

DISTRIBUTED GENERATION

INFORMATION PACK



COUNTIES **POWER**

Introduction to distributed generation

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 Counties Power's 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.

The information in this guide is separated into two categories:

- information about medium to large distributed generation systems (above 10 kilowatts)
- information about small distributed generation systems (10 kilowatts or less).

For more information about distributed generation, please contact:

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I Connecting distributed generation with capacity above 10 kilowatts

This information is for people who want to connect medium to large distributed generation systems (above 10kW) to Counties Power's 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 Section 3 of this information pack: 'Connecting distributed generation with capacity of 10 kilowatts or less'.

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 1000kW) 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.

More information about distributed generation is available on the Electricity Commission's website: www.electricitycommission.govt.nz.

Process to connect distributed generation above 10kW to our network

We outline below the steps that you will need to take to connect distributed generation above 10kW to our network. This information complies with the Electricity Governance (Connection of Distributed Generation) Regulations 2007 ("the Regulations").

2 Select your system

Usually distributed generation above 10kW will be diesel or wind generation. Occasionally it will be hydro, gas or co-generation. Your system must conform to the Standards Electrical Code of Practice AS/NZS 3000 – Electrical Installations (known as the Australian/New Zealand Wiring Rules), which you can purchase and download from www.ess.govt.nz or view for free at your public library.

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 10kW 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 section 2 of this information pack) and return it to us, along with the detailed information requested in the form.

Application fees

We may require an application fee to be paid, as prescribed in Schedule 5 of the Regulations (see section 5 of this information pack).

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, including both the design capacity (including fault levels) and actual operating levels;
- (b) the extent to which connection and operation of your distributed generation may result in a breach of the relevant standards for safety, voltage, power quality, and reliability of supply to other connected parties;

- (c) any measures or conditions (including modifications to the design and operation of our network or to the operation of your distributed generation) that may be necessary to address the matters referred to in paragraphs (a) and (b);
- (d) the approximate costs of any network-related measures or conditions identified under paragraph (c) and an estimate of time constraints or restrictions that may delay the connecting of your distributed generation;
- (e) 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;
- (f) 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 Governance Rules);
- (g) any additional information or documents that we consider would assist your application; and
- (h) 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 provide this further information within 10 business days of receiving your request.

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 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 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:

- (i) the details of the distributed generation to be connected; and
- (j) 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 I 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 2 of the Regulations (see section 6 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:

- (a) test and inspect your distributed generation before connection;
- (b) give us adequate notice of the tests and inspection – we may send qualified personnel to the site to observe the testing and inspection; and
- (c) 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:
 - 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, as prescribed in Schedule 5 of the Regulations (see section 5 of this information pack).

3 Initial application form to connect and operate distributed generation above 10kW on Counties Power's network

You must provide Counties Power with enough information to enable your distributed generation to successfully connect to our network without affecting other connected customers. Please note that an application fee may be payable if we need to carry out significant research and analysis to assess the potential impact of your proposed distributed generation.

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 kilowatt 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 the Electricity Governance (Connection of Distributed Generation) Regulations 2007.

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.

Initial application to connect and operate distributed generation with capacity above 10kW on Counties Power's network

Details of your proposed distributed generation

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

Details Of Connection:	Existing <input type="checkbox"/>	Upgrade <input type="checkbox"/>	New <input type="checkbox"/>
ICP number from your power account (if relevant):			
Proposed date to connect your distributed generation:			

Technical information for distributed generation

The following information must be supplied to us:

Data required for each distributed generation system

Data required for range of power output	10-100 kVA	100-750 kVA	> 750 kVA
Type of generation unit – synchronous, asynchronous, etc	✓	✓	✓
Type of prime mover	✓	✓	✓
Rated terminal voltage (kV)	✓	✓	✓
Rated generation capacity (kVA)	✓	✓	✓
Rated minimum power factors (both over and under excited) at rated kVA		✓	✓
Maximum continuous active power generated (kW)	✓	✓	✓
Maximum short term active power generated (kW)		✓	✓
For asynchronous generations, reactive power requirements (kVAr)	✓	✓	✓

Anticipated operating regime e.g. continuous, intermittent, peak lopping	✓	✓	✓
Method of voltage control	✓	✓	✓
Generation transformer details, if applicable			✓

Interface arrangements

Data required for range of power output	10-100 kVA	100-750 kVA	> 750 kVA
The means of connection and disconnection	✓	✓	✓
The 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	✓	✓	✓

Technical data

Data required for range of power output	10-100 kVA	100-750 kVA	> 750 kVA
Lowest frequency at which the distributed generation can run			✓
Actual low frequency trip setting and time delay	✓	✓	✓
Actual over frequency trip setting and time delay	✓	✓	✓
Minimum operating power			✓
Generation kW/kVAr capability charts (at lower voltage terminals at nominal and $\pm 10\%$ of nominal voltage) at:			
(a) maximum short term power			✓
(b) maximum continuous power		✓	✓
(c) 75% output			✓
(d) 50% output			✓
(e) minimum power			✓
Auxiliary power requirements at:			
(a) rated power output			✓
(b) minimum power output			✓
(c) start up			✓

Start up times to minimum operating power:			
(a) from cold			✓
(b) from warm			✓
(c) from hot			✓
Normal ramp rate			✓
Time for cold start to full rated output		✓	✓
Inertia constant (seconds) (whole machine)			✓
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 constants:			
(a) direct axis transient open circuit			✓
(b) quadrature axis transient open circuit			✓
(c) direct axis sub transient open circuit			✓
(d) quadrature axis sub transient open circuit			✓
Generation transformer details (impedance, tap changer, vector group, earthing, maximum overvoltage capability at rated frequency etc.)			✓
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)		✓	✓

Control arrangements

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

Protection Requirements	10-100 kVA	100-750 kVA	> 750 kVA
Generation circuit breaker	✓	✓	✓
Dedicated transformer			✓
Disconnect/isolate switch	✓	✓	✓
Over-voltage protection	✓	✓	✓
Under-voltage protection	✓	✓	✓
Over-frequency protection	✓	✓	✓
Under-frequency protection	✓	✓	✓
Earth-fault protection		✓	✓
Over-current voltage restraint protection			✓
Neutral voltage displacement protection	✓	✓	✓
Synchronisation	✓	✓	✓
Loss of network supply (see Islanding notes)	✓	✓	✓
Power factor or voltage regulation equipment		✓	✓

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.

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 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.

If you do not complete supply all required information and fill all sections of this form, your application may be delayed.

I apply to connect a distributed generator to Counties Power Limited's electricity network and confirm that the above information is correct.

Name:	
Company:	
Signature:	
Date:	

Counties Power Limited agrees to the connection of the distributed generator described above to its electricity network.

Name:	
Signature:	
Date:	

4 Connecting distributed generation with capacity of 10 kilowatts or less

This information is for people who want to connect small distributed generation systems (10kW or less) to Counties Power's electricity network to generate electricity and possibly export energy into our network. These systems are usually single-phase, but may be three-phase. They are typically installed at residential or small commercial premises.

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

For information about connecting larger distributed generation, see section 1 of this information pack: 'connecting distributed generation with capacity above 10 kilowatts'.

Talk to us about your proposed distributed generation

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. You will need to talk to us, even though such small generation quantities may have little impact on our network.

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.

More information about distributed generation is available on the Electricity Commission's website: www.electricitycommission.govt.nz.

Process to connect distributed generation of 10kW or less to our network

We outline below the steps that you will need to take to connect distributed generation of 10kW or less to our network. This information complies with the Electricity Governance (Connection of Distributed Generation) Regulations 2007 ("the Regulations").

Select your system

Usually distributed generation of 10kW or less will be solar powered (photovoltaic panels). Less frequently, it will be wind or micro-hydro generators. Your system must conform to the relevant standards (Australian Standard 4777.2 and Australian Standard 4777.3) which you can purchase and download from www.standards.com.au. or view for free at your public library.

While these standards have been created with solar powered systems in mind, they can be applied to other systems.

Contact your electricity retailer

You must discuss your proposed distributed generation installation with your electricity retailer, as any surplus energy which 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 of 10kW or less are unlikely to have significant impacts on our network. However we need to know where they are connected for safety and administrative reasons. Ideally, you should contact us as soon as you have decided which system you intend to install. The impact of small generation systems increases when several systems are located in close proximity.

Your application

You will need to complete an application form (see Section 4 of this information pack) and return it to us, along with the detailed information requested in the form. For example, we need to know the location, type, size and specification of your proposed distributed generation system, plus the name of the electrician who will install your system. We also need to know which electricity retailer is responsible for your connection.

Application fees

We may require an application fee to be paid, as prescribed in Schedule 5 of the Regulations (see Section 5 of this information pack).

Confirmation that your application is complete

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

Our acceptance of your application for generation

Within 30 business days of receiving your application we will give written notice of our decision to approve or decline your application for generation. We may request an extension of a further 20 business days. However, usually we will notify you of our decision within 10 business days. You must not connect your distributed generator to our network without our written consent.

If we decline your application

If we decline your application we will detail our reasons and, if you choose to make a new application, detail the steps that you can take to ensure your application will be successful. If you disagree with our decision, a dispute resolution process is provided in Schedule 3 of the Regulations.

Your intention to proceed

After we approve your final application you have 10 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.

Notice can be extended under the provisions outlined in Schedule I 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 as prescribed in the attached schedule of fees.

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. The contract will be based on the connection contract set out in Schedule 2 of the Regulations (see Section 6 of this information pack: regulated terms for connection of distributed generation). This schedule and terms are a default agreement if we are unable to negotiate a connection contract.

Metering

As a generator of electricity, you are responsible for ensuring that appropriate metering, for the separate measurement of imported and exported power (i.e. net metering is not allowable), is installed. This must be done in accordance with the requirements of your retailer and Counties Power.

Your retailer and/or Counties Power may arrange installation of appropriate metering.

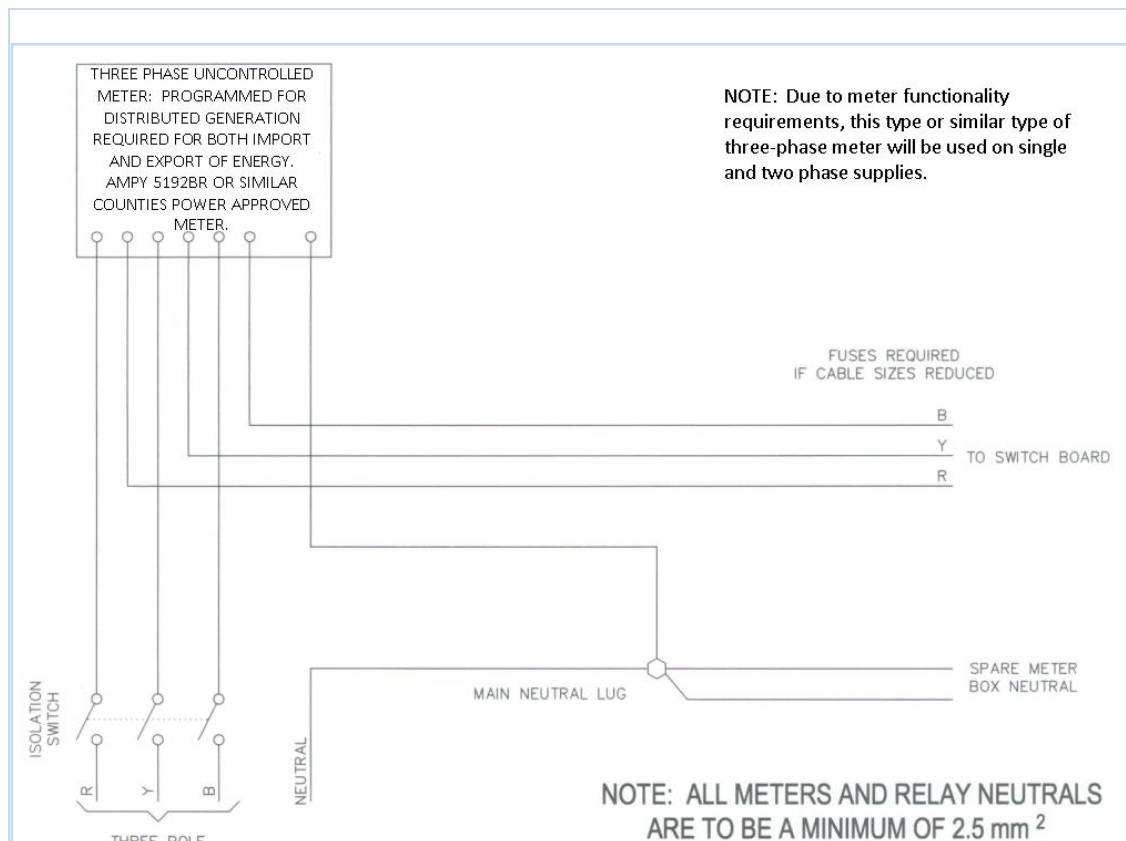
You may also be charged a tariff and/or meter change and installation fee, depending on your location and your existing metering.

Due to the intricacies of distributed generation metering, a controlled load (i.e. hot water separately metered and controlled by Counties Power) cannot be supported and any existing control devices and meters will be removed as part of the distributed generation metering installation.

Minimum metering requirements

The minimum metering configuration for distributed generation metering requires that imported and exported energy are independently registered and measured. Larger distributed generation installations may also require measurement of imported and exported reactive energy and ½ hour metering. The meter service provider will select and install the metering configuration appropriate to the type and size of distributed generation.

Our minimum requirement for metering of distributed generation is illustrated in the diagram below.



Installation

Any distributed generation equipment which you purchase should come with manufacturer's installation instructions. Installation must be undertaken by qualified tradespersons to ensure compliance with all relevant building and electrical codes and standards. All wiring associated with the system must be undertaken by a registered electrician, and comply with AS/NZS 3000 or any successive standard or legislation. You must also check with your local Council whether any building or other consents are required.

If your generator continued to operate when there was a power cut, this would pose a serious safety threat on our network. It could have serious consequences for anyone working on the network and/or could damage your equipment. A system manufactured to Australian Standard 4777.2 and with protection systems installed in accordance with the Australian Standard 4777.3, will provide isolation and prevent this happening.

Your registered electrician should closely follow AS 4777.1 when installing your equipment. This standard can be purchased and downloaded at www.standards.co.nz.

While AS 4777.1 deals primarily with connection of inverter based systems, its principles should also be followed for distributed generation systems that do not employ inverters.

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:

- (a) test and inspect your distributed generation before connection;

- (b) give us adequate notice of the tests and inspection – we may send qualified personnel to the site to observe the testing and inspection; and
- (c) provide us with a written test report after testing and inspection.

In addition to your electrician's testing and inspection, we may send qualified personal to the site to observe the testing and inspection. We may charge a fee for observing the testing and inspecting, as prescribed in Schedule 5 of the Regulations (see Section 5 of this information pack).

Application to connect and operate distributed generation with capacity of 10kW or less on Counties Power’s network

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

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

* Please attach Location Map.

Other Details Of Connection:	
ICP number from your power account:	
Certificate of compliance number:	
Energy Retailer who will purchase your electricity/ is responsible for your connection:	
Proposed date of connection of distributed generation:	
Load details at proposed point of connection:	

Details of your proposed distributed generation

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 kilowatt rating. Please attach to your application a copy of the manufacturer’s specifications and/or a photograph of the ‘name plates’ as evidence of capacity. Additional information may be required if the manufacturer’s specifications are not comprehensive.

Information Details

Connection:	Existing <input type="checkbox"/>	New <input type="checkbox"/>	Residential <input type="checkbox"/>	Commercial <input type="checkbox"/>
<input type="checkbox"/> Connection Diagram:	Please attach a sketch or drawing of the proposed electrical connection layout; for three phase systems, this can be in single line format.			
Manufacturer's rating of equipment:	Amps:	Volts:	kW:	kVA:
Type:	Solar PV <input type="checkbox"/>	Gas turbine <input type="checkbox"/>	Wind turbine <input type="checkbox"/>	Steam turbine <input type="checkbox"/>
	Micro Hydro <input type="checkbox"/>	Fuel Cell <input type="checkbox"/>	Other (specify) <input type="checkbox"/>	
Number of phases:			One <input type="checkbox"/>	Two <input type="checkbox"/>
Name of electrical contractor:				
Distributed generation system complies with AS 4777 (where appropriate):			Yes <input type="checkbox"/>	No <input type="checkbox"/>
Details of any inverter:				
Details of any battery storage:				

How the Distributed Generation complies with the connection and operation standards

Protection equipment and settings:	
Method of disconnection on loss of supply:	
Time required to disconnect : Enclose manufacturers details, curves	
Safeguards to stop generation backfeeding into network on loss of Supply:	
Protection to stop network reclosing damaging equipment (Please assume up to 4 reclosers with .5 to 30 seconds between each reclose):	
<input type="checkbox"/> Enclose any manufacturer's technical specifications, curves and schematic diagrams for your protection equipment. <input type="checkbox"/> Please ensure that you attach the technical specifications to show that your proposed distributed generation would automatically disconnect from our network during a power outage (It is important that distributed generation systems isolate from the network to avoid injury to line workers).	

Proposed Metering Information

Input/Export Energy:

Input/Export Demand:

If you do not complete all sections of this form, your application may be delayed.

I apply to connect a distributed generator to Counties Power Limited's electricity network and confirm that the above information is correct.

Name:

Signature:

Date:

Counties Power Limited agrees to the connection of the distributed generator described above to its electricity network.

Name:

Signature:

Date:

5 Maximum fees for connection of distributed generation

Schedule 5 of the Electricity Governance (Connection of Distributed Generation) Regulations 2007

In this schedule, reference to a kW or MW rate, in relation to distributed generation, is a reference to the kW or MW rate at which distributed generation is capable of generating electricity.

A distributor may require the payment of fees for any of the following activities prescribed under the regulations up to the maximum fee specified in the column opposite the activity:

Fee for application for distributed generation 10 kW or less in total	\$
Distributed generation of 10 kW or less in total	200
Fee for initial application for distributed generation above 10 kW	
Distributed generation of above 10 kW in total but less than 100 kW in total	500
Distributed generation of 100 kW or above in total but less than 1 MW	1,000
Distributed generation of 1 MW and above	5,000
Fee for observation of testing and inspection	
Distributed generation of 10 kW or less in total	60
Distributed generation of above 10 kW in total but less than 100 kW in total	120
Distributed generation of 100 kW and above	1,200

6 Regulated terms for connection of distributed generation

Schedule 2 of the Electricity Governance (Connection of Distributed Generation) Regulations 2007

General

- Overview of regulated terms
- Interpretation
- General obligations

Meters

- Installation of meters and access to metering information

Access

- Right of distributor to access generator's premises
- Process if distributor wants to access generator's premises
- Distributor must not interfere with generator's equipment
- Generator must not interfere with, and must protect, distributor's equipment
- Obligation to notify if interference with distributor's equipment or theft of electricity is discovered

Interruptions and disconnections

- General rule about interruptions
- Circumstances allowing distributor to temporarily disconnect distributed generation
- Obligations if distributed generation temporarily disconnected by distributor
- Adverse operating effects
- Interruptions by generator
- Permanent disconnections

Confidentiality

- Meaning of confidential information
- General rule about confidentiality
- 18 When confidential information can be disclosed
- 19 Disclosures by employees, agents, etc

Pricing

- 20 Pricing principles

Liability

- General rule about liability
- Exceptions to general rule about liability
- Limits on liability
- Liability clauses do not apply to fraud, wilful breach, and breach of confidentiality
- Indemnity
- Force majeure

General

1 Overview of regulated terms

This schedule sets out the regulated terms for connection of distributed generation that apply to the connection of distributed generation that is connected in accordance with regulation 9 and Schedule 1.

2 Interpretation

These regulated terms must be interpreted---

- (a) in light of the purpose of these regulations; and
- (b) so as to give business efficacy to the relationship between the distributor and the generator created by these regulations.

3 General obligations

- (1) The distributor and the generator must perform all obligations under these regulated terms in accordance with connection and operation standards (where applicable).
- (2) The distributor and the generator must each construct, interconnect, operate, test, and maintain their respective equipment in accordance with---
 - (a) these regulated terms; and
 - (b) connection and operation standards (where applicable); and
 - (c) the rules.
- (3) The generator must, subject to subclause (2), construct, interconnect, operate, test, and maintain its distributed generation in accordance with---
 - (a) reasonable and prudent operating practice; and
 - (b) the applicable manufacturer's instructions and recommendations.
- (4) The distributor and generator must each be fully responsible for the respective facilities they own or operate.
- (5) The distributor and generator must each ensure that their respective facilities adequately protect each other's equipment, personnel, and other persons and their property, from damage and injury.
- (6) The generator must comply with any conditions that were specified by the distributor under clause 18 of Schedule 1 as conditions of the connection (or, to the extent that those conditions were the subject of a dispute under clause 20(3) of that schedule, or of negotiation during the period for negotiation of the connection contract, the conditions or other measures as finally resolved or negotiated).

Meters

4 Installation of meters and access to metering information

- (1) The generator must ensure that 1 or more metering installations are installed that--
 - (a) separately record any inflows of electricity from the distribution network and any electricity injected into the distribution network; and
 - (b) fully comply with the rules.
- (2) The generator must provide to the distributor, at the distributor's request, the interval data and cumulative data recorded by those metering installations.

- (3) The distributor may require that reactive metering be installed for meters that are category 2 or above (as defined in the rules).
- (4) The distributor's requirements in respect of metering measurement and accuracy must be consistent with the rules.

Access

5 Right of distributor to access generator's premises

- (1) The generator must provide the distributor, or a person appointed by the distributor, with safe and unobstructed access onto the generator's premises at all reasonable times---
 - (a) for the purpose of installing, testing, inspecting, maintaining, repairing, replacing, operating, reading, or removing any of the distributor's equipment and for any other purpose related to these regulated terms; and
 - (b) for the purpose of verifying metering information; and
 - (c) for the purpose of ascertaining the cause of any interference to the quality of delivery services being provided by the distributor to the generator; and
 - (d) for the purpose of protecting, or preventing danger or damage to, persons or property; and
 - (e) for the purposes of reconnecting or disconnecting the distributed generation; and
 - (f) for any other purpose relevant to either or both of---
 - (g) the distributor connecting distributed generation in accordance with connection and operation standards;
 - (h) maintaining the integrity of the distribution network.
- (2) The rights of access conferred by these regulated terms are in addition to any right of access the distributor may have under any statute or regulation or contract.

6 Process if distributor wants to access generator's premises

- (1) The distributor must exercise its right of access under clause 5 by,---
 - (a) wherever practicable, giving to the generator reasonable notice of its intention and of the purpose for which it will exercise its right of access; and
 - (b) causing as little inconvenience as practicable to the generator in carrying out its work; and
 - (c) observing reasonable and prudent operating practice at all times; and
 - (d) observing any reasonable security or site safety requirements that are made known to the distributor by the generator.
- (2) However, the distributor may take all reasonable steps to gain immediate access where it reasonably believes there is immediate danger to persons or property.

7 Distributor must not interfere with generator's equipment

- (1) The distributor must not interfere with the generator's equipment without the prior written consent of the generator.
- (2) However, if emergency action has to be taken to protect the health and safety of persons, or to prevent damage to property, the distributor---
 - (a) may interfere with the generator's equipment without prior written consent; and
 - (b) must, as soon as practicable, inform the generator of the occurrence and circumstances involved.

8 Generator must not interfere with, and must protect, distributor's equipment

- (1) The generator must not interfere with the distributor's equipment without the prior written consent of the distributor.
- (2) However, if emergency action has to be taken to protect the health and safety of persons, or to prevent damage to property, the generator---
 - (a) may interfere with the distributor's equipment without prior written consent; and
 - (b) must, as soon as practicable, inform the distributor of the occurrence and circumstances involved.
- (3) The generator must protect the distributor's equipment against interference and damage.

9 Obligation to notify if interference with distributor's equipment or theft of electricity is discovered

- (1) If the distributor or the generator discovers evidence of interference with the distributor's equipment, or evidence of theft of electricity, the party discovering the interference or evidence must notify the other party within 24 hours.
- (2) If interference with the distributor's equipment at the generator's installation is suspected, the distributor may itself carry out an investigation and present the findings to the generator within a reasonable period.
- (3) The cost of the investigation---
 - (a) must be borne by the generator if it is discovered that interference by the generator, or by its subcontractors, agents, or invitees, has occurred, or if the interference has been by a third party, and the generator has failed to provide reasonable protection against interference to the distributor's equipment; and
 - (b) must be borne by the distributor in any other case.

Interruptions and disconnections

10 General rule about interruptions

The distributor must make reasonable endeavours to ensure that the connection of the distributed generation is not interrupted.

11 Circumstances allowing distributor to temporarily disconnect distributed generation

Despite clause 10, the distributor may interrupt the connection service, or curtail either the operation or output of the generation, or both, and may temporarily disconnect the distributed generation in any of the following cases:

- (a) in accordance with the distributor's congestion management policy;
- (b) if reasonably necessary for planned maintenance, construction, and repairs on the distribution network;
- (c) for the purpose of protecting, or preventing danger or damage to, persons or property;
- (d) if the generator fails to allow the distributor access as required by clause 5;
- (e) if the generator modifies its distributed generation, without prior authorisation from the distributor, in such a way that it has a material effect on the generator's injection of electricity into the network;
- (f) in accordance with clause 13 (adverse operating effects).

12 Obligations if distributed generation temporarily disconnected by distributor

- (1) The distributor must make reasonable endeavours to---
 - (a) notify the generator before any interruption under clause 11; and
 - (b) co-ordinate with the generator to minimise the impact of the interruption.
- (2) The distributor and the generator must co-operate to restore the distribution network and the distributed generation to a normal operating state as soon as is reasonably practicable following temporary disconnection.
- (3) In the case of a forced outage, the distributor must, subject to the need to restore the distribution network, make reasonable endeavours to restore service to the generator and to advise the generator of the expected duration of the outage.

13 Adverse operating effects

- (1) The distributor must notify the generator as soon as is reasonably practicable if it reasonably considers that operation of the distributed generation may---
 - (a) adversely affect the service provided to other distribution network customers; or
 - (b) cause damage to the distribution network or other facilities; or
 - (c) present a hazard to any person.
- (2) If, after receiving that notice, the generator fails to remedy the adverse operating effect within a reasonable time, the distributor may disconnect the generation upon reasonable notice (or without notice when reasonably necessary in the event of an emergency or hazardous situation).

14 Interruptions by generator

- (1) This clause applies to any connected distributed generation above 10 kW in total.
- (2) The generator must notify the distributor of any planned outages and must make reasonable endeavours to advise the distributor of any event that affects network operations.
- (3) The generator must make reasonable endeavours to notify the distributor of the interruption and to co-ordinate with the distributor to minimise the impact of the interruption.

15 Permanent disconnections

- (1) Despite clause 10, the distributor may permanently disconnect distributed generation in the following circumstances:
 - (a) on receipt of a request from a generator:
 - (b) without notice, if a generator has failed to comply with either the connection or safety requirements of the distributor and there is an ongoing risk to persons or property.
 - (c) without notice, on receipt of the registry inactive status with reason "De-energised--ready for decommissioning" where the trader has de-energised a site, attempted to recover the meters, and updated the registry to that status:
 - (d) on at least 10 business days' notice of intention to disconnect, if---
 - (i) the generator has not injected electricity into the network at any time in the preceding 12 months; and
 - (ii) the distributor has not been notified by the generator of reasons for the non-injection; and
 - (iii) the distributor has reasonable grounds for believing that the generator has ceased to operate the distributed generation.

- (2) If the point of connection is to remain as a consumption point, where applicable the generator must cancel any seller contracts and ensure the trader decommissions the embedded generation network service point with the reconciliation manager. The site must revert to a standard ICP.
- (3) If the point of connection is to be disestablished in its entirety, a permanent disconnection must be performed by means of isolation of generation by removal of all electrical connections to distributor's lines. The distributor must notify the generator within 2 business days of the work having been completed. Where applicable, the generator must cancel any seller contracts, ensure that the retailer decommissions the embedded generation network service point with the reconciliation manager, and that the retailer arranges decommissioning of the ICP.
- (4) Once having the status of decommissioned on the registry, the ICP must not be used again. The process for new connections in Part 1 or 2, as the case may be, of Schedule 1 must be followed if generation is to be connected again at this point of connection.
- (5) Both the distributor and the generator (through notification to a retailer where selling to a retailer) must ensure that the registry is correctly updated throughout this process in accordance with the rules.

Confidentiality

16 Meaning of confidential information

In this schedule,---

confidential information means all data and other information of a confidential nature provided by one party (**A**) to the other (**B**) under these regulated terms, but excludes---

- (a) information known to B before the date it was provided to B by A and that was not obtained directly or indirectly from A:
- (b) information obtained bona fide from another person who is in lawful possession of the information and who did not acquire the information directly or indirectly from A under an obligation of confidence.

17 General rule about confidentiality

- (1) Each party must preserve the confidentiality of confidential information, and must not directly or indirectly reveal, report, publish, transfer, or disclose the existence of any confidential information, except as permitted in subclause (2).
- (2) Each party must only use confidential information for the purposes expressly permitted by these regulated terms.

18 When confidential information can be disclosed

Either party may disclose confidential information in any of the following circumstances:

- (a) if the generator and distributor agree in writing to the disclosure of information:
- (b) if disclosure is expressly provided for under these regulated terms:
- (c) if, at the time of receipt by the party, the confidential information is in the public domain or if, after the time of receipt by either party, the confidential information enters the public domain (except where it does so as a result of a breach by either party of its obligations under this clause or a breach by any other person of that person's obligation of confidence):
- (d) if either party is required to disclose confidential information by---
 - (i) any statutory or regulatory obligation, body, or authority; or

- (ii) any judicial or arbitration process; or
- (iii) the regulations of any stock exchange upon which the share capital of either party is from time to time listed or dealt in; or
- (iv) the rules:
- (e) if the confidential information is released to the officers, employees, directors, agents, or advisors of the party, provided that---
 - (i) the information is disseminated only on a need-to-know basis; and
 - (ii) recipients of the confidential information have been made fully aware of the party's obligations of confidence in relation to the information; and
 - (iii) (iii) any copies of the information clearly identify it as confidential information:
- (f) if the confidential information is released to a bona fide potential purchaser of the business or any part of the business of a party, subject to that bona fide potential purchaser having signed a confidentiality agreement enforceable by the other party in a form approved by that other party, and that approval may not be unreasonably withheld.

19 Disclosures by employees, agents, etc

To avoid doubt, a party is responsible for any unauthorised disclosure of confidential information made by that party's officers, employees, directors, agents, or advisors.

Pricing

20 Pricing Principles

Connection charges that are payable by the generator must be determined in accordance with the pricing principles set out in Schedule 4.

Liability

21 General rule about liability

- (1) If a distributor or generator breaches any of the regulated terms (whether by act or omission), that party is liable to the other.
- (2) The generator's and the distributor's liability to each other is limited to damages for any direct loss caused by that breach.
- (3) This clause does not limit the liability of either party to pay all charges and other amounts due under these regulations or the regulated terms.

22 Exceptions to general rule about liability

- (1) Neither the distributor nor the generator, nor any of its officers, employees, directors, agents, or advisors, are in any circumstances liable to the other party for---
 - (a) any indirect loss, consequential loss (including, but not limited to, incidental or special damages), loss of profit, loss of revenue (except any liability under clause 21(3), loss of use, loss of opportunity, loss of contract, or loss of goodwill; or
 - (b) any loss resulting from the liability of the other party to another person; or
 - (c) any loss or damage incurred by the other party if, and to the extent that, this results from any breach of the regulated terms or any negligent action.
- (2) The distributor is not liable, except to the extent caused or contributed to by the distributor in circumstances where the distributor was not acting in accordance with the regulations (including these regulated terms), for---

- (a) any momentary fluctuations in the voltage or frequency of electricity conveyed to or from the distributed generation's point of connection or nonconformity with harmonic voltage and current levels; or
- (b) any failure to convey electricity to the extent that---
 - (i) the failure arises from any act or omission of the generator or other person, excluding the distributor and its officers, employees, directors, agents, or advisors; or
 - (ii) the failure arises from---
 - a failure to convey or a reduction of injection or supply of electricity into the distribution network; or
 - an interruption in the conveyance of electricity in the network, at the request of the system operator or under a nationally or regionally co-ordinated response to an electricity shortage; or
 - the failure arises from any defect or abnormal conditions in or about the generator's premises; or
 - the distributor was taking any action in accordance with the regulations or regulated terms; or
 - the distributor was prevented from making necessary repairs (for example, by police at an accident scene).
- (3) The generator is not liable for---
 - (a) any failure to perform any obligation under these regulated terms caused by the distributor's failure to comply with the obligation; or
 - (b) any failure to perform any obligation under these regulated terms arising from any defect or abnormal conditions in the distribution network.

23 Limits on liability

The maximum total liability of each party, as a result of a breach of these regulated terms, must not in any circumstances exceed, in respect of a single event or series of events arising from the same event or circumstance, the lesser of---

- (a) the direct damage suffered or the maximum total liability that the party bringing the claim against the other party has at the time that the event (or, in the case of a series of related events, the first of such events) giving rise to the liability occurred; or
- (b) \$1,000 per kW of installed capacity up to a maximum of \$5 million.

24 Liability clauses do not apply to fraud, wilful breach, and breach of confidentiality

The exceptions in clause 22, and the limits on liability in clause 23, do not apply---

- (a) if a distributor or generator, or any of its officers, employees, directors, agents, or advisors, has acted fraudulently or wilfully in breach of these regulated terms; or
- (b) to a breach of confidentiality under clause 17 by either party.

25 Indemnity

- (1) Each party (the **indemnifying party**) must indemnify the other for damages claimed by third parties to the extent that the loss is caused by a breach of these regulated terms by the indemnifying party, where the loss is materially caused by any action or omission of the indemnifying party.
- (2) The indemnity in this clause is subject to the limits on liability specified in clauses 21 to 24.

26 Force majeure

- (1) A failure by either party to comply with or observe any provisions of these regulated terms (other than payment of any amount due) does not give rise to any cause of action or liability based on default of the provision if---
 - (a) the failure is caused by--- (i) any event or circumstance occasioned by, or in consequence of, any act of God, being an event or circumstance--- (A) due to natural causes, directly or indirectly and exclusively without human intervention; and (B) that could not reasonably have been foreseen or, if foreseen, could not reasonably have been resisted: (ii) a strike, lockout, other industrial disturbance, act of public enemy, war, blockade, insurrection, riot, epidemic, aircraft, or civil disturbance: (iii) the binding order or requirement of any court, government, local authority, the Rulings Panel, or the Electricity Commission, and the failure is not within the reasonable control of the affected party: (iv) the partial or entire failure of supply or availability of electricity to the distribution network: (v) any other event or circumstance beyond the control of the party invoking this clause; and
 - (b) the party could not have prevented such failure by the exercise of the degree of skill, diligence, prudence, and foresight that would reasonably and ordinarily be expected from a skilled and experienced distributor or generator engaged in the same type of undertaking under the same or similar circumstances in New Zealand at the time.
- (2) If a party becomes aware of a prospect of a forthcoming force majeure event, it must notify the other party as soon as is reasonably practicable of the particulars of which it is aware.
- (3) If a party invokes this clause, it must as soon as is reasonably practicable notify the other party that it is invoking this clause and of the full particulars of the force majeure event relied on.
- (4) The party invoking this clause must---
 - (a) use all reasonable endeavours to overcome or avoid the force majeure event; and
 - (b) use all reasonable endeavours to mitigate the effects or the consequences of the force majeure event; and
 - (c) consult with the other party on the performance of the obligations referred to in paragraphs (a) and (b).
- (5) Nothing in subclause (4) requires a party to settle a strike, lockout, or other industrial disturbance by acceding, against its judgement, to the demands of opposing parties.

7 Credits and charges

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.

Charges

We do not currently apply a fee for assessing generation applications.

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.

Ongoing backup charges in relation to distributed generation are as follows¹:

- Up to 15 kVA : \$1.00 per day (excluding GST)
- Greater than 15 kVA : Evaluated based on application details.

You may also be charged a metering change and installation fee depending on your location and existing metering.

Normal delivery charges can often be reduced by generating to supply some or all of the load at the connection.

Other credits

In some cases, generators may reduce our delivery costs by lowering the peak loading levels on our network, reducing the need to upgrade and reinforce our network.

The evaluation of credits associated with these savings is undertaken on a case by case basis.

In our experience, distributed wind generation provides a highly correlated contribution which 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.

In most situations, additional metering is required to permit such credits.

Please note that these metering requirements are additional to our general metering requirements for delivery, and electricity retailers may also specify their own requirements.

¹ Effective from 1st May 2010.

8 Metering

The generator is 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 Governance Rules. The generator must ensure that arrangements are in place to read meters and provide this metering information to Counties Power in a suitable format.

Minimum metering requirements

Total generation capacity installed	Metering category of the connection (ICP)	Counties Power's minimum metering requirement
Up to 20 kW per phase	1 (Whole current metering)	Separate import/export metering of accumulated kWh flows at the network connection point.
CT metering up to 350kW	2 (3-phase metering with CTs up to 500A)	Half-hour interval metering to separately measure kWh import and export volumes at the network connection point.
350kW or less	3 and above (with low voltage 230/400V network connection)	
350kW 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 350kW	any category	

9 Glossary

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

Australian Standards (AS): Standards that apply in Australia and are optional for use in New Zealand, available from www.standards.co.au.

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.

Clearing manager: The Electricity Commission's service provider responsible for monitoring prudential security requirements and invoicing and settling electricity and ancillary service payments.

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 Governance Rules 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 Counties Power's 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's own 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 Counties Power 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.

Electricity Commission: The Electricity Commission is established under the Electricity Act 1992 to oversee the governance, operation and development of the New Zealand electricity industry.

Electrical contractor: In the context of new connections to Counties Power's 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 Governance (Connection of Distributed Generation) Regulations 2007: Regulations for connection of distributed generation to electricity distribution networks.

Electricity Governance Regulations and Rules: The Electricity Governance Regulations and Rules (EGRs) govern how the electricity market has operated since 1 March 2004.

Energy clearing house: The M-co subsidiary that is currently the clearing manager for the Electricity Commission.

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.

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.

Installation control point (ICP): 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.

Installed capacity: The electrical size of the system. A 1kW 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.

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

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.

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.

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

Retailer: An electricity retailer purchases electricity from the wholesale market to sell to residential and business users.

Spot market: The buying and selling of wholesale electricity is done via a 'pool', where electricity generators offer electricity to the market and retailers bid to buy the electricity. This market is called the spot or physical wholesale market.

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.