Modification proposal:	**Distribution Code: Modification to the Distribution Code for the revision of Engineering Recommendation G83**		
Decision:	The Authority directs that this proposal be made[1]		
Target audience:	Parties to the Distribution Code and other interested parties		
Date of publication:	20 November 2012	Implementation Date:	1 December 2012

Background to the change proposal

Electricity Distribution Licence holders[2] are required by Standard Licence Condition ("SLC") 20 of their licences to have in force, implement and comply with the Distribution Code. SLC 21 imposes, in effect, a duty on licence holders to review and, where appropriate, seek our[3] approval for modification of the Distribution Code so as to better achieve the requirements of SLC 21.

The DNOs may propose changes to the Distribution Code and initiate work on a review of the Code through the Distribution Code Review Panel ("DCRP").

The Energy Networks Association's ("ENA") Engineering Recommendation G83/1-1 ("ER G83/1-1") provides recommendations for the connection of small-scale embedded generators ("SSEG")[4] to the distribution systems of electricity distribution licence holders. It is referenced in Annex 1 of the Distribution Code and is incorporated within the Distribution Code.

The current version, ER G83/1-1, came into effect in May 2008.

The review of ER G83/1-1

In March 2011, the DCRP decided to establish a Working Group to review ER G83/1-1. This decision was driven by issues of consistency with ER G59/2[5] and the recognition that the transition to a low carbon electricity system will significantly increase the number of SSEGs being connected. It was also seen as an opportunity to make connections easier, simpler and cheaper, while ensuring that safety and quality of supply are not compromised.

The overall objective of the review process was to produce a new document that is consistent with ER G59/2 (introduced in April last year). Particular objectives were to:

- align the protection settings required for SSEGs with those of ER G59/2; and
- to make provision for the efficient type-testing of mass market small scale generation to simplify its assessment and connection.

The inconsistencies between ER G59/2 and ER G83/1-1, in particular the different protection settings stipulated in the two documents, were causing problems for micro wind and PV installers as well as the DNOs. The terms of reference for the Working Group were agreed by the DCRP and it started the review process in May 2011.

[1] This decision document includes the reasons for this decision as required by section 49A of the Electricity Act 1989.
[2] This includes the fourteen ex-PES licensees referred to as DNOs and all other licence holders referred to as IDNOs.
[3] The terms 'the Authority', 'Ofgem' and 'we' are used interchangeably in this document. The Authority is the Gas and Electricity Markets Authority; the regulator of the gas and electricity industries in GB. Ofgem is the Office of the Gas and Electricity Markets which supports the Authority.
[4] SSEGs are generators which have a rating up to 16A/phase.
[5] The Engineering Recommendation that applies to generators having a rating greater than 16A/phase.

The industry consultation process

The DCRP published a consultation document on the changes to the Distribution Code and ER G83/1-1 on its website in December 2011. Twenty four responses had been received when the consultation closed in February 2012, including responses from all the Distribution Network Operators ("DNOs") and National Grid. Once the consultation had closed, the Working Group met and reviewed all the responses. The Working Group made further changes to the documents to resolve the issues raised by respondents where they considered them to be appropriate. A copy of the Working Group's response to each point was sent to each respondent.

At the DCRP meeting on 29 March 2012, the final documents were reviewed and the DCRP gave its unanimous approval for a submission to us requesting our approval of a revised version of the Distribution Code (i.e. incorporating ER G83/2). The Chair of the DCRP wrote to us on 19 April 2012, on behalf of the Electricity Distribution Licence holders, with a report (as required by SLC 21.9) seeking approval to modify the Distribution Code to recognise the introduction of ER G83/2.

The modification proposal

As already described, the proposal seeks to replace ER G83/1-1 with ER G83/2 in Annex 1 of the Distribution Code, as the review by the industry Working Group has resulted in a major rewrite of ER G83/1-1.

As well as addressing the G59/2 consistency issues, the new ER G83/2 takes account of the recommendations of the Joint GCRP/DCRP working group dealing with the Energy Emergency Executive Committee's recommendations regarding the low frequency event on the GB system on 27 May 2008[6].

DCRP recommendation

The DCRP has considered this modification proposal and agreed unanimously to seek our approval to modify the Distribution Code so that in Annex 1 of the Distribution Code, ER G83/1-1 is replaced by ER G83/2. The changes proposed by the DNOs are set out in the report dated 19 April 2012 sent to us by the Chair of the DCRP.

The report recommended approval. It made the case that these proposals improve the clarity of the requirements on customers, generation scheme developers, installers and manufacturers. The report stated that the proposals had generally been welcomed and supported and that stakeholders had not identified any issues that could cause any material detriment to any User or prospective User. Finally, the report stated that the introduction of G83/2 allowed the DNOs to better meet the applicable objectives of the Distribution Code.

Our consideration of the report to the Authority

We are represented on the DCRP. We are aware of the extent of the work carried out to review G83/1-1 and of the steps taken, including consultation, to involve stakeholders in the process. We note the very wide range of stakeholders that joined the working group.

We were assisted by external experts in carrying out a review of the document. This review[7] concluded that a number of issues were of concern and should be addressed prior

[6] For further information, see the following link: National Grid Report - Frequency Deviation and Automatic Load Disconnection - 27 May 2008
[7] More details are available here: Consultancy Support for the Evaluation of ER G83/2

to the introduction of ER G83/2. We discussed these concerns with Electricity Distribution Licence holders who proposed changes to respond to these concerns.

As the version of ER G83/2 submitted as part of the report sent to us on 19 April 2012 contained a number of changes compared with the version that was subject to earlier public consultation, we decided to publish it under a 'Minded To' decision letter[8] seeking further comments. The comments we received in response to this letter focused on three issues (discussed further below).

We have given full consideration to these comments and the concerns expressed. We have discussed them with the Electricity Distribution Licence holders and other stakeholders and have decided to make further changes to the version of ER G83/2 that was circulated with our 'Minded To' letter. The responses to the three issues are summarised here and the precise drafting changes are shown in Annexes 1 and 2 to this letter.

Stirling engines

We have been made aware of the fact that microgenerators that employ a Stirling engine as the prime mover[9] are unable to operate over the frequency range required by ER G83/2. We have discussed this with the Electricity Distribution Licence holders and they have agreed to add a Guidance Note to the Distribution Code that effectively gives this technology a capacity constrained and time limited exemption from the requirement to operate over the frequency range set out in ER G83/2. The wording of this Guidance Note is provided in Annex 1 to this letter.

Definition of "Close Geographic Region"

It has been argued that this definition, which in part determines whether the Stage 2 process[10] applies, extends to too great an area. We have discussed this concern with the Electricity Distribution Licence holders and they have agreed that their primary concern relates to multiple installations on a single LV feeder from a distribution substation. The definition will therefore be redrafted as reflected in Annex 2.

Limitation on "Single Premises Connection Procedure"

It has been argued that the drafting in 5.1.1 has the potential to limit the ability of an Installer to install multiple but separate SSEGs in a Close Geographic Region. We have discussed this concern with the Electricity Distribution Licence holders who acknowledge the issue. The drafting in 5.1.1 will change (reflected in Annex 2) to allow a single Installer to install multiple SSEGs in a Close Geographic Region provided there is a time delay between installations that is judged to be consistent with an unplanned programme of work.

The Authority's decision

SLC 21.10 of the Electricity Distribution Licence provides that modifications to the Distribution Code that are proposed by the licensees and sent to us cannot be implemented without our approval.

We have considered the report dated 19 April 2012 and the comments received during the 'Minded To' consultation process. We have also considered the results of the review carried out by external experts. We have concluded that, based on the version of G83/2

[8] The letter is on our website here: 'Minded To' decision letter - 20 August 2012
[9] A prime mover is the source of the power necessary to drive a generator – e.g. a gas turbine.
[10] This is the process in G83/2 that applies to multiple installations of SSEGs.

that was published with our 'Minded To' letter of 20 August 2012, together with the further changes set out in Annexes 1 and 2 of this letter:

1. implementation of the modification proposal will better facilitate compliance with the requirements set out in SLC 21 of the Electricity Distribution Licence; and

2. directing that the modification is made is consistent with our principal objective and statutory duties[11].

Reasons for our decision

Discussions at the DCRP and elsewhere demonstrated a clear need to review ER G83/1-1 and we supported the DCRP's decision in 2011 to initiate this review.

As stated above, we have observed the process that the DCRP and the Working Group have followed in carrying out this review, in particular the steps taken to engage stakeholders in the process.

We note that the Health and Safety Executive (HSE) has been kept fully informed of the review process. We have consulted with the HSE and it has not raised any concerns about the introduction of G83/2 within the Distribution Code.

While the industry consultation process raised some issues, the proposals have generally been welcomed by stakeholders. Where parties proposed changes, these were considered by the Working Group before deciding whether they should be included or not. As an additional safeguard to allow stakeholders to engage with this process, we carried out a further consultation as a 'Minded To' decision letter and, as a result, further changes have been made.

In our view, the introduction of G83/2 in Annex 1 of the Distribution Code does better facilitate the applicable objectives of the Distribution Code as set out in SLC 21 of the Electricity Distribution Licence.

SLC 21 requires that the Distribution Code should, amongst other things, set out all material technical aspects relating to connections to, and the operation and use of, the licensee's Distribution System through a Planning and Connection Code. We support the DCRP's decision to update ER G83/1-1 and consider that ER G83/2 (in the form described by this decision letter) better meets this requirement. It does so by updating the guidance on a number of technical issues, including the alignment of the protection settings for SSEGs with ER G59/2, and making provision for the efficient type testing of mass market small scale generation.

SLC 21 also requires the Distribution Code to permit the development, maintenance, and operation of an efficient, co-ordinated, and economical system for the distribution of electricity. We consider that this requirement is better met by updating and clarifying the connection and operating requirements for small-scale distributed generators which is facilitated by this proposal.

We also note that the introduction of G83/2 will benefit the whole electricity system in terms of frequency stability, i.e. the Total System will be more secure against low frequency disturbances that can be made worse by the response of SSEGs.

[11] The Authority's statutory duties are wider than matters which the Panel and licensees must take into consideration and are largely provided for in statute, principally in this case the Electricity Act 1989 (as amended most recently by the Energy Act 2010), as well as arising from directly effective European Union law.

SLC 21 requires the Distribution Code to facilitate competition in the generation and supply of electricity. We consider that the additional clarity of the technical requirements for SSEGs provided by ER G83/2 is likely to make the connection process more efficient, which may contribute to the development of distributed generation, and facilitate competition in the generation market. We are aware that some stakeholders have expressed concerns about the way ER G83/2 manages multiple installations in a Close Geographic Area. We and the Electricity Distribution Licence holders have responded to these concerns through the drafting changes set out in Annexes 1 and 2. Our objective has been to balance ease of installation for installers with protection of the integrity/performance of the distribution network. We expect DNOs to communicate the changes being introduced in ER G83/2 to all affected stakeholders and to use their reasonable endeavours to ensure that installers are not unnecessarily constrained in pursuing new work. In particular we expect DNOs to minimise the timescales associated with processing applications for multiple installations, so that installers that comply with G83/2 are not unduly affected. We would also welcome ongoing feedback from installers as to how ER G83/2 works in practice. If there is evidence that its provisions are adversely affecting competition, we would expect industry to bring forward proposals to seek to address this in a timely way.

Finally, as far as environmental impact is concerned, we accept that these proposals are designed to make the connection process for SSEGs to distribution systems clearer. We also accept that the large majority of such connections will involve renewable or low carbon generators. Connection processes, including the engineering recommendations, are enablers rather than drivers for the growth of renewable generation. Nevertheless, by making it more straightforward to connect, it is not unreasonable to attribute an indirect environmental benefit to the introduction of ER G83/2.

Further work

We note that the G83 working group has recommended that five changes are now made to ER G59/2. They are to -

1. Bring the over voltage settings in G59/2 in line with G83/2.
2. Create simplified application and commissioning forms for sub 50kW installations.
3. Create type testing verification documents in line with the new G83 process.
4. Modify the text in G59/2 to explain the changes and additions proposed.
5. Allow the use of multiple type tested products in installations above 50kW but require that the commissioning process for this should be broadly in line with the existing G59/2 process.

We would expect this work to be completed in a timely way to assist the further development of distributed generation and that it may result in a revision to the Distribution Code in due course.

Decision notice

In accordance with SLC 21.10 of the Electricity Distribution Licence, the Authority hereby directs that **the modifications to the Distribution Code set out in the Report to the Authority of 19 April 2012 as modified by the 'Minded To' decision letter of 20 August 2012 and the further changes set out in Annex 2 to this letter be made.**

Andrew Burgess

Associate Partner, Transmission and Distribution Policy

Signed on behalf of the Authority and authorised for that purpose

Annex 1

Guidance Note to the Distribution Code on the connection of Stirling Engine SSEGs

New Guidance Note 3 is inserted as follows:

The Panel is aware that small scale generation using the Stirling engine as a prime mover has been designed using resonance to operate within ±1% of the nominal frequency of 50Hz. Accordingly it is not technically possible for generation using this technology currently to remain connected down to 47.0 Hz as required by G83/2.
Recognising the limitations of the current technology, and noting that currently the adoption of this technology is niche and far from mass market, the Panel believes that those G83/2 tests relating to behaviour at frequencies outside the ±1% range should be waived or modified, thus allowing this technology to continue its niche use.

In the longer term, the Panel expects that the requirements of the EU Network Code "Requirements for all Generators" when enacted in UK law will either require Stirling engine designs to be modified to comply, or for it to seek a specific derogation. Similarly, if the growth of this technology showed a risk of being material, then again full compliance with G83 would be required. The Panel believes that a sensible threshold of materiality, considering the technical and commercial effects of the technology, would be 50MW.

This note applies from 1 December 2012 and remains in force until 31 December 2016.

Annex 2

Revised definition of "Close Geographic Region"

The definition of "Close Geographic Region" is revised as follows:

"A close geographic region is defined as the area typically served by a single low voltage feeder circuit fed from a single distribution transformer. In a situation where this definition cannot be reliably applied by an **Installer,** the **Installer** can either confirm with the DNO whether a proposed **SSEG** is in a **Close Geographic Region** or ensure that at least one of the following criteria is met:

1) The postcodes of any of the premises where a **SSEG** installation is planned by the same organisation are the same when the last two letters are ignored…i.e. AB1 2xx, where xx could be any pair of letters or where x could be any letter.

2) The premises where a **SSEG** installation is planned by the same organisation are within 500m of each other."

Limitation on "Single Premises Connection Procedure"

The last paragraph of 5.1.1 is modified as follows:

"This procedure will not apply where an **Installer** plans (within the next 28 days) or has already installed (in the previous 28 days) other **SSEG**s in a **Close Geographic Region**; in this case the procedure in 5.1.2 shall be followed. Failure to comply with this requirement may lead to the disconnection of the **Customer's Installation** under ESQCR (26) or failure of the **SSEG** to operate as intended."