

# Voltage quality and constraints disclosure

## August 2025

### Electricity distribution information disclosure determination 2012

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## Introduction

This Asset Management Plan disclosure covers the additional narrative requirements prescribed in the Commerce Commission's Targeted Information Disclosure Review (November 2024 decision). These requirements are specified in Clause 2.6.1B and Clause 17.2.2 of Attachment A in the Amendment Determination. The requirements are as follows:

**"2.6.1B** Each EDB is also required to publicly disclose qualitative information in narrative form that describes its practices in a manner that complies with clause 17.2.2 of Attachment A by 31 August 2024 in a standalone document."

## Disclosure

- 1) A description of any policies or practices for:**  
**providing sufficient information on current and forecast constraints (including LV network constraints where known) to inform the decision-making of potential consumers connecting to the network and potential providers of non-network solutions, and regarding load and injection constraints on LV networks.**

All known constraints are listed in Table 49 of the TPCL AMP 25/26 update. Relevant parts of the table are reproduced here for ease of reference.

Table 49: Network Constraints and Intended Remedy

Constraint	Description	Management Approach
<b>Capacity at Zone Substations</b>	Substations close to (or exceeding) maximum capacity. Colyer Road, Edendale Fonterra, Glenham, Kelso, Kennington, Makarewa, Otatara, Riversdale, Seaward Bush, South Gore, Te Anau, Tokanui, Underwood.	Load are reviewed annually to ensure timing of projects is kept just ahead of load.  Upgrades are planned for the following substation: Colyer Road, Edendale Fonterra, Kelso, Makarewa, Otatara, Riversdale, Tokanui, and Underwood.
<b>North Makarewa GXP</b>	Transpower 220/33kV Transformers Capacity	The current capacity of the NMA 220/33kV supply transformer is limited to 67.3 MVA due to the ampacity of the cable. These transformers are rated at 68.3 MVA in summer and 71.2 MVA in winter. The capacity of the Grid Exit Point (GXP) is being closely monitored. If necessary, Transpower may implement the Transformer Overload Protection Scheme (TOPS) for these transformers and upgrade the cable.

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		The expansion of the 66kV network from Invercargill GXP to Underwood and Makarewa substation, which is planned for FY30/31 – FY34/35, is expected to help reduce load at the GXP. However, the increasing number of large-scale generation projects connecting to the western southland region could pose capacity constraints and necessitate an upgrade.
<b>North Makarewa</b>	33/66kV Transformer Capacity	<p>The two 33/66kV transformers at the North Makarewa are 40MVA each; however, due to an increase in generation connection, the capacity of the generation will exceed the capacity of the transformer and run back scheme will be implemented on a new generation to protect the transformer from overload under abnormal network configuration.</p> <p>An upgrade is planned for the North Makarewa substation, which will involve relocating the existing 40MVA 66/33 kV transformer from Mossburn. This relocation is intended to alleviate the current capacity constraints during FY25/26 and FY26/27, allowing for an installed capacity of 120MVA and a firm capacity of 80MVA.</p> <p>Note: The next constraint will be at the Grid Exit Point (GXP), as discussed in the previous section.</p>
<b>Limited Transfer Capacity between Gore and North Makarewa</b>	Limited integration between Gore and North Makarewa GXP.	<p>The 33/66kV transformer at Lumsden intends to provide an N-1 supply for Riversdale Substation, allowing transferable between Gore and North Makarewa. However, the transferable capacity from the overhead line is minimal. It can only cover load on Riversdale from North Makarewa or part of Lumsden from Gore, even though the transformer is rated for 15MVA.</p> <p>Investigate network upgrades to improve network reliability during contingency conditions.</p>
<b>Capacity available on the 33kV circuit to Makarewa and Underwood substation</b>	The capacity available on the Makarewa and Underwood circuit is expected to reach its design limitation.	The development in the Makarewa region is being closely monitored. Upgrades are planned for FY30/31 to FY34/35 to convert the existing 33kV circuit and substation in the Makarewa region to 66kV, which will be supplied from the Invercargill GXP.
<b>Capacity available on the 33kV circuits to Colyer Road substation</b>	The capacity available on the 33kV lines to the Colyer Road is close to its design limitation.	<p>Closely monitoring the development at the Seaward Bush, Coloyer Road and Bluff substation supply region. Tactical upgrades have been conducted on the INV 2742 and INV 2842 33kV feeders to increase circuit capacity and temporarily relieve some constraints.</p> <p>Further upgrades are planned for the fiscal years 2026/27 to 2028/29 to enhance the Colyer Road substation to 66kV by introducing a new 66kV circuit from the Invercargill GXP, which is being triggered by the Open Country Dairy Boiler project. This upgrade is expected to relieve approximately 12 MVA from the existing 33kV circuit and provide additional capacity for regional development in the near future.</p>
<b>Subdivisions</b>	Possible large developments in Athol and Kingston	Upgrade MV distribution network from the Athol substation and extend the 66kV subtransmission to Kingston if further growth occurs.

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<b>Voltage constrains on the Rural distribution network</b>	Conversion of farms to dairying may cause feeder voltage to drop below network planning limit.	Install 11kV regulators to improve voltage. Install new substations or convert lines and supply to 22kV if growth continues.
<b>Environmental – Oil</b>	Expectation that no significant oil spills from substations	Install oil bunding, blocking and separation systems.
<b>Coastal marine</b>	Increased corrosion of overhead lines Salt pollution reducing insulation effectiveness	Use high-spec (corrosion resistant) equipment near coast Over-insulate lines near coast
<b>MV Transformers</b>	Some transformers are near full capacity.	Maximum Demand Indicators (MDIs) and smart meters are monitored. Transformers will be upgraded or supplemented with additional units as needed. Underutilized transformers may be relocated before purchasing new ones.

Where we have known or forecast injection constraints on the LV network, these are published in map format on our website with the constrained locations indicated.

<https://powernet.co.nz/future-energy/generation-and-storage/get-connected/>

## 2) A description of

- any challenges, and progress, towards collecting or procuring data required to inform the EDB of current and forecast constraints on its LV network, including historical consumption data; and
- any analysis and modelling (including limitations and assumptions) the EDB undertakes, or intends to undertake, with that constraint-related Data.

It is recognised that as the uptake of EVs and other technologies increases, some parts of TPC's network may become constrained. TPC has fortunately invested in smart meters across its network, completed the deployment and is seeing the benefits of data availability of Low voltage (LV) network visibility. This is further enhanced due to TPC's relationship with SmartCo (of which TPC is a shareholder). That has enabled the development of electronic tools to provide this greater visibility of the LV network, providing valuable information for PowerNet as network manager to monitor network loading and congestion and forecast future growth, including use of wider data analytics. Having this insight will enable us to seek the most efficient solution to LV congestion, which may be either a network upgrade or a non-network solution.

PowerNet is currently developing load forecasting and scenario planning tools to allow constraint mapping and modelling of the LV growth. This will allow better forecasting of LV

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and MV constraints with the forecast constraints identified and published, and solutions sought.

## Certificate for year-end disclosures

We, Peter William Moynihan and James Albert Carmichael, being board members of The Power Company Limited certify that, having made all reasonable enquiry, to the best of our knowledge-

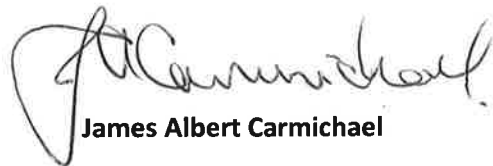
- a) the information prepared for the purposes of clauses 2.6.1B of the Electricity Distribution Information Disclosure Determination 2012 and Clause 17.2.2 of Attachment A in the Amendment Determination (Nov 2024) in all material respects complies with that determination.



Peter William Moynihan

Director

Dated 3 Sept 25



James Albert Carmichael

Director

Dated 3/09/2025

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