

# DG Connection and Operation Policy

Version 2.0 – 173P001  
Date Issued 2 Oct 23

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## 1. Purpose

This policy sets out the principles governing how Powerco will engage with prospective owners and operators of Distributed Generation (DG) connected to Powerco's network.

This policy should be read in conjunction with Powerco's Congestion Management Policy (DOC-ID-00010), relevant technical standards and application guides, Part 6 of the Electricity Industry Participation Code<sup>1</sup> (the 'Code'), and pricing guidelines issued by Powerco's Commercial Team (see Section 8). These set out the technical requirements, connection application process and commercial arrangements in more detail.

## 2. Definitions

Term	Meaning
<b>Distributed Energy Resource (DER)</b>	Any device connected to an electricity distribution network (directly or indirectly) which can generate electricity, store electricity and redirect it back to the network, or be controlled to provide demand response.
<b>Distributed Generation (DG)</b>	Any DER that can energise the network. Excludes generators without grid-tie capability such as standby generators.
<b>Demand Response (DR)</b>	A passive load that can be controlled or isolated to reduce the loading on a network. Also referred to as controllable demand.
<b>Energy Storage System (ESS)</b>	Generally comprising batteries, these are a form of DG. Combined PV + ESS are treated as two DG devices if they have independent grid-tie inverters, otherwise one DG device.
<b>Electric Vehicle (EV)</b>	An Electric Vehicle (EV) charger without grid injection capability is a passive device but potentially capable of providing DR. A Vehicle to Grid (V2Grid) EV charger is an active device, and hence considered to be a form of DG and DER.
<b>Flexible DER</b>	A Flexible DER is a connected load or generator whose consumption or output can be moderated in response to anticipated or unanticipated electricity supply variability. This can be either by automated load management, direct intervention by the network operator, end consumers (owner of the devices) or contracted third-parties, or indirectly through market incentives.
<b>Solar Photovoltaic (Solar PV)</b>	Solar PV panels use energy from the sun to generate electricity. If they are configured to inject electricity into the network, they are a form of DG.
<b>Controllable Generation</b>	Generation which can be instructed to increase or decrease output in response to local or remote signals, or pricing. As such, it can provide flexibility to address network congestion.

<sup>1</sup> Electricity Industry Participation Code 2010 Part 6 Connection of distributed generation

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Term	Meaning
<b>Intermittent Generation</b>	A generation technology that relies on a variable energy source such as wind or solar, and whose power export cannot therefore be predetermined or pre-set. {Note – it can be curtailed to address local export congestion, but this is not considered “controllable”.}
<b>Hosting Capacity</b>	The maximum additional unconstrained DG capacity the existing network can accommodate. While currently expressed as a static value; in future this may reflect the time variant and dynamic nature of capacity.  The term can be applied to load also; but in the context of this policy only refers to generation.
<b>Export Congestion</b>	Export congestion (as defined in Part 1 of the Electricity Industry Participation Code 2010) refers to a situation in which a distribution network is unable to accept electricity exported from DG because the injection of an additional unit of electricity into the distribution network would: <ol style="list-style-type: none"> <li>Directly cause a component in the network to operate beyond the component's maximum rated capacity; or</li> <li>Give rise to an unacceptably high level of voltage at the point of connection between the distribution network and the distributed generation.</li> </ol>

Figure 1 illustrates the DER terminology used in this policy.

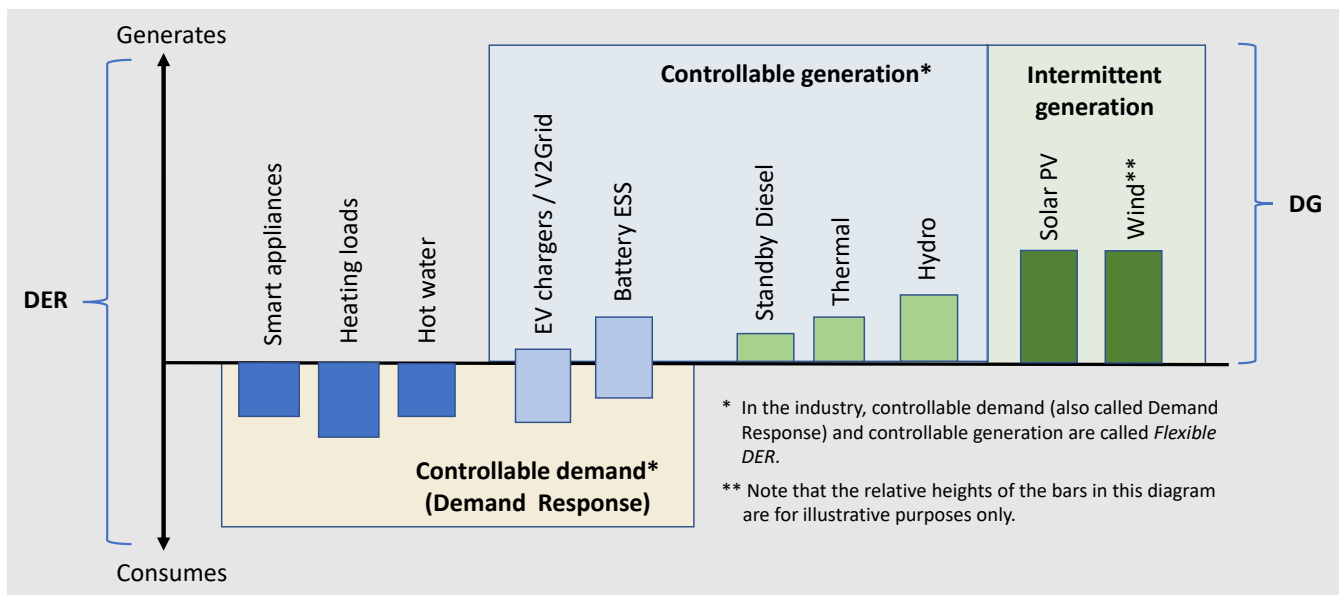


Figure 1: DG, DER, DSR and Flexibility Resources

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## 3. How Powerco facilitates connection of DG

We support NZ's decarbonisation and transition to renewable energy, aiming to make the process of connecting and operating distributed generation on our network as quick and simple as possible.

We will assist prospective DG owners to pre-assess the viability of a connection, by publishing information on network hosting capacity, being the estimated available network capacity for prospective future DG proposals.

If the DG owner decides to proceed, we will follow the process outlined in Part 6 of the Code, while also streamlining the connection approval processes for each class of DG.

We will make use of informative, user-friendly digital interfaces wherever possible, while still gathering the necessary information to ensure the intended DG installation conforms with our standards.

We will continue to develop enabling platforms to support DG while still effectively managing export congestion. This includes monitoring, communications systems and associated protocols, technical standards, and price structures.

## 4. Minimum technical requirements

Prospective DG must meet the technical requirements described in the following Powerco standards for an application to be approved:

- 393S089 Distributed Generation Up To 10kW Connection Standard
- 393S012 Distributed Generation Over 10kW Connection Standard
- 393S195 Large Scale Distributed Generation Connection Standard

After the facility has been commissioned, DG owners must allow Powerco to conduct periodic inspections and tests to verify the continuing functionality of protection and isolation facilities and any control capabilities. Powerco may also wish to periodically check power quality. (These inspections and tests will be carried out at Powerco's expense.)

## 5. Hosting Capacity

To assist prospective DG owners in understanding the DG capacity limits that may apply at a proposed connection point, Powerco will periodically publish a snapshot of the available hosting capacity at each point on the medium- and high-voltage network. This will reflect the unconstrained additional DG that could be accommodated at the time the snapshot was taken, considering:

- Technical and operational network characteristics and constraints
- All existing generation, all existing load (operating at a reasonable estimate of minimum loading) and any future customer connections that are committed to or foreseen with reasonable certainty,
- Our ability to manage DG output, directly or indirectly, to avoid export congestion.

It will not include prospective connections that have not progressed to a stage of sufficient forecasting certainty of capacity required.

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Any network locations indicating nil hosting capacity would generally be regarded as congested, in that no additional injection capacity can be connected at peak constraint times without operational congestion management or network augmentation.

## 6. Congestion management

Please refer to our Congestion Management Policy DOC-ID-00010 for details on how we signal and manage export congestion.

## 7. Safety

We may periodically require temporary isolation of DG from the Distribution Network to accommodate a safety response, fault repair or planned work on a distribution or subtransmission network. This includes remediation of any network stability problems contributed to by the connected DG.

We may also need to isolate DG if its export characteristics come to differ from that agreed to in the Connection Agreement through modification or malfunction.

## 8. Commercial arrangements

DG applications may incur fees to cover the cost of the engineering resources needed to process it, particularly where requests require exploration of options to extend the available hosting capacity.

Exploring hosting capacity options is often an iterative process, and we will work with you in good faith while we converge on an agreement. For applications that proceed on standard regulated terms, prices will reflect initial and ongoing costs, applying the pricing principles in Schedule 6.4 of the Code. Tailored applications may incur additional cost, reflecting the additional inputs required by Powerco to accommodate these. We will be transparent with prospective DG owners about costs and options at all stages of the process.

Where network upgrades involve shared assets, or assets which could likely be shared in future, we will achieve fair allocation of benefit costs through pro-rata allocation between Powerco and the end-user(s). Our [pricing methodology](#), [pricing policy](#), and [capital contribution guide](#) contain further information on recovery of network costs for customer connections or upgrades.

The specifics of the project, Industry or regulatory developments may impact the nature of commercial arrangements. This could include transmission pricing, the arrangements for managing flexibility and DER, and whether the project is eligible for network support payments.

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## 9. Document review history and Control

Version	Date	Change
2.0	18 Oct 23	First formal issue

Document management and control		
	Name and position	Date
Document owner	Eric Wolters, Strategy Principal	Oct 2023
Approved by	Ryno Verster, Business Strategy Manager	Oct 2023
This standard will be reviewed every 5 years		