE: DISTRIBUTION CODE COMMUNICATION - DCRP_18_09_PC – Electricity Storage Fast Track Modifications to G98 and G99 Public Consultation

Hi Alan,

Thank you for Northern Powergrid's response to the Electricity Storage Fast Track Modification to G98 and G99.
We concur with your suggestion for additional text in paragraph 6.2.2.3 and have added it as you suggested.

> "In addition to Form A3-2, an EREC G100 Export Limitation Scheme Installation and Commissioning Tests form must be submitted to the **DNO** to confirm that the Export Limitation Scheme meets the requirements set out in EREC G100. Confirmation shall be provided in a format as shown in EREC G100 Appendix B."

In respect of your other suggestion we have put a requirement in the document check section of Form A3-2 in respect of the EREC G100 Export limitation scheme installation and commissioning test form. We have expanded the requirement in the commissioning check section of Form A3-2 to ensure that the Export limitation scheme meets the requirements of EREC G100 as well as having been commissioned in accordance with EREC G100. This is shown below. We believe this takes onboard your request.

Form A3-2: Installation Document for Integrated Micro Generation and Storage ···¶

Please complete and provide this document for each **Integrated Micro Generation and Storage** installation.¶

imbalance to below 16A per phase, as required by EREC G99.	
Export limitation scheme meets the requirements of EREC G100 and has been commissioned in accordance with EREC G100.	Yes / No*
Information to be enclosed:	
Description	Confirmation *
Final copy of circuit diagram.	Yes / No*
EREC G100 Export limitation scheme installation and commissioning test form.	Yes / No*

¶

Best regards,

Sarah

From: Creighton, Alan [mailto:Alan.Creighton@northernpowergrid.com]
Sent: 11 September 2018 14:39
To: David Spillett <david.spillett@energynetworks.org>
Cc: Creighton, Alan <Alan.Creighton@northernpowergrid.com>; Hadjiodysseos, Paris <Paris.Hadjiodysseos@northernpowergrid.com>; Nicholson, Mark <Mark.Nicholson@northernpowergrid.com>
Subject: RE: DISTRIBUTION CODE COMMUNICATION - DCRP_18_09_PC – Electricity Storage Fast Track Modifications to G98 and G99 Public Consultation

David
Please see the attached from Northern Powergrid. Just one minor suggestion on the attached.
Cheers Alan