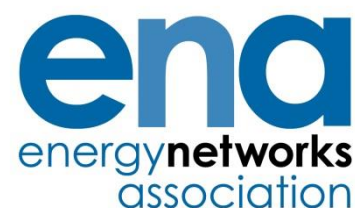


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Engineering Recommendation G59

Issue 3 Amendment ~~7~~X

01 September 2019

Recommendations for the Connection of  
Generating Plant to the Distribution Systems of  
Licensed Distribution Network Operators

## 2 Scope

2.1 ...

2.12 **Generating Units** which by agreement between the **Generator** and the **DNO** have the capability to run in island mode, as described in section 9.8 and including those providing system restoration services to the **NETSO**, will need to comply with the general requirements of this EREC G59, although the specific technical requirements, particularly in relation to the earthing requirements of Section 8, the design requirements of Section 9 and the protection requirements of Section 10 shall be modified in accordance with any site-specific requirements that are specified in the agreement with the **DNO** and in any contract covering system restoration services.

...

## 5 Legal Aspects

...

5.5 The **DNOs** have statutory and licence obligations within which they have to offer the most economic, technically feasible option for connecting **Generating Plant** to their **Distribution Systems**. The main general design obligations imposed on the **DNOs** are to:

a. maintain supplies to their **Customers** within defined statutory voltage and frequency limits;

~~b.a. ensure that the **Distribution Systems** at all voltage levels are adequately earthed;~~

~~e.b.~~ comply with the "Security of Supply" criteria defined in EREC P2;

~~d.c.~~ meet improving standards of supply in terms of customer minutes lost (CMLs) and the number of customer interruptions (CIs);

d. ensure that the **Distribution Systems** at all voltage levels are adequately earthed;

e. facilitate competition in the connection, generation and supply of electricity.

5.6 Under conditions of system restoration it is recognized that **DNOs** may relax some or all of the requirements (a) to (c) of 5.5 for the duration of the system restoration event for the purpose of re-establishing a stable network.

5.7 Failure to meet any of the above obligations will incur legal or regulatory penalties. The first two criteria, .....

... [note - 5.8 to 5.19 to be renumbered]

## **9 NETWORK CONNECTION DESIGN AND OPERATION**

### **9.1 General Criteria**

- 9.1.1 As outlined in Section 5, **DNOs** have to meet certain statutory and **Distribution Licence** obligations when designing and operating their **Distribution Systems**. These obligations will influence the options for connecting **Generating Plant**.
- 9.1.2 The technical and design criteria to be applied in the design of the **Distribution System** and **Generating Plant** connection are detailed within the Distribution Planning and Connection Code (DPC) and the standards listed in Annex 1 of the **Distribution Code**. The criteria are based upon the performance requirements of the **Distribution System** necessary to meet the above obligations.
- 9.1.3 The **Distribution System**, and any **Generating Plant** connection to that System, shall be designed,
- a. to comply with the obligations (to include security, frequency and voltage; voltage disturbances and harmonic distortion; auto reclosing and single phase protection operation).
  - b. according to design principles in relation to **Distribution System's** plant and equipment, earthing, voltage regulation and control, and protection as outlined in DPC4, subject to any modification to which the **DNO** may reasonably consent.
- 9.1.4 **Generating Plant** should meet a set of technical requirements in relation to its performance with respect to frequency and voltage, control capabilities, protection coordination requirements, phase voltage unbalance requirements, neutral earthing provisions, islanding and [system restoration](#) capability. These requirements are listed in DPC7.4 of the **Distribution Code**.
- 9.1.5 There are additional performance requirements that are specified in the **Grid Code** for all embedded **Medium and Large Power Stations**. The requirements for **Medium Power Stations** are referenced in DPC7.5 of the **Distribution Code**, and are all listed in CC3.3 to CC3.5 of the **Grid Code**.
- [9.1.6 As explained in section 2.12 DNOs may relax certain aspects of section 9 for island operation, and section 5.7 during a system restoration event.](#)

...

### **9.8 Island Mode**

- [9.8.1 The provisions of this section 9.6.3 apply to situations where island mode operation is envisaged both for the mutual benefit of \*\*DNOs\*\* and relevant \*\*Generators\*\*. For \*\*Generators\*\* providing system restoration services, additional or different technical requirements may be imposed in relation to system restoration services, again by mutual agreement, and recorded in the system restoration services contract.](#)

[9.8.2](#) A fault or planned outage, which results in the disconnection of a **Generating Unit**, together with an associated section of **Distribution System**, from the remainder of the **Total System**, creates the potential for island mode operation. The key potential advantage of operating in Island Mode is to maintain continuity of supply to the portion of the **Distribution System** containing the **Generating Unit**. The principles discussed in this section generally also apply where **Generation Plant** on a **Customer's** site is designed to maintain supplies to that site in the event of a failure of the **DNO** supply.

... [note – 9.8.3 to 9.8.9 to be renumbered]

## 10 PROTECTION

### 10.1 General

10.1.1 The main function of the protection systems and settings described in this document is to prevent the **Generating Plant** supporting an islanded section of the **Distribution System** when it would or could pose a hazard to the **Distribution System** or **Customers** connected to it. The settings recognize the need to avoid nuisance tripping and therefore require a two stage approach where practicable, ie to have a long time delay for smaller excursions that may be experienced during normal **Distribution System** operation, to avoid nuisance tripping, but with a faster trip for greater excursions.

10.1.2 In accordance with established practice it is for the **Generator** to install, own and maintain this protection. The **Generator** can therefore determine the approach, ie per **Generating Unit** or per installation, and where in the installation the protection is sited.

Where a common protection system is used to provide the protection function for multiple **Generation Units** the complete installation cannot be considered to comprise **Type Tested Generating Units** as the protection and connections are made up on site and so cannot be factory tested or **Type Tested**.

10.1.3 In exceptional circumstance additional protection may be required by the **DNO** to protect the **Distribution System** from the **Generating Plant**.

[10.1.4](#) Where a **Generator** has entered into an agreement with the **DNO** for island mode operation or has entered into a system restoration services contract, the **DNO** and the **Generator** shall agree variations to the standard arrangements described in this Section 10 to the extent necessary to facilitate island mode operation and/or system restoration services.