C. An Overview of Getting Connected

In this section:

- An introduction to getting connected
- The main tasks in the process of connecting small generating units in multiple premises
- Guidance on where to find more information

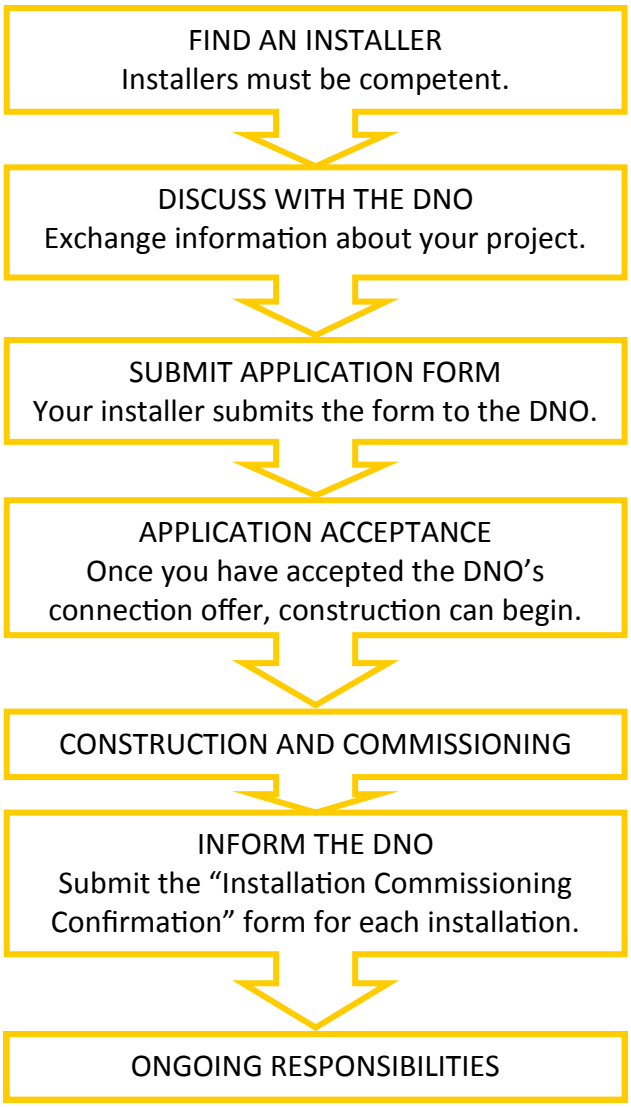
Introduction

While the process for connecting small-scale generation in a single premises is relatively simple, the process for connecting small-scale generation in multiple premises is more involved. Projects involving multiple installations could be, for example:

- A housing refurbishment programme in the same road or street
- A new housing development

There is a key difference between connecting units at one customer site and multiple units within different customer sites within a close geographic region: for multiple sites **you need to get approval from the Distribution Network Operator (DNO)** before you can connect.

The diagram opposite presents the key actions that you have to complete to connect multiple units of small-scale generation within different customer sites and in a close geographic region. These tasks are based on the requirements set out in EREC G83, and are described further in this section.



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 G83 and G59 are in use. See www.nie.co.uk

Getting Connected—Main Tasks

Finding an Installer

The first task is to find a competent installer, who is using type tested equipment (see note in "Is this the right Guide for my project?"). There are companies who design, install and commission domestic generation. They can fully certify and sign off installations.

Certified generation products and installers can be found on the following website: www.microgenerationcertification.org

The Microgeneration Certification Scheme is operated by the Department for Business, Energy and Industrial Strategy (BEIS). Your installer must be certified in order for you to claim Feed-in Tariffs, with the exception of hydro and anaerobic digestion projects, which have to go through the ROO-FIT process. There is more information about this in Section F: Selling Electricity - Feed-in Tariffs (FITs).

Discussions with the DNO

You must discuss your plans with the DNO before starting work. You should do this as soon as possible in your planning, as the DNO's response may have a big impact on how you plan your project. You may discuss the feasibility of your connection, and if there will be any charges for connection (charges are discussed further in Section E—Costs and Charges).

If your generation project is part of a larger project, e.g. developing new housing, then your application needs to be co-ordinated with the connection application for the import supplies themselves. The DNO will need to take into account the new generation in the design of the overall connection.

All DNOs provide information to support generation developers, such as capacity heat maps, on their websites. These can be an important source of information. In addition, there may be dedicated generation 'surgeries' or 'drop in' sessions to discuss your project with the DNO.

Submitting an 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. The format of the application form is given in Appendix 2 of EREC G83, which is available free of charge on the Energy Network Association's website. Your installer should submit the application form on your behalf.

Application acceptance

When you submit your application form you need to include technical details of the equipment. The DNO needs this information to assess the impact that your generating equipment 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 (charges are discussed further in Section E—Costs and Charges). You should ensure that you fully understand this offer before accepting it. You should discuss questions with your DNO if you are unsure.

Construction and Commissioning

Your installer should be aware of the requirements to ensure that construction and commissioning is in line with EREC G83. These requirements are described in Section 7 of EREC G83, which states that the equipment must be installed within the manufacturers' instructions, and that no modifications should be made.

Your DNO will also complete any work that is required on the network. Close communication with the DNO throughout this process will allow coordinated planning of construction and connection.

During the commissioning, your installer will check that your equipment is working as it should. EREC G83 specifies that the

Getting Connected—Main Tasks

installation must act as required in the event of your mains power being interrupted.

Informing the DNO

Once your installation is complete, the DNO needs to be made aware of your generating unit(s). This is so that the DNO can take this into account when operating and designing the network.

Your installer must notify the DNO within 28 days of commissioning the generating units in each premises, and provide them with information on the installation. This information is called "**installation commissioning confirmation**". The content and format of the installation commissioning confirmation is set out in Appendix 3 of EREC G83, which is available free of charge on the Energy Networks Association website.

Note: DNOs may have their own installation commissioning confirmation forms on their websites—a web search should help you locate the forms you need, or try telephoning your DNO.

Ongoing responsibilities

Although the focus of this Guide is to inform you about the process of connecting generation to the distribution network, you (or the owner of the equipment if that is not you) should be aware that once it is connected you have some responsibilities. This includes the responsibility to keep it maintained by someone who is competent to do so.

Ofgem's Review of the Electricity Connections Market: Ofgem has been conducting a review into the market for new connections to the distribution network, and how effective competition is. They have made some initial proposals for improvements, including a Competition in Connections Code of Practice for DNOs — now available on the ENA and DNO's websites. Refer to Ofgem's website for more information.

Getting Connected — IDNO's Networks

The process for connecting your Distributed Generation to an IDNO's network follows EREC G83 or G59, and is therefore similar to connecting to a DNO's network. IDNOs are licensed entities and are bound by some of the same licence conditions as DNOs, including certain performance standards such as timescales for responding to requests for quotes. The majority of what is included in this guide applies to both DNO and IDNO connections.

However, there are a few key differences for a Distributed Generation connection to an IDNO network:

- **Provision of Information:** IDNOs have a reduced set of licence conditions compared with DNOs, and they are not obliged to provide the same documents for customers. IDNOs are not required to produce Long Term Development Statements nor Connection Charging methodologies and statements.
- **Interaction between the IDNO and the DNO:** When an IDNO receives an application for connection for Distributed Generation, they need to get approval from the DNO before they can offer to connect you. If your generation project would cause certain network parameters to exceed defined limits, such as voltage or export to the DNO network, the IDNO and DNO will explore options for accommodating your project. This discussion will take place between the IDNO and the DNO, and will not involve you directly. However,

Getting Connected — IDNO's Networks

the IDNO may then discuss different options with you for the most appropriate generation project to be connected.

- **Formal Agreements:** IDNOs will not necessarily insist on the same set of formal agreements that the DNOs will. Agreements such as the connection and adoption agreements may not be required.

To determine whether you are connected to a DNO or IDNO network, refer to the guidance on page 11.

Customer Service and Provision of Information

There are a number of drivers for DNOs to provide a good level of service to customers, including:

- The new price control proposals;
- Standards of Performance; and
- Ofgem DG forums.

Price Control Proposals (RIIO-ED1)

Ofgem administers a price control regime which allows DNOs to earn a fair rate of return while limiting costs passed on to customers. The current price control period is called RIIO-ED1, which runs until 2023. The RIIO-ED1 proposals include a number of mechanisms to incentivise DNOs to provide a good service to Distributed Generation customers, including:

- A new Time to Connect Incentive for minor connections customers (less than 70kW and connected at LV);
- An Incentive on Connections Engagement (ICE) - 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:
  - Part 1: Plans for improvements for the forthcoming year; and
  - Part 2: Reviews the progress in the previous year.

ICE workplans can be found on individuals DNO websites

- The Broad Measure of Customer Satisfaction (BMCS) surveys.

DNOs publish annual ICE plans for stakeholder engagement.

Guaranteed Standards of Performance

The guaranteed standards of Performance are set out in Standard Licence Condition 15A. They include, for example, maximum timescales in which DNOs must provide you with a quotation (Connection Offer). Ofgem has guidance documents about these Standards on their website: www.ofgem.gov.uk/licences-codes-and-standards/standards/quality-service-guaranteed-standards

DG Forum

The DG Forums, hosted by the ENA on behalf of DNOs, are annual events that are used to explore issues and concerns around Distributed Generation connections, including barriers to Distributed Generation and process issues. They are open to anyone, and are attended by DNOs and developers. Details can be found on the ENA Events website: http://www.energynetworks.org/events/

Improvements made to DNO Services

In recent years, there have been a number of improvements to DNO services as a response to these drivers and feedback, including:

Customer Service and Provision of Information

- Increased internal resources;
- Improved provision of information, including more detailed breakdown of costs, web portals, decision support tools/application hotline, and capacity "heat maps", indicating areas that can more readily facilitate connections;
- Holding stakeholder and customer events; and
- Exploring the possibility for discussions prior to formal application ("connection optioneering"). This process is being carried out in different ways by different DNOs. Refer to your DNO for more information.

DNOs have promised to bring about continued improvements, including:

- Shortening connection timescales;
- Enhancing the publicly available network capacity information, e.g. contracted capacity reports;
- Publishing case studies; and
- Enhancing the connection application and the wayleaves/consents processes.

DNOs publish Distributed Generation 'Work Plans' that outline progress against improvement initiatives. Check your DNO's Distributed Generation web pages.

Getting Connected — Energy Storage

Storage devices for electrical energy are becoming more prevalent, and can be used as part of Distributed Generation schemes to allow generated electricity to be stored within the premises rather than exported to the distribution network. DNOs treat storage as generation, and need to be aware of storage because of the potential impact on their networks. Therefore storage needs to meet the relevant connection requirements (EREC G83 or G59).

If you are planning to use storage in conjunction with PV to offset consumption in your home, the total connected generation is likely to be above 16A / phase and G59 should apply. However by Autumn 2017 the ENA expects to have implemented a fast track application process, for domestic scale storage. This will take the form of an online tool and is expected to reduce the connection time from 45 days to 10 days or less. If the storage is intended to be operated in island mode (during a power outage) the fast track process is not applicable and G59 applies.

Health and Safety considerations

Safety is very important in the design of generation connections. Some of the safety requirements for Distributed Generation connections are set out in EREC G83. This document references the Regulation that informs these requirements, the Electricity Safety, Quality and Continuity Regulations (ESQCR) 2002, and also lists the relevant British Standards.

You can find out more about Health and Safety aspects of Distributed Generation connections on the following websites:

- The Electrical Safety Council (ESC): www.esc.org.uk
- The Energy Networks Association—Safety, health and environment: www.energynetworks.org/electricity/she/overview.html

Dealing with disputes

If you are not satisfied with a particular aspect of service during the process of connecting your generation, your first port of call should be the party with whom the issue lies, e.g. the DNO, supplier, etc. DNOs have their complaints process set out on their website. If you still cannot resolve the issue you can contact the Energy Ombudsman:
www.ombudsman-services.org/energy.html
If you are still unable to resolve the matter, as a last resort it can be referred to Ofgem.

Supply Issues

Your DNO is obligated to maintain the power quality on their network within a set of defined limits. These include maintaining voltage at the required levels. This is so that customer equipment is not damaged. If you have a voltage complaint you should contact your DNO. Your DNO should respond to your complaint within 5 working days, or visit within 7 working days. If work is required to correct the issue, the DNO should complete this within 6 months.

Where to Find More Information

If you want to find out more, these documents are particularly relevant:

- **Engineering Recommendation EREC G83**: Recommendations for the Connection of Type Tested Small-scale Embedded Generators (Up to 16 A per Phase) in Parallel with Low-Voltage Distribution Systems — a technical document, with references to other relevant sources of detailed technical information. Key appendices of G83 are available free of charge on the ENA's Website

- **Electricity Safety, Quality and Continuity Regulations (ESQCR) 2002, Section 22**: Statutory Instrument Number 2665, available free of charge.

- Ofgem's information about how to get an electricity connection for a new building or site.

Some DNOs have produced their own guidance notes for small scale generation connections - check your DNO's website.

D. The Connection Application: Connection Application Process

In this section:

- How to apply to your DNO for connecting generating units in multiple premises
- Details of the information that you will need to provide to the DNO and the design work they may need to do to assess your connection
- How to notify the DNO that your generation unit(s) has been installed and commissioned in accordance with EREC G83

Introduction

This section of the Guide describes how to inform your DNO that you are planning to install a number of generating units that fall under EREC G83 in to different customer sites within a close geographic region.

This section also explains the notifications which the installer of your equipment will need to give to your DNO once the units are commissioned.

The Application for Connection Pro-forma

The Application for Connection Pro-forma included in EREC G83 should be completed by your installer if you are planning to install generating units of the types covered by EREC G83 in to different customer sites within a close geographic region. This should be submitted **before any generation is installed**, as the DNO needs to assess the possible impact of your generating equipment on the distribution network. The format for the application is shown in Appendix 2 of EREC G83, which is available free of charge on the Energy Networks Association website.

The form requires a number of pieces of information:

- 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.

When the application has been submitted to the DNO by your installer, the DNO will assess the impact of the generation on their network. Where necessary, they will carry out design work, e.g. for network reinforcement.

As mentioned, if your generation project is part of a larger project, e.g. developing new housing, then your application needs to be co-ordinated with the connection application for import supplies.

Connection of the generation equipment will only be allowed to proceed after the DNO has approved the application, and any facilitating works for the connection have been completed.

Installation and Commissioning

If the DNO gives permission for the installation of your generation equipment to proceed, your installer will install and commission the generating units. They must then notify the DNO that this has been done, in accordance with the Electricity Safety, Quality and Continuity Regulations (ESQCR). The process and timescales for doing this are described below.

The Commissioning Pro-forma

The installer of your generating units has to tell the DNO about each generation installation **within 28 days of the date of commissioning** (including the commissioning day itself).

The Commissioning Pro-forma included in EREC G83 is a convenient way of capturing all of the information that the DNO needs to know once your installer has commissioned each of your generating units.

This can be found in Appendix 3 of EREC G83, which is available free of charge on the Energy Networks Association website.

The information required includes:

- details about the **site** where you are connecting your generating unit, including metering information;
- **contact details** for the owner of the generating unit;
- **technical information** about the generating unit itself, including the generating capacity, type test reference and primary energy source;
- details of the **installer** of the generating unit, including the party's accreditation and qualifications;
- **supporting information**, e.g. circuit diagrams; and
- a **signed declaration** as to the compliance of the generating unit with the requirements of G83.

One commissioning pro-forma is required for each generating unit.

Other Requirements

The declaration that your installer signs on the Commissioning Pro-forma requires them to confirm that they've installed your generating unit in accordance with EREC G83. It's important that you use an installer who is familiar with the requirements of these standards. If you appoint a competent installer (see Section C. An Overview of Getting Connected), they should know about these standards and make sure that your installation meets with all the relevant standards.

E. Cost and Charges: Overview of Charges

In this section:

- An introduction to connection costs
- The basis of DNO connection charges for infrastructure
- Other elements of connection charges and where to find indicative costs and examples
- Generation Distribution Use of System charges

Read the boxes for definitions or explanations of terms that may be new or un-familiar.

Introduction

There are two categories of charges made by the DNO:

- **Connection charge**: this is a one-off charge made by the DNO, which primarily covers the cost of work and equipment associated with connecting your generating project to the distribution network.

- **Use of System charges**: these are ongoing charges, which primarily cover operation and maintenance costs and include the costs of ongoing network development including general reinforcement.

DNOs are obliged to publish documents describing the basis of their connection charges and their charging methodology. They also present the different elements of connection charges, and indicative costs for works and equipment of significant cost. This will help you to understand the charges they quote you.

This information is contained in the DNOs Statement of Methodology and Charges for Connection to the electricity distribution system. All DNOs' statements follow the same format, and are available on their websites. This document contains:

- The DNO's connection charging methodology (i.e. how they calculate their charges);
- The DNO's connection charging statement (i.e. what the charges are);
- An indication of the costs of providing a connection quotation / budget estimate; and
- Other relevant information for connecting customers.

The basis and elements of connection charges, as well as indicative costs and examples are discussed in this section.

Use of System charges are levied by the DNO on the supplier, so as a generator you will not be charged these directly. However, this section is included for your information, as Use of System charges may appear as an item on your bill.

Connection Charges

Depending on the location and size of your generating units, new equipment and reinforcement to the existing network may be necessary to accommodate your generation. In the connection charge, you will be charged for any extension to the network.

DNOs are obliged to publish a document describing the basis of their connection charges and their charging methodology. You can refer to this document to see what costs you will be charged for. These are available on DNO websites.

Connection Charges—Other Elements

Elements of charges

As well as charges for any network extension (if required), there are other elements that are covered in the connection charge. These can include the following:

- System / feasibility / fault level studies
- Provision of Wayleaves
- Additional meetings with the DNO or site visits
- Administration

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.

Indicative costs and examples

Equipment costs and charges for services vary across DNOs; it could therefore be misleading to list indicative costs in this Guide. If you want to get an idea for indicative costs, the best place to look is the **DNO's Statement of methodology and charges for connection**. You can find this on the DNO's website.

Aside from giving indicative costs for connection charges, these documents typically contain other useful information, including guidance on the connection process and examples of various connections and their associated cost breakdown. It is updated annually.

The connection charging methodology is governed by the Distribution Connection and Use of System Agreement (DCUSA) and is subject to open governance so any party materially affected by it can propose a change to it. The process for doing this is laid out within the DCUSA itself. See the DCUSA website for more information: www.dcusa.co.uk

The Connection Charging Methodologies Forum exists to enable parties to discuss ideas for improving the methodology possibly prior to submitting a formal change proposal.

Estimating costs and getting a quotation

As mentioned, you can obtain indicative costs for works and equipment from DNO documents. To obtain a more accurate picture of the connection costs for your project, you can:

- Ask the DNO for a budget estimate
- Obtain an estimate of connection costs from a specialist engineering consultant

You should exercise care in interpreting budget estimates.

Connection Charges—Other Elements

Payment of connection charges

Connection charges are paid either:

- in full at the time that the connection offer is accepted; or
- in staged or phased payments, as per a payment schedule.

Staged payments are typically used for generation projects which are greater than a certain size, e.g. in project value or duration. The staged payments cover committed expenditure by the DNO.

If your connection does not proceed, it is possible that some of the connection charge will be refundable depending on if the DNO has performed the work. You should inform your DNO as soon as possible if you decide not to go ahead with your project.

Assessment and Design fees:

At the time of writing, DNOs cannot charge upfront for the development of their formal connection offer under Section 16 of the Electricity Act. However they may make up-front charges for budget estimates, feasibility studies and other enquiries. BEIS are working with Ofgem to create a framework that would allow DNOs to charge up-front fees in the case of formal quotations, however the timeframe for this is still unclear.

What is a budget estimate?

You may read about **budget** or **indicative estimates** and **formal quotations**. The differences between these two terms are summarised in the following table.

Budget or Indicative estimate	Formal quotation
Requested in the early stage of a project, and generally only for larger capital schemes	Requested when electrical requirements have been finalised
The DNO doesn't require much information from you	The DNO requires a lot of information from you
Based on a desktop study—the DNO is unlikely to carry out detailed designs or studies	Based on detailed design work, and may require other input such as site surveys
To give an **indication** of costs, and is therefore subject to change	Provides formal contract offer
Not open for acceptance	Open to acceptance, subject to conditions
DNO may charge	DNO will not charge

Assuming that you ask the DNO to undertake all of the work involved in your connection, the timescale for the DNO to provide a budget estimate is 10 working days.

Use of System Charges

Use of System charges are levied by the DNO to the supplier, so as a generator you will not be charged these directly. However, this section is included for your information, as Use of System charges may appear as an item on your bill.

What are Use of System charges?

Use of System charges cover the development, operation, maintenance and repair of the distribution network. DNOs make Use of System charges to suppliers. Suppliers may reflect these charges to their customers as either:

- a 'pass-through' item so that the customer can clearly see the Use of System element; or
- 'wrapped-up' in a total electricity supply tariff where the customer may not be able to clearly see the Use of System element.

DNOs are obliged to publish documents about their Use of System charges. These cover their Use of System charging methodology and a statement of what the charges are for both generation and demand customers. You can find these on DNOs' websites.

All generators connected at Low Voltage are subject to Generation Distribution Use of System charges under the Common Distribution Charging Methodology (CDCM). These charges are currently negative (i.e. credits). You can find out more about the Common Distribution Charging Methodology (CDCM) by looking at Distribution Charging on the Ofgem website, Distribution Charges Overview on the Energy Networks Association website and some DNOs' websites.

Categories of Use of System charges

UoS charges are categorised by:

- the voltage level your equipment is connected to and;
- the type of meter you have.

The boxes below define the voltage level that will apply to EREC G83 compliant equipment (Low Voltage) and the metering arrangements that are likely to apply to this equipment (Non -Half Hourly meters). 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).

Non-Half Hourly Meters (NHH)

NHH meters record total energy passing through the meter, but do not record the times the energy is transferred. Typically the recorded data would be collected a few times a year, e.g. every quarter. Most domestic and small commercial properties have NHH meters. You can contact your current electricity supplier to discuss the provision of NHH meters, or other meter suppliers.

LV (Low Voltage)	400/230 V in practice, less than 1 kV in general.