



Guide to Connecting Distributed Generation to the MainPower Network

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1. What is Distributed Generation (DG)?

Distributed Generation (DG) is any equipment used to generate electricity that is connected to the distribution network. This includes dedicated generation installations and generators connected through existing installations, such as homes or businesses. While most of these systems are installed to lower the amount of power imported, and therefore paid for, there is always a chance that some amount of energy will be exported to the network. As the provider of energy to your premises through the distribution network it is vital that MainPower is aware of all connected generation sources to maintain the quality of supply to our customers that we strive for.

Typically, DG is split into two categories; equal to or under 10kW and over 10kW. The smaller systems are generally installed in homes or small businesses whereas the larger systems are used by industrial customers or large businesses.

As the number of DG systems connected to the network increase, so do their impact on the network. At the moment the number of connected DG systems is not great enough to have a significant impact on the network however to enable us to control this impact in the future we have created our congestion management policy, outlined later in this document.

2. What do I need to know?

MainPower will endeavor to allow connection of DG in all instances. We recommend that before you submit your application or purchase any equipment, you make contact with our Network Services Representative team to discuss your needs ([0800 30 90 80](tel:0800309080) or nsr@mainpower.co.nz). It is important to talk to us as early as possible to avoid any unnecessary costs or delays.

You can then complete the application form at www.mainpower.co.nz/get-connected. The form can be completed by either the DG owner or a representative.

Inverters

If you want to connect DG that requires an inverter (e.g. solar) the AS/NZS 4777 series of standards must be followed. Your electrician/DG installer should be familiar with these standards if you require any advice. Otherwise, MainPower can assist.

These standards are also available for purchase from <https://www.standards.govt.nz/>. A declaration of conformity will be required from the inverter manufacturer if the inverter isn't on MainPower's list of approved inverters.

If you want to connect DG that doesn't require an inverter, please contact us.

Phases

If you wish to connect DG with a rating of greater than 5kW you will need to have a three-phase connection to the network. There will also need to be no greater than a 5kW unbalance between any two phases of your installation.

3. How do I apply?

Outlined below are the steps that you will need to take to connect distributed generation to our network. This information complies with the Electricity Authority, Electricity Industry Participation Code 2010 Part 6, Connection of Distributed Generation ("the Code"). You can [read the code here](#).

3.1 Select your system and sizing

For installations with inverters connecting the generation to the grid, the AS/NZS 4777 series of standards must be followed. These standards have been created with solar generation in mind but can be applied to other types of generation systems.

For applications involving systems over 10kW, please select an application in accordance with Part 2.

For applications involving systems under (or equal to) 10kW, you can use the Part 1 or Part 1A pathway. A Part 1A application requires use of a pre-approved inverter and will shorten timeframes for the process. A list of pre-approved inverters can be found on the MainPower website. If your system is under 10kW and has no inverter you will need to use Part 1.

3.2 Contact your electricity retailer

To connect generation to the network there must be an agreement for any exported power to be purchased and recorded. This is most commonly done through an agreement with your existing energy retailer and the installation of an import/export meter at the generation location. It can also be done through an agreement with the Electricity Authority's clearing manager although this is less common. This is required before connecting to the network without exception. Any costs associated with metering changes will be agreed between you and your retailer.

3.3 Fill out the application form

MainPower has provided a form for all requests to connect DG to our network. This must be completed for all generation that is grid connected. All the information requested must be provided.

We will confirm receipt of your application via an automated email. If you do not receive this, please get in touch and let us know.

If the application is incomplete, or we require additional information, we will advise you of this within five working days of receiving the application.

3.4 Application acceptance

For Part 1A applications, using known compliant equipment, we aim to approve connection within 5 – 10 business days. If we do not approve a Part 1A application within 10 business days, under New Zealand regulations, it is deemed to be accepted. It is important that we have a record of all connected generation so please contact us to receive formal approval. This acceptance is dependent on MainPower knowingly receiving your initial application and any unapproved connection of generation may result in a request to disconnect.

For Part 1 applications, MainPower will approve or decline the application to connect within 30 business days. If this does not occur, please contact MainPower to ensure we have received your application. There is no provision to connect without written acceptance under a Part 1 application.

For Part 2 applications, MainPower will communicate with the DG owner or a representative the expected time frames to allow for approval or any further investigation that may be required by MainPower or the DG owner within 30 business days. This communication can include network parameters and the likely impact of the connected generation, any distribution network related upgrades or change to the operation of the DG that are required to mitigate any negative impacts or information about any studies required to identify potential adverse effects the generation may have on the network. If further study is required, it will be identified if MainPower accepts the DG owner (or a suitably qualified person) to undertake the studies or if MainPower is able to perform the studies and a reasonable cost estimate for this work. The timeframe for acceptance of a Part 2 application varies with system size.

3.5 If we decline your application

If we decline your application, we will provide details as to why this has occurred and the steps you can take to fix the issues. A declined application does not stop you from applying again in the future. If you disagree with the decision we make, a disputes resolution process is provided in Section 6.3 of the Code.

3.6 Connection of Generation

After your system has been installed you are required to provide MainPower with a copy of your Certificate of Compliance (COC) and Record of Inspection (ROI) within 10 working days. Failure to do so may result in a request to disconnect your DG from the network.

4. Congestion Management Policy

The distribution network has been built to handle the traditional flow of power, from source to load. Distributed generation alters this model by allowing the load to become the source and feed energy back onto the network. The effect of this reverse power flow is to counter the drop-in voltage along power lines typically experienced in the traditional system. As levels of DG in close proximity increase, pockets of the network with high voltages can occur. This is possibly damaging to sensitive electronics and can impact the operation of certain machinery or household electronics.

Because there is such variance in the operation and export capacity of DG systems, congestion management is best performed on a case-by-case basis. There are two main options to manage network congestion:

- 1) By ensuring new connections are only allowed in uncongested areas or always accompanied by network upgrades to mitigate the impact of the new connection
- 2) By agreeing in real-time and case-by-case on the operational rules that will apply

Typically, MainPower will prioritise the use of option 2 to manage congestion but this is dependent on the area of congestion, the type and severity of congestion and the business model of the connection proposal.

In line with the pricing principles in the Electricity Industry Participation Code 2010 Part 6 Connection of Distributed Generation, in situations where a proposed generator will add to, rather than relieve, network congestion, and where this congestion requires reinforcement of the network, we will charge this to the connecting distributed generator.

5. Contact

Contact the MainPower Network Service Representative team to discuss distributed generation.

Phone MainPower on 0800 30 90 80

Email nsr@mainpower.co.nz