



**DISTRIBUTED GENERATION ABOVE 10 KW
INFORMATION AND APPLICATION PROCESS
FOR CONNECTION AND OPERATION**

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1. DISTRIBUTED GENERATION

You can generate some or all of your own electricity in a variety of ways. These include using solar energy (photo voltaic cells), wind, water (hydro electric) or fossil fuels such as diesel or natural gas.

A generator can also be connected to your local electricity distribution network through your fuse board and meter board, enabling you to inject any that is surplus to your requirements into the network and sell it to an energy retailer.

WEL Networks provides a network that connects generators, the national grid and consumers. This enables generators and consumers to sell to and buy from their parties of choice. WEL Networks does not retail electricity, but it does provide the means for retailers to convey or transport electricity through its network to buyers. All generators therefore have to either sell their electricity to a retailer that has contracted to access the network, or the generator can be an electricity retailer in its own right.

The information in this document applies to those generators that propose to be connected to WEL Networks and have a capacity of more than 10kW. These generators are likely to be located at commercial or industrial premises or be stand-alone for direct connection to the network. Separate conditions and procedures apply to generating installations of up to 10kW.

The Government has in 2007 issued regulations pertaining to distributed generation and this document has been issued in compliance with these. WEL Networks' intention is to help you to understand our requirements and the steps that you will need to take to connect your generator to our network.

2. THE PROCESS FOR CONNECTION

If you are considering distributed generation of more than 10kW, the process summarised in the following table and further explained in this document will help to ensure that you meet our technical and contractual requirements for a safe and trouble-free connection to our network. The information provided primarily deals with issues relating to connection to and use of WEL Networks' network. You will also need to ensure that other requirements and arrangements, such as safety aspects, building and resource consents and electricity retail agreements are in place with the relevant authorities and parties.

The process adopted by WEL Networks conforms to the Electricity Governance (Connection of Distributed Generation) Regulations 2007. These will be referred to in this document as the "Regulations". The Regulations, which can be viewed and copied from the Ministry of Economic Development's website, provide for a two-step application process for distributed generators of more than 10 kW.

3. SUMMARY OF THE PROCESS FOR SELECTING, APPLYING FOR CONNECTION AND CONNECTING A DISTRIBUTED GENERATOR WITH CAPACITY MORE THAN 10 KW

<p>Select a generator type:</p>	<p>The generator type will depend on its location & the source of energy available. Solar panels, wind turbines, reciprocating engines, gas turbines and mini-hydro generators are the most common. Connection to the network must be safe and must not interfere with the quality of electricity supplied to other connected parties. WEL Networks requires equipment to comply with internationally recognised standards.</p>
<p>Making an initial application:</p>	<p>Once a suitable generator has been identified and all of the related information is available, an initial application on the prescribed form may be submitted. The application fee of \$562.50 incl GST if your generator will be smaller than 100kW, must be provided with the application. Higher fees apply to larger generators as set out in this document. You will be advised within 5 working days whether or not the information you have provided is complete. If it is, WEL Networks will then assess the information and respond with information that you will need to assess the viability of the project.</p>
<p>WEL Networks will respond with information:</p>	<p>We will respond to your application within 30 working days, by providing comprehensive information about the network that will help you to decide if you want to proceed. You will also be advised at this time of any investigative studies that you will be required to undertake.</p>
<p>Making a final application:</p>	<p>This requires submitting an application on WEL Networks' prescribed form. This must be done within 12 months of your receiving the information mentioned above. The results of any investigative studies that you may have undertaken also need to be submitted at this time.</p>
<p>WEL Networks will respond with written notice:</p>	<p>If the proposed generator is less than 1 MW capacity, we will provide written notice within 45 working days of receipt of the final application whether or not the application has been approved. Longer response periods apply to larger generators, as specified in the Regulations. We may seek your written agreement to one or more extensions of the response time by up to 40 days each. If your final application is declined, we will provide detailed reasons and advise what steps you will need to take to ensure approval. If it is approved, we will provide with our response:</p> <ul style="list-style-type: none"> • Detailed description of the related conditions of approval together with the reasons for these • Details of the line charges payable by the generator

<p>Generator's notice of intention to proceed:</p>	<p>You must provide written notice to WEL Networks within 30 days of our approval of your final application as to whether or not you intend to proceed. This period may be extended by mutual agreement. The notice of intention to proceed must include:</p> <ul style="list-style-type: none"> • Details of the distributed generator to be connected • Acceptance of all of the conditions and other requirements of WEL Networks that were specified in the approval document. If one or more of these is not accepted then a disputes resolution process is triggered.
<p>Connection agreement and inspection & testing:</p>	<p>A connection agreement should be negotiated between the parties within 30 business days of receipt of the generator's notice to proceed. This period can be extended by mutual agreement. If the parties cannot conclude a connection agreement within the agreed time, then the generator will be connected as soon as is practicable on the terms prescribed in the Regulations.</p> <p>The final step before activating the connection is inspection and testing. You must provide adequate notice of this, so that WEL Networks can send a qualified representative to site for observation purposes. Our fee for this observation is \$135 incl GST if your generator is smaller than 100kW. Higher fees apply to larger generators and these will be the maxima as specified by the Regulations. When the inspection and testing is complete, you must provide us with a written test report that includes suitable evidence that the metering installation complies with the required standards and rules.</p>

4. SELECTING YOUR GENERATOR TYPE

Wind, mini-hydro, reciprocating engines and gas turbines are probably the most commonly used systems for distributed generation above 10kW. These systems are available from various suppliers in New Zealand. WEL Networks does not sell or supply these systems and has no affiliation with any supplier. Please note that WEL Networks will not take any responsibility for the accuracy of claims or other information provided by your generator supplier. Our advice is that you talk to qualified specialists and compare the specifications of various products before deciding on a system.

5. TECHNICAL REQUIREMENTS

You must ensure that your generator will not compromise safety and will not adversely affect other parties who are connected to our network. You will need to use a registered electrician and other qualified people to install your system and you will need to obtain an electrical Certificate of Compliance (CoC).

Regardless of the type of generator you select, you will need as a minimum to comply with the following standards:

AS 4777.1 - Grid connection of energy systems via inverters - installation requirements

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

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

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

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

The AS 4777.1 to AS 4777.3 standards apply to distributed generation systems that are connected to an electricity network via inverters. They focus primarily on solar panel systems, but they can also be applied to other generator types. If you are contemplating a non-inverter system then you will still need to comply with the parts of these standards that are applicable.

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

All synchronous generators exceeding 30 kW and not subject to dispatch must also comply with the current revision of the WEL Networks document “Embedded Generation Network Connection and Safety Requirements: Part a) Synchronous Generators Exceeding 30 kW and Not Subject To Dispatch”. Copies of this are available upon request.

The generator must not interfere with WEL Networks’ network switching operations or ripple control of protection signalling.

The generator must not interfere with other customers’ quality of supply, unless there is a specific agreement in place with these customers and any third parties. This may mean that some generators will not be permitted to connect to the network, for example in certain rural locations.

WEL Networks’ Control

WEL Networks will reserve the right to disconnect a generator for the purposes of maintaining safety or integrity of supply. If the generator is co-sited with a load, this could mean either disconnection of the generator from the premises or complete site de-energisation at the connection to the network.

Any generator with a capacity greater than 500 kW may be subject to dispatch and must be able to provide WEL Networks’ control room with generator status information. We may require fast-response excitation equipment to be fitted.

In the event that we agree to control the generator, we will enter into a appropriate arrangement with the generator as part of the connection agreement. This will mean that WEL Networks has exclusive control of the generator and that on-site safety precautions and procedures will be established to promote safe and reliable operation.

Protection

The EEA Guide specifies protection requirements. The level of protection and the associated requirements to integrate with the network's protection equipment (eg rural auto-re-closers) will have to be approved by WEL Networks prior to initial connection of the generator.

For directly connected (non-inverter) generators of any size, we will require the following:

- A generator circuit breaker
- Over and under voltage protection
- Over and under frequency protection
- Earth fault protection
- Neutral voltage displacement

All generators must have means of synchronisation.

For all generators above 200 kW and for smaller generators in some locations, voltage regulation or power factor control will be required.

Loss of Supply

Unless a specific agreement to the contrary between the parties is reached, all generators must disconnect themselves automatically from the network upon loss of supply. Reconnection will not be allowed without the prior approval of WEL Networks. Also there must be a readily accessible means of isolation the generator which is to be equipped with a lockable isolator switch.

6. DISTRIBUTED GENERATION (DG) CONNECTION - INITIAL APPLICATION FORM FOR GENERATORS ABOVE 10 KW

All initial applications for the connection of generators of more than 10 kW must be made by means of completing and submitting the appropriate form. This is available on our website <http://www.wel.co.nz/index.asp?pageID=2145853709> or from our head office in Hamilton.

This application will enable WEL Networks to:

- Assess whether or not your proposed generator meets our safety and technical requirements
- Identify any network constraints or conditions that may result in additional costs being incurred
- Evaluate the combined effect on our network and other connected parties of your proposal, together with other proposals that may have been received

The information that we require includes:

- The ICP number of your existing connection if you have one
- Your street or installation location address
- The generator type and nominal power output in kW
- The number of electrical phases to be generated (1 or 3)
- Manufacturer and model of the generator and related equipment
- Technical specifications

- Your contact details for our response or requests for additional information

The fees that are to be provided with initial applications depend on the total capacity on the generator and they are as follows:

10 kW but less than 100 kW:	\$ 562.50 incl GST
100 kW or above but less than 1 MW:	\$1125.00 incl GST
1 MW and above:	\$5625.00 incl GST

7. RESPONSE TO INITIAL APPLICATION

You will be advised within 5 working days of receipt of the completed initial application and fee whether or not the information you have provided is complete. If it is, WEL Networks will then assess the information and respond with information that you will need to assess the viability of the project.

We will respond to your application within 30 working days of our receipt of the completed application, by providing information about the network that will help you to decide if you want to proceed. You will also be advised at this time of any further investigative studies that will be required.

8. THE FINAL APPLICATION AND RESPONSE

This requires submitting an application on WEL Networks' prescribed form, which is available from our website <http://www.wel.co.nz/index.asp?pageID=2145853709>. This must be done within 12 months of your receiving our response to your initial application. The results of any investigative studies that you may have undertaken also need to be submitted at this time.

If the proposed generator is less than 1 MW capacity, we will provide written notice within 45 working days of receipt of the final application whether or not the application has been approved. Longer response periods apply to larger generators, as specified in the Regulations. We may seek your written agreement to one or more extensions of the response time by up to 40 days each.

If your final application is declined, we will provide detailed reasons and advise what steps you will need to take to ensure approval. If it is approved, we will provide with our response:

- Detailed description of the related conditions of approval together with the reasons for these
- Details of the line charges payable by the generator
- If the connection of your DG is likely to require expenditure on the network then we will advise you accordingly. This would mean that approval to connect would be subject to agreement on additional terms relating to payment for part or all of the related expenditure on the network.

9. GENERATOR'S NOTICE OF INTENTION TO PROCEED

You must provide written notice to WEL Networks within 30 days of our approval of your final application as to whether or not you intend to proceed. This period may be extended by mutual agreement. The notice of intention to proceed must include:

- Details of the distributed generator to be connected

- Acceptance of all of the conditions and other requirements of WEL Networks that were specified in the approval document. If one or more of these is not accepted then a disputes resolution process is triggered.

10. CONNECTION AGREEMENT

A connection agreement will be negotiated between the parties within 30 business days of receipt of the generator's notice to proceed. This period can be extended by mutual agreement. If the parties cannot conclude a connection agreement within the agreed time, then the generator will be connected as soon as is practicable on the terms prescribed in the Regulations.

11. INSPECTION & TESTING

The final step before activating the connection is inspection and testing. You must provide adequate notice of this, so that WEL Networks can send a qualified representative to site for observation purposes. Our fee for this observation is \$120 plus GST if your generator is smaller than 100kW. Higher fees apply to larger generators and these will be the maxima as specified by the Regulations. When the inspection and testing is complete, you must provide us with a written test report that includes suitable evidence that the metering installation complies with the required standards and rules.

12. OPERATIONAL MATTERS

Before committing to the project, you are advised to consider future operational matters, such as maintenance of your plant and a suitable arrangement with an electricity retailer. This retailer arrangement will need to address:

- Acquisition and reading of input and output meters
- Agreement for the sale of surplus electricity
- The tariffs that your retailer will apply

13. ADDITIONAL LINE CHARGES

Even though you will be generating and selling you own electricity, you may be required to pay an additional line charge. This will depend on the nature of your installation and the agreement reached regarding payment for additional work required on the network that results from your installation. Any such charges will need to be agreed prior to connection and may either be billed directly to you or via your electricity retailer as an additional line charge.

14. CHANGE OF OCCUPANCY OR CHANGING THE CONFIGURATION OF THE INSTALLATION

In the event that the occupancy of your property changes, it is important that the new operator of the generation equipment understands and accepts the responsibilities and obligations of having a distributed generator connected to WEL Networks' network.

If you wish to make any changes to the DG installation, you will be required to submit a new application.