



MARLBOROUGH  
LINES

DISTRIBUTED GENERATION INFORMATION  
PACK

**For generators rated over 10kVA  
April 2015 - Issue 7**

**Marlborough  
Lines**

# Introduction to distributed generation

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Distributed generators, also known as 'embedded generators', are generators located at a home or business which are capable of generating electricity for that home or business's own use. They may also be capable of putting surplus electricity back into Marlborough Lines' electricity distribution network. These generators can take many forms; diesel generators, wind turbines and solar panels are the most common.

If you are interested in operating distributed generation and connecting it to our network, there are some things you need to know. This guide contains information designed to help you understand distributed generation and how to apply to connect it to our network.

Please note that any reference made to the regulations in this document refers to Part 6 of the Electricity Industry Participation Code 2010 which can be found at [www.ea.govt.nz](http://www.ea.govt.nz).

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# 1 Connecting distributed generation with capacity above 10kVA

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This information is for people who want to connect medium to large distributed generation systems (above 10kVA) to Marlborough Lines' electricity network to generate electricity and possibly export energy into our network. These systems are usually three-phase, and are typically installed at industrial, commercial or rural sites.

This information does not apply to generation systems which are not connected to our network.

For information about connecting smaller distributed generation, see separate document 'Distributed Generation Information Pack for generators rated under 10kVA'.

## **Talk to us about your proposed distributed generation**

Installing distributed generation is complex. If you intend to install distributed generation that is capable of exporting any excess energy from the generator into our network (even if this seems unlikely), then you will need to involve us in the process as early as possible. Each distributed generation situation is different and needs to be discussed with us.

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.

Once you have finalised your distributed generation design, we will need to review it before we will allow it to connect to our network. As with any new or altered electricity connections, we will need to see a certificate of compliance for the installation before it can be connected.

Larger generators (above 1000kVA) may be subject to Transpower's terms and conditions. If this is the case, we will facilitate responses to Transpower's requests. The generation owner will be responsible for providing any requested information to us to assist in the process.

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

General information on the NZ electricity sector is available on the Electricity Commission's website: [www.electricitycommission.govt.nz](http://www.electricitycommission.govt.nz). Or from the energy efficiency and conservation authority [www.eeca.govt.nz](http://www.eeca.govt.nz)

## **Process to connect distributed generation above 10kVA to our network**

The steps that you will need to take to connect distributed generation above 10kVA to our network are outlined below. This information complies with Part 6 of the Electricity Industry Participation Code 2010.

### **Select your system**

Usually distributed generation above 10kVA will be solar, diesel or wind generation. Occasionally it will be hydro, gas or co-generation.

Your system must conform to the relevant standards in particular:

- 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
- AS/NZS 3000 Electrical installations (known as the Australian/New Zealand Wiring Rules)

In addition, The generator should be automatically disconnected from the supply if the mains line to neutral voltage drops below 200 volts or rises above 250 volts. It must remain disconnected for 120 seconds. The maximum that can be connected to any phase is 5kVA and ideally systems greater than 5kVA will be 3 phase.

Your system must also conform with the requirements detailed in this information pack and application form.

### **Contact your electricity retailer**

You must discuss your proposed distributed generation installation with your electricity retailer (or the Electricity Commission's clearing manager, although this approach is less common), as any surplus energy you generate may be sold to them. Unless you have contractual arrangements for purchase of any surplus electricity generated, and an electricity retailer is responsible for the connection, you will not be able to connect to our network.

### **Notify us**

Generation systems above 10kVA in capacity can have significant impacts on our network. We need to know where the distributed generation system will be connected and ensure the generation operates safely. Ideally, you should contact us as soon as you have decided which system you intend to install.

### **Your initial application**

You will need to complete an initial application form (see Appendix A of this information pack) and return it to us, along with the detailed information requested in the form.

### **Application fees**

We require an application fee to be paid as per Section 3 of this document.

### **Confirmation that your initial application is complete**

Within five business days of receiving your initial application we will advise you in writing whether or not your initial application is complete.

### **After your initial application**

Within 30 business days of receiving your completed initial application we will provide you with the following information:

- (a) The capacity of our network at the proposed connection point, including both the design capacity (including fault levels) and actual operating levels.
- (b) Any issues or concern that the connection or operation of your proposed distributed generation may have, in particular any possible breaches of the relevant standards for safety, voltage, power quality, and reliability of supply to other connected parties.
- (c) The approximate costs of any network-related measures or conditions identified under paragraph (b) and an estimate of time constraints or restrictions that may delay the connecting of your distributed generation.

Any further detailed investigative studies that we reasonably consider are necessary to identify any potential adverse effects on the system resulting from the proposed connection, together with an indication of:

- whether we agree to you, or a suitably qualified agent for you, undertaking those studies; or
- if not, whether we could undertake those studies and, if so, the estimated cost of the studies that you would be charged.
- Any obligations to other parties that may be imposed on us and that could affect your distributed generation (for example obligations to Transpower, in respect of other networks, or under the Electricity Authority's Electricity Industry Participation Code 2010).
- Any additional information or documents that we consider would assist your application.
- Information about the extent to which planned and unplanned outages may affect the operation of your distributed generation.

### **Other information to assist with your decision making.**

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

## **Your final application**

If you choose to proceed to connect to our network, you must do so within 12 months after we evaluate your initial application. We will provide you with a 'final application form' to enable you to do this.

## **Our acceptance of your application for generation**

Within 45 business days of receiving your final application we will give written notice of our decision to approve or decline your application for generation, and whether any conditions or other measures apply if we accept your application. Please note that notice can be extended under the provisions outlined in Schedule 6.1 of the Regulations.

## **If we decline your application**

If we decline your application we will detail our reasons. If you disagree with our decision, a dispute resolution process is provided in Schedule 6.3 of the Regulations.

## **Your intention to proceed**

After we approve your final application you have 30 business days (or a mutually agreed longer period) to notify us in writing if you want to proceed with the distributed generation connection, and if so, confirming:

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

Notice can be extended under the provisions outlined in Schedule 6.1 of the Regulations. Please note that if you choose not to proceed, and then apply to connect the same generation at a later date, we may charge an application fee.

## **Connection of generation**

We have 30 business days to negotiate a connection contract with you after you notify us in writing of your intention to proceed. This contract will be based on the connection contract set out in Schedule 6.2 of the Regulations (see section 2 of this information pack for the regulated terms for connection of distributed generation). This schedule and terms are a default agreement if we are unable to negotiate a connection contract.

## Testing and inspection before connection

Please note that after your application has been approved and the steps outlined above are complete, as a minimum you must:

- test and inspect your distributed generation before connection;
- give us adequate notice of the tests and inspection – we may send qualified personnel to the site to observe the testing and inspection; and

You must then provide us with a written test report after testing and inspection. This 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:

- Operation of controls
- secondary injection testing of all protection
- proof of tripping circuits for protection operation
- automatic synchronising and interlocking
- load and VArS sharing stability
- loss of mains testing
- compliance of warning notices and labelling.

We may charge a fee for observing the testing and inspecting.



## 2 Regulated terms for connection of distributed generation

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Part 6 of the Electricity Industry Participation Code 2010 contains regulated terms for the connection of distributed generation. In general we use these terms, however we are prepared to discuss alternate terms where they provide mutual benefit.

A copy of the regulated terms is contained in schedule 6.2 of the Code which can be found at

<https://www.ea.govt.nz/code-and-compliance/the-code/part-6-connection-of-distributed-generation/>

## 3 Credits and charges

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### Delivery credits

Distributed wind generation does not effectively reduce our peak loadings, and photovoltaic generation does not reduce our significant winter evening peaks. On this basis, we do not generally provide credits for these forms of generation.

Where Generation is effective in reducing the peak loading on MLL Network, credits may be paid. These will be based on the effective reduction in peak loading and the consequential reduction in costs to MLL.

### Energy credits

Generators are able to contract with electricity retailers (or the Electricity Commission's clearing manager) to sell any generation that is injected back into our network.

### Connection Charges

For the initial connection to our network, we consider the costs of any extension or modifications that are required (including any ongoing operational and maintenance costs) and generally require the generator to cover all of these costs via a one-off capital contribution. Wherever possible, we encourage generators to contract directly for the construction of extensions to take advantage of the competitive electrical contracting alternatives that are available.

Normal delivery charges can often be reduced significantly by generating to supply some or all of the load at the connection. Further information on lines charges for energy can be found on our website [www.marlboroughlines.co.nz](http://www.marlboroughlines.co.nz) under "About Us", "Disclosures".

Our charges are:

<10kW	See separate information pack for generators of less than 10kVA.
>10kW and <100kW	\$400 plus GST
>100kW and <1,000kW	\$1,000 plus GST
>1,000kW	\$5,000 plus GST

### Power Factor Correction

When your installation is acting as a load (i.e. importing real energy), power factor charges will apply if its power factor is less than 0.95. When your installation is acting as a generator (i.e. exporting real energy), power factor charges will apply if it imports reactive energy.

## 4 Metering

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You (the generator) are responsible for ensuring that suitable metering is installed which meets the minimum requirements for the size of the generator, and is also suitable for the pricing options applicable for the generator. This metering must be certified and compliant with the metering standards set out in the Electricity Authority's Electricity Industry Participation Code 2010

You must ensure that arrangements are in place to read meters and provide this metering information to Marlborough Lines in a suitable format.

### Minimum metering requirements

Total generation capacity installed	Metering category of the connection	Marlborough Lines' minimum metering requirement
10kVA or less- or -30kVA or less (with no export, or minimal export)	1 or 2	Separate import/export metering of accumulated kWh flows at the network connection point.
Above 10kVA and up to 350kVA	1 or 2	Half-hour interval metering to separately measure kWh import and export volumes at the network connection point.
350kVA or less	3 and above (with low voltage 230/400V network connection)	
350kVA or less	3 and above (with high voltage 11kV network connection)	Half-hour interval metering to separately measure kWh and kVArh import and export volumes each half hour at the network connection point (i.e. four-quadrant interval metering).
Above 350kVA	any category	

## 5 Connection and Operation Standards

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Marlborough Lines' Connection and Operation Standards as they relate to Distributed Generation consist of:

- a) Distributed Generation Information Pack – For Generators rated below 10kVA
- b) Distributed Generation Information Pack – For Generators over below 10kVA (this booklet)
- c) The application forms contained in a) and b) and the congestion management policy below
- d) Applicable legalisation, industry rules and standards, specifically the New Zealand Electricity Act, New Zealand Wiring Rules and New Zealand Codes of practise.

### **Congestion Policy**

Our network is mainly engineered so that electricity flows in one direction. Continued growth of distributed generation could create reverse energy flows on our network and this has the potential to create congestion on both our low and high voltage networks.

During the distributed generation connection application phase we will assess (using our database of distributed generation installations and network capacity) the likelihood that the new distributed generation proposal will cause network congestion.

Distributed generation can be provided in many different forms, with wide variations in the business model and operational requirements. How to manage network congestion is best determined on a case-by-case basis during the network application process. There are two main ways to manage network congestion:

- Prevent network congestion by ensuring that distributed generation connection only occurs in unconstrained areas or is always accompanied by an appropriate network upgrade.
- Prevent network congestion by agreeing on a case-by-case basis the real-time operational rules that will apply.

The outcome will depend on the nature of the network congestion, the distributed generation operational characteristics and the business model of the proposal.

In line with the pricing principles in Part 6 of the Electricity Industry Participation Code 2010, in situations where a proposed generator will add to (rather than relieve) network congestion, and where this congestion is likely to lead to a future requirement to reinforce the network, we will assess the long run incremental cost of this network capacity and include this in the connection charges for the generator. In this way, all generators will pay an equitable share of network reinforcements that are required to relieve or avoid network congestion.

In some instances events on Transpower's national transmission grid may restrict distributed generation.

## **Emergency response policies**

We provide a 24hr 365 days a year fault service. Faults are dealt with as soon as practical. In the event of multiple faults, safety is our first consideration, followed by restoration of supply to critical customers, e.g. hospitals, first, then followed by prioritising work by the number of affected customers.

More information on our emergency response policies and network management are detailed in our Asset Management Plan, available on our website ([www.marlboroughlines.co.nz](http://www.marlboroughlines.co.nz)) and from our offices at 1 Alfred Street, Blenheim.

## **Asset Management Plan**

Our Asset Management Plan is available on our website ([www.marlboroughlines.co.nz](http://www.marlboroughlines.co.nz)) and from our offices at 1 Alfred Street, Blenheim.

## 6 Glossary

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**Australian/NZ Standards (AS/NZS):** Standards that apply jointly to Australia and New Zealand, available from [www.standards.co.nz](http://www.standards.co.nz).

**Australian Standards (AS):** Standards that apply in Australia and are optional for use in New Zealand, available from [www.saiglobal.com](http://www.saiglobal.com).

**Black start:** Certain generators have the ability to black start, meaning they can restart their generation plant with no electrical input if the system has blacked out. Generators without this capability require power from the grid to restart their generating plant.

**Certificate of compliance (COC):** Registered electrical workers must audit their own work and fill out a certificate of compliance as proof that they have complied with electrical safety standards and codes. A customer should request the COC from their electrical contractor when work is completed. We will need to see the COC before we can connect the electrical installation to our network.

**Code of practice:** The codes of practice are those parts of the Electricity Industry Participation Code 2010 which cover the accuracy of metering installations, requirements for approved test houses, requirements of metering installations, data-logger requirements, requirements for data administrators and profile administration.

**Connection:** A point at which Marlborough Lines' network connects to a customer's electrical system.

**Distributed generation:** Generation installed at a customer's installation that is capable of exporting electricity back into the local network.

**Distributed generator:** A distributed generator, also known as an 'embedded generator', is a generator located at a home or business which is capable of generating electricity for that home or business use. It may also be capable of putting surplus generation back into the distribution network.

**Distributor:** Also called 'lines companies', 'network companies' or 'distribution companies', distributors such as Marlborough Lines own and operate the lower voltage power lines and distribution networks in local areas. These connect to the national grid to deliver electricity to homes and businesses.

**Electrical contractor:** In the context of new connections to Marlborough Lines' network or upgrades to existing connections, an electrical contractor is a person or organisation contracted by either the customer, or the customer's consultant, to install part or all of the works required to achieve the new or upgraded electricity supply. This work generally involves low voltage construction on the customer's property.

**Electricity Industry Participation Code 2010:** The Electricity Authority's Electricity Industry Participation Code 2010 governs how the electricity market operates.

**Electricity retailer:** An electricity retailer (sometimes referred to as a 'power company') purchases electricity from the wholesale market to sell to residential and business users.

**Generator customer islanding:** Generator will automatically isolate from the network and only supply a local load (normally emergency supply within a building).

**Generator network islanding:** Generator network islanding occurs when a fault on the network is isolated by network switches and the generator continues to supply power to the isolated network.

**Generator islanding protection:** A complex protection system that detects an islanding situation and executes prescribed generator control and isolation functions.

**(ICP), Installation control point:** A point of connection on a local network or an embedded network which the distributor nominates as the point at which a retailer will be deemed to supply electricity to a customer.

**Import/export of electricity:** 'Import' refers to electricity bought by the customer from an electricity retailer in the normal manner. 'Export' refers to electricity generated by the distributed generation system and injected back into the power network, where it can be sold to others (by a retailer).

**Installation:** A complete electrical installation from the point of a service main connection to the network, to the most remote circuit supplied by the switchboard.

**Installed capacity:** The electrical size of the system. A 1kVA system can supply 1kWh (or one unit) of electricity in an hour.

**Intermittent generation:** Generation for which the source is intermittent and not easily predicted, e.g. wind or wave generation.

**Inverter:** An electronic device that converts DC electricity to AC electricity.

**kVAr, kilo-volt-amperes (reactive):** Measurement of reactive power.

**kVA, kilo-volt-amperes:** Measurement of total power (combined real and reactive power), also called apparent power.

**kWh, Kilowatt-hour:** A kilowatt-hour is also known as a unit of electricity and is the basis of retail sales of electricity.

**kW, kilo-watts:** Measurement of real power.

**Meter:** Equipment that measures electricity quantity, usually in kilowatt-hours.

**Micro hydro:** Small water-powered generation systems, typically able to operate on low head pressure sources.

**Net billing:** The effective result of the cost of purchased electricity being offset by the same price being received for any exported electricity.

**Network Standards:** Marlborough Lines' network standards outlines technical requirements for connections to our network.

**Network:** A network (also called an electricity distribution network) is the lower voltage power lines and other assets in a local area which are used to carry electricity from the national grid to homes and businesses.

**Peak period:** Period during which Marlborough Lines operates its load management system to control network peaks.

**Photovoltaic panels:** Silicon panels that convert sunlight to DC electricity.

**Power Factor:** The ratio of the real power (W) to the apparent power (VA).

**Spot price:** The half-hour price of wholesale electricity.

**Time of use metering:** Metering that records the amount of energy either imported, exported, or both, in half hour time segments and is interrogated.

**Transpower:** The state-owned enterprise that operates New Zealand's transmission network. Transpower delivers electricity from electricity generators to various electricity distribution networks around the country.



## Appendix A - Initial application to connect and operate distributed generation with capacity above 10kVA on Marlborough Lines network

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### Details of your proposed distributed generation

You must provide Marlborough Lines with enough information to enable your distributed generation to successfully connect to our network without affecting other connected customers.

For all existing electricity connections, and when applying for a new electricity connection, we will evaluate the total export capacity of your proposed distributed generation (i.e. the maximum amount of electricity that your generation is able to inject into our network) to assess whether your proposed generation will exceed the capacity of your electricity connection. To complete this evaluation, we will need evidence of your generation capacity – normally a kVA rating. Please attach to your application a copy of the manufacturer's specifications and/or a photograph of the 'name plates' for your proposed generation, as evidence of its capacity. Additional information may be required if the manufacturer's specifications are not comprehensive.

The extent of the information required will depend on the size and type of generation. This information will remain confidential between us unless agreed otherwise, however we reserve the right to release information about the distributed generation to meet our obligations to Transpower, the operator of the national grid, or as required by Part 6 of the Electricity Industry Participation Code 2010.

We will use the information supplied in your application to evaluate and model our network to decide what method of connection would be needed and the voltage level at which the connection should be made.

### You must obtain our written agreement before you can connect distributed generation to our network

Connection: Existing ☐ Upgrade ☐ New ☐

ICP number from your power account (if new or upgraded connection): \_\_\_\_\_

Proposed date to connect your distributed generation: \_\_\_\_\_

Energy retailer who has agreed to purchase your electricity: \_\_\_\_\_

Details of person/organisation applying to connect distributed generation		Details of customer at premises where distributed generation is to be connected	
<b>Name:</b>		<b>Name:</b>	
<b>Company:</b>		<b>Company:</b>	
<b>Address:</b>		<b>Address:</b>	
<b>Phone:</b>		<b>Phone:</b>	
<b>Facsimile:</b>		<b>Facsimile:</b>	
<b>Email:</b>		<b>Email:</b>	

## Generator information

Data required	Information or reference to attached documents & location of information with documents
Type of generation unit – synchronous, asynchronous, etc	
Type of prime mover	
Rated terminal voltage (kV)	
Rated generation capacity (kVA)	
Maximum continuous active power generated (kW)	
Maximum short term active power generated (kW) – only required if gen greater than 100kVA	
reactive power requirements (kVAr) including direction of reactive power flow	
Anticipated operating regime e.g. continuous, intermittent, peak lopping	
Method of voltage control	
Generation transformer details, if applicable	

## Interface arrangements

Data required	Information or reference to attached documents & location of information with documents
Means of connection and disconnection	
Means of synchronisation between the distribution network and the distributed generation	
Generation neutral earthing arrangements	
Single line diagram for installation detailing circuit breakers, base loads and generation capabilities	

## General Technical Data

Data required	Information or reference to attached documents & location of information with documents
Actual low frequency trip setting and time delay	
Actual over frequency trip setting and time delay	
Actual low voltage trip setting and time delay	
Actual high voltage trip setting and time delay	

## Additional Technical data for Generators of > 100 kVA

This schedule must be completed if the total distributed generation on your site will exceed 100 kVA.

### General Technical Data

Data required	Information or reference to attached documents & location of information with documents
Generation kW/kVAR capability charts at maximum continuous power	
Start up times to full rated output from cold	
Type of excitation system (block diagram/specifications, forward/feedback gains/time constants and limits)	
Speed governor and prime mover data (detailed functional description of governing system with all subsystems including system control and turbine time)	

## Additional Technical data for Generators of > 750 kVA

This schedule must be completed if the total distributed generation on your site will exceed 750 kVA.

Data required	Information or reference to attached documents & location of information with documents
Minimum operating power (kW)	
Lowest frequency at which generation can operate (Hz)	
Generation kW/kVAr capability charts at 50% output	
Inertia constant (seconds) (whole machine)	
Auxiliary power requirements	
Startup time to minimum operating power from cold	
Startup time to minimum operating power from hot	
Normal ramp rate	
maximum ramp rate	
Inertia constant whole machine (seconds)	
Stator resistance	
Direct axis synchronous reactance	
Quadrature axis synchronous reactance	
Direct axis transient reactance	
Quadrature axis transient reactance	
Direct axis sub transient reactance	
Quadrature axis sub transient reactance	
Leakage (positive sequence) reactance	
Negative sequence reactance	
Zero sequence reactance	
Earthing resistance/reactance	
Time constant- direct axis transient open circuit	
Time constant- quadrature axis transient open circuit	
Time constant- direct axis sub transient open circuit	
Time constant- quadrature axis sub transient open circuit	
Generation transformer details (impedance, tap changer, vector group, earthing, maximum overvoltage capability at rated frequency etc.)	

## Control arrangements

Distributed generators not subject to despatch shall export reactive energy (kVArh) whenever real energy (kW) is exported onto our network. Subject to network voltage remaining within agreed limits, the power factor shall be between 0.95 and 1.00. If the installation imports reactive power while exporting real energy power factor charges will apply.

See protection and generator network islanding below for islanding detection requirements. 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 our network to which it is connected.

## Protection

The distributed generator must be equipped with the appropriate protection elements as required by the “EEA Guide for the Connection of Generating Plant”. Distributed generator owners must consult us with regard to any special arrangements or protection that may be necessary due to the characteristics of our network. The general protection requirements are outlined below.

Data required	Information or reference to attached documents & location of information with documents
Generation circuit breaker	
Disconnect/isolate switch	
Over-voltage protection	
Under-voltage protection	
Over-frequency protection	
Under-frequency protection	
Loss of network supply (see Islanding notes)	
Power factor or voltage regulation equipment	
Earth-fault protection	
Neutral voltage displacement protection	
Synchronisation	

The protection associated with the distributed generator must co-ordinate with the protection associated with our network as follows:

In order to keep the impact of faults on our network to a minimum, the distributed generation must meet target clearance times agreed between us and the generation owner, for fault power flowing from our network. We will ensure that the relevant protection settings are compatible with the target clearance times that we specify.

The settings of any protection which controls a circuit breaker, or the operating parameters of any automatic switching device at any network connection point, must be approved by us; The distributed generation protection must co-ordinate with any auto re-close settings specified by us; and

Any distributed generator connected to our network may be required to withstand, without tripping, the negative phase sequence loading incurred during the clearance of a close-up phase-to-phase fault by our network back-up protection and which is within the plant short-time rating.

## **Generator network islanding**

All distributed generation must disconnect from our network when a network outage is detected. The generation must also disconnect from the supply if the mains voltage drops below 200 volts. The generator must not reconnect to the system until the mains voltage exceeds that limit for a continuous period of at least 60 seconds. Note in the event of a permanent fault, the mains supply may be automatically relivened a number of times in close succession (0.5 to 30 seconds) before finally staying tripped.

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 reliven the local network without synchronising to the distributed generation then substantial damage can occur to the network and to the customer's installation equipment.

It is therefore critical that all generator operating intentions 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.

## **Signage**

Suitable signage shall be attached to all switchboards that can be supplied from any generation in accordance with AS/NZS3000. Typical signage is shown in Appendix A.

**If you do not complete all sections of this form and supply the requested information, your application may be delayed and an additional fee of \$80 will be charged.**

## Appendix B – Warning Signs/Labels

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**WARNING**

**-DUAL SUPPLY-**

ISOLATE BOTH NORMAL AND  
GENERATOR SUPPLIES BEFORE  
WORKING ON THIS  
SWITCHBOARD

Sign on switchboard to which generator is connected

**WARNING**

**-DUAL SUPPLY-**

ISOLATE GENERATOR SUPPLY AT  
GENERATOR DISTRIBUTION  
BOARD BEFORE WORKING ON  
THIS SWITCHBOARD

Sign on intermediate distribution switchboard