

Distributed Generation (>10kW) Policy



Horizon[®]
Networks

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1. Introduction & Purpose

This policy has been prepared in accordance with the Electricity Industry Participation Code 2010 (Part 6 Connection of Distributed Generation) Regulations (the “Regulations”). It sets out the process and requirements for the connection of distributed generation with capacity of more than 10 kilowatts to Horizon Energy’s network.

2. Terms & Definitions

Term	Definition
Anytime Demand	The higher of the Load Anytime Demand or the Generation Anytime Demand
Load Anytime Demand	The average of the 100 load demands that are coincident with the Lower North Island (LNI) 100 peaks
Generation Anytime Demand	The average of the 100 generation demands that are coincident with the Lower North Island (LNI) 100 peaks
Generation Coincident Demand	The average of a generator’s demand coincident with the System Demand
Regional Coincident Peak Demand (RCPD)	The average of the 100 load demands for any particular grid exit point (GXP that are coincident with the Lower North Island (LNI) 100 peaks demands)
Reliability Penalty	<p>Operators of distributed generation, which restricts Horizon Energy’s ability to use auto-reclosers for management of the Network, will be subject to a penalty charge for the additional System Average Interruption Duration Index (SAIDI) minutes that may result</p> <p>An average number of SAIDI minutes are calculated for each applicable generator on the following basis:</p> <ul style="list-style-type: none"> ○ Number of generators supplied from the feeder ○ Multiplied by Average number of trips (per annum) ○ Multiplied by Average number of minutes required to restore <p>This average SAIDI number is then used to calculate the reliability penalty using a rate per generator minute. This charge is calculated at the beginning of each pricing year and charged monthly</p>
Power Factor Charge	<p>Horizon Energy reserves the right to pass on power factor charges for generation where:</p> <ul style="list-style-type: none"> ○ Transpower charge for power factor; or ○ Power factor is detrimental to the operation of Horizon Energy’s network <p>Power factor will be charged where the point of connection power factor is less than 0.95. Horizon Energy may, at its discretion, allow a consumer/generator a specified period of time to correct the power factor at the connection</p>

3. Policy Details

NOTE: Horizon Energy reserves the right, at any time, to amend any part of this policy including, without limitation, the type, amount or application of any distribution and transmission charges, penalties or rebates set out in this policy. This policy is intended as a summary only and is not intended to be a statement of Horizon Energy's rights and obligations in relation to distributed generation.

This policy includes the following sections:

- 4 – Connection Process
- 5 – Network Charges
- 6 – Technical Requirements
- 7 – Data Requirements
- 8 – Useful Links

Please read each section. If you have any questions related to this policy please contact Horizon Energy on (07) 306 2900 or email distributed.generation@horizonenergy.net.nz.

4. Connection Process

4.1. Installation Codes and Standards

In the case of new generation, the installation of the distributed generation must be done by a registered electrician in accordance with the approved plans and specifications and all relevant building and electrical codes and standards, including AS/NZS 3000 and AS 4777 and also in accordance with the technical requirements as detailed in section 6 below.

4.2. Connection

4.2.1. Initial Application

You can make an initial application for connection of distributed generation with capacity of more than 10 kilowatts to Horizon Energy at any time. At the time you submit the application, you must pay Horizon the relevant application fee. The application fees are non-refundable and as follows:

- (a) [\$500+GST] for distributed generation of above 10 kilowatts in total but less than 100 kilowatts in total,
- (b) [\$1,000+GST] for distributed generation of 100 kilowatts or above in total but less than 1 megawatt; and
- (c) [\$5,000+GST] for distributed generation of 1 megawatt and above.

Horizon Energy will acknowledge receipt of the application within 5 business days of receiving it and will notify you as to whether the application is complete.

Within 30 business days of the date that Horizon Energy receives the completed initial application form and required documentation, we will provide the following information to you:

- (a) information about the capacity of the distribution network, including both the design capacity (including fault levels) and actual operating levels;
- (b) information about the extent to which connection and operation of the 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) information about any measures or conditions (including modifications to the design and operation of the distribution network or to the operation of the 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 the distributed generation;
- (e) information about any further detailed investigative studies that Horizon Energy reasonably considers are necessary to identify any potential adverse effects on the system resulting from the proposed connection, together with an indication of:
 - (i) whether the distributor agrees to the generator, or a suitably qualified agent of the generator, undertaking those studies; or
 - (ii) if not, whether the distributor could undertake those studies and, if so, the reasonable estimated cost of the studies that the generator would be charged;
- (f) information about any obligations to other parties that may be imposed on Horizon Energy and that could affect the 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 Horizon Energy considers would assist your application; and
- (h) Information about the extent to which planned and unplanned outages may adversely affect the operation of the distributed generation.

You may reasonably request further information from Horizon Energy that is reasonably necessary to enable you to consider and act on the information given to you as set out above. Horizon Energy will provide this information to you within 10 business days of receipt of the request.

4.2.2. Final Application

You must make a final application within 12 months after receipt of the information from Horizon Energy if you intend to proceed to connect to our network. You must include all

the information and supporting documentation that is specified by Horizon Energy on the final application form, which is posted on our website. This information is to include the results of any investigative studies identified by Horizon Energy that are to be undertaken by you or your agent in the initial application process.

When Horizon Energy receives the final application we will use reasonable endeavours to give written notice to:

- (a) all persons who have made an initial application for the connection of distributed generation to the particular part of the network that Horizon considers would be affected by the connection of the distributed generation that is the subject of the final application; and
- (b) all customers who have distributed generation above 10 kilowatts in total connected on regulated terms to the particular part of the network that Horizon Energy considers would be affected by the connection of the distributed to that part of the network.

We will give written notice to you stating whether the final application is approved or declined within the time limits specified below:

- (a) 45 business days after the date of receipt of the final application, in the case of an application for distributed generation that is not capable of generating electricity at a rate of at least 1 MW;
- (b) 60 business days after the date of receipt of the final application, in the case of an application for distributed generation that is capable of generating electricity at a rate of at least 1 MW but is not capable of generating electricity at a rate of at least 5 MW; or
- (c) 80 business days after the date of receipt of the final application, in the case of an application for distributed that is capable of generating electricity at a rate of at least 5 MW or above.

We may ask for one or more extensions of the above timelines in considering whether the final application is approved or declined. If you consent, you may specify the period of the extension however it cannot be more than 40 business days.

If Horizon Energy approves the final application, our approval may be subject to any conditions that are reasonably required. Our notice of approval will be accompanied by a description of the conditions of connection and the charges payable by you. We will give reasons for those conditions and advise you of the dispute resolution process should you dispute the conditions or charges payable.

If Horizon Energy declines the final application, we will tell you why and what steps that you can take to ensure a new application for connection of distributed generation is approved. We will also ensure you are aware of the dispute resolution procedure under the Regulations.

If Horizon Energy approves your application, you must provide written notice to Horizon Energy of whether you intend to proceed with the connection and, if so, confirming the details of the generation to be connected. You have 30 business days from the date you are notified that your application has been approved to provide such notice. If you fail to do so within this time, our approval of your application will expire and we will not be required to proceed with the connection. You may request an extension of the 30 business day period.

4.3. Connection Contract and Data Management

4.3.1. Connection Contract

If we approve your application and you notify us that you wish to proceed with the connection within the specified time period, then we will provide you with a connection contract and the negotiate the terms of that contract with you in good faith for a period of 30 business days (starting on the date on which Horizon Energy received notice of your intention to proceed). We may agree to extend the 30 business day term by mutual agreement.

For distributed generation with capacity of 10kW to 1MW, Horizon Energy will seek to negotiate a contract directly with the operator of the distributed generation which will deal with the technical, safety and operational aspects of the connection of the distributed generation to the Network. There will be an interposed agreement between the Retailer and the operator of the distributed generation for billing purposes.

For distributed generation of over 1 MW, Horizon Energy will seek to negotiate a contract directly with the operator of the distributed generation. This contract will deal with all aspects of connection of the distributed generation to the Network including billing and the technical aspects of the connection of the distributed generation to our network. Such contracts include details of the charges that will be payable in respect of the connection of the distributed generation to our network.

If you enter into a connection contract with Horizon Energy, we will connect the distributed generation to our network in accordance with that contract as soon as practicable.

If you do not enter into a connection contract within the 30 business day period prescribed above, then Horizon Energy will connect the distributed generation to our network on the regulated terms and, to the extent not inconsistent, our Standard Terms and Conditions of Connection as soon as practicable after the later of:

- (a) the expiry of the negotiation period; and
- (b) the date on which you have fully complied with any conditions or other measures that were specified by Horizon Energy as conditions of the connection; or

- (c) if conditions or other measures are the subject of a dispute, the date on which the dispute is finally resolved and those conditions or other measures have been performed by you.

The regulated terms are set out in Schedule 2 of the Regulations and a copy is posted on our website. A copy of our Standard Terms and Conditions of Connection is also available from our website. If there is any conflict between our Standard Terms and Conditions of Connection and the regulated terms, the regulated terms prevail.

4.3.2. Data Management

You will need to appoint a data administrator (your Retailer will be able to help with this). All load and half hourly generation data applicable to the connection will need to be supplied to Horizon Energy and to the Reconciliation Manager via the chosen data administrator (see section 7 of this policy). In addition, Horizon Energy will raise an ICP number for the generation site. Horizon Energy will notify the Retailer of this identifier for reconciliation purposes.

4.4. Metering

Where distributed generation is being added to an existing load connection, metering equipment may need to be changed on the installation. A distributed generation installation **MUST** have a half hour meter that records import and export energy flows separately and is compliant with the Regulations. Your Retailer or a registered electrician can confirm this.

4.5. Retailer Interface

You should discuss options for the sale of energy from the distributed generation with your Retailer. The Retailer will usually enter a contract with you once the distributed generation has been approved for connection to Horizon Energy's network. Each ICP must have only one Retailer for both importing and exporting energy. Any switch of Retailers must occur at the beginning of a month.

4.6. Testing and Inspection

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 Horizon Networks adequate notice of the tests and inspection – we may send qualified personnel to the site to observe the testing and inspection;
- c. provide Horizon Networks with a written test report when testing and inspection is complete, including suitable evidence that the metering installation complies with the metering standards in the rules; and
- d. pay the fee specified by Horizon Networks for observing the testing and inspection, up to the maximum non-refundable fee of \$350 (plus GST).

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
- and compliance of warning notices and labelling.

Whether or not you entered into a connection contract with Horizon Networks before the period for negotiating a connection contract, you must complete the testing and inspection presented above prior the connection of distributed generation.

If you have entered into a connection contract with Horizon Networks, your distributed generation will be connected in accordance with that contract as soon as practicable. Otherwise, Horizon Networks will connect the distributed generation on the regulated terms as soon as practicable after the expiry of that period.

4.7. After Connection

You must provide as-built information and drawings to Horizon Energy following connection of the distributed generation to our network.

You are required to carry out testing and inspection of your distributed generation. You must provide adequate notice to us beforehand. We may send qualified personnel to the site to observe the testing and inspection. You must provide Horizon Energy with a written test report after the testing and inspection is complete. The report should include suitable evidence that the metering installation complies with the metering standards in the Regulations. You must pay a non-refundable fee of \$350 (plus GST) to Horizon Energy for observing the testing and inspection

5. Network Charges

You will be responsible for the cost of any upgrade of our network or any additional network assets required for connection of the distributed generation to our network in accordance with the pricing principles specified in the Regulations. This may require you to make an upfront payment. Charges may also be levied for assets that are shared by you with other generators to enable the transmission of the generated energy to the Transpower grid connection point

5.1 Transmission Charges

5.1.1. Avoided Cost of Transmission (ACOT)

Distributors will no longer make ACOT payments to new distributed generation. Transpower will be responsible for assessing the need for additional grid support from new distributed generation where that would be the cheapest way to achieve the required level of transmission service.

For existing generation the Electricity Authority will make the final decision on which distributed generation will receive ACOT under the default DGPP terms prior to implementation on 1 October 2018 for distributed generation located in the lower North Island (LNI). Currently no embedded generation ACOT is available at the Edgecumbe GXP due to existing generation agreements in place.

5.1.2. Transpower Connection Charge

Any distributed generation with a load will be required to pay a contribution towards the cost of connection of Horizon Energy's network to the National Grid. The connection charge will be levied against the Load Anytime Demand.

5.1.3. Interconnection

Interconnection charges apply to Load Anytime Demand at the prevailing Transpower kW rate for the year in question.

6. Technical Requirements

The connection of the distributed generation to our network must comply at all times with Horizon Energy's technical requirements and all relevant industry governance, statutory and regulatory requirements (including the Electricity Governance Rules, the Electricity Regulations 1997 and all applicable codes of practice and industry standards).

You must provide as much technical information as possible about the distributed generation at the time the plans and specifications of the distributed generation are provided to Horizon Energy for approval.

In the case of new generation, the installation must be done by a registered electrician. The installation must be carried out in accordance with all applicable building and electrical codes and standards, including AS/NZS 3000 and AS 4777. Once a certificate of compliance has

been obtained following testing and commissioning of the distributed generation, it must accompany the application to Horizon Energy for connection of the distributed generation to our network.

Horizon Energy may require you to arrange for some analysis of our network to be undertaken before it approves the connection of the distributed generation to ensure the distributed generation will not affect the operation or integrity of our network. This analysis may include analysing the potential for power quality issues as well as matters relating to ripple plant operation, voltage and power factor issues. Any technical report provided to Horizon Energy must be of a standard acceptable to Horizon Energy (acting reasonably). The cost of any such analysis and resulting technical reports is to be borne by you.

Dependant on the size of the distributed generation, Horizon Energy may require the operator of the distributed generation to provide information in a form that will interface with the Horizon Energy supervisory control and data acquisition system (SCADA). The information will include, but not be restricted to, circuit breaker status, station output in MW and MVAR and voltage.

Large distributed generation projects may be subject to Transpower's Connection Code and Electricity Governance Rules obligations. Refer to Transpower's web site for more information.

7. Data Requirements

7.1 Data Format

Load and generation data that is to be supplied to Horizon Energy must be provided in the format prescribed by Horizon Energy which is in line with that required by the Reconciliation Manager. This data must be at the "at the gate" data without the addition of any loss factor that may apply.

7.1 Loss Factors

At the time that the connection contract is entered into Horizon Energy will allocate technical loss factors to the distributed generation. These loss factors will be calculated through load flow modelling on a case-by-case basis.

8. Useful Links

Electricity Authority

<http://www.ea.govt.nz/code-and-compliance/the-code/>

Ministry of Economic Development

Distributed Generation Regulations

http://www.med.govt.nz/templates/ContentTopicSummary_3847.aspx

Transpower

<https://www.transpower.co.nz/system-operator/resources-asset-owners/generation-connection-dispatch>

9. Amendment Record

Page No.	Context	Date
9	Section 5.1 updated	29/3/2017
4,9,10,12	Fees details, Testing and Inspection; and Useful Links updated sections 4.2.1, 4.6, 4.7 and 8.	13/10/17