

scanPOWER

DISTRIBUTED GENERATION WITH A CAPACITY ABOVE 10kW

INFORMATION FOR CONNECTION AND OPERATION

Connecting distributed generation with a capacity greater than 10kW

The following information is for people who wish to connect distributed generation systems with a capacity greater than 10kW to Scanpower's distribution network and possibly export electricity into our network.

These systems are likely to be installed at industrial, commercial or rural sites and are either single or three phase.

Separate conditions and procedures apply to generating installations of less than 10kW.

Talk to us first about your proposed distributed generation

If you are considering installing distributed generation greater than 10kW then you need to involve us in the process as early as possible. This will help to ensure that you meet our technical and contractual requirements for a safe and reliable connection to our network.

Scanpower's intention is to assist you to understand our requirements and work through the steps you will need to take prior to connecting your generator to our network.

Any agreement to connect distributed generation to our network may include costs associated with design and reinforcement of the existing network. If network reinforcement is required the design and schedule for this project work will need to be factored into your installation planning. Projects may be constrained by network resources and restrictions.

Distributed generation must meet all relevant statutory and regulatory requirements and comply with applicable safety standards. If you connect distributed generation to our network it is a mandatory requirement that safety equipment and procedures must be in place to ensure safe interaction between your distributed generator and our network.

The process adopted by Scanpower conforms with the Electricity Governance (Connection of Distributed Generation) Regulations 2007. Please refer to the Electricity Commission's website: www.electricitycommission.govt.nz.

Process to connect distributed generation greater than 10kW to Scanpower's network

The following information outlines the steps you will need to take to connect distributed generation greater than 10kW to our network. This information complies with the Electricity Governance (Connection of Distributed Generation) Regulations 2007 (the Regulations).

Selecting your generation system

Generally distributed generation systems greater than 10kW will be diesel or wind generation however hydro, gas or co-generation can also be used.

Connection to our network must be safe and must not interfere with the quality of electricity supplied to other connected parties.

You must ensure that your generator system fully complies with the following standards:

AS 4777.1 Grid connection of energy systems via inverters – installation requirements.

AS 4777.2 Grid connection of energy systems via inverters – inverter requirements.

AS 4777.3 Grid connection of energy systems via inverters – grid protection requirements.

The above standards apply to distributed generation systems that are connected to an electricity network via inverters. While they primarily focus on solar panel systems, they can also be applied to other generator types.

Inverters can interfere with the reliable operation of the network or can affect plant and appliances of other connected parties. Therefore we require all inverter connected generators to be approved by an Australian or New Zealand independent test house.

Copies of these standards are available from the standards NZ website www.standards.com.au.

Contact your electricity retailer

You must contact your electricity retailer and discuss with them your proposed distributed generation system as any surplus electricity which is generated may be sold to them. Unless you have contractual arrangements for purchase of any surplus electricity generated, and an electricity retailer responsible for the connection, you will not be able to connect to our network.

Notify Scanpower

Once you have decided on your generating system and had discussions with your electricity retailer you should contact us.

Distributed generation systems greater than 10kW in capacity can have a significant impact on our network. We need to know where the system is to be connected on our network.

Initial application

You will need to complete an initial application form (attached) together with the detailed information requested in the form.

Your application should be accompanied by the prescribed application fee as prescribed in Schedule 5 of the Regulations

Confirmation that your application is complete

Within 5 business days of receiving your application we will advise you in writing whether your application is complete. If it is Scanpower will assess the information and respond with information that you will need to assess the viability of your project.

Decision on your application

Within 30 business days of receiving your completed application we will provide you with comprehensive information about our network, as required by Schedule 1 Part 2 Section 12 of the Regulations, that will assist you to decide if you want to proceed with your application.

You can request further information from us that is reasonably necessary to enable you to consider and act on the information which we provided in response to your initial application. We will provide this information within 10 business days of receiving your request.

Final application

If at this stage you wish to proceed we will provide you with a final application form which you must complete and return to us within 12 months of you receiving the aforementioned information.

Acceptance of final application

Within 45 business days of receiving your final application we will give you written notice of our decision to approve or decline your application. We may seek extensions of the time specified as provided for in Schedule 1 Part 2 Section 19 of the Regulations.

If we approve your application we will provide with our response;

- (a) detailed description of the related conditions of approval together with the reasons for these;
- (b) details of the line charges payable by the generator;
- (c) if the connection of your distributed generation is likely to require expenditure on the network then we will advise you accordingly.

If we decline your final application we will provide detailed reasons and advise what steps you will need to take to ensure approval.

If you disagree with our decision a dispute resolution process is provided in Schedule 3 of the Regulations.

Intention to proceed

You must provide us with written notice within 30 business days (or a mutually agreed longer period) of our approval of your final application as to whether or not you intend to proceed with the distributed generation connection, and if so, confirming;

- (a) the details of the distributed generation to be connected;
- (b) that you accept all of the conditions (or other measures) which we have specified as conditions of the connection.

Should you not accept all of the conditions, but still intend to connect to Scanpower's

network then a dispute resolution process is provided in Schedule 3 of the Regulations.

Control arrangements

Scanpower reserves the right to disconnect a generator for the purposes of maintaining safety and integrity of supply.

It is preferable for distributed generators not subject to despatch to export reactive energy (kVArh) whenever real energy (kWh) is exported into our network. Subject to network voltage remaining within agreed limits, the desired power factor should be between 0.85 and 0.9.

We will advise if continuously acting fast response automatic excitation and/or governor control systems are required to control the distributed generator voltage and frequency without instability over the entire operating range of the distributed generator. This will depend on the size and type of distributed generator and the characteristics of the part of the network to which it is connected.

Protection

The EEA Guide for the Connection of Generating Plant specifies the appropriate protection requirements. The level of protection and the associated requirements to integrate with our network's protection equipment (eg rural auto reclosers) will have to be approved by Scanpower prior to initial connection.

Generator network islanding

All distributed generation must disconnect from our network when a network outage is detected. Reconnection will not be allowed without the prior approval of Scanpower.

Generator network islanding occurs when a fault on our network is isolated by network switches and the generator continues to supply power to the isolated network. Many generators will disconnect and supply a load within their installation during a network outage (creating their own island).

Managing safety for operations and people becomes an issue with network islanding. If an attempt is made to re-liven the local network without synchronising on the distribution generation then substantial damage can occur to the network and to the customer's equipment.

It is therefore critical that all generator operating intensions and protection systems are detailed to us. We will decide, based on local network conditions and information given by you, whether network islanding is a credible possibility.

Metering

As a generator of electricity you are responsible for your metering installation. Your electricity retailer will arrange this for you. When you contact your electricity retailer they will advise you on the appropriate metering requirements for measuring the electricity imported and exported.

Installation

Installation must be carried out by a qualified tradesperson to ensure compliance with all relevant building and electrical codes and standards. All wiring associated with the system must be carried out by a registered electrician and comply with AS/NZS 3000 or any successive standard or legislation. A copy of the Certification of Compliance will be required before the installation can be connected to Scanpower's network.

Your generating system needs to comply with the previously mentioned AS 4777.1 to 4777.3 standards to ensure that our network's safety requirements are met. This means that your generator will automatically isolate itself if there is a power outage on the Scanpower distribution network upstream from your point of supply. It also means that your system will not reconnect to the network until we have restored the supply. We also require your inverter to be sealed so as to restrict any adjustment of the protection provisions. Access will be by means of a lockable isolation switch which will be restricted to Scanpower representatives. This provision will enable a Scanpower line mechanic to isolate a section of our network so that he can work on it without your generator feeding electricity into it.

Testing and inspection before connection

Prior to connecting your distributed generation to our network as a minimum you must:

- (a) test and inspect your distributed generation;
- (b) provide adequate notice of the tests and inspection in order for Scanpower to send a qualified representative to site for observation purposes;
- (c) provide us with a written test report after testing and inspection. The report must confirm that the metering installation has a certificate of compliance. The following tests should be carried out on both generation and associated control equipment;
 - Secondary injection testing of all protection
 - Proof of tripping circuits for protection operation
 - Automatic synchronisation and interlocking
 - Load and VARs sharing stability
 - Loss of mains testing
 - Compliance of warning notices and labelling

Any fee charged for observing the testing and inspecting will be in accordance with Schedule 5 of the Regulations.

Operating the distributed generation

Scanpower may request inspection of the site from time to time to ensure that the installation remains safe and that other connected parties will not be adversely affected.

Scanpower wishes to acknowledge the assistance of Orion and WEL Networks in the preparation of this information.