

## Connection and Operation of Distributed Generation (<10kW)

(For which Part 1A of Schedule 6.1 applies)

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| <b>Company:</b>                  | Scanpower<br>Oringi Business Park<br>Oringi Rd<br>PO Box 157<br>Dannevirke 4942<br>New Zealand |
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# Connection and Operation of Distributed Generation <10kW

## 1. INTRODUCTION

This document has been prepared to assist people who are considering installing and connecting small (10kW or less) distributed generation equipment to the Scanpower electricity network for which the following specific criteria are met:

- It is designed and installed in accordance with AS 4777.1, and
- It incorporates an inverter that has been tested and declared compliant with AS 4777.2 by an accredited laboratory.
- Meets Scanpower's specified protection settings.

Generation that is connected to the local distribution network rather than the national grid is normally referred to as distributed generation. Any consumer depending on their location and their connection to the distribution network can generate and potentially export electrical energy from their installation.

Distributed generation generally relates to generation connected into the low voltage network (400/230 volt) and have a maximum rated output at less than 10kW capacity. It would typically be solar powered, although small wind turbine and micro hydro systems are available.

The connection of distributed generation is regulated by Part 6 of the Electricity Industry Participation Code, and more information is available on the Electricity Authority's website [www.ea.govt.nz](http://www.ea.govt.nz)

If you are planning to install distributed generation equipment that is connected to ScanPower's network and would be capable of exporting electricity into the Scanpower network, at either a new or existing installation, it is preferable that you discuss your intentions with us as soon as possible. This will ensure that any issues can be resolved before you submit a formal application.

Distributed generation must comply with all of the relevant statutory and regulatory requirements and safety standards. It is also essential that the connection of distributed generation to our network does not compromise the safe and efficient operation of the network, the safety of staff or contractors working on the network, or the general public.

This information does not apply to standby or emergency generation that is not capable of being connected to the network.

For information pertaining to larger distributed generation plant, refer to the 'Connection and operation of generation rated at greater than 10kW capacity' document. If your distributed generation does not meet the technical criteria set out in Clause 1D of Schedule 6.1 of Part 6 of the Electricity Industry Participation Code (quoted above), you will need to use the application process set out in the document entitled "Connection and Operation of Distributed Generation (<10kW) for which Part 1A does not apply".

In accordance with clause 6.11 of Part 6, as a Distributor, we will act at arm's length in respect of all distributed generators. We will make consistent efforts in processing and considering applications and notices under Schedule 6.1, irrespective of whether we hold an ownership interest or a beneficial interest in the distributed generator, or the identity of the distributed generator.

### 1.1 DEFINITIONS

**Connection assets** means assets such as (but not limited to) lines, poles, transformers, cables, fuses, reclosers or circuit breakers necessary to connect generation to our network.

**Code** means the Electricity Industry Participation Code as published and updated from time to time on the Electricity Authority's website [www.ea.govt.nz](http://www.ea.govt.nz)

**Fuel** means the primary energy source for your distributed generation, which may include wind, water or sunlight as well as commonly understood fuel such as diesel.

**Part 6** means Part 6 of the Code as published and updated from time to time on the Electricity Authority's website.

**Regulated terms** means the terms and conditions set out in Schedule 6.2 of Part 6.

**Requirements** means the requirements referred to in Sections 2.2 to 2.6 of this document.

**We, us, our, ours and similar words** means Scanpower Ltd.

**You, your, yours and similar words** means the party wishing to connect distributed generation to Scanpower's network.

## 2. CONNECTION REQUIREMENTS

### 2.1 NETWORK CONNECTION ISSUES

Issues for concern of generation connected to our system include:

- Electrical safety of your distributed generation and our network
- The quality of electricity supply on our network
- The capability of our network to absorb any electricity exported from your distributed generation
- Arrangements with an energy retailer to purchase any electricity you export.

### 2.2 SAFETY REQUIREMENTS

Your generation system could pose a serious safety hazard if it continued to export energy into our network during a system fault or a planned outage.

This would compromise the safety measures implemented by anyone working on the network and may also damage your equipment.

There is often a need to de-energise a section of the network to allow maintenance to be undertaken safely. Therefore, it is essential that generation systems capable of being connected to the network have a readily identifiable physical isolation point. This isolation point may be the ICP service fuse that connects your premises to our network. It is preferable that the means of isolation includes a visible disconnection that can be seen from ground level.

All wiring associated with the system must be undertaken by a registered electrician and comply with the following safety requirements.

The following specific requirements are contained in the Electrical (Safety) Regulations 2010.

- AS/NZS 3000 Wiring Rules.
- Various Electrical Codes Of Practice (ECPs).
- The general requirements contained in the Health and Safety in Act 2015.

Systems manufactured to Australian Standard 4777.2 and with protection systems installed in accordance with AS 4777.3 will generally meet our connection requirements.

## 2.3 TECHNICAL REQUIREMENTS

Your generation system must comply with our Network Connection Standard NS 05/05 that is available on our website [www.scanpower.co.nz](http://www.scanpower.co.nz), and the following technical standards:

- AS 4777.2 2002
- AS 4777.3 2002
- AS/NZS 3000.
- The harmonic interference standards specified in NS 05/05.

If your generator will be connected through an inverter, you will need to visit the Approved Inverters sub-page of our website to ensure that your proposed inverter is approved for connection to our network.

## 2.4 OPERATIONAL REQUIREMENTS

Your generation must include a switch or circuit breaker that disconnects and locks out if mains voltage is lost on our network or if the mains frequency dips below 49.5Hz for more than 2 seconds. This is to ensure that our network is not back-livened from your generation 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 has been disconnected.

In the areas of our network protected by auto-reclosing devices, your generator must not attempt to re-connect during the reclosing sequence. This will require an auto-restart delay of 1 minute following restoration of mains voltage.

## 2.5 COMMERCIAL REQUIREMENTS

You must have a contract in place with a retailer for the purchase of the energy you generate or provide evidence that you will be consuming all this energy yourself.

You may not simply “lose” the energy in our network or use our network as a ‘dummy load’, however you can “gift” your electricity to the market by making prior arrangement with an electricity retailer and any metering services provider involved. We are a lines business and not an energy business and we therefore cannot purchase the energy from your generation.

Your energy retailer will need to determine the quantity of energy exported from, and the energy imported into, your installation. This will require additional metering to be installed. This is normally arranged through them.

Your energy retailer will advise you of any meter rental or associated charges.

## 2.6 CODE REQUIREMENTS

You should also download and read the Regulated Terms & Conditions from the Electricity Authority’s website, and understand how those terms and conditions will apply

## 2.7 OTHER REGULATORY REQUIREMENTS

You may also need to liaise with your district or regional council and other agencies to ascertain whether resource or building consents are required. Micro hydro systems may require resource consent from the Regional Council to divert water or alter a waterway, whilst erection of a mast

for a small wind turbine may require planning consent. Scanpower does not deal with building or planning consent issues.

## **2.8 CIRCUMSTANCES UNDER WHICH WE MAY CURTAIL YOUR GENERATION**

- Under conditions similar to the following we may curtail, interrupt or disconnect your generation...If the safe operation of our network, including public safety, requires disconnection
- If, in our opinion, your generation has become technically or operationally unsafe including breaching the specific safety requirements.
- If, in our opinion, your generation is interfering with the notional 50Hz voltage or current waveforms on our network including but not limited to by imposing spikes, surges, sags, flicker, harmonics or creating phase imbalances.
- If we believe you have breached any connection terms & conditions.

We may curtail, interrupt or disconnect your generation without notifying you if technical, safety or operational issues require.

## **2.9 CIRCUMSTANCES UNDER WHICH WE MUST APPROVE CONNECTION OR RECONNECTION OF YOUR GENERATION**

### **2.10 IF WE HAVE INSTRUCTED YOU TO DISCONNECT YOUR DISTRIBUTED GENERATION BECAUSE OF A DEFICIENT APPLICATION, AND YOU HAVE DONE SO, WE MUST CONNECT OR RECONNECT YOUR DISTRIBUTED GENERATION ONCE YOU HAVE REMEDIED ALL DEFICIENCIES TO OUR SATISFACTION WITHIN 12 MONTHS OR NOTIFYING YOU OF THE DEFICIENCIES.NETWORK CONSTRAINTS OR CONGESTION**

Refer to the webpage Network Congestion for the areas of our network that are or are expected to become congested or constrained.

## **2.11 LIMITING THE DENSITY OF GENERATION**

Our network was originally designed to distribute electricity in one direction from large grid substations. Although a single generator of less than 10kW capacity probably won't upset the way our network operates, too many separate generators in any one part of our network might. 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. In the event that we receive more than one application to connect generation to part of our network the Regulations allow us to treat those applications as competing bids for limited capacity as long as we consider the overall purpose of the Regulations.

## **2.12 CHANGE OF OCCUPANCY OR OWNERSHIP**

It is important that any new owner or occupant of a premise involving distributed generation is aware of the safety, technical, operational and commercial aspects. Accordingly you must advise us of any new occupant or owner so we can discuss their obligations with them.

## **2.13 CONFIDENTIALITY OF YOUR APPLICATION**

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

In turn, we may provide you with information about our network that is confidential. If you do not agree to keep any such information confidential, Schedule 6.1 of Part 6 of the Code allows to refuse to process your application.

### **3. NETWORK ACCESS COSTS**

#### **3.1 NETWORK ACCESS**

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

#### **3.2 FUNDING & OWNERSHIP OF CONNECTION ASSETS**

Connection of your generation to our network may require the installation of additional assets, such as a few spans of line, additional conductors, or a disconnect switch etc. These assets are referred to as connection assets and will be funded by you but may be vested in us. In addition, all new connections to our network, whether they are used for off-take or injection purposes, are charged a Connection Levy based on the maximum capacity requirement in kW of the connection when used for either off-take or injection (but not both). This levy allows us to fund capacity upgrades of the core network assets shared by all users.

If your generation capacity is greater than the capacity of the local 400V system you will be expected to fund the cost of any dedicated equipment required to connect your distributed generation at 11kV. This equipment may be provided by us for an annual charge, or you may choose to provide and own your own equipment as long as it complies with our network design and construction standards.

Lines or cables installed on your property, or on property over which you have a right or easement to convey electricity will be owned by you with the exception of the revenue meters and transformer which may be owned by other parties. By regulatory default the connection point to our network is where these dedicated assets cross your property boundary.

Additional assets installed to extend our network to your point of connection will be owned by us if they are located on the road reserve or other public property. Although these assets will be funded by you, they will become part of our network and we will assume all the usual ownership responsibilities and obligations.

#### **3.3 FUNDING TECHNICAL MODIFICATIONS**

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

#### **3.4 APPLICATION FEES**

We may charge a fee for performing various tasks related to your DG application, subject to the following maximum fees set out in Part 6 of the Code:

|                                                                                 |                 |
|---------------------------------------------------------------------------------|-----------------|
| Application fee                                                                 | \$200 excl. GST |
| Observing tests, and inspecting                                                 | \$60 excl. GST  |
| Additional admin fee for re-assessing or assisting with a deficient application | \$80 excl. GST  |



### **3.5 OWNER/OPERATOR RESPONSIBILITIES**

The owner/operator of a distributed generating system shall ensure:

- Maintenance and safe operation of the generating system (including inverters, protection devices, cabling etc.)
- The generation system complies with all relevant Acts, Regulations, Codes and Rules.
- Operating the system within the net output level specified in the Network approval.

## **4. CONNECTION PROCESS**

### **4.1 Step #1 (your application)**

To begin the connection process you must apply in writing although we would prefer you phoned us to discuss your intentions first. Please use Form 1 at the back of this document and include additional pages as required to specify the following:

- What type of generation you intend to connect (hydro, photo-voltaic etc.).
- The manufacturer's rating of your generator, or if this is not possible, certification that its maximum rating is less than 10kW.
- The configuration of your proposed generation, in particular whether your generator is a new generator or an addition to an existing generator. 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.
- The technical specifications of your generator and associated equipment.
- The technical specifications of the equipment that will disconnect your generation from our network if mains voltage is lost.
- Exactly where you expect to install your generation.
- Whether your generator is 1-phase or 3-phase.
- The exact point and voltage at which you propose to connect to our network.
- Evidence that your generation will meet the requirements set out in Sections 2.1 to 2.8 of this document.

Your completed Form 1 will need to be accompanied by the application fee shown in Section 3.4. If your completed Form 1 does not provide sufficient information for us to determine if your proposed generator meets the standards set out in Section 2 of this document, we may ask you for further information.

### **4.1 STEP #2 (OUR RESPONSE TO YOUR APPLICATION)**

Upon receiving your application, we are firstly required to acknowledge receipt of your application within 2 working days. We are then required to advise you within 5 working days of receiving your application whether your application is complete. If your application is incomplete or deficient we will advise you of the information you will need to include when you reapply.

If your application is correctly completed and there are no delays in processing due to your actions we must advise you by way of a Notice of Final Approval within 10 working days whether your application is approved or declined. If your application is approved, the Regulated Terms & Conditions will apply.



If we do not give you a Notice of Final Approval within 10 working days after the date on which you submitted your application, we are deemed to have given such a Notice in which case you can connect your distributed generation as per your application unless you have either failed to correct an identified deficiency or have not provided reasonable access for us to inspect your distributed generation.

Broadly speaking we are required to approve your application if it meets the following requirements...

- It is made in accordance with the Regulations.
- It will comply with the Health and Safety in Work Act 2015.
- It will meet the requirements set out in Sections 2 of this document.

If we decline your application we are required to do the following...

- Provide detailed reasons why your application has been declined.
- Advise what you would need to do to make a compliant application.
- Advise you of the dispute resolution procedure set out in Schedule 6.3 of Part 6 of the Code.

#### **4.2 STEP #3 (YOU GIVE NOTICE OF INTENTION)**

If we approve your application to connect generation, you must advise us in writing within 10 working days of receiving our approval whether you intend to connect your generation, although we can extend this period at our discretion.

If you do not provide such written notice, our obligations under the Code cease. You can however make a new application.

#### **4.3 STEP #4 (NEGOTIATE CONNECTION CONTRACT)**

Once you have notified us in writing of your intention to connect your generation, we have 30 working days (starting from the date at which we receive your written notice of intention to connect) to mutually negotiate a connection contract. This period can be extended by mutual agreement.

If we cannot agree with you on mutually acceptable connection terms and conditions, the regulated terms and conditions set out in Schedule 6.2 of Part 6 of the Code will apply.

#### **4.4 STEP #5 (WE CONNECT YOUR GENERATION)**

Before you connect your generation to our network, you must test your generation. We will require sufficient prior notice to arrange for our staff to be on site to observe these tests, and from our end we must give you at least 2 working days notice. Our charges for observing these tests and inspections are set out in section 3.4.

You must also provide us with a comprehensive test and inspection report that includes confirmation that any metering will fulfil its intended purposes.

Within 10 working days of us approving connection of your generation you must provide us with both the Certificate of Compliance and an ICP number (if not already done).

#### **4.5 ALTERNATIVE TO THE ABOVE PROCESS FOR CONTINUED CONNECTION**

Under the following circumstances we may agree to a simpler process for continued connection of your distributed generation...

- If you wish to extend the term of a contract that is already in force.
- If an existing connection contract has expired.
- Where there is no connection contract.
- Where the nameplate capacity or fuel type has changed.