Modification proposal:	**Distribution Code: Changes to the Distribution Code and Engineering Recommendation G83/1**		
Decision:	The Authority[1] directs that this proposal be made[2]		
Target audience:	Parties to the D Code and other interested parties		
Date of publication:	22 May 2008	Implementation Date:	1 June 2008

Background to the modification proposal

Distribution Network Operators are obliged under Standard Licence Condition 9 of their distribution licences to prepare and at all times have in force and implement a Distribution Code. The Distribution Code details the technical parameters and considerations relating to connection to and use of their electrical networks.

Following a period of consultation, the Chair of the Distribution Code Review Panel (DCRP) wrote to us on 14 May 2007, on behalf of the ex-PES[3] distribution licensees[4] ("DNOs"), seeking approval to make some minor amendments to Engineering Recommendation G83/1 ("ER G83/1") and to amend the Distribution Code so that Engineering Recommendation G83/1, cited in Annex 1 of the Distribution Code, would be replaced by Engineering Recommendation G83/1-1 ("ER G83/1-1"). Our decision in relation to this request has been delayed, in agreement with the Chair of the DCRP, in order to achieve consistency with related British Standards that have been under development but have only recently come into force. This letter now sets out our decision and the background to it.

ER G83/1 is an 'Annex 1 Standard' being an 'electricity industry national standard that implements Distribution Code requirements, which is listed in Annex 1 of the Distribution Code, and forms part of the Distribution Code[5]'. It provides guidance on the technical requirements for the connection of Small Scale Embedded Generators (SSEG[6]) in parallel with public low-voltage distribution networks and was developed to be consistent with the Electricity, Safety, Quality and Continuity Regulations (ESQCR).

The generic connection requirements for all types of SSEG (e.g. Domestic Combined Heat and Power (DCHP), Photovoltaic (PV), Fuel Cells, Micro wind and Micro Hydro) are defined in the main text of ER G83/1, whilst the specific requirements for each different type of SSEG are defined in the annexes.

The current earthing requirements in ER G83/1, section 6.4, unintentionally restrict the connection between a pole of the primary energy source of an inverter connected SSEG and the DNO's earth terminal. This change proposal was initiated to address this restriction.

The modification proposal

This proposed change to ER G83/1 was initiated by a request to the Distribution Code Review Panel (DCRP) from Ceres Power/Smart Power Solutions for modifications to the

[1] The terms 'the Authority', 'Ofgem' and 'we' are used interchangeably in this document. Ofgem is the Office of the Gas and Electricity Markets Authority.
[2] This document is notice of the reasons for this decision as required by section 49A of the Electricity Act 1989.
[3] The Public Electricity Supply licensees established at vesting
[4] All references to "distribution licensees" in this letter relate solely to the ex-PES distribution licensees. All other holders of a distribution licence are referred to as Independent Distribution Network Operators (IDNO).
[5] As defined 'Distribution, Glossary and Definitions' section of the D Code.
[6] A source of electrical energy and all associated interface equipment, rated up to and including 16A per phase, single or multi phase 230/400V ac and designed to operate in parallel with a low voltage distribution network.

main text (Section 6.4 of G83/1) on earthing arrangements. The change is required to accommodate inverter connected generating devices including the fuel cell combined heat and power (CHP) unit that Ceres is developing with Smart Power Solutions.

It is now proposed to replace the existing wording of section 6.4 of ER G83/1 with the following:

> *"When a SSEG is operating in parallel with a DNO's Network there shall be no direct connection between the generator and earth.*
>
> *For a SSEG which is designed to operate in parallel with a DNO's Network but which is connected via an inverter (eg a PV array or fuel cell) it is permissible to connect one pole of the DC side of the inverter to the DNO's earth terminal if the insulation between the AC and the DC sides of the inverter meets the requirements for at least simple separation. The requirements for simple separation are those given in Section 5.3.3.of BS EN 60664-1 for basic insulation. In such cases the Installer / Manufacturer shall take all reasonable precautions to ensure that the SSEG unit will not impair the integrity of the DNO's Network and will not suffer unacceptable damage for all credible operating conditions, including faults on the DNO's Network. In all cases the level of DC injection should not exceed that detailed under clause 5.5.*
>
> *Earthing of all exposed conductive parts shall comply with the requirements of BS 7671."*

The DCRP intends that approval of this modification will ensure that inverter connected energy sources such as PV arrays and fuel cells are able to connect one pole of the DC side of the inverter to the DNO's earth as long as the insulation between the AC and DC sides of the inverter meet the requirements specified in the recently introduced British Standard, BS EN 60664-1.

A number of general amendments are also proposed to be made to ER G83/1 as follows:

- Publish ER G83/1 in the modern ENA house style and replace all references to G83/1 with G83/1-1.
- Replace the section of the table in Appendix 3 of ER G83/1 titled "Declaration – to be completed by installer" with a revised table which now additionally requires the loss of mains protection to be proved.
- Revise the text in "Annex D, section D7" to refer to "section 6.4" of ER G83/1 as it currently incorrectly references "section 6.3".

DCR Panel[7] recommendation

The DCRP reviewed the request from Ceres Power/Smart Power Solutions and directed the Energy Networks Association (ENA) to issue a consultation on the proposal to amend ER G83/1 to address it. These amendments to ER G83/1 will update the current version to become ER G83/1-1.

As ER G83/1 is cited in the Distribution Code, minor consequential changes are needed to be made to the Distribution Code to replace references to ER G83/1 with ER G83/1-1.

[7] The BSC Panel is established and constituted pursuant to and in accordance with Section B of the BSC.

The ENA, on behalf of the DCRP, carried out a public consultation for a four week period, closing on 17 July 2006. Responses were received from three parties and their comments, together with those of other interested parties, have been addressed to their satisfaction. On 14 May 2007, with support of the DCRP, the Chair of the DCRP wrote to us seeking approval for the changes to ER G83/1 and the related Distribution Code amendments.

It was at this point in the process that the possibility of an inconsistency between ER G83/1-1 and the related British Standard was identified. It was decided to delay the introduction of ER G83/1-1 until the British Standard (BS EN 60664-1) was in force so that consistency of drafting could be assured.

On 15 April 2008, the Chair of the DCRP wrote to us again confirming that the British Standard had now been published and that the issue of consistency had been fully addressed. After due consideration of the DCRP's reports, we have made our decision in relation to the proposed amendments to G83/1 and the consequential changes to the Distribution Code.

The Authority's decision

The Authority has considered the issues raised by the proposed Distribution Code Modification and the Report dated 14th May 2007 to the Authority setting out the results of the consultation and the revisions proposed by the Panel to the proposed modification. The Authority has concluded that:

1. implementation of the modification proposal will better facilitate the achievement of the relevant objectives of the Distribution Code[8]; and

2. directing that the modification be made is consistent with the Authority's principal objective and statutory duties[9].

Reasons for the Authority's decision

The changes proposed by the DNOs are set out in the Report to the Authority by the Chair of the DCRP and the subsequent related correspondence as required by standard condition 9(2) of the distribution licence. Approval of these changes by the Authority is required by standard condition 9(3). While this is a minor change to ER G83-1, we agree with the DCRP that it removes an unintentional restriction and improves the clarity of the drafting with respect to earthing arrangements.

We agree with the DCRP that amending ER G83/1 as proposed will:

- Provide better clarity with respect to the earthing arrangements for inverter connected SSEGs operating in parallel with the DNOs' network thereby allowing for a more generic approach to earthing SSEGs irrespective of technology type.

- Harmonise the earthing section of ER G83/1 with the BS EN 60664-1:2007.

- Provide the opportunity to publish ER G83/1 in the new and more user friendly ENA style.

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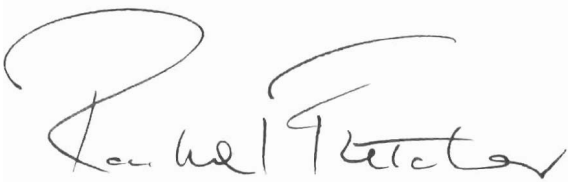
[8] As set out in Standard Condition 9(1)(b) of the Electricity Distribution Licence, see: http://epr.ofgem.gov.uk/document_fetch.php?documentid=12769

[9] The Authority's statutory duties are wider than matters which the Panel must take into consideration and are detailed mainly in the Electricity Act 1989.

Ofgem consider that, having regard to the DNOs' obligations set out in standard condition 9(1)(b) of the distribution licence ("the obligations") and our wider statutory duties, the proposed changes to ER G83/1 and the consequential changes to the Distribution Code should be approved by the Authority.

Decision notice

In accordance with Standard Condition 9(1) (b) of the Electricity Distribution Licence, the Authority, hereby directs that modification proposal: Changes to the Distribution Code and Engineering Recommendation G83/1 be made.



Rachel Fletcher

Director of Distribution

Signed on behalf of the Authority and authorised for that purpose.