

# Electricity Policy Document 259

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## Generation Connected to the Electricity North West Limited Distribution Network



## Amendment Summary

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## 1 Introduction

Electricity North West Limited has a duty under the Energy Act 1983 (restated in the Electricity Act 1989) to offer connection to Generators where this is practical. Where Generation equipment is connected to Electricity North West Limited's network (the Network), Electricity North West Limited has certain requirements to ensure the safe and secure operation of the Network and to enable it to charge the operators of the Generation for the use of the Network for the transport of energy.

This Electricity Policy Document (EPD) sets down Electricity North West Limited's policy to meet its obligations under the Energy Act and supersedes EPD602.

## 2 Scope

This EPD sets out the policy for the connection of all Generation to the Network, at all voltages from LV to 132kV.

## 3 Definitions

For the purpose of this document the following definitions shall apply:

### 3.1 Operation with Alternative Connection

The operation of Generation as an alternative to the Network connection, arrangements being such that the generating plant cannot be paralleled with the Network.

### 3.2 Embedded Generation

Generation that is designed to operate in parallel with the Network. Distributed Generation is an alternative term.

### 3.3 Generating Unit

Any apparatus which produces electricity. This includes micro-generators and energy storage devices.

### 3.4 Generator

A person who generates electricity under licence or exemption from Section 4.1(a) of the Electricity Act 1989.

### 3.5 Network

The electricity distribution Network owned by Electricity North West Limited, to which Embedded Generation is to be connected.

### 3.6 Point of Common Coupling

The point on the Network nearest to a Generator's installation at which other customers' loads are or may be connected. Further clarity on the definition or interpretation of the Point of Common Coupling can be found in Engineering Recommendations P28 and G5/5.

### 3.7 Point of Supply

The point of electrical connection between the Network and the apparatus owned by a Generator.

### 3.8 Power Generating Module

A Generating Unit, which can be either synchronous or asynchronous and may include storage.

### 3.9 Micro-generator

Generation rated up to and including 16A per phase, single or multi-phase 230/400V and designed to operate in parallel with the Network.

## 4 Design Policy

The Electricity North West Limited Business Connections Manager, Energy Solutions shall be responsible for the implementation of this EPD.

Network design shall comply with EPD279 - Distribution System Design - General Requirements - and other related design documents.

All Generators shall comply with the Distribution Code.

No Generation shall be operated in parallel with the Network unless its connection is specifically designed for the purpose.

All Generation connections to the Network shall comply with this EPD, CP259 and ES259 - Generation Connected to the Electricity North West Limited Distribution Network. All exceptions require the written consent of the Electricity North West Limited Policy and Implementation Manager.

CP259 shall be used only for the guidance of Electricity North West Limited and shall not be issued to third parties.

Before acceptance of Embedded Generation onto the Network, a fault level study shall be carried out that confirms that the requirements of EPD220 - Fault Level Management - are met.

With the exceptions described within this EPD and associated CP259 and ES259, the connection of all Embedded Generation shall comply with the relevant current version of the following documents:

Generation, other than Micro-generators - Energy Networks Association (ENA) Engineering Recommendation (ER) G59/2 - Recommendations for the Connection of Generating Plant to the Distribution Systems of Licensed Distribution Network Operators if either:

- The Power Generating Module is commissioned before 27<sup>th</sup> April 2019
- The generator signed contracts to procure the Power Generating Module before 27<sup>th</sup> April 2018 and notified Electricity North West Limited of this before 27<sup>th</sup> November 2018.

EREC G99 Requirements for the connection of generation equipment in parallel with public distribution networks on or after 27 April 2019.

Small Scale Embedded Generation - ENA ER G83/1 - Recommendation for the Connection of Small-scale Embedded Generators (up to 16A per Phase) in Parallel with Public Low Voltage Distribution Networks if the Power Generating Module is commissioned before 27<sup>th</sup> April 2019.

EREC G98 Requirements for the connection of Fully Type Tested Micro-generators (up to and including 16 A per phase) in parallel with public Low Voltage Distribution Networks on or after 27 April 2019

Electricity Safety, Quality and Continuity Regulations 2002, as amended (ESQCR).

The Distribution Code.

**NOTE:** Electricity North West Limited does not insist on the application of Neutral Voltage Displacement protection.

Existing Power Generating Modules, commissioned before 27<sup>th</sup> April 2019, may be maintained in compliance with either EREC G59 or EREC G83 as appropriate. Existing Power Generating Modules shall be made compliant with either EREC G98 or EREC G99, as appropriate, where there has been any significant modification. For clarity, a modification is any actual or proposed replacement, renovation, modification, alteration or construction by a Generator to any Power Generating Module, or the manner of its operation.

Electricity North West Limited will not accept responsibility for any loss or damage sustained as a result of compliance with the above ENA documents.

All earthing shall be in accordance with the principles described in ENA EREC G99, or ENA EREC G98 as applicable.

Where it is necessary to ensure satisfactory power flow management of the Network, Electricity North West Limited shall apply constraints on the Generation. These constraints will follow the principles laid down in ENA Engineering Technical Report 124.

Where Electricity North West Limited provides any electrical lines, or other electrical plant, including remote control and indication facilities, or any other works to enable the installation or operation of Generation that will be for the exclusive purposes of the Generator, Electricity North West Limited will require payments in respect of any expenditure incurred in carrying out this work. Some of the work required to provide the connection may be contestable, in which case the Generator may engage an Independent Connection Provider to carry out this part of the work.

A Generator being provided with a connection to the Network for Embedded Generation, other than an individual connection for Micro-generators, will also be liable for charges to cover:

- Scheme preparation, including the calculation of load flow, Fault Level and electrical losses and the assessment of the effect of the Generation on Network reinforcement requirements.

- Contribution to costs of reinforcement, operation, repair and maintenance through Generator Distribution Use of System charges. These charges are described in Electricity North West Limited's Electricity Distribution Licence - Statement of Methodology and Charges for Connection to Electricity North West Limited's Electricity Distribution System (Licence Condition 13A).
- Attendance at Generation commissioning tests.
- Installation and operation of suitable telemetry (SCADA) equipment, where required.

**NOTE:** These charges will not normally be levied on Micro-generators connected at LV since Electricity North West Limited currently does not expect to reinforce the Network to connect Micro-generators. However, if costs are incurred to connect this type of Generation then an appropriate charge shall be levied on those Generators.

## 5 Applications to Connect Generation to Operate as an Alternative Connection

### 5.1 Design

Applications for such Generation shall be in writing and forwarded to Electricity Connections, Electricity North West Limited, Frederick Road, Salford, M6 6QH.

The Electricity North West Limited Business Connections Manager, Energy Solutions, shall approve all such designs.

All designs, particularly changeover arrangements, testing and commissioning shall be as described in CP259 and ES259.

### 5.2 Changeover

#### 5.2.1 Changeover Operated at 132kV or 33kV

The design of the arrangement shall be agreed for each scheme.

#### 5.2.2 Changeover Operated at 11/6.6kV

Changeover requirements shall be as described in ENA ER G59/2, section 7.4.2.

Over and above the recommendation of ENA ER G59/2, section 7.4.2.1, it is a **requirement** that TWO of the methods described shall be incorporated into any changeover scheme that connects to the Network, as recommended in section 7.4.2.2.

#### 5.2.3 Changeover Operated at LV

Changeover requirements shall be as described in ENA ER G99.

Electricity North West Limited's responsibility is limited to the approval of the type of interlocking system(s) to be used, and the methods of earthing to be adopted. Witnessing of commissioning tests shall only be required in accordance with [Section 8](#).

## 6 Applications to Connect Small Scale Embedded Generation

A single installation of a Micro-generators unit is that compliant with the technical requirements of ENA ER G98 may be connected to the Network without prior notification.

Connection of multiple Micro-generators units, located in a close geographic region, even though the single units are compliant with the technical requirements of ENA ER G98, shall not be undertaken without prior notification. The Generator shall apply to Electricity North West Limited in accordance with the requirements of the relevant sections of ENA ER G98. The cost of any Network studies undertaken shall be charged to the applicant, in accordance with Electricity North West Limited's Electricity Distribution Licence - Statement of Methodology and Charges for Connection to Electricity North West Limited's Electricity Distribution System (Licence Condition 13A).

As provided by the exemption to ESQCR Regulation 22 (2) (c) the Generator is required to ensure that Electricity North West is made aware of the installation within 28 days after the time of commissioning.

The Generator also shall provide Electricity North West Limited with all necessary information on the installation within 30 days of the commissioning date of each of the single Micro-generators units.

The Terms and Conditions Manager, Statutory Connections will be the nominated contact point of for immediate notification of the installation and also be the recipient of the formal 30-day notice.

The Electricity North West Limited Business Connections Manager, Energy Solutions shall arrange for asset records to be updated in accordance with [Section 11](#) below.

## 7 Applications to Connect Embedded Generation

The responsibility for the acceptance of Embedded Generation to operate in parallel with the Network rests with the Electricity North West Limited Business Connections Manager, Energy Solutions.

The requirements of this section shall apply also to Generation that is occasionally paralleled for the purpose of maintaining the continuity of supply when changing over from one source of supply to another or for routine load testing of generating units.

Before commencing Generation, it will be necessary for Electricity North West Limited and the prospective Generator to complete a Technical and Operating Agreement. The Terms and Conditions Manager, Statutory Connections shall sign this agreement on behalf of Electricity North West Limited.

Site Responsibility Schedules shall be prepared for all Embedded Generation connections at primary substations and at 33kV and 132kV. These shall be prepared by the planning engineer responsible for the design or approval of the connection.

Where the Generator's site output capacity exceeds 50 MW, Electricity North West Limited, will pass the necessary information to National Grid Electricity Transmission (NGET) and make the appropriate modification to the Bilateral Connection Agreement with NETG.

Each item of generating unit and its associated control equipment shall be designed for stable operation in parallel with the Network.



The Business Connections Manager, Energy Solutions, in conjunction with the Electricity Programme Delivery Manager, shall ensure that the design of the connection, together with any necessary reinforcement of the Network and with all earthing, protection, control indication and communication associated with the installation, complies with the detailed requirements of CP259 and ES259.

Responsibilities for the provision and maintenance of any battery and charger, necessary for control or protection, shall be set out in the Site Responsibility Schedule. The Generator shall normally provide a LV supply for the battery charger. More detail is given in ES259.

In certain circumstances, Electricity North West Limited will require indication of whether Generation is operating in parallel with the Network and the means to disconnect Generation from the Network, either locally, in a position where Electricity North West Limited has unrestricted access, or remotely.

Unless otherwise agreed, the Generator shall provide Electricity North West Limited with the means to arrange the attendance on site of a person, with the authority to operate the Generator's electrical installation and to act to the instruction of the Electricity North West Limited control engineer within one hour of a request, and to establish communication between that person and Electricity North West Limited control engineer.

Electricity North West Limited shall provide the Generator with (an) appropriate 24-hours emergency telephone number(s) and contact details.

Any costs incurred by Electricity North West Limited associated with the processing of such applications, including for network studies, design approval and the witnessing of commissioning tests, shall be fully recharged to the Generator.

Connections shall be designed to export to an intact network only (n-0) unless the customer chooses to pay for a higher level of security. This will generally provide the least cost connection and is considered most appropriate for intermittent Generation.

## **8 Testing and Commissioning**

Full tests on the protective equipment needed to meet the requirements of this document, CP259 and ES259 shall be carried out to the satisfaction of Electricity North West Limited. These tests are the responsibility of the Generator and shall be carried out by him. The tests shall be witnessed by a representative of Electricity North West Limited, unless, in any particular case, Electricity North West Limited has notified the Generator that such witnessing is not required. Witness testing of connections to the LV network is not required except for changeover type connections with a total generator nameplate capacity in excess of 100kVA.

## **9 Charges for Electricity North West Limited Technical Services**

Where the initial technical assessment does not require electrical distribution network studies, an oral indication of the cost of connection will be provided free of charge.

The cost of preparing a firm estimate for Electricity North West Limited work involved in the connection of Generation, including the costs of distribution network studies, will be added to the estimate and so included in the quotation for the provision of the connection.

Charges will often need to be made on an ongoing basis for System Control and Management. These will generally be determined individually, and early discussions shall take place between the planner of the connection, The Distribution System Management Centre (DSMC), and Electricity Commercial Policy, Electricity North West Limited.

Overall progression of schemes and all charging arrangements are the responsibility of the Business Connections Manager, Energy Solutions.

## 10 Records for Display at the Point of Supply

Where Generation runs in parallel with the Network, the Generator shall submit to Electricity North West Limited for approval and then display near the Point of Supply up to date information, as required by ENA ER G59/1 and ES259. The planning engineer designing or approving the connection shall be responsible for approving this information and shall then arrange for the Generator to display it.

## 11 Documents Referenced

DOCUMENTS REFERENCED	
Energy Act 1983	
Electricity Act 1989	
Electricity Safety, Quality and Continuity Regulations 2002	
The Grid Code of England and Wales - Connection and Use of System Code (CUSC)	
The Distribution Code	
Electricity North West Limited's Electricity Distribution Licence	Statement of Methodology and Charges for Connection to Electricity North West Limited's Electricity Distribution System (Licence Condition 13A)
ENA Engineering Recommendation G5/5	Planning Levels for Harmonic Voltage Distortion and the Connection of Non-linear Equipment to Transmission Systems and Distribution Networks in the United Kingdom
ENA Engineering Recommendation G59	Recommendations for the Connection of Generating Plant to the Distribution Systems of Licensed Distribution Network Operator
ENA Engineering Recommendation G83/1	Recommendations for the Connection of Small-Scale Embedded Generators (up to 16 A per phase) in Parallel with Public Low-Voltage Distribution Networks

<b>ENA EREC G98</b>	Requirements for the connection of Fully Type Tested Micro-generators (up to and including 16A per phase) in parallel with public Low Voltage Distribution Networks on or after 27 April 2019
<b>ENA EREC G99</b>	Requirements for the connection of generation equipment in parallel with public distribution networks on or after 27 April 2019
<b>ENA Engineering Recommendation P28</b>	Planning Limits for Voltage Fluctuations Caused by Industrial, Commercial and Domestic Equipment in the United Kingdom
<b>ENA Engineering Technical Report No. 124 (2004)</b>	Guidelines for Actively Managing Power Flows Associated with the Connection of a Single Distributed Generation Plant
<b>EPD220</b>	Fault Level Management
<b>EPD279</b>	Distribution System Design - General Requirements
<b>CP259</b>	Generation Connected to the Electricity Distribution Network Operated by Electricity North West Limited
<b>ES259</b>	Generation Connected to the Electricity Distribution Network Operated by Electricity North West Limited

## 12 Keywords

Connection; Earthing; Generation; Generator