

Distributed Generation Connection Guides: G99 Type A Summary

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Acronym Guide

| | | | |
|------|----------------------------------|------|---|
| DNO | Distribution Network Operator | IDNO | Independent Distribution Network Operator |
| ENA | Energy Networks Association | NHH | Non-Half Hourly (meter) |
| EREC | Engineering Recommendation | PGF | Power Generating Facility |
| FITs | Feed in Tariffs | PGM | Power Generating Module |
| SEGs | Smart Export Guarantees | PPM | Power Park Module |
| HH | Half Hourly (meter) | SPGM | Synchronous Power Generating Module |
| ICP | Independent Connections Provider | | |

Note that this document covers the process for connecting generation to the distribution networks in Great Britain. Northern Ireland has different connection arrangements, for example different versions of Engineering Recommendations G98 and G99 are in use. For more information, refer to the Northern Ireland Electricity website: www.nie.co.uk

Note: Many of the terms used in this guide are defined in the Glossary.

Introduction

Who is this Guide for?

This Guide is intended to help you, as a developer or prospective owner of any form of **Distributed Generation**, to connect your generating unit to a distribution network in Great Britain. It may also be useful for installers or manufacturers of distributed generation equipment. Note that the term 'DNO' as used in this guide generally refers to both DNO and IDNO companies.

This "summary" guide is for developers of distributed generation projects which are covered by **Engineering Recommendation (EREC) G99**. This covers either:

- Projects with a capacity of **more than 16 A per phase** (if there are multiple generation units connected at the same premises, then 16 A or more is the combined capacity per phase); or
- Projects connected at a **higher voltage** than 230 V (single phase), or 400 V (three phase); or
- Any projects that are **not type tested** under the requirements of EREC G98.

In particular, this Guide is written for projects within the scope of EREC G99 Type A, ie the Power Generating Module has a registered capacity greater than 16 A per phase but less than 1 MW.

If your project is within the scope of EREC G98, there are **alternative guides** and summary guides you can read.

What is the aim of the Guide?

This is a 'summary' form of a much more detailed guide, available on the Energy Networks Association (ENA) website. The purpose of this summary guide is to act as a **simplified 'route map'** of the processes for getting a Power Generating Module connected to the distribution network.

You should be aware that the process of getting connected described in this guide is **only part of the process** of developing your distributed generation. For example, this guide does not cover:

- Designing, installing and operating the generation units themselves;
- Planning and financing the project; and
- Resolving local planning issues.

The format of the Guide

This Guide has been written and formatted with you, the reader, in mind. We have tried to make this Guide as clear and easy to read as we can, bearing in mind that some of the issues discussed are technical and complex. In particular:

- Any acronyms and terms which may be unfamiliar are explained in the glossary.
- Text is **emboldened** for emphasis.
- Where necessary the Guide distinguishes between the arrangements that apply in Scotland and those which apply in England and Wales. This is indicated with a Scottish flag.
- There is a pointer on where to find more information at the end of the guide.



Because the topics covered here are technical and complex, it is necessary to refer to such concepts as voltage and power. Where possible, terms that may be unfamiliar have been defined.

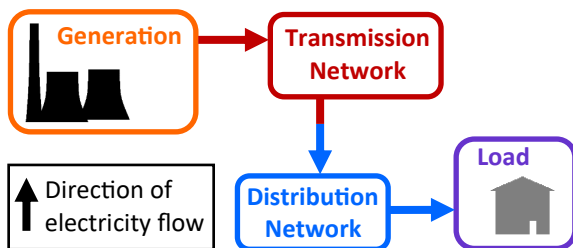
Governance of the Guide

This Guide is a Distribution Code Review Panel (DCRP) document. The DCRP will update the Guide periodically.

A: Background-The GB Power Sector

Traditional power system

In the traditional power system, electricity generally flows in one direction; from large power stations (mostly coal, gas and nuclear), into the transmission system, through to distribution systems and delivered to loads (such as homes, businesses and factories).



Changing power system

An increasing number of small electricity generating units are being developed, often connected to distribution networks. This is known as Distributed Generation, and can bring advantages such as low carbon energy sources and reduced transmission and distribution system costs.

However, it can result in the electricity flows in the network being less predictable. As this is not what the network was designed to deal with, this can cause issues around network control and protection.

Important terms

Transmission Network / Transmission System: Transports electricity over long distances across the country. Electricity is transported at a high voltage to reduce losses. Transmission voltages are 275 kV or 400 kV. In Scotland, 132 kV is also used.

Distribution Network / Distribution System: Transports electricity from the Transmission System (and from Distributed Generation) to loads like homes and businesses. The voltage is reduced to the correct supply voltage for the loads. Distribution voltages are 132 kV and lower in England and Wales, and less than 132 kV in Scotland. Most domestic customers are supplied at 230 V.

Key organisations

National Grid Electricity Transmission (NGET): The Transmission Owner for England and Wales. The Transmission Owner for northern Scotland is Scottish Hydro Electric Transmission Plc, and for southern Scotland, SP Transmission Plc.

National Grid Electricity System Operator (NGESO): The System Operator of the transmission system in England, Wales & Scotland.

Distribution Network Operator (DNO): Owns and maintains public electricity distribution networks. There are six DNOs in Great Britain.

Note: You may be connected to an Independent DNO's (IDNO) network or a private network rather than the DNO's network. In this Guide when we refer to DNOs, this also applies to IDNOs.

Suppliers: Buy electricity in bulk from generators, and then sell to consumers. They are responsible for providing bills and customer services, and arranging metering and meter reading. Electricity supply is a competitive market so you can choose and change your electricity supplier.

Elxon: The Balancing Settlement Code company for Great Britain.

Ofgem (Office of Gas and Electricity Markets): The regulator of the power system in Great Britain.

B. The Role of Distributed Generation

What is driving Distributed Generation?

Environmental concerns—The increased concern over the damage that Greenhouse Gases may be doing to our environment. Distributed Generation technologies are often renewable or low carbon means of generating electricity.

Government policy—The Department for Business, Energy and Industrial Strategy (BEIS) is developing policy to ensure that in the UK energy supplies are secure, low carbon, and fuelled from a diverse mix of energy supplies. This includes supporting Distributed Generation.

Security of Supply—The need for secure and reliable sources of energy, both now and into the future.

Technological innovation

Technology is developing all the time, and there are more generating technologies and network techniques available now than there were when the national grid was being developed.

To incentivise innovation in energy networks, Ofgem runs two mechanisms: the **Network Innovation Allowance** (NIA, an allowance awarded to each network company) and **Network Innovation Competitions** (NIC, where network companies bid competitively to fund larger projects).

For more information, and details about individual projects, refer to the Smarter Networks Portal, hosted by the Energy Networks Association: www.smarternetworks.org/

Benefits of Distributed Generation

The benefits that increased Distributed Generation has on the UK and its electricity system include:

- **Increased energy mix** —often lower carbon; and
- If Distributed Generation is connected close to the point of use,
 - **Reduced need for network infrastructure**
 - **Reduction in transmission and distribution losses.**

The commercial benefits to having Distributed Generation include:

- **Lower electricity bills**—through using your own energy onsite instead of importing from the grid;
- **Selling energy** that you generate, and gaining from **incentives** like FITs; and
- **Participation in Ancillary Services**—Larger units (more than around 3MW) may be able to participate.

Impacts of Distributed Generation

As well as introducing benefits, the increased penetration of Distributed Generation in UK distribution networks also poses challenges, including:

- **Thermal ratings** being exceeded;
- **System voltage** rising beyond the acceptable limits;
- **Reverse power flows**, i.e. power flows in the opposite direction to which the system has been designed;
- **Fault level** rising above the rating of equipment; and
- **Power quality** being affected, e.g. flicker, voltage unbalance or harmonics.

C: An Overview of Getting Connected

Below is a summary of the major tasks of the connection process.

1. FIND AN INSTALLER

Installers must be competent

2. REVIEW INFORMATION and DISCUSS WITH THE DNO

Hold meetings with your DNO

3. SUBMIT APPLICATION FORM

4. APPLICATION ACCEPTANCE

Accept a Connection Offer from your DNO

5. COMPLIANCE

Submit relevant compliance forms

6. INSTALLATION AND COMMISSIONING

Infrastructure is installed and tested

7. INFORM THE DNO

Submit the Installation and Commissioning form

8. ONGOING RESPONSIBILITIES

1. Find an installer

For installations up to 50 kW certified generation products and installers can be found [here](#).

2. Review Information and Discuss with the DNO

You should look for supporting information published on the DNO's website, as this can be a valuable resource.

You must also discuss your plans with the DNO before starting work, including issues such as feasibility and potential charges. You should do this as soon as possible in your planning, as the DNO's response may have a significant impact on how you plan your project.

3. Submit Application Form

Once you have planned the project and exchanged information about your plans with the DNO, it is time to submit an application form. If your Power Generating Module is less than 50 kW three-phase or 17 kW single-phase, then you can use a simplified application form ([Annex A.1 of EREC G99](#)). For larger schemes, you should use the standard application form, which is generally available on DNOs' websites.

4. Application Acceptance

When you submit your application form the DNO will assess the impact that your Power Generating Module may have on the network. Once the DNO has conducted these assessments, they will produce a Connection Offer. This will specify the conditions for your connection, and inform you of any connection charge that you may be asked to pay.

You should ensure that you fully understand this offer before accepting it. You should discuss questions with your DNO if you are unsure.

General Tip: Communication with the DNO

Communication with the DNO from an early stage and throughout the project means you can discuss potential issues early, and allows you to plan your project effectively. You can also request additional information like budget estimates and feasibility studies, though some DNOs will charge for this.

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5. Compliance

If your Power Generating Module is Fully Type Tested and has a Manufacturer's reference number available (the Product ID on the ENA Type Test Verification Report Register), then you should include this number in your application.

Otherwise you need to provide the DNO with a Compliance Verification Report. The format of these reports is given in [Annex A.2 of EREC G99](#). These forms are completed by the manufacturer of your Power Generating Module. However, you (or your installer on your behalf) should obtain these and submit them to the DNO as part of the connection commissioning process.

6. Installation and Commissioning

EREC G99 details the commissioning tests that you or your installer needs to perform. Your DNO will complete any work required on the network. Close communication with the DNO throughout this process will allow coordinated planning of construction and connection.

Commissioning can only take place once the construction is complete. For Power Generating Modules covered by EREC G99, it is your obligation to undertake appropriate commissioning tests, which the DNO may choose to witness.

You should notify the DNO at least 28 days before commissioning the Power Generating Module.

7. Inform the DNO

You must supply your DNO with commissioning documentation either at the time of commissioning (where tests are witnessed) or within 28 days of the commissioning date (where the tests are not witnessed). The information to be provided is captured on the Installation Document ([Form A.3 in EREC G99](#)) and Site Compliance and Commissioning Test Form ([Form A.2-4](#), where required). DNOs may have their own installation commissioning confirmation forms on their websites.

C: An Overview of Getting Connected

7. Ongoing Responsibilities

Ongoing commitments are outside of the scope of this Guide, but you should be aware of them. They include:

- maintenance of the equipment;
- informing your DNO if you remove or replace your generating unit;
- informing the DNO if something happens that affects the compliance of your Power Generating Module with EREC G99; and
- periodic testing specified by the DNO.

Health and Safety Considerations

Some of the safety requirements for Distributed Generation connections are set out in EREC G99, which reflects Regulations and Acts such as the Electricity Safety, Quality and Continuity Regulations (ESQCR) 2002, and also the relevant British Standards.

Dealing with Disputes

If you have a dispute during the connection process which you cannot resolve with the party directly, you can contact the Energy Ombudsman:

www.ombudsman-services.org/energy

As a last resort it can then be referred to Ofgem.

Types of Power Generating Module

Power Generating Modules are classified in EREC G99 as Power Park Modules (PPM) or Synchronous Power Generating Modules (SPGM) - see glossary.

In terms of classifying your Power Generating Module as Type A to D – for a Power Park Module, this is based on the total capacity of all non-synchronous generating units in the Power Generating Facility (all behind a single Connection Point). For Synchronous Power Generating Modules, this is based on the capacity of each Synchronous Power Generating Module, even if there are multiple modules in a Power Generating Facility.

For further information on this and for examples, refer to the full Guide for Type A Power Generating Modules and/or EREC G99.

EREC G99 was introduced in May 2018. It is based on EREC G59, which was revised to take account of a European Network Code called Requirement for Generators. Generation connecting to the distribution network must connect under EREC G98 or G99.

C: An Overview of Getting Connected

Vehicle to Grid

Vehicle to Grid (V2G) is in its infancy and trials are being undertaken to further understand and demonstrate its benefits. For V2G the electric vehicle will be considered as both a demand and a generator by DNOs. The application you need to submit will depend on the power export capacity of the V2G unit and what generation or storage devices are already connected at the designated charging point. It is likely that V2G will be > 16 A/phase and therefore G98 is not applicable and G99 should be used.

The current situation is that installers follow one of two generation application processes and sets of forms, which are as follows below:

- Where the total of all generation, fixed storage and the power export capacity of the V2G is < 50 kW 3-phase or 17 kW single-phase, the G99 Simplified Application Form A1-1 can be used.
- Where the total of all generation, fixed storage and the power export capacity of the V2G is > 50 kW 3-phase, the connection application should be made using the Standard Application Form.

In addition, your installer should complete forms associated with a standard Electric Vehicle (EV) charge point, such as the ENA EV installation form (“Application Form for the Installation of Low Carbon Technologies”). The DNO may request further information, such as a photograph of your electric meter and consumer unit.

The ENA Low Carbon Technology Working Group has been looking at ways to simplify the connection application process and associated forms for V2G applications, including considering a single process that combines the aspects of EV as demand and generation. **This is now available and an updated version was published on the 7th July 21. The form is available at the [ENA website](#) under the heading “Connecting electric vehicles (EVs) and heat pumps”.**

D: The Connection Application

There are a number of formal documents that you need to submit to your DNO throughout the connection process. These are mentioned in the previous section of this Guide, and described in further detail here.

The Connection Application Form

For Power Generating Modules with capacity less than 50 kW 3-phase or 17 kW single phase there is a simplified connection application form in [Annex A.1 of EREC G99](#). This needs to be submitted to your DNO **before you begin installation**. Connection of Power Generating Modules will only be allowed to proceed after the DNO has approved the application, and any facilitating works for the connection have been completed.

The information required includes:

- details of the **installer** of the generating units, including their qualifications; and
- **information on the proposed equipment**, including the address, meter number, capacity and type testing reference number.

For larger Power Generating Modules there is a Standard Application Form, which is available on the ENA website and generally on DNO websites. It contains data requirements to assist the DNO with carrying out system studies to assess your connection. You should do your best to provide as much of this information as possible at the connection application stage.

Compliance Forms

If your Power Generating Module is Fully Type Tested and has a reference number:

- You should include the reference number on your application form; and
- You do not need to submit anything further to demonstrate compliance.

Otherwise, your Power Generating Module may comprise a mixture of:

- Type tested components;
- Components where the compliance is demonstrated using manufacturers' information; and
- Components that will need to be tested on site.

In this case you (or your installer) **need to submit information to indicate how you are intending to demonstrate compliance** with EREC G99. This is done by submitting a Compliance Verification Report for each Power Generating Module ([Annex A.2 of EREC G99](#)) prior to arranging commissioning.

In some cases you will need to demonstrate elements of compliance on site. You can do this either at the time of commissioning (if tests are witnessed) or within 28 days of commissioning, using [Form A.2-4 in EREC G99](#). There may be a need to demonstrate compliance with power quality standards even if other aspects are type tested.

D: The Connection Application

The Installation Document

The Installation Document is in [Annex A.3 in EREC G99](#). It needs to be filled in and given to your DNO **either on the day of commissioning** (where the tests are witnessed by your DNO) **or otherwise within 28 days of the date of commissioning**. The information required includes:

- details about the **site** where you are connecting your Power Generating Module, including meter information (MPAN);
- **contact details** for the owner of the Power Generating Module;
- **technical information** about the Power Generating Module itself, including the generating capacity, type test reference (if applicable) and primary energy source;
- details of the **installer** of the Power Generating Module, including the party's accreditation and qualifications;
- **supporting information**, e.g. circuit diagrams;
- a **signed declaration** as to the compliance of the Power Generating Module with the requirements of EREC G99; and
- a **signed declaration** as to the compliance with the site compliance and commissioning tests, if applicable (Form A2.-4).

There are two parts to the Installation Document:

- Part 1 is required for the Power Generating Facility; and
- Part 2 is required for each Power Generating Module.

E: Costs and Charges

Costs and charges can be divided into two categories:

CONNECTION CHARGES

ONGOING CHARGES

DNOs are obliged to publish documents about their charges, which can be found on their websites. These contain the **DNO's charging methodology** (i.e. how they calculate their charges), the **DNO's charging statement** (i.e. what the charges are), and other relevant information for connecting customers.

Connection charge

This is a one-off charge made by the DNO to cover the cost of your connection, which may contain charges for:

- **Infrastructure:** new equipment and reinforcement to the existing network necessary to accommodate your generation. You will be charged for:
 - Extension to the network
 - A **portion** of reinforcement costs
- **Budget Estimates and Feasibility Studies** (optional).
- Others, including: Administration, additional meetings or site visits, provision of Wayleaves, substation locks and notices.

Note that not all DNOs apply charges for all of these items, and that not all of these items will be relevant for your project.

To obtain a more accurate picture of the connection costs for your project, you can get a budget estimate from either the DNO, or from a specialist engineering consultant. You must be aware that this will be an estimate, and may not accurately reflect what you will be charged. It is likely that you will need to pay for this estimate.

Ongoing Charges

Use of System (UoS) charges cover the operation and maintenance of the distribution network. They are levied by the DNO to the supplier, so you will not be charged these directly. However, they may appear as an item on your bill. DNOs are obliged to publish documents about their Use of System charges. You can find these on DNOs' websites.

UoS charges change depending on:

- the **voltage level** you are connected to; and
- the **type of meter** you have. All projects with a capacity greater than a certain threshold (currently 30kW) must have a Half Hourly (HH) meter (if metering export). If you have a HH meter, it is your responsibility to appoint a Meter Operator to install, maintain and collect data from your meter. If you have a Non-Half Hourly (NHH) meter, then it is the responsibility of the supplier to install, maintain and collect data.

With the Common Distribution Charging Methodology charges for LV generation customers with NHH meters are in the form of a single unit rate (p/kWh). Changes are underway for use of system charges.

F: Selling Electricity-SEG

Important Point: The SEG scheme for generators opened on the 1st January 2020. The SEG scheme replaces the Feed-in Tariff (FIT) scheme that closed on the 31st March 2019 but works differently to FITs.

There are two sources of financial benefit from FIT payments which are:

- **Generation tariff:** A fixed unit for each unit of electricity generated.
- **Export tariff:** A guaranteed price for each unit of electricity exported to the grid.

The SEG scheme obliges electricity suppliers to offer an export tariff rate to an eligible generating unit.

Generators cannot receive SEG payments as well as FIT payments for exported electricity. However, if the generator continues to receive FIT generation payments and opts out of receiving FIT export payments then they are eligible to receive SEG export tariff payments.

Smart Export Guarantees (SEGs)

SEGs are a financial incentive to support distributed renewable energy generation **up to 5 MW**. SEGs are available for the following generation technologies:

- | | | |
|----------------------------|------------|---------|
| • Anaerobic digestion (AD) | • Solar PV | • Hydro |
| • CHP and Micro-CHP* | • Wind | |

*Up to 30,000 domestic Combined Heat and Power (CHP) units are supported through FITs under a Micro-CHP pilot scheme. These units must have a capacity of no greater than 2 kW each.

There are financial benefits for Generation projects that use the old FIT and new SEG scheme.

Generation and Export tariff (FITs):

Installations which receive payments under the FIT scheme will continue to receive the same generation and export tariffs that were current at the time of installation. The last export tariff under the FIT scheme, before the scheme closed on the 31st March 2019, was fixed at 5.24p/kWh. This differs from the export tariff rate offered through the SEG scheme, which depends on the electricity supplier you choose to contract with.

SEG Export Tariff

The SEG scheme is an export tariff, which is a guaranteed price for each unit of electricity exported to the grid. It is an obligation for licensed energy suppliers to offer eligible generation projects an export tariff rate. The electricity suppliers decide the SEG export tariff details i.e. the rate and the length of the contract. However, although wholesale electricity prices can fall below zero due to changes in demand, electricity suppliers must always offer a tariff which is greater than zero.

Where to Find More Information

Relevant Organisations:

Energy Networks Association —the industry body for UK energy transmission and distribution licence holders and operators: www.energynetworks.org

Ofgem is a good source of up to date information about **Smart Export Guarantee** — [Ofgem SEG](#)
Note that your electricity supplier is your point of contact for the SEG scheme.

National Grid Electricity Transmission (NGET)—The Transmission System Owner in England and Wales: www.nationalgrid.com/uk/Electricity/

Has a lot of useful information available, including the National Grid Electricity Transmission Ten Year Statement and more information about connection and agreements.

National Grid Electricity System Operator (NGESO) - The System Operator in England, Wales and Scotland: <https://www.nationalgrideso.com/>

Department for Business, Energy and Industrial Strategy (BEIS) - For the most up to date information on relevant Government policy <https://www.gov.uk/government/organisations/department-for-business-energy-and-industrial-strategy>

Energy Saving Trust—www.energysavingtrust.org.uk/Generate-your-own-energy

Some Useful References:

Engineering Recommendation G98 and G99— available free of charge on the DCode website: www.dcode.org.uk/

The Grid Code of Great Britain — available free of charge on NGESO's website: [Grid code](#)

The Distribution Code of Great Britain—available free of charge on the Distribution Code website: www.dcode.org.uk/

The European Network Code, Requirements for Generators—available on the [EUR-Lex website](#)

Metering Codes of Practice: www.elexon.co.uk/bsc-related-documents/related-documents/codes-of-practice/

Certified generation products and installers: www.microgenerationcertification.org

Where to Find More Information

There is a great deal of published information that your DNO will provide that will be helpful for your project planning. Some of the most useful sources are summarised here, and links to the DNO websites are in the table below. You should also contact your DNO from an early stage in your project, and they will be able to advise you with information specific to your situation.

Long Term Development Statement (LTDS)

Covers the development plans for the network, and other information useful for prospective developers. An introductory chapter is generally available on the DNO's website and DNOs will give access to the full document on request. These documents are updated annually.

Connection Charge Documents

Statements and methodologies will be given for both connection charges and Use of System (UoS) charges. This information may be included in a single document, or in several, and are updated regularly. These are available on your DNO's websites.

Standards of Performance

Ofgem has set minimum performance standards for the provision and performance of connections, and if your DNO fails to meet these standards, you may be entitled to receive payment. Ofgem has guidance documents about these Standards on their website:

www.ofgem.gov.uk/licences-codes-and-standards/standards/quality-service-guaranteed-standards

Distributed Generation "Work Plan"

The Incentive for Customer Engagement (ICE) exists to encourage DNOs to engage with and respond to the needs of major connections customers (which includes generation customers), and includes a requirement on DNOs to set out plans on what improvements they plan to make in the next regulatory year, consisting of two parts. Part 1 covers plans for improvements for the forthcoming year; and Part 2 reviews the progress in the previous year. Check your DNOs Distributed Generation web pages.

Other Supporting Information Provided by DNOs

In recent years, there have been improvements to the information that DNOs provide, including:

- web portals and decision support tools/application hotline;
- capacity "heat maps", indicating areas that can more readily facilitate connections;
- holding events such as "open surgeries" for Distributed Generation customers; and
- more details provided on outages (historic and planned outages).

Where to Find More Information

| Region | DNO | Website |
|--|----------------------------|--|
| North Scotland, Southern England | SSE Power Distribution | www.ssepd.co.uk |
| South Scotland, Cheshire, Merseyside and North Wales | SP Energy Networks | www.spenergynetworks.com |
| North East England and Yorkshire | Northern Powergrid | www.northernpowergrid.com |
| North West | Electricity North West | www.enwl.co.uk |
| East Midlands, West Midlands, Southern Wales, South West England | Western Power Distribution | www.westernpower.co.uk |
| Eastern England, South East England, London | UK Power Networks | www.ukpowernetworks.co.uk |
| No area—IDNO | GTC | www.gtc-uk.co.uk |

Glossary of Terms

Balancing and Settlement Code company: Governs the operation of the balancing mechanism. They charge generators and suppliers for the cost to the System Operator to balance the market. The Balancing and Settlement Code company for Great Britain is Elexon.

Close Geographic Region: Typically, an area which is fed by the same part of the distribution network, from a single feeder or distribution transformer. A general rule of thumb is that if your installations are within 500 meters of each other, then they are likely to be within a close geographic region.

Commissioning: A set of visual inspections and tests performed on equipment after installation, renovation or maintenance, and before it goes into full operation. Commissioning aims to ensure the equipment is working safely and as it should.

Distribution Code: The code required to be prepared by a DNO pursuant to condition 21 (Distribution Code) of a Distribution Licence and approved by the Authority (The Gas and Electricity Markets Authority - Ofgem) as revised from time to time with the approval of, or by the direction of, the Authority.

Distributed Generation: A generation project is classed as Distributed Generation if it operates while electrically connected to the distribution network. Also known as 'Embedded Generation'.

Distribution Network (System): Transports electricity from the Transmission System to loads like homes and businesses. The voltage is reduced to the correct supply voltage for the loads. The voltage is 132kV and lower. Most customers are supplied at 230V.

Distribution Network Operator (DNO): Owns and maintains public electricity distribution networks. They must hold a Distribution Network Operator Licence. These are regulated monopoly businesses which recover their costs by levying use of system charges on electricity traded using their network. There are six DNOs in Great Britain.

Engineering Recommendation (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.

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

Engineering Recommendation (EREC) G59: Recommendations for the Connection of Generating Plant to the Distribution Systems of Licensed Distribution Network Operators. This is not applicable to generation connecting after the 27th April 2019.

Smart Export Guarantees (SEG): A financial incentive to support distributed and small-scale renewable energy generation, up to 5 MW.

Fully Type Tested: The whole Power Generating Module is type tested, rather than just part of the Power Generating Module.

Generating Unit: Any apparatus which produces electricity.

Generator: A person who generates electricity under licence or exemption under the Electricity Act 1989.

Independent Distribution Network Operator (IDNO): A holder of a distribution licence, an IDNO designs, builds, owns and operates a distribution network, which is an extension to existing DNO network. They typically build network for new developments such as business parks, retail and residential areas and leisure facilities. Your local DNO will be able to inform you if you are connected to an IDNO's network or a private network rather than the DNO's network.

Glossary of Terms

Office of Gas and Electricity Markets (Ofgem): The regulator of the electricity system. They are responsible for regulating prices and performance in the monopoly elements of the electricity supply industry, resolving disputes between different parties when necessary, and granting the various licences in the power sector, including generation licences.

Power Generating Facility (PGF): One or more Power Generating Modules connected to at one or more Connection Points. This is a Power Station in EREC G59.

Power Generating Module (PGM): Either a Synchronous Power Generating Module (SPGM) or a Power Park Module (PPM).

Power Park Module (PPM): Generating Units that are connected to the network either through power electronics (eg solar PV or electricity storage devices connected through an inverter) or asynchronously (eg some wind turbines are induction or asynchronous generation). They have a single Connection Point to the distribution network.

Registered Capacity: The normal full load capacity of a Power Generating Module less the MW consumed when producing the same (ie auxiliary load). For Power Generating Modules connected via an Inverter, the Inverter rating is the Power Generating Module's rating.

Suppliers: Buy electricity in bulk from generators, and then sell to consumers. They are responsible for providing bills and customer services, and arranging metering and meter reading.

Synchronous Power Generating Module (SPGM): An indivisible set of Generating Units—ie one or more units which cannot operate independently of each other—which generate electrical energy in synchronism.

System Operator: Responsible for balancing demand with generation on a second by second basis. National Grid Electricity System Operator (NGESO) is the System Operator in Great Britain.

Transmission Network (System): Transports electricity over long distances across the country. Electricity is transported at a high voltage to reduce losses. The voltage is 275kV or 400kV. In Scotland, 132kV is also used.

Transmission Owner (TO): Owns and maintains the high voltage transmission system.

The Transmission Owners are as follows:

- National Grid Electricity Transmission (NGET) in England and Wales
- Scottish Power in southern Scotland (SP Transmission Plc)
- Scottish and Southern Energy (SSE) in northern Scotland (Scottish Hydro Electric Transmission Plc)

Type tested equipment: Equipment that has been tested to ensure that it meets the requirements of EREC G98 or G99. Using type tested equipment simplifies the connection and commissioning process.