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Connecting Community Energy

A guide to getting a network connection



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Introduction

Who is this guide for?

This guide is for people developing community energy projects who want to get a connection to the electricity network. It provides an introduction to the electricity network and an overview of the application process for different types of new energy generation relevant to community energy groups. If you are not quite sure where to start with getting your project connected and are slightly confused about the difference between EREC G83 and G59, this guide is for you.

Community energy projects are becoming more widespread, as communities are recognising the benefits of generating their own energy. Projects tend to take one of two approaches:

- > They enable lots of households and businesses to install microgeneration on their premises using community ownership
- > They issue a share offer to the community to raise finance for a renewable energy project(s)

Who are we?

Energy Networks Association (ENA) represents the 'wires and pipes' transmission and distribution network operators for gas and electricity in the UK and Ireland. Our members control and maintain the critical national infrastructure that delivers these vital services into our homes and businesses. ENA's overriding goals are to promote the UK and Ireland energy networks ensuring our networks are the safest, most reliable, most efficient and sustainable in the world.

This guide relates to connecting to the electricity distribution network, which is managed by eight distribution network operators (DNO). The UK DNO regions are shown on the map on the next page.

Some DNOs have developed their own guides which can provide more specific information. The following guides are available:

- > [Western Power Distribution - Connecting Community Energy](#)

- > [Northern Powergrid - Community Energy Projects](#)

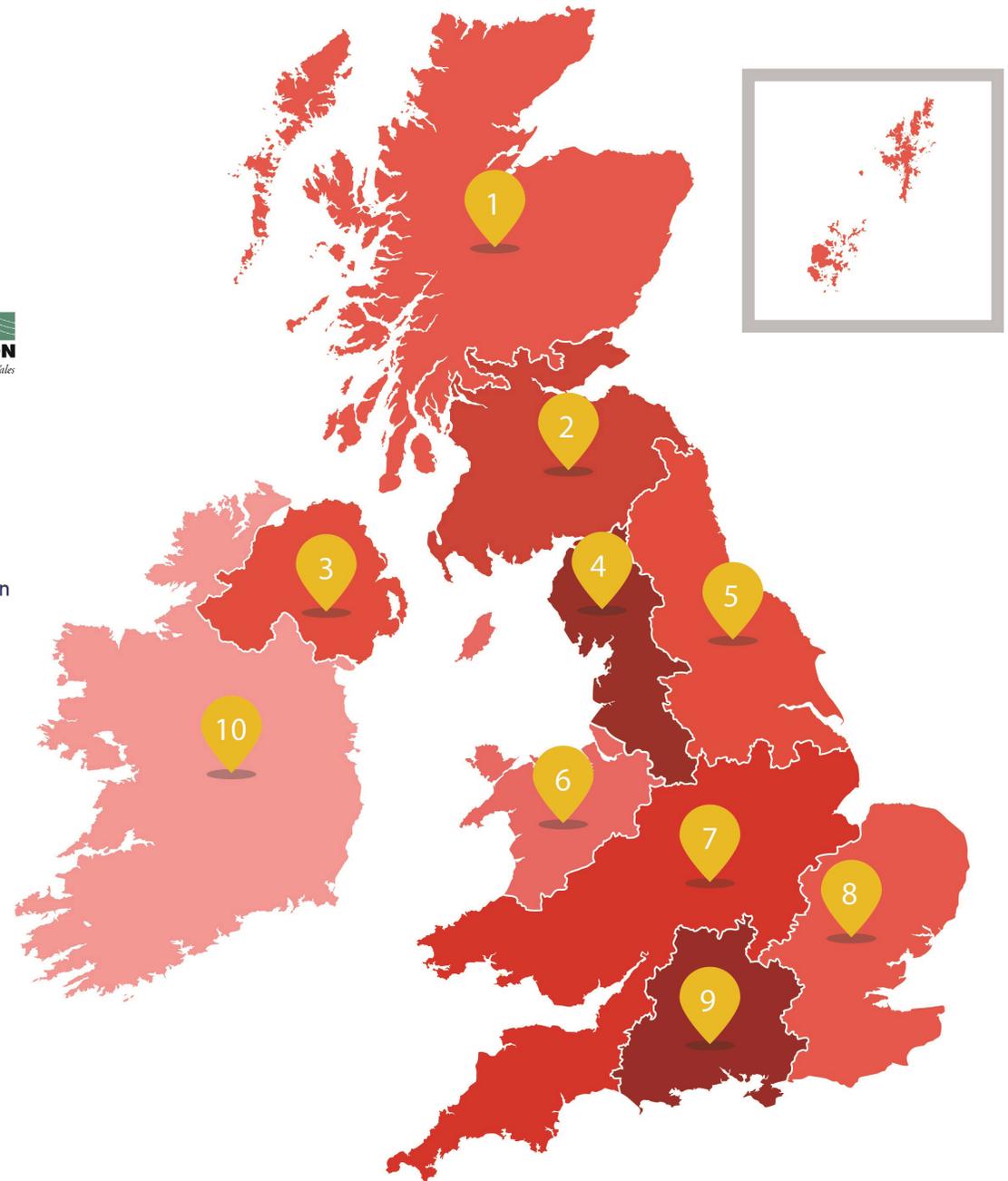
- > [Scottish and Southern Power Distribution - Community Connections](#)

Our DNO members are keen to make connecting to their networks as straightforward as possible, which is why we have worked with Regen SW to produce this guide. Regen is an independent not-for-profit organisation that uses its expertise to work with industry, communities and the public sector to revolutionise the way we generate, supply and use energy.



Introduction

Electricity Distribution



Introduction

Getting a community energy scheme up and running

There are a number of tasks involved in getting a community energy scheme up and running, of which getting an electricity connection is just one.

To be reading this guide, you've probably made a lot of progress already and have an idea of what you want to achieve. But if not, the [Community Energy Hub](#) website is a good place to start. You will clearly be dealing with a range of issues in parallel with applying for an electricity connection, so here are some tips to help.

Tips

Are you looking for funding for your initiative?

In England, take a look at the [Rural](#) or [Urban](#) Community Energy Funds. In Wales, look at Ynni'r Fro and The Community Energy Fund. In Scotland, the Community And Renewable Energy Scheme (CARES) is available.

Do you need more volunteers, technical or business planning support?

Community Energy [England/Scotland/Wales](#) will be able to point you in the direction for further support. Regen SW runs a free community energy accelerator programme in the UK which offers bespoke support and a network of over 200 community energy groups sharing learning.

Do you need help setting up as a legal entity or undertaking a share issue?

There is a list of organisations that can help communities in the [Shared Ownership Taskforce](#) report.

Does the opportunity of shared ownership with a commercial business interest you?

Regen SW has a Grid and Communities Collaboration service which could help you to establish a viable partnership.

Do you need to find a MCS certified installer or a consultant?

Have a look through the [national directory](#).

Do you need planning consent?

Speak to your local planning authority about whether you need to obtain planning permission.



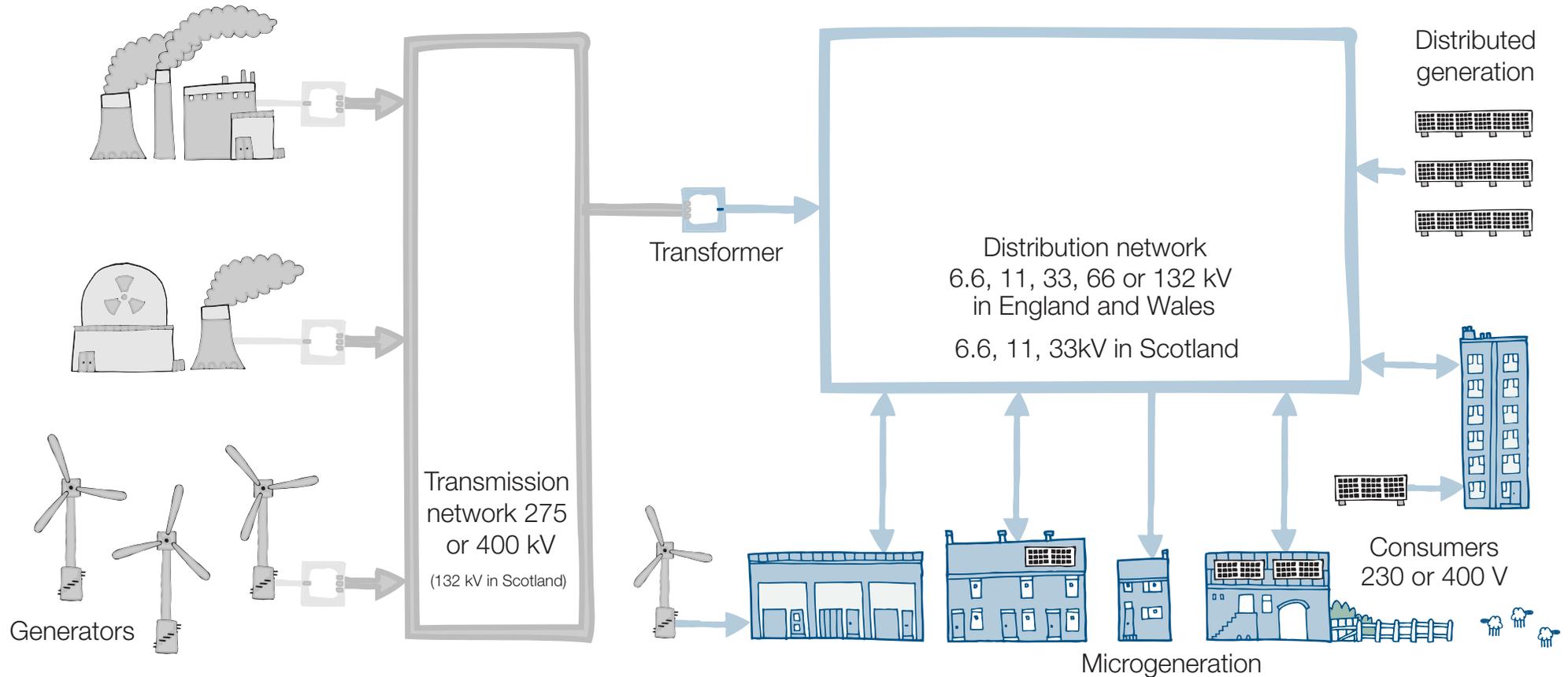
Introduction

Introduction to the electricity network

In general, electricity flows from the power stations into the transmission network, run by the National Grid, which transports electricity over long distances at a high voltage (275 kV or 400 kV in England and Wales) (132 kV, 275 kV or 400 kV in Scotland). It then flows into the distribution network, run by Distribution Network Operators (DNOs), to loads, such as homes and businesses. The voltage is reduced in the distribution network to be able to supply loads (from 132 kV down to 230 V in England and Wales) (from 33 kV down to 230 V in Scotland).

An increasing number of smaller generators feed energy into the distribution network (only the very large schemes connect to the transmission network). They are known as Distributed Generation (or DG). They can range from microgeneration installations on homes and businesses up to megawatt-scale schemes.

The picture below illustrates how the electricity network operates.



Introduction

Introduction to the electricity network (continued)

Distributed generation can connect to the network through:

- > an existing supply line to your house or business
- > a modification to an existing connection
- > a new connection.

The connection may be to single phase or three phase distribution lines: single phase supply is used for light loads such as household lighting and heating; whereas three phase electric power is used for heavier loads, distribution and transmission. Schemes larger than 50 kW would generally be connected to three phase.

The electricity network was not designed to support high levels of distributed generation and so the increase has introduced new challenges. For instance, it can:

- > Make the power flow in the distribution network more dynamic and unpredictable, which can cause:
 - Thermal limits¹ to be exceeded
 - Reverse power flows²

- > Contribute to fault levels³ and cause the network to exceed safe levels if it is already close to its fault level limit
- > Effect power quality⁴ limits from distorting the shape of the voltage waveform, for example by increasing the levels of harmonics.

To make sure your DNO avoids these problems, it's important that they look at what impact your project may have on the network and, where necessary, carry out reinforcement work to protect the system and existing customers.



¹ Thermal limit – the maximum reliable capacity of the cable determined by the heating effect caused by electrical losses.

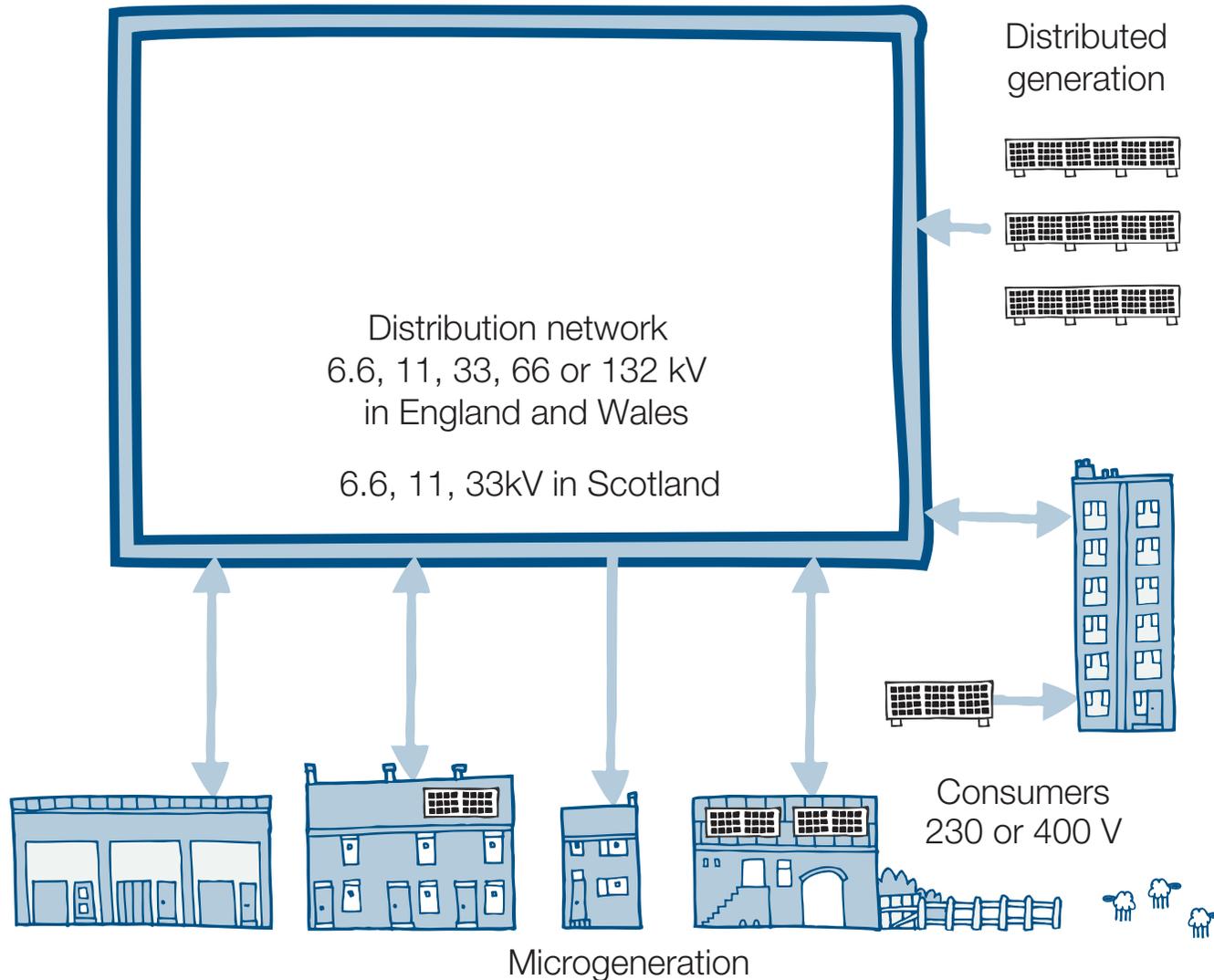
² Reverse power flows – the flow of energy in the opposite direction from consumers, i.e. back up the network.

³ Fault levels – the highest electric current that can exist in a particular electrical system under short-circuit conditions.

⁴ Power quality – the quality of the voltage, which determines the fitness of electrical power to consumer devices.

Introduction

Is there capacity available?



In places, the electricity network is now constrained or at capacity due to the amount of distributed generation that has been connected. It is still possible to get an electricity connection, but it might take longer and be at a higher cost due to the need to modify or reinforce the network.

If work is required on the network before you can connect, there may be a one-off charge depending on your requirements, which may include:

- > Cost of modifying an existing part of the network.
- > A portion of the cost of reinforcement to increase the electrical capacity of the network.

The cost of your connection will depend on the location, size of your project and specific constraints in your local area. Your DNO will set out any costs in your connection offer.

If these costs make your project unaffordable, you may want to consider a 'flexible connection'. These allow DNOs to temporarily reduce your capacity, known as curtailment, at times when the network is under pressure. You will need to weigh up the pros and cons as your connection cost could be lower, but you may not be able to export as much electricity.

You may also want to explore other innovative solutions – see over the page for further information.

Introduction Innovation

For sites where the network is full and the cost of connection is prohibitive it is worth exploring innovative solutions. These could include:

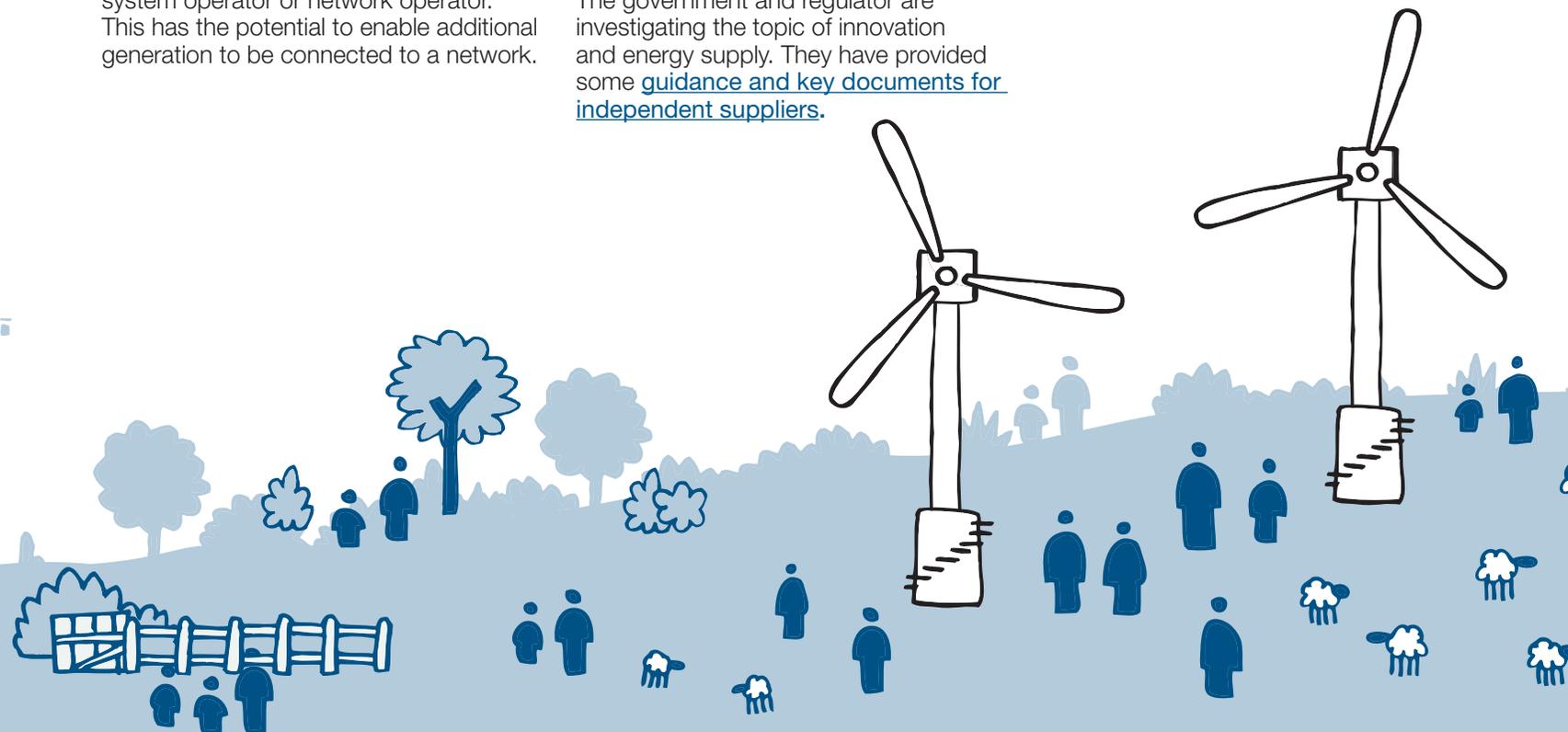
- > A private wire linking to local demand. Balancing and export limiting technology may be required
- > Energy storage alongside intermittent renewables, such as solar and wind, to reduce peak output and the capacity required
- > Demand side response where consumers adjust the amount of electricity they use at particular times in response to a signal (i.e. either a control signal or price signal) from a supplier, system operator or network operator. This has the potential to enable additional generation to be connected to a network.

The role of the above and other smart technology options is yet to be fully realised. The commercial viability of such technologies is dependent on the specific scheme.

Community groups have a role to play in managing demand and the local supply of energy. [The Local Supply: Options for selling your energy locally](#) paper provides more detail.

There is a full list of past and present projects looking at ways to make the electricity distribution and transmission networks smarter at the [ENA Smarter Networks Portal](#). Some of these projects include community groups as partners.

The government and regulator are investigating the topic of innovation and energy supply. They have provided some [guidance and key documents for independent suppliers](#).



Introduction

Shared Ownership

There is a voluntary protocol¹ from government that encourages developers of larger projects² to work with communities and offer some form of local ownership or income. The government has reserved powers to legislate for shared ownership of new renewable energy schemes. There are three main models of shared ownership:

- > Joint venture – the community group and developer set up and part own a specific organisation³ which is used to develop the scheme
- > Shared revenue – a proportion of the income is paid to the community
- > Split sites - in April 2015 new measures under the Feed-in Tariff (FIT) were introduced in order to support community energy. One of these proposals allowed a new shared ownership model to be initiated with the potential for two new projects, up to 5 MW each, to share one network connection and meter connection point (MPAN⁴) and receive separate tariffs – providing at least one of the sites is owned by a community organisation.⁵

The process for connecting split sites to the network is not standardised between the DNOs. If a developer already has a connection offer for a site that it then decides to split with a community, it may need to choose between either applying for two separate connections and going back to the beginning of the queue, or having one point of connection with two ‘pseudo’ MPANs on the other side of the meter. Contact your DNO to find out what the application process is.

More detail is available in the [DECC guidance](#).

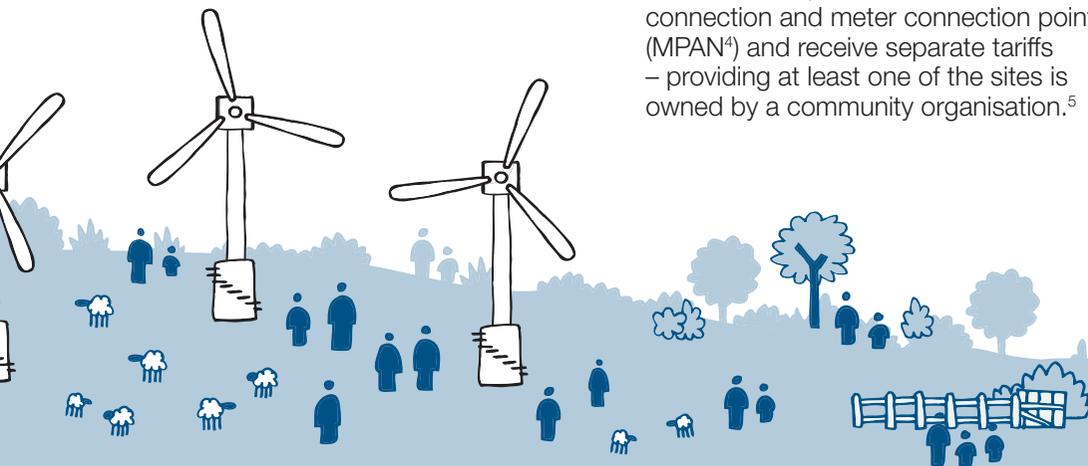
Case study – split sites

Braydon Manor solar farm

Wiltshire Wildlife Community energy raised £5.6 million to build a community-owned solar array near Swindon, Wiltshire, alongside a privately owned solar farm. Working with Mongoose energy and the delivery partners of Public Power Solutions and Solarcentury, the costs of installation were lower, due to the potential for cooperation between the community and private developer.

Capacity: 5 MW community-owned and 4.1 MW privately owned (9.1 MW in total)

Benefits: enough energy for 1400 homes; save 2500 tonnes of carbon a year; and local community ownership.



¹ [Shared ownership voluntary protocol](#)

² Defined as those projects above £2.5 million in capital value

³ This is normally called an Special Purpose Vehicle (SPV)

⁴ The MPAN (Meter Point Administration Number) is the unique identifying number for an electricity meter.

⁵ A ‘community organisation’ is classed as one of the following: a community interest company; a community benefit or co-operative society; a charity; or a subsidiary wholly owned by a charity, where the subsidiary has 50 or fewer employees and the parent charity has 50 or fewer employees.

Introduction

How to use this guide

The way your DNO deals with applications fall into a number of categories:

- > Connecting microgeneration
- > Connecting large scale microgeneration
- > Connecting major schemes.

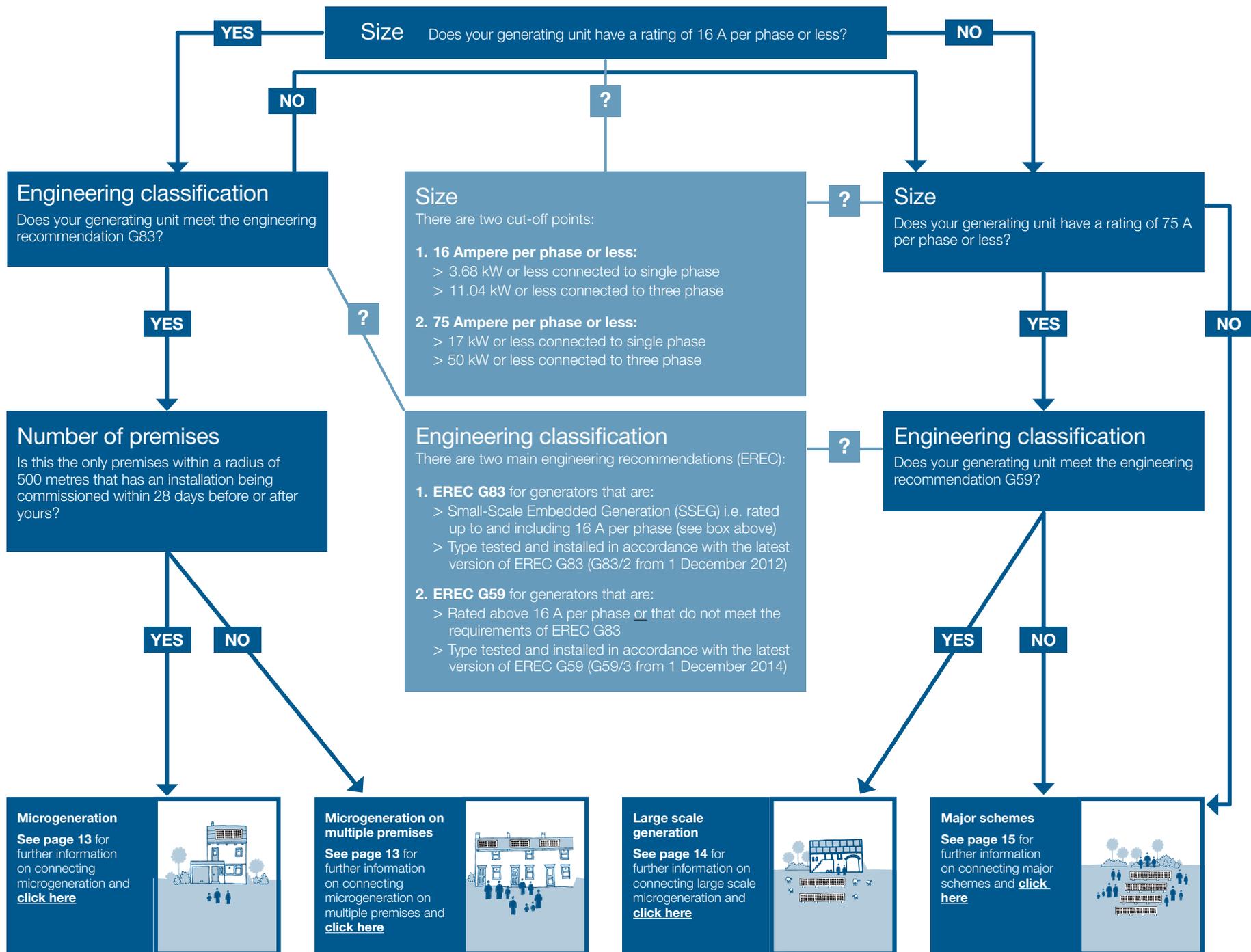
The size of your scheme and the engineering classification of your technology determine which application process you should follow. The cut-off points for the size and the different engineering classifications are explained in the central boxes on the following page.

Follow the flow chart below to find out which application process applies to your project and what section of the guide is relevant to you.

The following sections then set out the steps you need to take to apply for an electricity connection.

And don't forget the glossary at the back for any terms you don't understand – see pages 24-25.





Applications for microgeneration

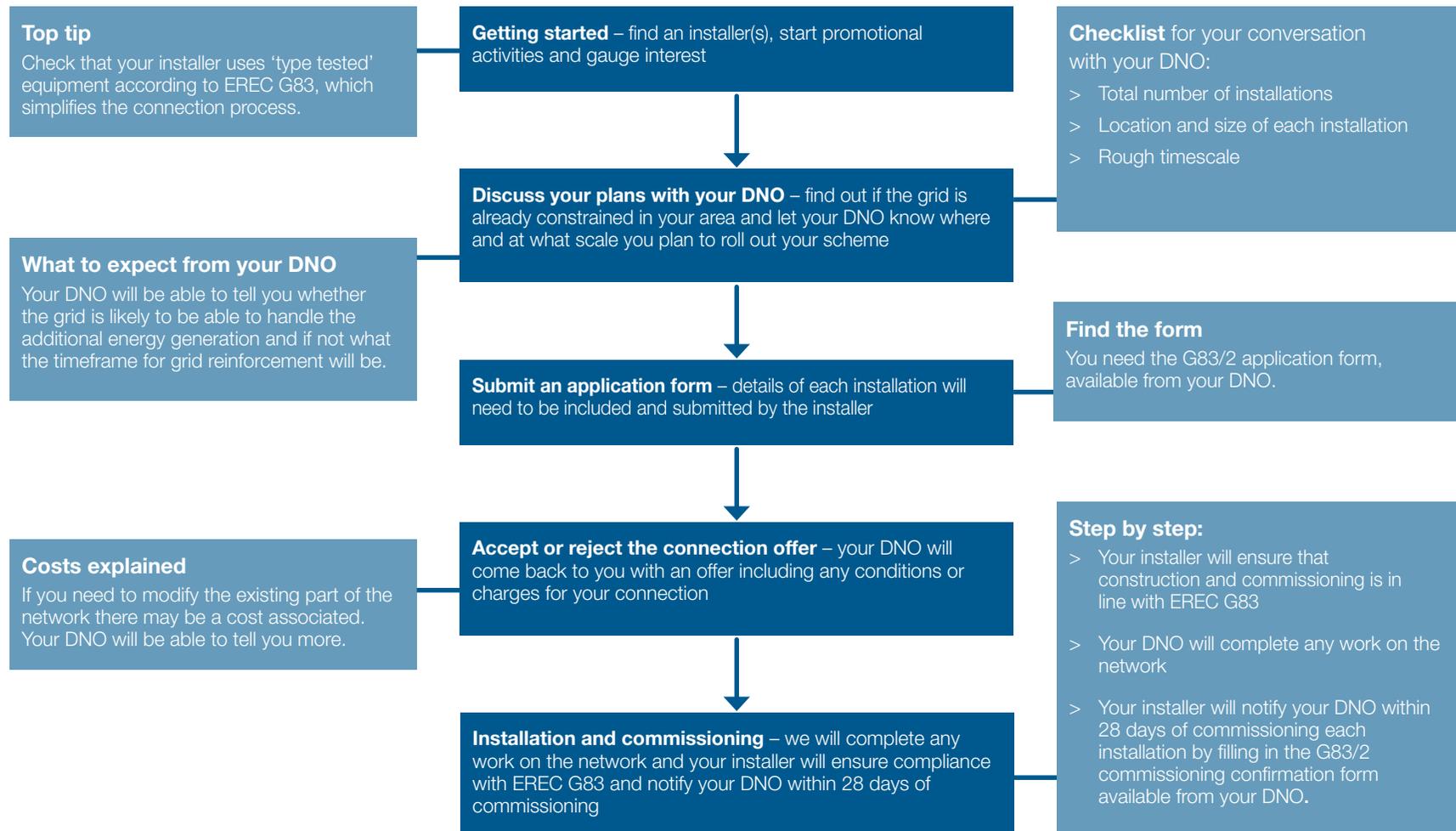
Many community energy groups have supported the installation of small scale renewable energy generation on homes and commercial buildings through information campaigns and bulk buying schemes.

For a single premises the installer is responsible for liaising with your DNO. It is useful to be familiar with the process.

When more than one microgenerating unit is installed within a 28 day period in a local area, it is important that your DNO checks it will not put too much pressure on the local grid network. Which is why you have to get approval from your DNO before you can connect.

The installer you use is responsible for completing the G83 multiple premises connection application form and liaising with your DNO, but it is important that you discuss your plans with them as early as possible, to be aware of the process and to pre-empt any problems.

Getting connected



Applications for large scale microgeneration

Larger microgeneration installations fall under the G59 simplified application process. For example, a large domestic solar PV system (over 3.68 kW or about 18 panels) on single phase or a large agricultural or commercial solar PV system (over 11 kW or about 54 panels) on three phase would fall into this category.

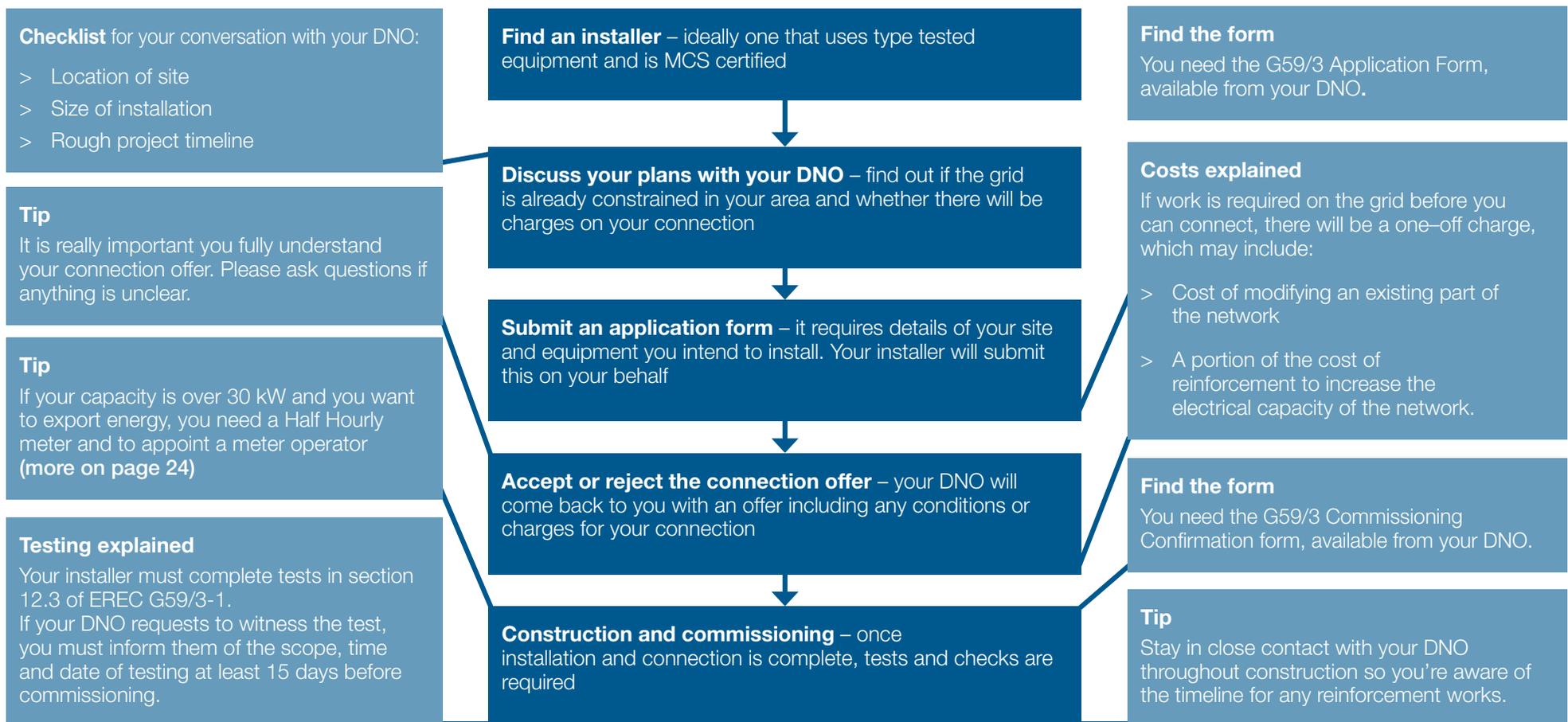
If you are not sure which process is right for you, go back to page 12.

This may apply to installations on community buildings and small commercial sites that are funded through a community share offer. The installation may be building-mounted or free-standing, and could be up to 17 kW on single phase or up to 50 kW on three phase.

See the next page for the main tasks for getting connected.

This section is relevant to installations that meet all of the following criteria:

- > Type tested according to EREC G59/3 or G83/2
- > A total rating of up to 75 A per phase
- > The connection requires a minimum amount of network extension



Applications for major schemes

More and more communities across the UK are recognising the benefits of investing in and building community owned energy generation projects. The Feed-in Tariff has been a highly successful policy for incentivising community energy projects up to 5 MW and larger projects are likely to come forward as the ambitions of community energy groups grow and shared ownership with industry becomes commonplace (see page 10).

The application process for larger projects is more complex and can take longer. Major schemes fall under the G59/3 standard application process. If you are not sure which application is right for you, go to page 9.

You can find more detailed information about the connection process in the Electricity Network Association guides available at www.energynetworks.org (see page 12).

This section is relevant to installations that either:

Have an aggregate rating of over 75 A per phase

or

have not been type tested according to EREC G59/3 or G83/2.

The main tasks for getting connected are shown below with more detail on the following pages:

Pre-application – project planning; information gathering; discussions with your DNO (see page 16).

Application – submit formal connection application and we will prepare connection design and connection offer (see page 17).

Connection offer – assess options and conditions and accept or reject connection offer for either the DNO-only or ICP works options (see page 18).

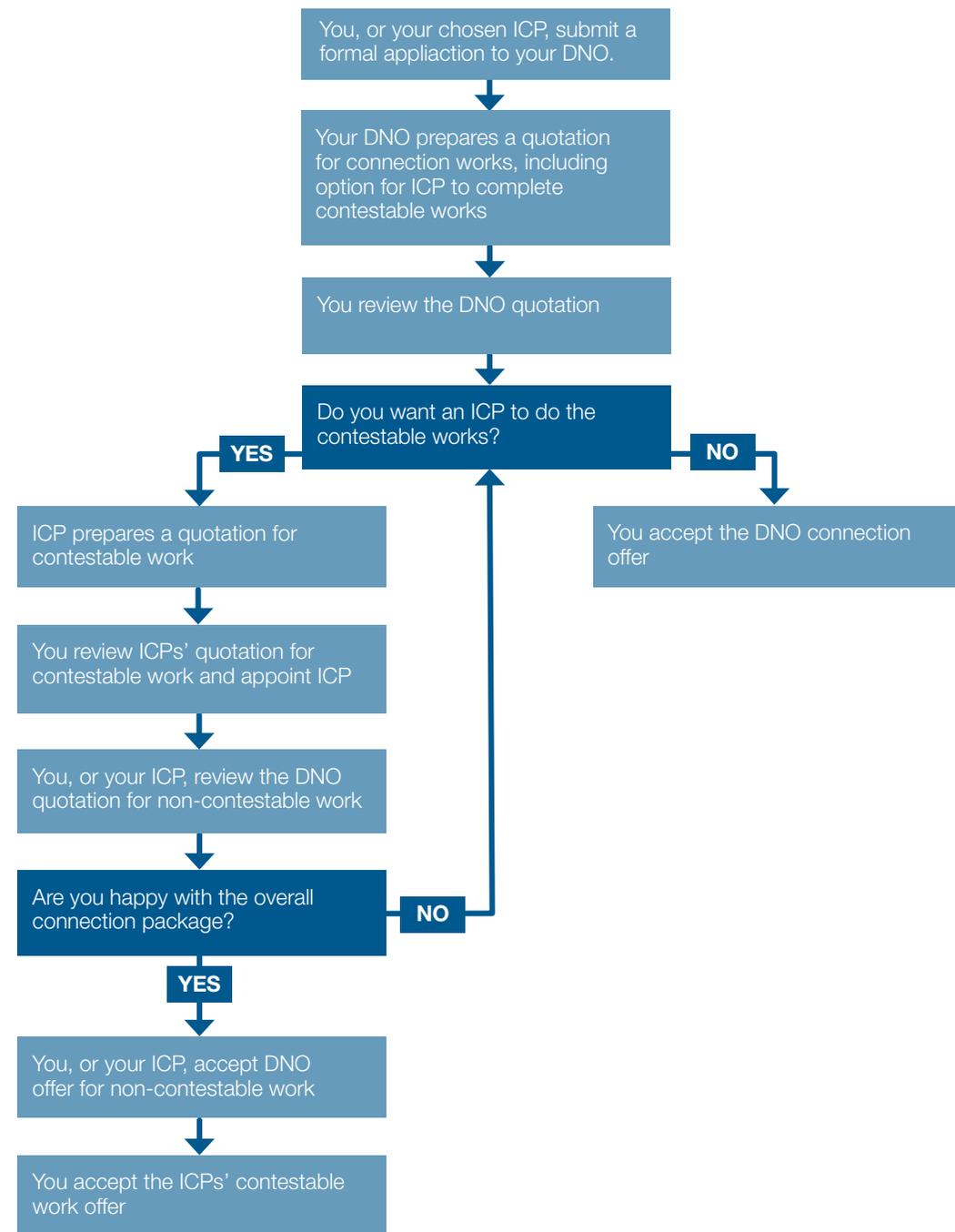
Legal considerations – contracts; wayleaves, easements and land rights (see page 20).

Construction and commissioning – connection infrastructure construction; testing and commissioning of equipment (see page 21).

Applications for major schemes

Pre-application

- > Consider whether you have the time and resource to go through the application process yourselves, or whether you need the help of external consultants to get you through. If you have partnered with a developer, they will probably handle the application process in-house
- > Look at the generation capacity maps (if available) online to get an idea of whether your DNO will be able to connect your project without expensive reinforcement work. You can find them your DNOs website – see page 3 to identify your DNO.
- > Discuss your plans with your DNO at an early stage. They can talk about:
 - How close your proposed project is to the network and whether there is any 'spare' capacity
 - The process of applying and connecting to the network
 - The choices you will need to make about who will carry out any connection works and the type of connection you go for.
- > Some DNOs offer an initial budget estimate to give you an early indication of cost. This may be worth exploring.
- > Decide who will construct the connection. Some of the work is non-contestable¹ and some is contestable². You will need to decide whether to appoint an Independent Connection Provider (ICP) to do the contestable work or whether you'd like your DNO to do it all – this will affect the connection process. The flow diagram (on the right) might help you decide.



¹ Non-contestable – work must be carried out by your DNO and is not open to competition.

² Contestable – work is open to competition and can be conducted by ICPs.

Applications for major schemes

Application

- > Submit a formal connection application online or offline. Further details are available on your DNOs website.
- > You may need support from your DNO or a consultant to help you complete the form, which requires comprehensive data about your generating equipment and its location.
- > If you are not sure whether you want the DNO to do all the work or an ICP to do the contestable elements, then you can submit an application and the DNO will provide a convertible offer so that you can choose either option. Alternatively you can ask an ICP to liaise with the DNO on your behalf.

Information checklist

- > Contact details and site address
- > Whether you need a budget or a formal offer
- > A site layout plan showing where the connection is required
- > The capacity of the connection
- > Export and import capacities
- > Any special equipment characteristics



Applications for major schemes

Connection offer

Once you have applied, your DNO will carry out a number of studies to assess the impact of your generation on the network, which may include looking further up the system at higher voltage levels, at the direction of flow of energy from your generating project, and at the impact on fault levels.

Industry regulations require all DNOs to provide you with a quote within the following guaranteed timescales:

For both contestable and non-contestable work:

- > 45 working days for LV¹ generation
- > 65 working days for HV² and EHV³ generation.

For non-contestable services only:

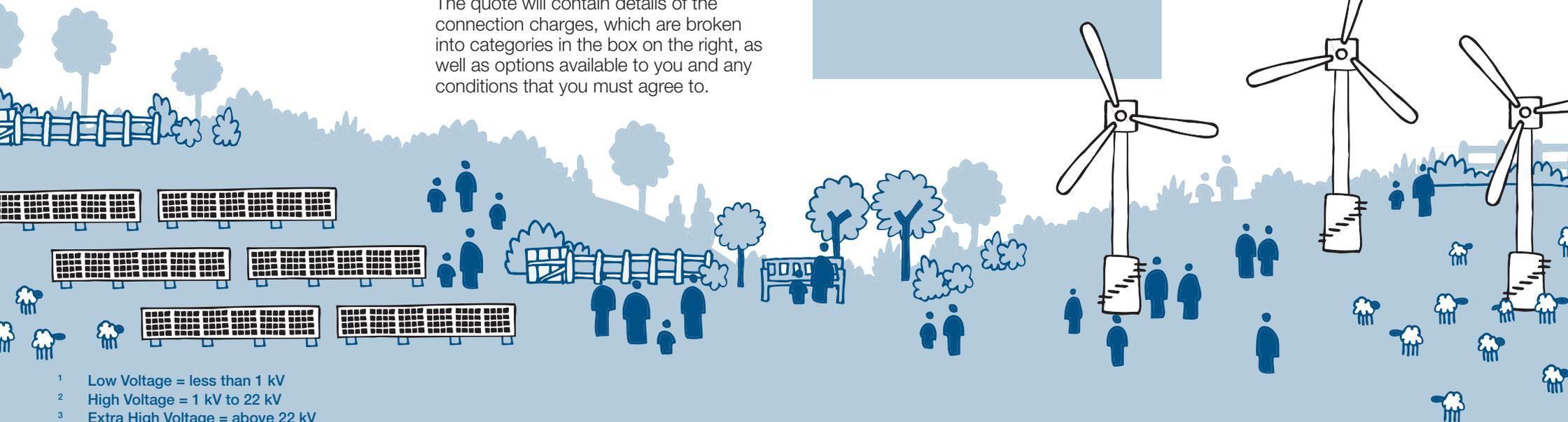
- > 30 working days for LV generation
- > 50 working days for HV generation
- > 3 months for EHV generation.

The quote will contain details of the connection charges, which are broken into categories in the box on the right, as well as options available to you and any conditions that you must agree to.

Connection charges

The cost of connection can be broken into three categories:

1. New infrastructure for the equipment to connect your generating project (the point of supply) to the point of connection to the network. These are sole use assets and so are paid for by you in full
2. Reinforcement of the existing network to increase the electrical capacity and enable the flow of electricity onto the network. You will pay a portion of this cost
3. Recovery of costs from previous works carried out for other connections.



¹ Low Voltage = less than 1 kV
² High Voltage = 1 kV to 22 kV
³ Extra High Voltage = above 22 kV

Applications for major schemes

Connection offer

There are several options that you will need to consider:

- > If you have asked your DNO to quote for both the contestable and non-contestable work, you will need to decide if you will accept the quote for all connection works or whether you would like an ICP to carry out the contestable works
- > If your connection requires expensive reinforcement work, it is worth considering a 'flexible connection'. This allows your DNO to temporarily reduce your capacity, known as curtailment, at times when the network is under pressure. See the box on the right for more information. You will need to weigh up the pros and cons as your connection cost could be lower, but you may not be able to export as much electricity
- > When your DNO has more than one application for a connection to the same part of the network, the applications become interactive connection applications¹. If this happens, your DNO will let you know in writing along with your position in the queue and the process for accepting interactive connection offers.

Flexible connections

Timed – available across some network areas – contact your DNO to find out more. Your DNO will give you an operating schedule that says when you can generate and at what capacity, based on predictable loads and generation patterns.

Soft-intertrip – available in across some 'non-complex networks', contact your DNO for specifics. Through real-time monitoring of specific assets or limits, your DNO can reduce your generating capacity at times when the asset is under pressure or the limit is close to being exceeded.

Active Network Management (ANM) – being rolled out in a few 'complex networks', contact your DNO for specifics. ANM allows real time monitoring of all the limits on the network and allows your DNO to allocate the maximum amount of capacity to you based on the date your connection was accepted within the area. For more detail please refer to the [ENA Active Network Management Good Practice Guide](#).

¹ Interactive connection applications – when two or more applications for connection are made that make use of the same part of the existing or committed network or otherwise have a material operational effect on that network.

Applications for major schemes

Legal considerations

There are a number of agreements and contracts that need to be put in place before your DNO can connect your generation to the network. You may wish to seek professional advice if you are in any doubt.

- > You, or your ICP, will have 90 days (may vary so check with your DNO or ICP) to formally accept the connection offer, as long as it does not become interactive.

The offer then becomes the contract between you, or your ICP, and your DNO to meet the terms, conditions and payments specified.

- > You will also be required to enter into a connection agreement with your DNO. This is the lifetime agreement for the connection once it is energised and includes our rights and obligations to one another. For instance, you will be required to comply with the Distribution Code (see www.dcode.org.uk for more information).

- > Where the connection works are carried out by an ICP, an adoption agreement is put in place for your DNO to adopt the assets constructed and will be between either:

- Your DNO and you
- Your DNO and your appointed ICP
- Your DNO, you and your appointed ICP

- > When the equipment required to connect your generation to the network (e.g. cables, substations) is on someone else's land, your DNO or ICP will need to secure land rights through an easement¹, wayleave² or land transfer³ for the asset over the long term. Your DNO or ICP may also require consents for overhead lines, environmental restrictions and planning.



¹ Easement – a right to cross or otherwise use someone else's land for a specified purpose.

² Wayleave – a right of way granted by a landowner.

³ Land transfer – transfer of ownership from the landowner to your DNO.

Applications for major schemes

Construction and commissioning

- > Stay in touch with your DNO and your ICP (if you have one) during the construction phase. It is essential that your DNO is working to the same timelines and that all work meets the required standards.
- > Once construction is complete, it is your responsibility to carry out full commissioning tests which your DNO may need to witness. You need to:
 - Provide your DNO with detailed information about the test scope at least 15 working days before the proposed commissioning date
 - Submit registered data¹ to your DNO
 - Put commercial arrangements in place and keep your supplier informed of when you expect to start generating
 - Make sure you have metering arrangements in place (see the box on the right)
 - Send your DNO a completed commissioning form within 30 days of completing the commission tests. This is called the G59/3 Commissioning Confirmation Form and is available on our website.

Checklist of other tasks

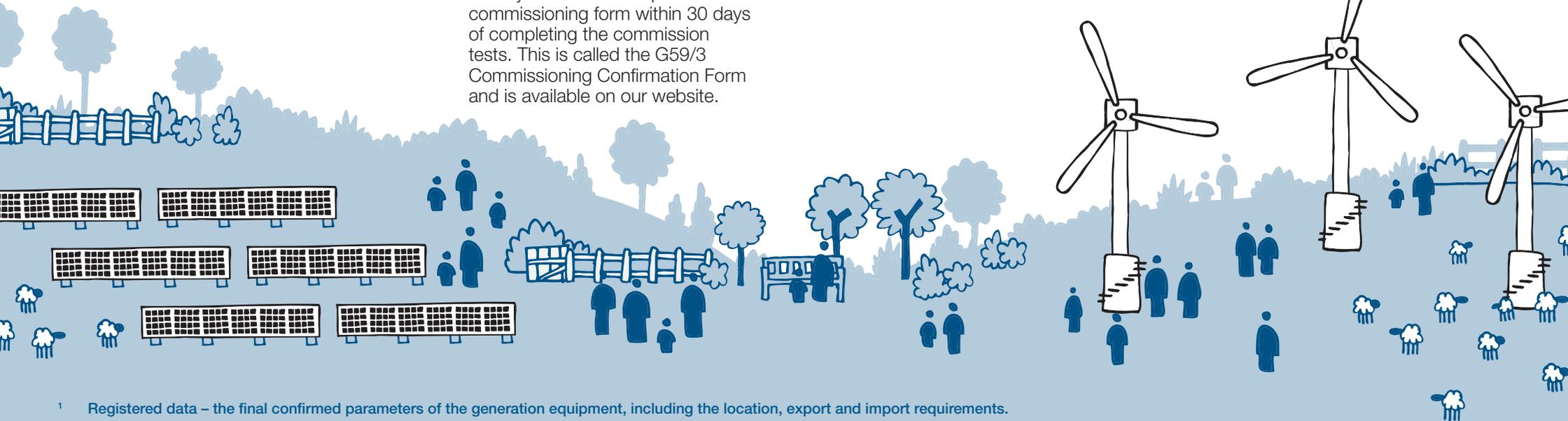
Whilst your DNO (or your ICP) are constructing your connection, you should be:

- > Completing the construction of your generation project
- > Working with your DNO or ICP to negotiate easements or wayleaves
- > Appointing a meter operator (see box below)
- > Finalising negotiations with a supplier who will purchase your energy

Metering explained

There are two categories of meter:

- > Non-Half Hourly (NHH) for generation less than 30 kW. It is the responsibility of the supplier to appoint the meter operator and collect the data
- > Half Hourly (HH) for generation over 30 kW. You must appoint a meter operator. See the Association of Meter Operators for a list of accredited providers and further information on the services they can provide.



¹ Registered data – the final confirmed parameters of the generation equipment, including the location, export and import requirements.

Frequently Asked Questions

What is the electricity network and how does it work?

The transmission network transports electricity over big distances at high voltage (275 kV or 400 kV in England and Wales) (132 kV, 275 kV or 400 kV in Scotland) from large generators and is managed by National Grid. The distribution network links to the transmission network and manages the flow to domestic and commercial users and smaller generators at lower voltage (from 132 kV down to 230 V in England and Wales) (from 33 kV down to 230 V in Scotland). To generate or use electricity you need a connection to the distribution network which is managed by a number of Distribution Network Operators (DNOs). See page 5.

Who is my distribution network provider?

There is a list of contact details for all the different DNOs [here](#).

Who do I contact to get a quote for network connection?

Your Distributed Network Operator (DNO). There is a list of contact details for all the different DNOs [here](#).

Who can carry out the grid connection work?

There are elements for the work known as 'non-contestable' which must be carried out by the DNO and there are parts of the connection for a scheme, known as 'contestable works', that can be carried out by an Independent Connection Provider (ICP). See page 16.

How do I find an Independent Connection Provider?

An Independent Connections Provider (ICP) is an accredited company that is entitled to build electricity networks to the

specification and quality required for them to be owned by either a DNO or an IDNO. You can find a list of registered ICPs [here](#).

At what stage in a project should I think about applying for a network connection?

At the earliest possible stage. There may be limited available network capacity in your area, which could shape your project. The DNO is obliged to provide a connection to you, but the cost may be prohibitive if there is no available capacity and reinforcement work is required. Contact your DNO to find out more.

How do I find out if there is any network capacity in my area?

Some DNOs have provided capacity maps, or 'heat maps', for the areas they cover that give an indication of available capacity. Otherwise you will need to contact your DNO directly for more information.

What size system can I develop at my site?

This will depend on what the network can take on the site, the subsidy environment, the technology of choice, the local planning situation, finance available and the use of innovative technology options.

What is the process to gain a network connection?

- > Apply for your connection to your DNO
- > Your DNO (and/ or ICP) will provide a quotation.
- > Accept the quotation and arrange payment
- > Your DNO (and/ or ICP) will notify you and complete the works
- > A new Meter Point Administration Number (MPAN) is provided which is used by your energy supplier to fit a meter

See page 9 for a detailed process.

What role does a community group have in the process of gaining a network connection offer?

Community groups can complete the process themselves or use specialist knowledge from an installer or consultant.

What do I need to get a network connection quotation?

- > Contact details and site address
- > Do you need a budget or a formal offer?
- > A site layout plan showing where the connection is required
- > The maximum capacity of the connection
- > The type e.g. demand or generation
- > Any special equipment characteristics

How long does the process take to get a quotation?

There are specific timescales to limit time taken to provide quotation with compensation if deadlines are missed your DNO (or ICP) will then advise how long the work will take.

What can I do if the connection offer is too expensive?

First, ask your DNO if they offer flexible connections and if they do, to provide you with a quote and further information. Secondly, ask if you could be eligible for an innovation trial. And thirdly, talk to your local community energy support organisations (e.g. Community Energy England/Scotland/Wales) to explore funding and trial opportunities.

Frequently Asked Questions (continued)

What are the cost implications of gaining a network connection offer?

The quotation for works for the project in question is free of charge. If you choose to accept the quote then you will have to cover the cost, which can be via scheduled payments in some instances. See page 18.

How do I apply for a split ownership project?

There is no set procedures on how DNOs should approach this new model of application. See page 18. Please talk to your local DNO directly.

How long is my connection offer valid for?

There are varied lengths depending on your project and the area you are applying in. Your quotation will contain this information.

Can a network connection offer be transferred to another organisation?

In the majority of cases that is not possible.

How long will the network be full in a particular place?

Details of any network reinforcement work planned will be contained within a quotation from your DNO.

Who do I contact if I have a complaint about my DNO?

If you have a complaint or enquiry about a network operator you should contact them directly in the first instance. When you contact them, explain the issue and ask them to resolve it. If the complaint is not resolved to your satisfaction, you can refer it to Ofgem. See Ofgem's guidance on determination of disputes [here](#).



Glossary

Active Network Management (ANM)

– The use of distributed control systems to continually monitor all the limits on the network, along with systems that enable the correct level of generation to meet demand.

Adoption Agreement – An agreement which sets out the terms and conditions for the DNO to adopt assets which have been constructed by an ICP.

Connection offer – A formal offer from the DNO containing terms, conditions and charges for the DNO to make the connection. Issued either to you or the ICP where applicable.

Connection Agreement – An agreement between you and the DNO detailing terms and conditions for connecting to and remaining connected to the DNO's network.

Contestable – Work that is open to competition and can be conducted by Independent Connection Providers (ICPs).

Community energy – Community projects or initiatives focused on reducing energy use, managing energy better, generating energy or purchasing energy, with an emphasis on community ownership, leadership or control where the community benefits.

Curtailement – A temporary reduction in electricity generation imposed on the generator.

Distribution network – A system of electricity lines and equipment that connects the transmission system and distributed generation to end users. In England and Wales the distribution systems are the lines with a voltage less than or equal to 132 kV. In Scotland this is 33 kV and below.

Distribution network operator (DNO) – The DNO owns, operates and maintains a distribution network and is responsible for confirming requirements for the connection of distributed generation to that network.

Distributed generation (DG) – A generating scheme that is connected to the distribution network.

Engineering recommendations (EREC) – The technical standards developed by the Energy Network Association.

Fault level – The highest electric current that can exist in a particular electrical system under short-circuit conditions.

Harmonics – Distortions to a current or voltage wave shape. Harmonic frequencies in the power grid are a frequent cause of power quality problems.

Independent Connection Provider (ICP) – Companies that have the necessary accreditation to provide new connections in competition with the DNOs. See the [Lloyds Register website](#) for a list.

Interactive connection applications – When two or more applications for connection are made that make use of the same part of the existing or committed network, or otherwise have a material operational effect on that network.

Meter Point Administration Number (MPAN) – When a new connection to the grid is created your DNO will provide you a new MPAN number which your electricity supplier will need in order to install a meter.

Non-contestable – Work that must be carried out by your DNO and is not open to competition.

Power quality – The quality of the voltage, which determines the fitness of electrical power to consumer devices.

Registered data – The final confirmed parameters of the generation equipment, including the location, export and import requirements supplier meter operator.

Reinforcement – Increasing the electrical capacity of those parts of the network that are affected by the introduction of new generation or demand.

Reverse power flow – The flow of energy in the opposite direction from end users in the network.

Small-Scale Embedded Generation (SSEG) – Defined in EREC G83 as “A Generating Unit together with any associated interface equipment that can be used independently, rated up to and including 16A per phase, single or multi-phase 230/400V AC and designed to operate in parallel with a public low voltage Distribution System”. I.e. up to 3.68 kW on a single-phase supply and 11.04 kW on a three-phase supply.

Special Purpose Vehicle (SPV) – an organisation created to allow a community group and developer to set up and part own a specific scheme.

Glossary

System voltage – The voltage at which the network is operated.

Thermal rating – The current carrying capacity of the cable determined by the heating effect caused by electrical losses.

Transmission network – A system of electricity lines and equipment that connects power stations and substations. In England and Wales the transmission system is rated above 132 kV. In Scotland the transmission system is rated 132 kV and above.

Voltage unbalance, fluctuation or flicker – Deviations in system voltage.

LV – Low Voltage = less than 1 kV networks, i.e. 230/400 V.

HV – High Voltage = networks operating between 1 kV and 22 kV, i.e. 6.6 kV or 11 kV.

EHV – Extra High Voltage = networks operating above 22 kV, i.e. 33 kV or 66 kV.



Energy Networks Association
6th Floor, Dean Bradley House
52 Horseferry Road, London SW1P 2AF

Tel +44 (0)20 7706 5100
Fax +44 (0)20 7706 5101
www.energynetworks.org

 @EnergyNetworks

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