Voltage quality and constraints disclosure

August 2024

Electricity distribution information disclosure determination 2012

Monitoring load and injection constraints

Information Disclosure requirements

This material has been prepared to provide additional information to meet the requirement set out in clause 17.2.2 (a) and (b) of the Commerce Commission's Electricity Distribution Information Disclosure Amendment Determination 2024.

This material supplements the information on the management of our low voltage network contained in Section 6 of [Alpine Energy's 2023-2033 Asset Management Plan](#).

Challenges and progress towards collecting data to inform current and forecast constraints on the low voltage network

Enhancing network visibility

We have reasonably good visibility on high voltage (HV) and low voltage (LV) networks via remote connected/controlled field devices and SCADA. We are exploring opportunities to access more granular data and enhance visibility to allow our digital twin to simulate the actual network behaviour more closely. This will enable us to:

- Enhance operational flexibility and widen avenues for improved customer services;

- Optimize network assets; and

- Identify and resolve network constraints.

Low voltage network visibility

Our existing LV monitoring platform utilises smart metre data, and can provide a good visibility across our network, enabling us to provide an improved service to the customers. It supports diverse applications and functionalities to identify issues in the network, including;

- LV network congestion calculations (distribution transformer loading):

- Distributed generation (DG) hosting calculations;

- High and low voltage conditions; and

- High impedance faults.

We continue to engage with our service provider and the other relevant parties to improve our LV network visibility platform.

Our short-term goals are to:

- Improve accuracy of estimates of distribution transformer loading;

- Improve accuracy of congestion and DG hosting capacity calculations to support faster assessment of customer new connection requests;

- Gain access to other smart meters that are not owned by our current service provider to improve the accuracy of loading calculations;

- Develop a framework to capture and process LV network voltage breaches to support overall network planning;

- Develop tools to detect the presence of electric vehicles (EVs) and DG on our LV network; and

- Develop LV phase mapping.

Analysis and modelling (including limitations and assumptions) Alpine undertakes, or intends to undertake, with constraint-related data.

We have not carried out any modelling using LV constraint-related data to date. Future load forecasting is challenging at an LV level. The traditional linear regression-based forecasting is not capable of capturing multiple variables which could alter customer electricity consumption patterns such as EV and DG uptake, other technological developments, and the potential impact of climatic changes.

We are working towards a more inclusive and comprehensive load forecasting methodology. This will enable us to forecast impacts and prepare the LV network to meet new demands efficiently and effectively.
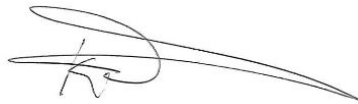
Directors' certificate

We, Melissa Clark-Reynolds and Kevin Winders, being directors of Alpine Energy Limited New Zealand certify that, having made all reasonable enquiry, to the best of our knowledge:

a. the above attached information of Alpine Energy prepared for the purposes of clause 2.6.1B of the Electricity Distribution Information Disclosure Determination 2012 in all material respects complies with that determination.

b. The prospective financial or non-financial information included in the attached information has been measured on a basis consistent with regulatory requirements or recognised industry standards.

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Melissa Clark-Reynolds

30 August 2024

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Kevin Winders

30 August 2024