

Energy Networks Association

Distributed Generation Connection Guide

A QUICK REFERENCE GUIDE FOR
CONNECTING GENERATION TO THE
DISTRIBUTION NETWORK THAT FALLS UNDER
G59/3

June 2014

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In the event that there is any conflict or contradiction between this Guide and the engineering standards and codes referenced in the Guide, the terms of the referenced documents will prevail. These include inter alia Engineering Recommendation G83/2, Engineering Recommendation G59/3, the Distribution Code, the Grid Code, the Connection and Use of System Code and the Balancing and Settlement Code.

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 one of the UK's electricity distribution networks. This "summary" guide is written for the developers of Distributed Generation projects which are covered by **Engineering Recommendation (EREC) G59**.

This covers either:

- Projects with a capacity of **more than 16A per phase**; or
- Projects connected at a **higher voltage** than 230V (single phase), or 400V (three phase); or
- Any other projects that are **not type tested** under the requirements of EREC G83.

If your project is within the scope of EREC G83, there are **alternative guides** and summary guides you can read. They are available on the Energy Networks Association website.

There is also a guide written for projects within the scope of EREC G59, but which meet certain criteria that allow their connection process to be **significantly simpler**. These criteria are:

- the **generating capacity** of the generating units is less than or equal to 50kW three phase, or 17kW single phase; and
- the equipment to be installed is **type tested** according to EREC G59 or G83.

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 generation project 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 **bolded** 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.



Governance of the Guide

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

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

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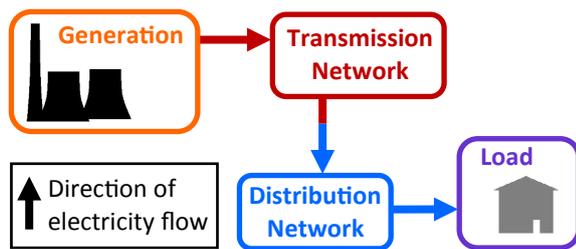
Acronym Guide

BEGA	Bilateral Embedded Generation Agreement
BELLA	Bilateral Embedded Licence exemptible Large power station Agreement
DNO	Distribution Network Operator
ENA	Energy Networks Association
EREC	Engineering Recommendation
FITs	Feed in Tariffs
HH	Half Hourly (meter)
ICP	Independent Connections Provider
IDNO	Independent Distribution Network Operator
NGET	National Grid Electricity Transmission
NHH	Non-Half Hourly (meter)
RO	Renewables Obligation
ROC	Renewables Obligation Certificate

A: Background-The UK 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 275kV or 400kV. In Scotland, 132kV 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 132kV and lower in England and Wales, and less than 132kV in Scotland. Most domestic customers are supplied at 230V.

Key organisations

National Grid Electricity Transmission (NGET): The System Operator for Great Britain, and also the Transmission Owner for England and Wales.

The Transmission Owner for northern Scotland is **Scottish Hydro-Electric Transmission Ltd**, and for southern Scotland, **Scottish Power Transmission Ltd**.

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 Gasses may be doing to our environment. Distributed Generation technologies are often renewable or low carbon means of generating electricity.

Government policy—The Department of Energy and Climate Change (DECC) 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.

Ofgem has introduced the **Low Carbon Networks Fund** (LCNF, which aims to drive innovation in distribution networks), and **Network Innovation Allowance** and **Network Innovation Competitions** (NIA and NICs, to incentivise innovation in transmission networks).

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 ROCs; 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. These tasks are described in more depth in this section of the guide.

1. PROJECT PLANNING PHASE

- Consult published information
- Make contact with your DNO

2. INFORMATION PHASE

- Hold meetings with your DNO
- Decide who will construct the infrastructure

3. DESIGN PHASE

- Submit a formal connection application
- Receive a Connection Offer

4. CONSTRUCTION PHASE

- The connection infrastructure is constructed
- Enter into agreements

5. COMMISSIONING PHASE

- Commission the generating equipment
- Submit Commissioning form

ONGOING RESPONSIBILITIES

1. Project Planning Phase: Useful Documents

Consult useful documents, including:

- The DNO's Long Term Development Statement (LTDS) - available on their websites.
- National Grid Electricity Transmission's ten year statement

2. Information Phase

A connection is often made up of two types of work:

- **Non-Contestable**—The DNO must complete this work as it covers work on existing network equipment owned by the DNO.
- **Contestable**—Either your DNO or an Independent Connections Provider (ICP) can complete this work. This often includes work on new infrastructure.

Using an ICP to install the contestable work allows the work to be competitively bid for, and so it could bring some cost advantages.

At the same time, any design and installation work that an ICP does will need to be approved by the DNO, as it is likely that the DNO will take over ownership of the infrastructure after construction. This brings about additional costs which will need to be accounted for when making this decision.

You may wish to invite quotations from a number of ICPs, as well as the DNO for comparison.

The National Electricity Registration Scheme (NERS) assesses ICPs and accredits them for various items of contestable work. DNOs stipulate that all or most items of Contestable work need to be carried out by accredited ICPs. A list of accredited ICPs can be found on the Lloyds register website.

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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ONGOING RESPONSIBILITIES

3. Design Phase

Formal Connection Application

For projects with a generating capacity of 50kW or less, and where the equipment is type tested under EREC G59 or G83, you can use a **simplified connection process and application form** - see the G59 50kW Guide. For all other projects covered by EREC G59, you need to submit the **standard application form** which is available from DNO's websites.

If you contract an ICP at this stage, they will generally submit the forms and liaise with the DNO. The DNO provides the ICP with a quote for the Non-contestable work, and the ICP provides you with the total cost for all the work. However, you will need to have a relationship with the DNO as well, and some agreements may still be held directly between you and the DNO.

If the DNO is doing all the work, then the connection application will be submitted by you or your installer. The DNO's licence requires them to produce a connection offer **within 3 months** of them receiving all the required information.

Connection Offer

You, or an ICP acting on your behalf, will receive a Connection Offer from the DNO. This contains the **technical and commercial terms** under which the DNO will do the Non-contestable work and, if applicable, the Contestable work.

A Connection Offer may be restricted by conditions such as a maximum export, or constraining output under certain network conditions. This is called a '**non-firm**' connection.

The Connection Offer **must be reviewed carefully**—you can hire an independent consultant to help you. DNOs will be willing to discuss and agree the details of the offer before you reach a formal agreement.

Connection Offers are **time limited**, normally within 30 to 90 days. Your DNO will inform you how long the offer is valid for. If a Connection Offer is expired, there is no guarantee that the same offer will be made again.

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ONGOING RESPONSIBILITIES

4. Construction Phase

Your DNO and/or ICP **constructs** your connection. You may also be installing your generation equipment.

Agreements are discussed in Section G of this Guide.

5. Commissioning Phase

The requirements and tests for the **commissioning** of your generating equipment are set out in EREC G59 (Section 12). The DNO will inform you if they wish to witness your commissioning, which you may be charged for. In this case you will have to submit a scope, and the date and time of commissioning tests at least 15 days before the commissioning date.

The **commissioning form** will need to be submitted within 28 days after the commissioning date. The form is in EREC G59 (Appendix 13.2, and 13.3 where there is equipment that is not type tested), and includes information about your generation equipment and a declaration that the equipment was installed in accordance to EREC G59.

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 the DNO of significant changes to your units or of unusual events
- Periodic testing specified by the DNO

Health and Safety Considerations

Some of the safety requirements for Distributed Generation connections are set out in EREC G59, 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.

C: An Overview of Getting Connected

Medium and Large Power Stations

Larger Power Stations

If your project is a medium or large power station (as defined by the Distribution Code, see table opposite), then there are some additional complexities that you should be aware of. These are summarised on this page.

	Power station size based on Registered Capacity		
	Small	Medium	Large
National Grid Electricity Transmission (England and Wales)	Less than 50MW	50 to 100MW	100MW and above
Scottish Power Transmission Ltd (southern Scotland)	Less than 30MW		30MW and above
Scottish Hydro-Electric Transmission Ltd (northern Scotland)	Less than 10MW		10MW and above



Generation Licence

Currently all generation with an export capacity of greater than 100 MW requires a Generation Licence. Generation between 50 MW and 100 MW capacity may be given an exemption from this requirement by the Secretary of State for Energy and Climate Change. For more information, see the UK government document: [Statutory Instrument 2001 No. 3270, The Electricity \(Class Exemptions from the Requirement for a Licence\) Order 2001](#).

There are a number of conditions in a Generation Licence, including:

- compliance with the **Distribution Code**, and parts of the **Grid Code** that apply to you; and
- compliance with the **Balancing and Settlement Code (BSC)** and becoming a party to the Balancing and Settlement Code Framework Agreement.

To apply for a Generation Licence, you should look up the UK government document: [Statutory Instrument 2008 No. 2376, The Electricity \(Applications for Licences, Modifications of an Area and Extensions and Restrictions of Licences\) Regulations 2008](#). This contains detailed information about how to make the application, including information about the costs of a Generation Licence.

National Grid Electricity Transmission (NGET) Interfaces

If your Distributed Generation project is classed as a large power station, you will need to enter into an agreement with NGET. These could be:

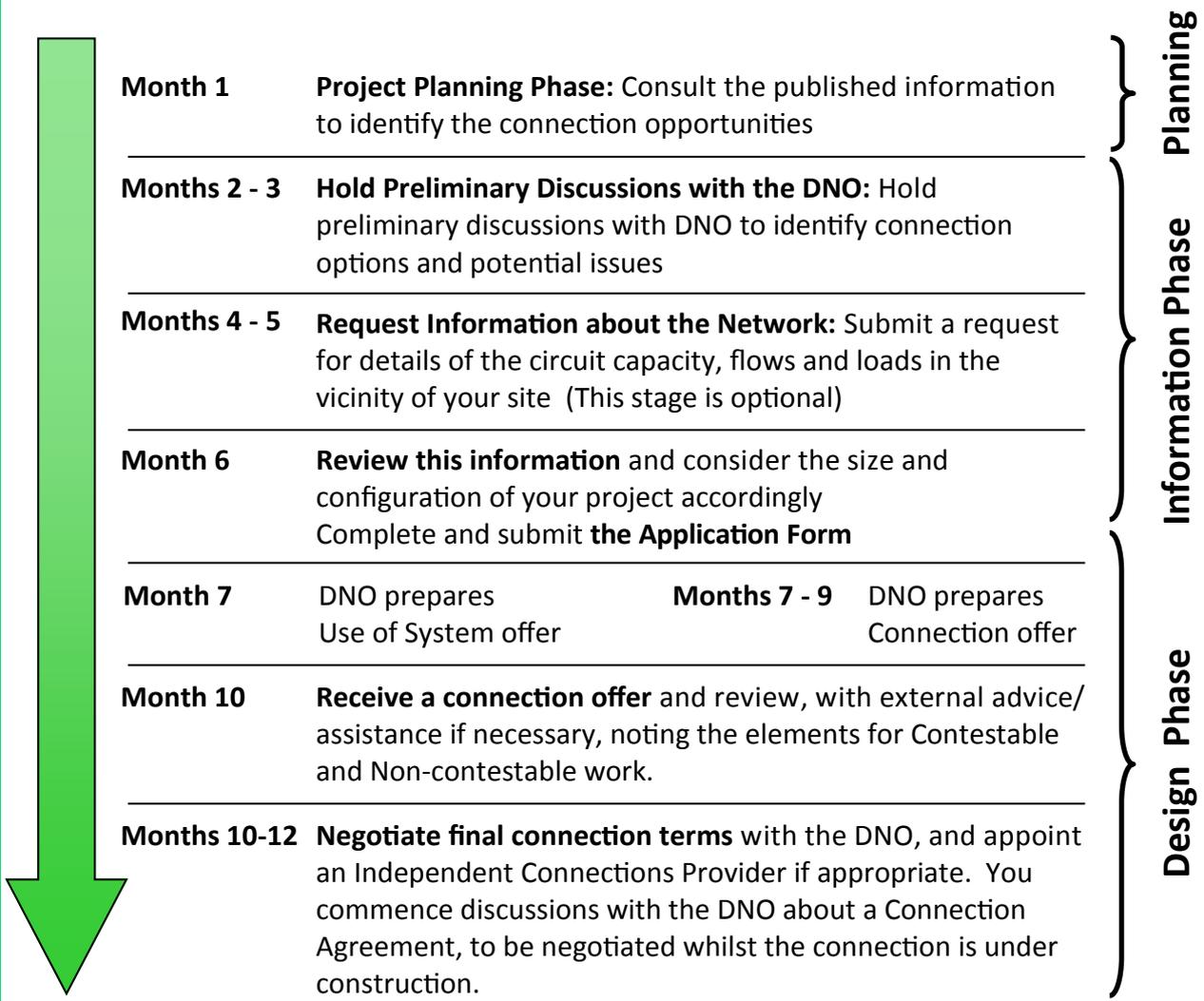
- **Bilateral Embedded Generation Agreement (BEGA)** - This gives you the right to export onto the transmission network and to operate in the energy balancing market. If your generating units have a capacity of more than 100MW you must enter into a BEGA. Developers of smaller stations have the option to enter into a BEGA if they wish to take part in the wholesale electricity market;
- **Bilateral Embedded Licence Exemptable Large Power Station Agreement (BELLA)** - This applies to the Scottish large power stations which do not need to hold a generation licence because they are below the 100MW threshold. Scottish generators of this size can choose to enter into a BEGA or a BELLA. A BELLA allows you to export onto the transmission network, but you cannot take part in the energy balancing market.

D: The Connection Application Timeline

The timeline below is an **indicative** guide as to how long it might take you to have a Connection Offer agreed with your DNO. The times shown in the timeline could vary depending on, for example:

- How **complex** your connection is, and any technical or planning issues that the DNO identifies;
- How quickly you do the background work. It is possible to combine some of the stages of activity, e.g. you begin compiling the information to support your connection application whilst in the early stages of discussions with the DNO; and
- If your generation project might have an impact on the **transmission network**, the timescale could be **significantly extended**, due to the need for NGET to carry out a Statement of Works process. You should discuss the likelihood of a Statement of Works being required with your DNO at an early stage.

Sometimes the DNO may be considering your Connection Application alongside others which would have an impact on the same part of the distribution network. In this case all the relevant applications are referred to as “interactive”, and connection applications are considered on a ‘first come-first served’ basis. Your DNO will tell you if your application is interactive.



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.

Ongoing Charges

- **Generation Distribution 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.
- **Transmission Network Use of System (TNUoS) charges:** Cover operation and maintenance of the transmission network. If you hold a generation licence and a BEGA, you will pay TNUoS charges.
- **Top-up and standby charges:** To supplement the output from your generating units to cover your electricity demand on site.
- **Metering charges:** If you have a Half Hourly (HH) meter, it is your responsibility to appoint a Meter Operator to install, maintain and collect data from your meter. You must have a HH meter if you are above a certain threshold (currently 30kW). If you have a Non-Half Hourly (NHH) meter, your supplier is responsible for it.

Details of Meter Operators can be found on the Association of Meter Operators website: www.meteroperators.org.uk

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).
- **Approval of ICP work:** Where work is being undertaken by an ICP, the DNO may charge for design approval, inspection and monitoring of work and witnessing tests.
- **Information provision:** Determining or providing information on point of connection.
- **Statement of Works Process:** Identifies what, if any, work needs to be carried out on the **transmission system**. Your DNO may apply for a Statement of Works if your generating units could affect the transmission network. You may be charged for the Statement of Works itself, and any transmission system work that the project requires.
- Others, including: Administration, additional meetings or site visits, provision of Wayleaves, NGET fees, 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.

F: Selling Electricity-Incentive Schemes

FEED-IN TARIFFS (FITs)

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

- Anaerobic digestion
- Combined Heat and Power (CHP)*
- Solar PV
- Wind
- Hydro

*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 three sources of financial benefit from a Generation project receiving FITs:

1. Generation tariff (FITs):

A fixed price for each unit of electricity **generated**, depending on the generation technology. The tariffs are reviewed regularly, and can be found on Ofgem's webpage. The tariff level that your generator will receive will remain the same throughout the eligible lifetime of the project, which for most technologies is 20 years.

2. Export tariff:

A **guaranteed price** for each unit of electricity **exported** to the grid. The tariffs are reviewed regularly, and can be found on DECC's or Ofgem's webpages.

3. Import Reduction:

Reducing your electricity bill by using your own electricity rather than importing from the grid.

In the case of solar PV, your tariff will also be dependent on the number of PV installations that you are receiving FIT payments from, and the energy efficiency of the property itself. The accreditation process for your generation project will depend on the generating technology you are using. **To find out more, please see Ofgem's website.**

RENEWABLE OBLIGATIONS (RO)

The RO applies to renewable energy generators **over 50kW**, and those that are **not eligible for FITs** due to the type of technology. Generators that have a declared capacity of 50kW to 5MW may be eligible for both FITs and ROCs, and will have a one-off choice between the schemes. The RO works by issuing eligible generators with Renewable Obligations Certificates (ROCs):

Generator reports their renewable generation levels to Ofgem and receive their ROCs.

Suppliers buy ROCs (in addition to energy generated).

Suppliers present their ROCs to Ofgem. If they do not produce enough, they pay a penalty.

The number of ROCs that a generator receives per MWh of energy produced is dependent on the generating technology. This is called ROC Banding. For most technologies, the banding level that your generator will receive will remain the same throughout its 20 year eligible lifetime. The value of your ROCs will fluctuate according to the demand for certificates, and the amount that your supplier pays for your ROCs will be a matter of negotiation between you and your supplier.

Under government changes to energy policy (called Electricity Market Reform EMR), it is proposed that the RO will close to new installations from 2017. Existing installations accredited with the RO will continue to receive financial support under a "vintage" scheme. The RO will be replaced by Feed-in Tariffs with Contracts for Difference (CfD). It is proposed that the FIT CfD scheme is available from 2014. Between 2014 and 2017, generators will have a one-off choice between the RO and FIT CfD. See DECC's website for the latest information.

G. Technical and Commercial Interfaces

CONTRACTS AND AGREEMENTS

Connection Agreement: Covers the conditions under which your equipment is entitled to be physically connected to the DNO's network and remain connected and energised during normal operation of the network. A first draft will probably be prepared by the DNO for discussion, agreement and signature. DNOs discuss the Connection Agreement in their Connection Charging Methodology, available on their website.

Adoption Agreement: If you use an ICP to construct the Contestable work for your connection, an Adoption Agreement will be needed. This will cover the arrangements for the DNO to take over responsibility for the infrastructure installed by the ICP. The Agreement is held between the DNO and either you or your ICP, depending on your circumstances. DNOs discuss the Adoption Agreement in their Connection Charging Methodology, which are available online.

Other Agreements:

- **Terms for 'Use of System'** are either covered by:
 - i. The agreement you will have with your supplier, who is a party to the DCUSA. This is the most likely option.
 - ii. Entering into a 'Distribution Connection and Use of System Agreement' (DCUSA). See the DCUSA website: www.dcusa.co.uk
- **Agreements with NGET**, for large power stations. This will be either a Bilateral Embedded Generation Agreement (BEGA) or a Bilateral Embedded Licence Exemptable Large Power Station Agreement (BELLA) (this is explained further in Section C: An Overview of Getting Connected)
- **An agreement for electricity supply** with a supplier
- **A Power Purchase Agreement** or an **agreement with your supplier** for selling your exported electricity
- **Metering Agreements**

OPERATIONAL ISSUES

Once your generating units have been connected, you still have some ongoing responsibilities around running your generating equipment. For example, you may need to provide the DNO with forecasts of your generation output, or exchange information with them if an unusual event occurs. These are outlined in a section of the Distribution Code called the Distribution Operation Code (DOC).

The DNO may apply conditions to your connection, such as limiting generation export under certain network conditions. This is called a non-firm connection, and if your DNO does apply such an operational control scheme this will be detailed in your Connection Agreement. You may be offered a non-firm connection if the network reinforcement required to fully accommodate your generation units is not feasible, or is very expensive.

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—www.ofgem.gov.uk is a good source of up to date information about **Feed in Tariffs and Renewables Obligations**

National Grid Electricity Transmission (NGET)—The Great Britain System Operator and 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 connections and agreements

Department of Energy and Climate Change (DECC) - For the most up to date information on relevant Government policy www.decc.gov.uk

Energy Saving Trust—<http://www.energysavingtrust.org.uk/Generate-your-own-energy>

Some Useful References:

Engineering Recommendation G59 and G83—available to buy on the ENA Document Catalogue System: www.ena-eng.org/ENA-Docs/
Some of the appendices are available for free from the ENA website.

The Grid Code of Great Britain — available free of charge on NGET's website: www.nationalgrid.com/uk/Electricity/Codes/gridcode/

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

Approved Independent Connections Providers (ICPs)—see the Lloyds Register website information on the National Electricity Registration Scheme (NERS): www.lloydsregister.co.uk/schemes/NERS/

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

For full details on **Generation Licence exemptions:** www.legislation.gov.uk/ukxi/2001/3270/contents/made

Certified generation products and installers: www.microgenerationcertification.org

Ofgem is a good source of up to date information about **Feed in Tariffs and Renewables Obligations**—www.ofgem.gov.uk/environmental-programmes

Note that your electricity supplier is your point of contact for the FIT scheme.

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 DNO 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. The ENA has guidance documents about these Standards on their website: www.energynetworks.org/electricity/regulation/electricity-standards-of-performance.html

DG (Distributed Generation) Forums

Ofgem held a series of regional events ("DG forums") to explore issues and concerns around Distributed Generation connections, including barriers to Distributed Generation and process issues. DNOs responded to these concerns in a number of ways, including:

- Providing a more detailed **breakdown of costs**;
- Making improvements to the **provision of information** (e.g. web portals and capacity "heat maps", indicating areas that can more readily facilitate connections);
- Holding **stakeholder workshops** and **customer events** (e.g. some DNOs host "open surgeries" for Distributed Generation customers); and
- Utilising **new technologies and techniques** in connection offers.

The ENA has taken on running these forums on behalf of the DNOs.

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	Northern Power Grid	www.northernpowergrid.com
North West	Electricity North West	www.enwl.co.uk
Yorkshire	Northern Power Grid	www.northernpowergrid.com
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

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.

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.

Contestable Work: There are certain tasks in the connection design and construction that are open to competition. This is called Contestable work and can be conducted by Independent Connections Providers (ICPs) or by a DNO. Conversely, when work is not open to competition it is called Non-contestable work.

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) G59: EREC G59 is called "Recommendations for the Connection of Generating Plant to the Distribution Systems of Licensed Distribution Network Operators." The purpose of the document is to provide guidance to you and to DNOs on all aspects of the connection process.

Engineering Recommendation (EREC) G83: EREC G83 is called "Recommendations for the Connection of Type Tested Small-scale Embedded Generators (Up to 16 A per Phase) in Parallel with Low-Voltage Distribution Systems." It sets out the requirements you must meet before your generating unit can be connected to the network. The document is aimed at the manufacturers and installers of your generating unit.

Feed-in Tariffs (FITs): A financial incentive to support distributed and small-scale renewable energy generation, up to 5 MW.

Generating Unit: Any apparatus which produces electricity. Is a synonym of a generation set as defined in the Distribution Code.

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

Independent Connections Provider (ICP): Companies that have been thoroughly assessed and granted the necessary accreditation to provide new connections in competition with the DNOs.

Glossary of Terms

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.

Non-contestable Work: There are certain tasks in the connection design and construction that DNOs do themselves, so that they can maintain co-ordination and control of their networks. These tasks are called Non-contestable work, as they are not open to competition. Conversely, when work is open to competition it is called Contestable work.

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.

Renewables Obligation (RO): The main support mechanism for renewable electricity projects over 50kW, and those that are not eligible for FITs due to the type of technology.

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.

System Operator: Responsible for balancing demand with generation on a second by second basis. National Grid Electricity Transmission (NGET) 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 Ltd)
- Scottish and Southern Energy (SSE) in northern Scotland (Scottish Hydro Electric Transmission Ltd, or SHETL)

Type tested equipment: defined in G83 as equipment that "has been tested by the Manufacturer, component manufacturer or supplier, or a third party, to ensure that the design meets the requirements of this Engineering Recommendation". The following generation types fall under G83, as they have a type testing appendix:

- Hydro
- Wind
- Fuel Cells
- Domestic Combined Heat and Power (CHP)
- Photovoltaic (PV)
- Energy Storage Device