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DISTRIBUTED GENERATION

(PV, Wind, Hydro, Battery)

Connection and Operation of Distributed Generation 10kW or less in total Generation in specified circumstances, any electricity storage

To be read in conjunction with the following:

"Preferred terms and conditions for connection and operation of generation rated at 10kW or less capacity"

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1. Introduction

1.1 What is distributed generation?

Small scale distributed generation (SSDG) is used to describe the equipment used to generate electricity from energy sources such as photovoltaic modules, small wind turbines and micro-hydro schemes. Generally, it is used to supply some or all of the electricity needed for homes, businesses or farms. It may also be possible to put surplus energy back into a utility's distribution network.[1] [2]

1. 1.1 What is Battery Storage

Is any storage medium capable of storing electricity with the means of conveying the electricity into or out of the storage device.

1.2 What happens if surplus electricity is generated?

Surplus electricity may be stored in a battery. Alternatively, you may wish to sell the surplus electricity to an Electricity Retailer. To do this, you will need to be connected to a distribution network. Connection to our network will allow you to use electricity from our network when your generation is insufficient for your needs.

SSDG of 10kW or less will usually be solar powered (photovoltaic panels). Less frequently, it will be wind or micro-hydro generation. In the vast majority of these installations, an inverter will be used to connect the generation to the distribution network.

1.3 Regulations

The Electricity Industry Act 2010 (Act) provides a framework for the regulation of the electricity industry. To promote competition, reliability and efficiency in the industry, the Electricity Industry Participation Code 2010 was established and this is administered by the Electricity Authority (EA).

Section 7(1)(g) of the Act provides that a person, other than a generator, who generates electricity that is fed into a network is an *industry participant*. Distributed generators that are either directly connected to a distribution network, or connected to a consumer installation that is connected to a distribution network, meet this definition. Under section 9(1) of the Act, industry participants must

(a) Register as participants by supplying the EA with the information specified in section 27(2) of the Act

[1] EA Fact Sheet 7: "Small-scale distributed generation"

[2] To provide guidance to both home and business owners who are interested in generating their own electricity, but need more information before going ahead, the EECA has provided the following guide: "Power from the people: a guide to micro-generation" It is directed at the layperson who already has some basic knowledge of micro-generation.

(b) Comply with the Code

1.4 Definitions

In the rest of this document, the following definitions apply:

Act	Means the Electricity Industry Act 2010
Connection assets	means assets such as (but not limited to) lines, poles, transformers, cables, fuses, reclosers or circuit breakers necessary to connect the SSDG to our network.
Code	means the Electricity Industry Participation Code 2010, Part 6, *Connection of Distributed Generation* or any regulation passed in substitution thereof.
EA	Electricity Authority
Requirements	means the requirements referred to in Sections 2.2 to 2.6 of this document.
We, us, our, ours and similar words	means Electra Ltd.
You, your, yours and similar words	means the party wishing to connect the SSDG to Electra Ltd's network.

1.3 Applying for connection

An application for approval is required in advance of connection for both standard Part 1 and simplified Part 1A systems.

The process for connection is set out in the Electricity Industry Participation Code 2010, Part 6, *Connection of Distributed Generation*. Further information is provided in the EA's Guideline "*Connection of small scale distribution generation (equal to or less than 10kW) to a local network*".

Part 1A (Schedule 6.1) of the Code provides for a simplified 1-stage application process. To connect under Part 1A, your SSDG must have be designed, installed, tested and connected in accordance with specified standards such as AS/NZS 4777 and regulations such as the Electricity (Safety) Regulations 2010. This document explains the steps you will need to follow.

This document is based on the EA's Guideline, and where this document is inconsistent or unclear, the Code shall prevail.

(Note: This information does not apply to SSDG systems that are not connected to our network.)

2. Requirements your generation must meet

2.1 Safety requirements

Your SSDG must comply with the Electricity (Safety) Regulations 2010 in relation to generation.

2.2 Technical requirements

Your SSDG must:

- Be designed and installed in accordance with AS/NZS 4777.1:2024 – *Grid Connection of Energy Systems via Inverters – Installation Requirements* except for the voltage compliance level in Section 4.2 where a compliance level of 230V +/- 6% as stated in Electricity (Safety) Regulations 2010 would apply for installations in New Zealand.
- Incorporate an inverter that has been tested and issued with a Declaration of Conformity with AS/NZS 4777.2:2020 – *Grid Connection of Energy Systems via Inverters – Inverter Requirements* by a laboratory with accreditation issued or recognized by International Accreditation New Zealand, or use an inverter approved for our network.
- Have protection and power quality settings that meet the requirements of AS/NZS4777.1:2024 and AS/NZS4777.2:2016.
- Conform with AS/NZS 3000 – *Wiring Rules*

2.3 Operational requirements

Your SSDG must comply with the following operational requirements:

- Your SSDG must include a switch or circuit breaker that **disconnects *and* locks out** if
    - the **mains voltage is lost** on our network.

  This is to ensure that our network is not back-livened from your SSDG which would create a safety hazard for our faults staff.
- **Clear and durable notices** must be prominently posted
    - near the **point of connection to our network**, and
    - at your **switchboard and meter box**

  stating that there is connected generation. This is to warn people of the possibility that your installation could still be live even if the mains have been disconnected.

2.4 Commercial requirements

Your SSDG must comply with the following requirements:

- As we are a lines business and not an energy business (as defined in Part 3 of the Act) we are prohibited from purchasing the energy from your generation.
- You must discuss the options for the sale of the electricity to be produced by your SSDG with your retailer. The retailer will usually enter into a contract with you for the purchase of the electricity once the SSDG has been approved for connection to our network. You may not simply "lose" the energy in our network.
- Authorization must be received from your retailer prior to connection (livening and energization) to our network.
- As a generator, you are responsible for your metering installation. Your electricity retailer can look after this for you. It may arrange for a metering service provider to call and fit a second meter to measure exported energy or a single meter that measures the amount of electricity both imported and exported at your installation.
- Your energy retailer may charge you for the purchase of exported electricity, metering services and data management. Ensure that you request a copy of its tariffs.

2.5 Regulatory requirements

Your SSDG may require one or more of the following classes of consents:

- Resource consent issued by the Regional Council.
- Resource consent issued by the District Council.
- Building consent issued by the District Council.

You may also need to liaise with other agencies such as (but not limited to) Land Transport, Civil Aviation Authority or the Department of Conservation if your SSDG extends into areas like road reserve, flight paths or ecologically sensitive areas. We do *not* provide advice on these matters nor do we issue such consents.

3. Our policy

3.1 Open access network

Our policy for network access is that anyone who meets the applicable safety, technical, operational and commercial requirements and who agrees to pay the applicable charges can connect to our network.

3.2 Funding & ownership of connection assets

Connection of your SSDG to our network may require construction of specific assets, such as a few spans of line, a length of cable or a disconnector. These assets are referred to as connection assets and can be funded and owned in the following ways:

- You install and own these assets at your expense subject to them meeting our usual technical requirements for connection to our Network. This option will require you to take all usual ownership responsibilities and obligations such as planning and building consents, safety, maintenance, fault restoration, land issues and tree trimming.
- You install the assets at your expense and, subject to them meeting our usual technical requirements for connection to our Network, Electra takes ownership over them. This option makes all ongoing responsibilities and obligations for maintenance, fault restoration, land issues and trees Electra's.

3.3 Funding technical modifications

You may also need to pay for any technical modifications such as re-calibration of protection or control equipment.

3.4 Limiting the density of generation

Our network was originally designed to distribute electricity in one direction from large grid substations. Although a single generator less than 10kW probably won't upset the way our network operates, too many separate generators in any one part of our network might (a condition referred to as *"export congestion"* in the Code). We therefore reserve the right to decline an application to connect any generation to our network if we believe that installing generation in that area could interfere with the operation of our network or with our customers' quality of supply. We also reserve the right to approve your application but with limited export capabilities.

Electra currently has an export limit of 5kW for single phase residential customers and 10kW for 3 phase residential customers. Residential inverters can be no larger than 10kW.

3.5 Change of occupancy or ownership

You are responsible for the maintenance of your system to the appropriate standards. Should you sell your property or someone else moves in, it is important that the new owner or occupier understands the requirements for the safe operation of the equipment and its connection to our network.

3.6 Confidentiality of your application

The Code allows us to divulge the broad details (but not necessarily the ownership details) of generation applications to other applicants whose generation might be affected by your generation.

4. Connection process – Part 1 and Part 1A

4.1 Step #1 (your application)

To begin the connection process you must apply in writing. Please use Form 1 at the back of this document and include additional pages as required to specify the following:

1. The ICP Number and address of the location where you intend to connect your SSDG.
2. The make, model and nameplate capacity of your inverter (or a certification that its maximum rating is 10kW or less)
3. The fuel type of the SSDG you intend to connect (solar, wind, micro-hydro, etc)
4. The physical location (i.e. the location of the SSDG within the premises) of the SSDG installation. Is your SSDG a new SSDG or an addition to an existing SSDG? (If your proposed generator is an addition, the rating of your **entire installation** at a single point of connection to our network must be 10kW or less.)
5. The technical specifications of your SSDG and associated equipment.
6. The technical specifications of the equipment that will disconnect your generation from our network if mains voltage is lost or frequency dips below 49.5Hz for more than 2 seconds.
7. Whether your SSDG is 1-phase or 3-phase.
8. Evidence that your SSDG will meet the requirements set out in Sections 2.2 to 2.5 of this document.

Your completed Form 1 will need to be sent to Electra.

4.2 Step #2 (our response to your application)

We are required to acknowledge receipt of an application under Part 1A within two business days of receiving the application. If your application is incomplete we will advise you of the information you will need to include when you reapply.

If your application is correctly completed we must advise you within ten business days whether your application is approved or declined. Broadly speaking we are required to approve your application if it meets the following requirements:

- It is made in accordance with the Code.
- It will meet the requirements set out in Sections 2.3 to 2.5 of this document.

If we decline your application we are required to:

- provide the reasons why your application has been declined, and
- advise you of the steps you can take to ensure that your application will be successful.

If your application is found to be deficient, you must remedy each deficiency no later than ten business days of being notified.

If you disagree with our decision, a dispute resolution process is provided in Schedule 6.3 of the Code.

4.3 Step #3 (your generation is connected)

Before you connect your SSDG to our network, you must test your SSDG. You must also provide us with a comprehensive test and inspection report that includes confirmation that any metering will fulfill its intended purpose.

You must supply us with a copy of the **Certificate of Compliance (CoC)** for the SSDG issued under the Electricity (Safety) Regulations 2010 and an **Electrical Safety Certificate (ESC)** confirming that the installation complies with the Code and is safe to liven.

5. Inspection of Distributed Generation

We may inspect your SSDG that is connected, or is proposed to be connected, to our network for the purpose of:

- verifying that it meets, or continues to meet, the requirements specified in clause 1D of the Code
- verifying the information in your application made under Part 1A of the Code.

If we wish to inspect your SSDG, we will give you at least two business days' notice of the time and date on which the inspection will take place.

Form 1 - Application

Application for connection of distributed generation rated at 10kW or less (4 pages including this page).

1. Applicant contact details

Full name: _____

Street address: _____

Contact number_____

Email: _____

Installer contact details

Company name:_____

Street address: _____

Contact Number:_____

Email: _____

2. Make, Model and Nameplate Capacity of your inverter(s)

Make: _____ Model: _____

Nameplate Capacity of each inverter: _____kW (total must be 10kW or less)

Number of Inverters to be installed: _____

Is it on Electra's approved list? ☐ yes ☐ no

(If no, attach an AS/NZS 4777.2:2020 Declaration of Conformity certificate for the inverter.)

Make, Model and Nameplate Capacity of your Battery Storage

Make: _____ Model: _____

Nameplate Storage Capacity: _____kWH

Maximum charge rate: _____kW

Maximum discharge rate: _____kW

Are you adding to existing generation? ☐ yes ☐ no

Make, Model and Nameplate Capacity of your Array

Make: _____ Model: _____

Size of panel (W):_____ No. of panels:_____

Total generation capacity of array: _____kW

3. Location where you wish to connect your generation to our network (please include a map reference if possible)?

ICP Number (from the power bill for the location): _____

Address: _____

_____

_____

4. Do you wish to connect your generation to;

- ☐ An existing Electra point of connection for which you are the account holder
- ☐ An existing Electra point of connection for which you are ***not*** the account holder
- ☐ A location that will require new connection assets.

5. How many phases is your generation?

☐ 1-phase ☐ 2-phase ☐ 3-phase

6. What is the fuel type of your generation?

☐ Solar PV ☐ Wind ☐ Micro-Hydro

☐ Other (please describe) _____

7. Will your generation be

- ☐ An entirely new installation?
- ☐ An addition to an existing generator? (If it is an addition to an existing generator, the entire installation must be rated at 10kW or less.)

If additional, please enter the details of the existing inverter(s) below:

Make: _____**Model**:_____

Nameplate Capacity of each inverter: _____kW

Number of Inverters installed: _____

8. Please attach the following information. Where possible please use sketches, photo's and photocopies of brochures etc.

- ☐ Brief description of the physical location at the address at which your generation will be connected.
- ☐ Technical specifications of your generator and associated equipment.
- ☐ Technical specifications of the equipment that will disconnect your generation from our network if mains voltage is lost or mains frequency dips.

9. Confirmation that our requirements will be met (attach supporting documentation as necessary).

- ☐ Safety requirements
- ☐ Technical requirements
- ☐ Operational requirements
- ☐ Commercial requirements

10. Confirmation that external regulatory requirements such as resource, planning or building consents will be met (attach supporting documentation as necessary).

- ☐ External regulatory requirements

11. Name of energy retailer who will buy your energy

Company: _____

12. Details of electrical worker who will connect your generation

Name: _____ Registration No.: _____

13. Declaration

In submitting this enquiry I certify that all of the above information and any attached information is true and correct. I also certify that the generation we intend to connect to Electra's network is rated at 10kW or less capacity and acknowledge Electra's full and unlimited right to disconnect our generation should it generate at a rate greater than 10kW or if any part of this inquiry proves false or fraudulent.

I have read, understand and agree to the terms and conditions stated in this form and in the *Terms and Conditions for connection and operation of 10kW or less in capacity*.

Signature of applicant: _____

Email address: _____

Date: _____

Note: a copy of the following certificates must be sent to Electra **no later than 10 business days** after installation:

- **Certificate of Compliance** (CoC) certifying that your generation is electrically safe. This certificate must be signed off by both the licensed electrical worker who installed your generation and a person who is a registered electrical inspector under Part 9 of the Electricity Act 1992 **and** who is competent with distributed generation.
- **Electrical Safety Certificate** (ESC) certifying that the installation is safe to liven.