Electric Vehicle Charging Infrastructure (EVCI) Trial

Interim charger and network performance report

26 June 2026

Executive Summary

The Electric Vehicle Charging Infrastructure (EVCI) Trial has been established to generate practical, evidence-based insights into how distribution networks can support Victoria's transition to electric transport, with a particular focus on network performance, charger utilisation and customer charging behaviours.

Delivered by CitiPower, Powercor and United Energy, the trial is examining the real-world integration of pole-mounted EV charging infrastructure across a range of metropolitan and regional locations. The program is designed to improve understanding of how EV charging demand manifests at the low voltage network level, including utilisation patterns, temporal load profiles and site-specific customer behaviours.

The trial involves the installation of up to 100 publicly accessible, pole-mounted chargers. Networks are responsible for the installation, connection and ongoing asset management of the infrastructure, while charging services are operated by independent third-party providers. This model enables the assessment of both technical performance and operational interfaces between network and market participants.

A key focus of the trial is to assess how existing distribution assets can safely and efficiently accommodate EV charging load. Early findings indicate that charger utilisation varies significantly by location and is influenced by local parking availability, land use and customer access to off-street charging. Emerging customer charging patterns demonstrate clustering of demand at certain times of day, reinforcing the importance of understanding temporal diversity and its implications for network loading.

From a network performance perspective, initial observations indicate that current levels of utilisation have not resulted in material adverse impacts on power quality or network reliability. Where localised impacts have been observed, they have remained within manageable operating limits and are being effectively addressed through existing monitoring and operational practices. These findings indicate that, at current penetration levels, pole-mounted EVCI can be integrated whilst maintaining network integrity.

Importantly, the trial is enabling a deeper understanding of utilisation thresholds and the conditions under which network augmentation or mitigation measures may be required as EV uptake increases. It is also informing approaches to site selection, connection design and operational management to optimise both customer outcomes and network performance.

The insights generated through this trial are intended to address current evidence gaps and support future planning, regulatory and investment decisions. As utilisation increases over time, continued monitoring will be critical to understanding evolving customer behaviours, demand growth and potential network impacts at scale.

CitiPower, Powercor and United Energy remain committed to transparently sharing these findings with governments, regulators and industry participants to support a coordinated and efficient transition to an electrified transport system.

Project Background

Victoria has set ambitious decarbonisation objectives, including a commitment to achieve net zero emissions by 2050 and a long-term vision for zero-emission vehicles to become the dominant form of transport across the state.

A key enabler of this transition is the availability of reliable, accessible and affordable charging infrastructure. While electric vehicle adoption continues to grow, charging accessibility remains one of the most significant barriers influencing customer confidence and purchasing decisions.

Research consistently identifies charging availability, convenience and concerns regarding charging access as important factors affecting EV adoption rates. These challenges are particularly pronounced for customers who do not have access to private off-street parking, customers living in higher-density urban environments, and customers located in regional communities where charging infrastructure may be less prevalent.

Recognising these challenges, CitiPower, Powercor and United Energy developed the EVCI Trial to explore how existing electricity distribution infrastructure could support the delivery of public charging services in a safe, efficient and scalable manner.

The trial was established following a ring-fencing waiver application to the Australian Energy Regulator (AER), enabling the networks to install and maintain EV charging infrastructure while independent third-party operators provide customer-facing charging services.

The trial is intentionally limited in scope and scale. It is designed as a learning initiative rather than a commercial charging network. The objective is to gather practical insights that can assist governments, regulators, network businesses and market participants in understanding how public charging infrastructure may evolve as EV adoption accelerates.

The trial focuses on several key areas of learning.

- impact of EVCI charging on demand in local networks
- impact of customer charging on price elasticity during periods of both low and high demand
- application of new technologies on the networks
- understanding utilisation rates of local area identities, for instance utilisation of residential streets compared to commercial and no-off-street parking locations to inform demand forecasting
- impact of power quality on the network from customer charging behaviour
- development of processes and technical guidelines for ECVI connections.

About this Report

This report presents the early assessment of the Electric Vehicle Charging Infrastructure (EVCI) demand, utilisation patterns and associated impacts on network performance under CPU's pole mounted EVCI trial.

Over the reporting period usage data indicates a progressive increase in charger utilisation, though overall load profiles remain variable and influenced by site-specific behaviours and time-of-use patterns.

Network performance analysis was conducted on a limited number installed on the CitiPower network and shows that the integration of EVCI has not resulted in widespread or material adverse impacts to power quality or network performance. Observed impacts, including localised voltage fluctuations and have been limited in scope and have remained within manageable operating thresholds. Where minor issues have emerged, they have been effectively mitigated through existing network controls and monitoring practices.

The findings support the continued application of the site selection as a pragmatic mechanism to facilitate timely EVCI deployment while maintaining network integrity. Importantly, the report highlights that current levels of charger uptake and utilisation do not present systemic risks, but ongoing monitoring remains critical as penetration increases.

Looking ahead, the report identifies the need for a continued refinement of connection and mitigation frameworks to ensure the network remains resilient under higher EV adoption scenarios.

Site Analysis

Network performance analysis was undertaken for the period January to May 2026, across sites on the CitiPower network, to assess the operation of installed electric vehicle chargers. This is an **example of information** that will be included in the annual reporting, however on installation of the 100 chargers the data will be provided in an aggregated format for readability.

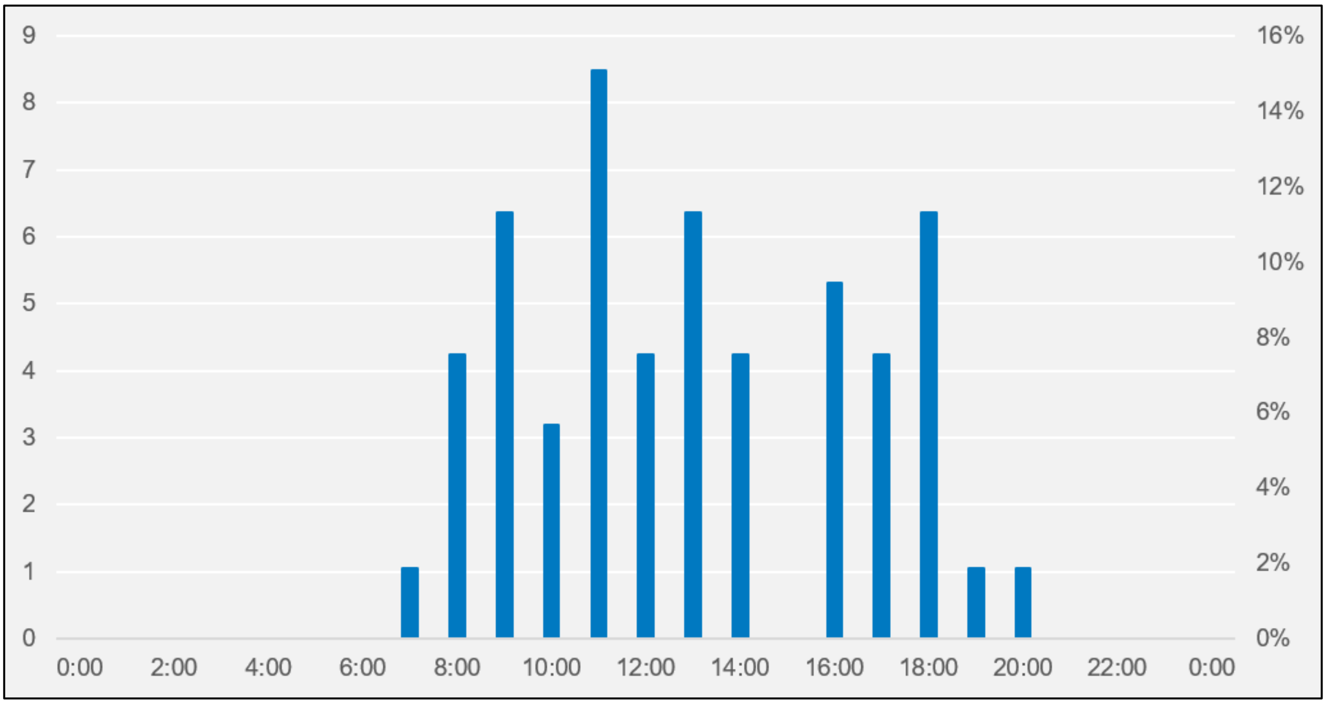
This analysis forms part of CitiPower's ongoing process to monitor charger performance and identify network performance and operational trends ahead of formal reporting to the Australian Energy Regulator (AER) as per waiver condition eight.

Charger - 6 Hepburn St Hawthorn Vic 3122

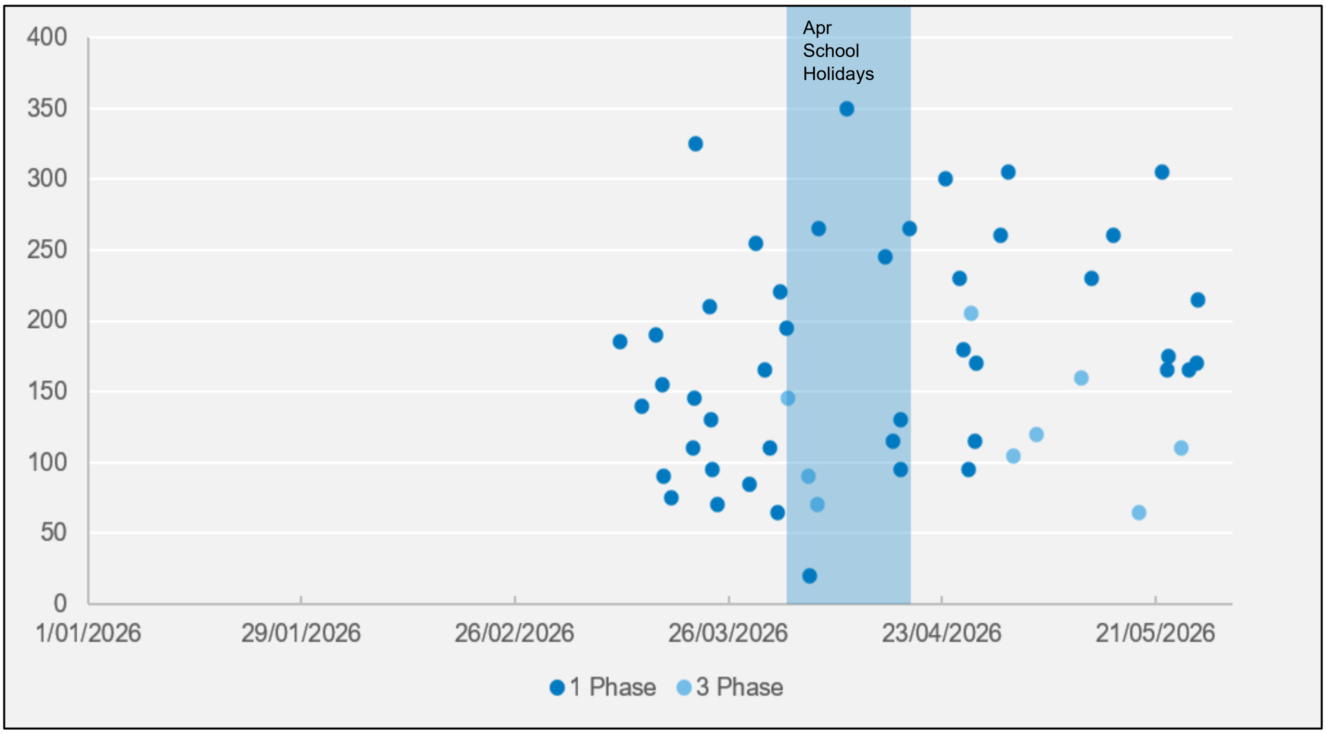
NMI	6103089722
Meter	B6298228
Address	6 Hepburn St, Hawthorn, Victoria
Pole identifier	797410
Distribution Substation	HEPBURN-BURWOOD
Supplying HV Feeder	CL016
Reporting period	January 2026-May 2026
Charger installation date	February 2026 (First charge detected on 11/03/2026)
Charger usage cycles	53 charge cycles initiated 16 5-min charge cycles detected* *EVCI AMI Meter records data in 5-minute intervals. Charge sessions with a duration of 1 interval data were detected. These are excluded from the reporting data below.

Time of use

(a) Frequency and relative frequency of charge session start times (hour of day) from January to May 2026



(b) Distribution of charge session start times (day of year) & duration (mins) from January to May 2026

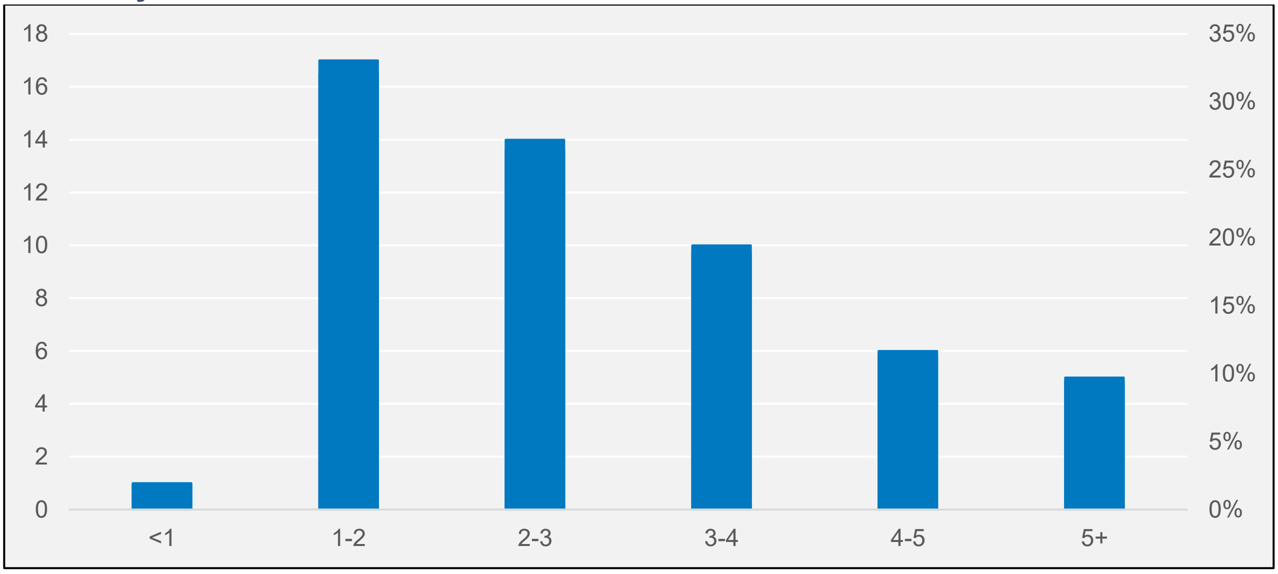


Duration of use

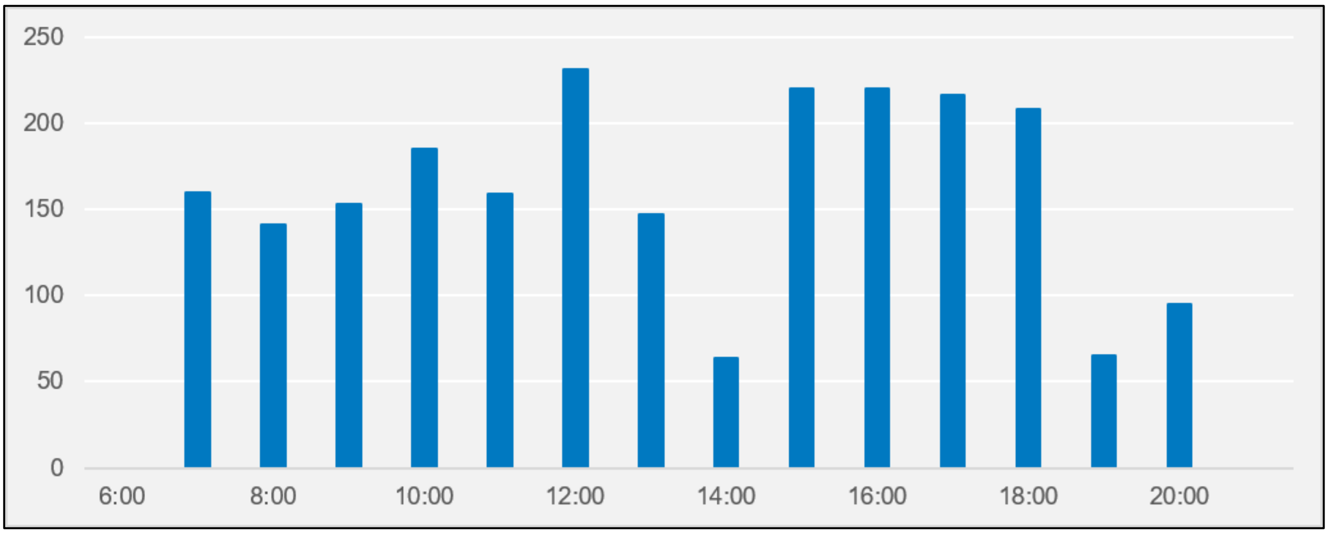
(a) Total & average length of time charger was in use

Charge Duration	
Total duration	148 hours & 30 minutes (8910mins)
Average duration	2 hours 48 mins

(b) Frequency and relative frequency of charge session duration (hours) from January to May 2026



(c) Distribution of charge sessions start times by duration (mins) from January to May 2026



Network impact

(a) Network Strength

Network strength at HEPBURN-BURWOOD distribution substation is considered strong.

This analysis considers the following:

- Substation capacity: Substation (500kVA nameplate capacity, 750kVA cyclic rating for pole top transformers) operating at 61.4% of nameplate capacity and 41% of cyclic rating on peak demand (307kVA) day. Substation has sufficient capacity for existing peak demand and additional load from EV Charger.
- Distance to substation: EV Charger at HEPBURN-BURWOOD is located close to the substation at 3 bays (87m) from substation transformer and is the third supply point from the beginning of the circuit.
- Circuit conductor types: Circuit conductors have sufficient capacity for existing peak circuit (285A) load plus the additional load (32A) from the EV Charger.

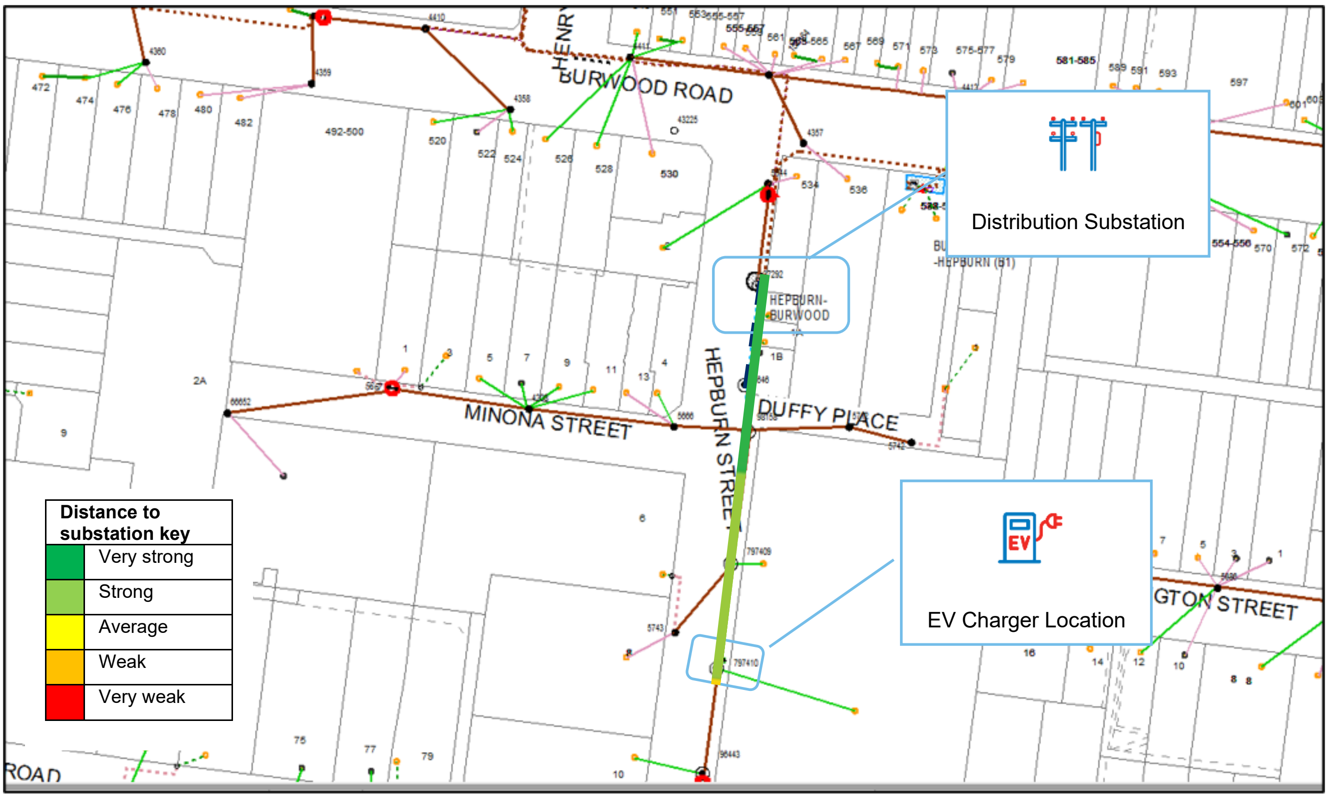
CIRCUIT CONDUCTOR SPECIFICATIONS

Section (Bays)	Conductor Type	Conductor Rating	Length (m)
1	UG XLPE 240mm	355A*	32
2-3	OH 7/4.75 AAC	370A**	55

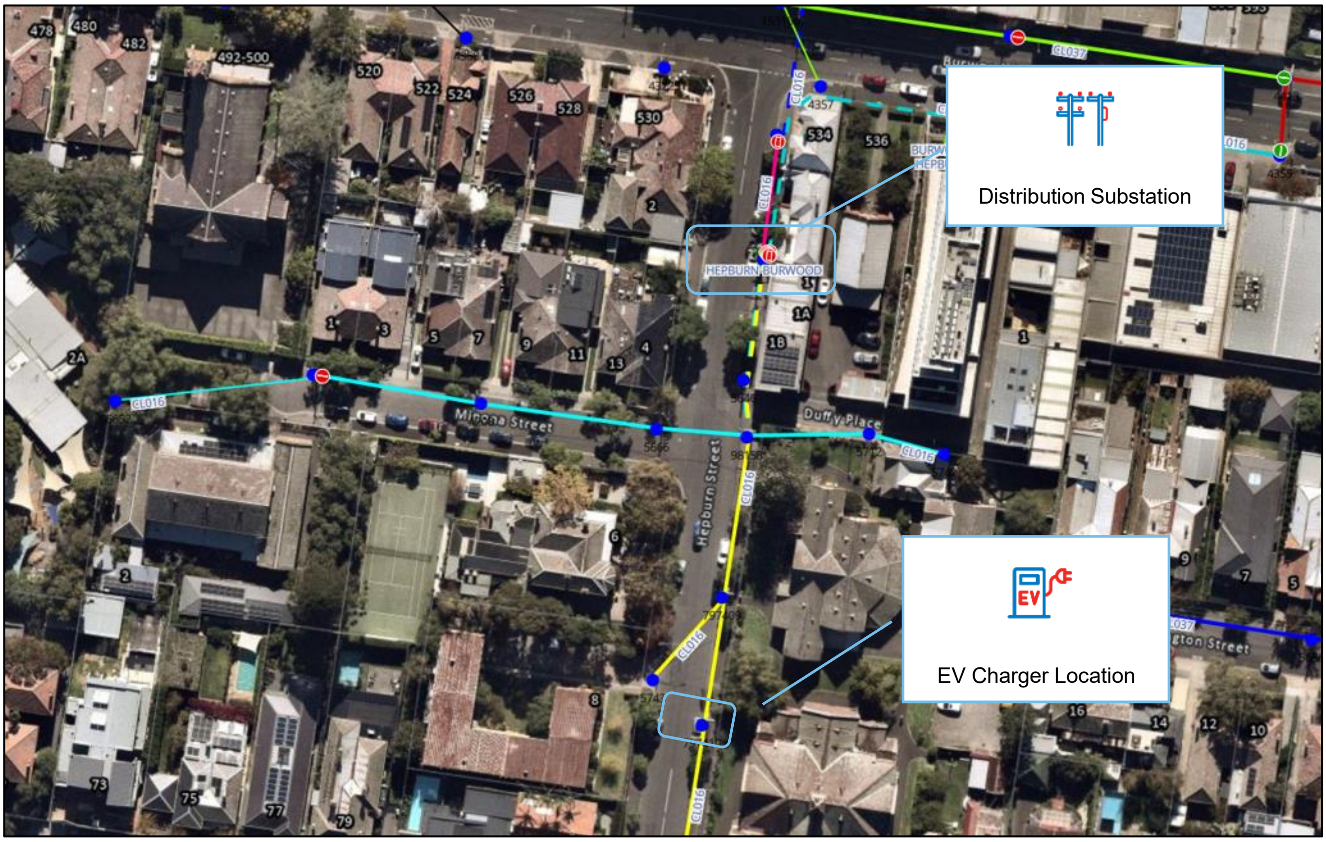
*Cyclic rating for cable in conduit

**Summer Day Metro Continuous Current Ratings @ 65 degrees Max Operating Temperature

Distance from HEPBURN-BURWOOD substation to the charger

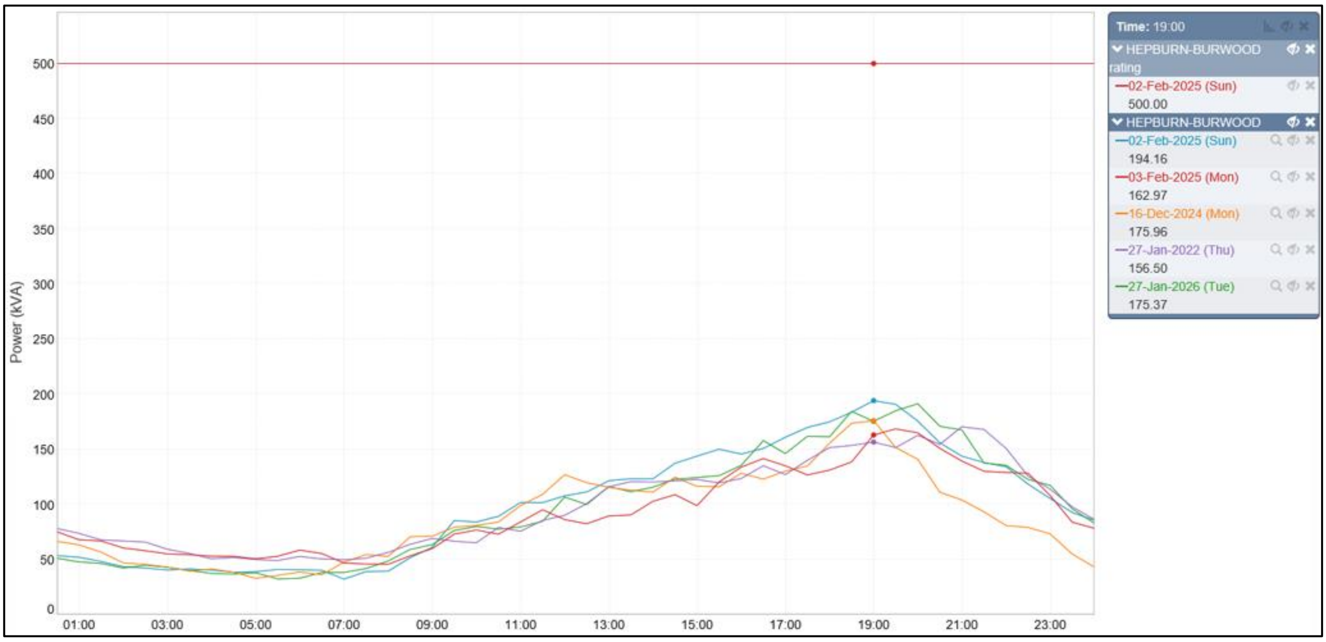


Topography of the charger and the HEPBURN-BURWOOD substation



The supplying substation is operating well within its available capacity, with peak demand representing only a portion of both nameplate and cyclic ratings, and the additional load from the charger is accommodated within existing headroom as shown by the below charts.

Electricity demand at the circuit the EVCI is supplied from (kVA) by hour of day for the five peak demand days from May 2024-2026



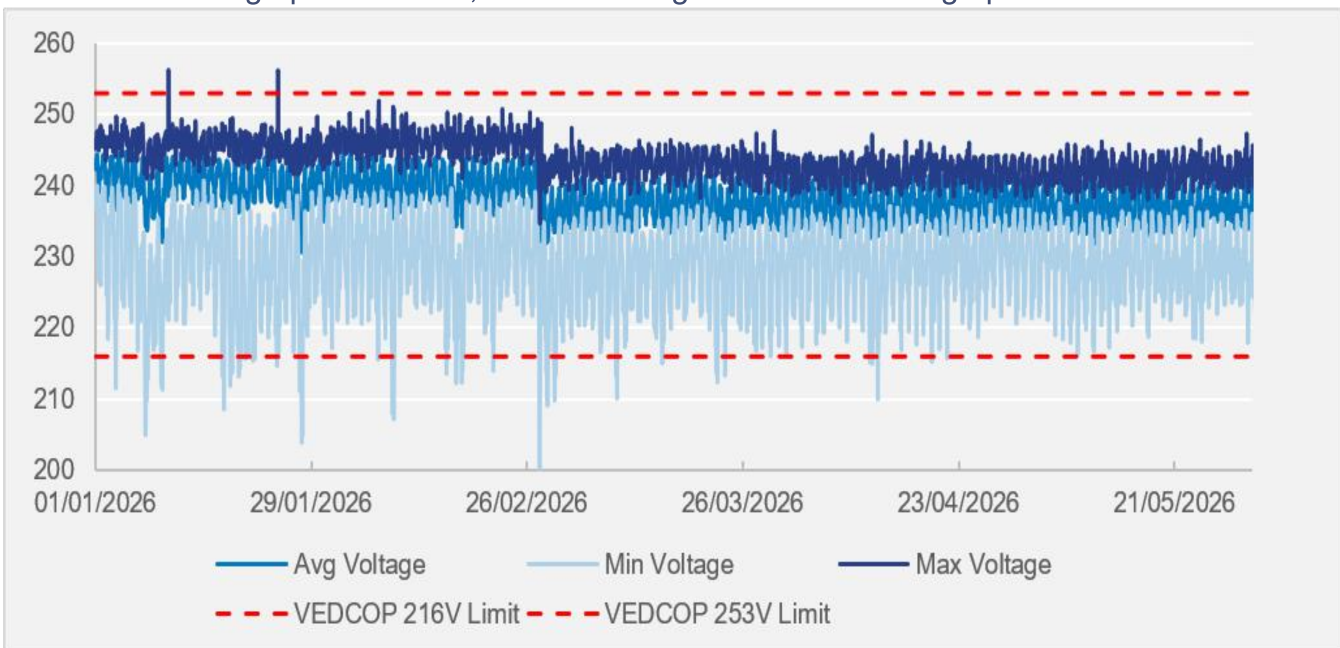
Electricity demand at the HEPBURN-BURWOOD substation (kVA) by hour of day for the five peak demand days from May 2024-2026

(b) Voltage performance of the main circuit and charger position

The charger at 6 Hepburn Street is connected to a constrained circuit, where at times during the year customers experience voltage excursions outside compliance limits, as shown by the red dashed lines in the circuit-level performance chart below.

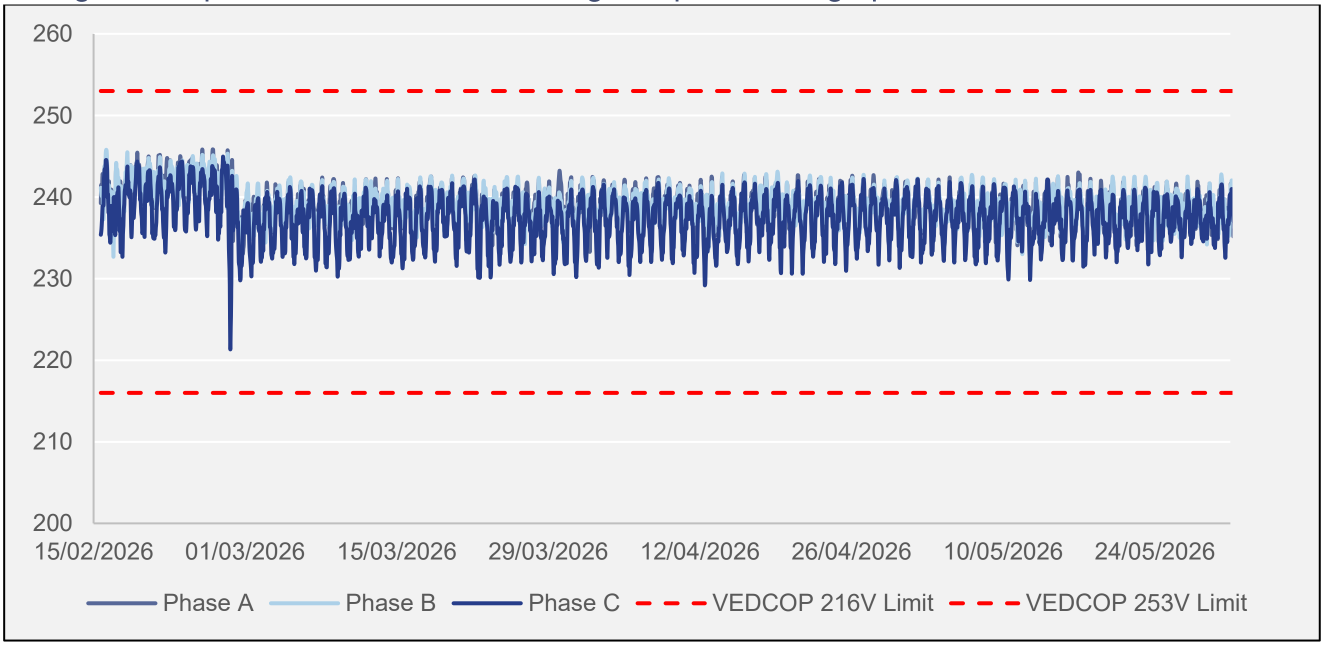
The voltage variation observed around 1 March, where voltage levels reduced by approximately 5 V, was due to a reconfiguration of the high voltage network supplying the substation.

Circuit level voltage performance, demonstrating constrained voltage performance



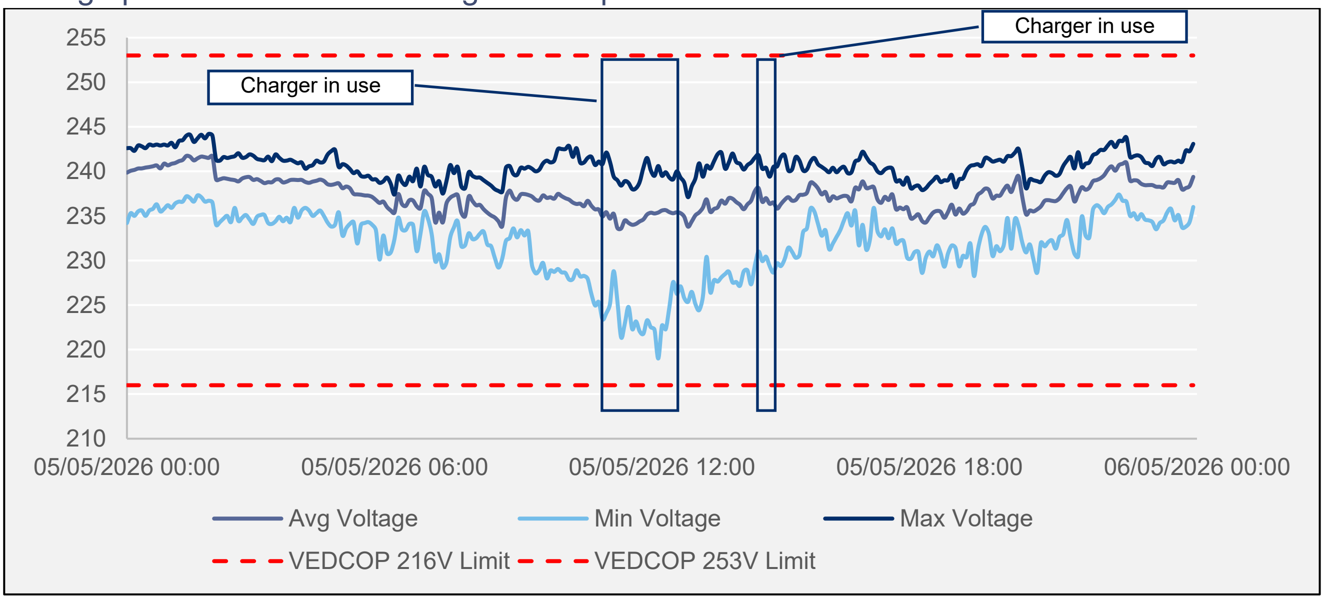
Despite these broader circuit constraints, voltage at the charger has remained within the prescribed limits of the Electricity Distribution Code of Practice, as shown in the charger-level voltage performance chart. This reflects the charger's close proximity to the supplying distribution substation, consistent with the strong network conditions outlined in the Network Strength section of this report.

Charger level performance, demonstrating compliant voltage performance



Importantly, the charger's position at a strong electrical connection point has limited the voltage performance impact attributable to its operation, as demonstrated in the chart below.

Voltage performance whilst charger is in operation



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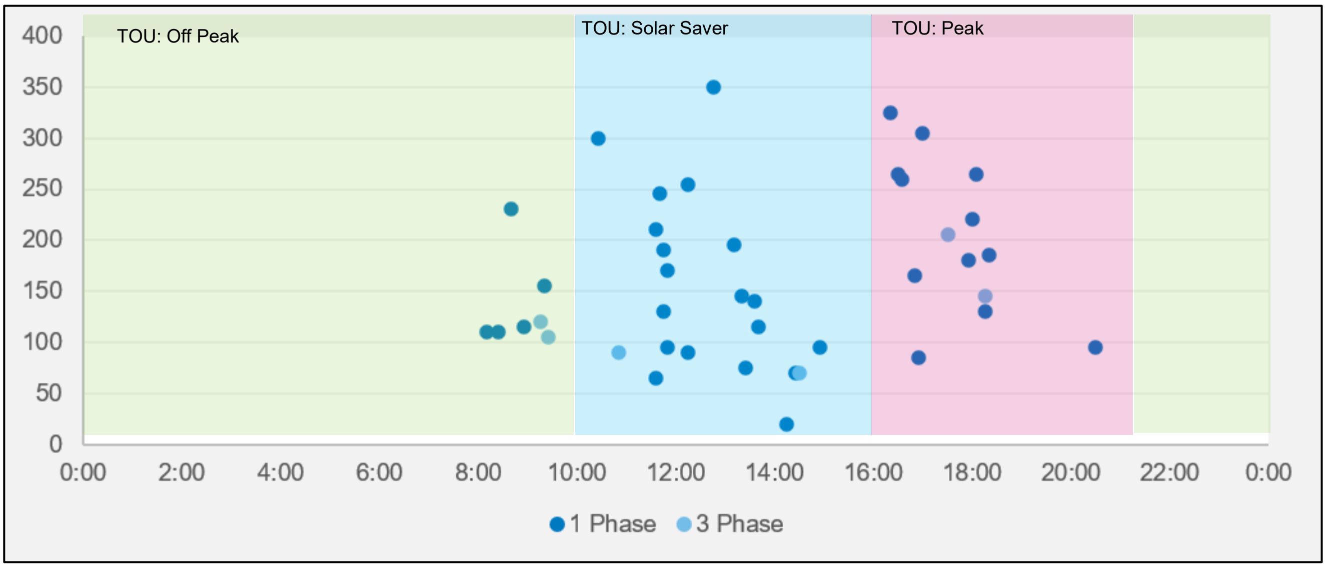
Demand response to Time of Use (TOU) tariffs

*Autumn period recorded below.

TOU tariffs are passed on to our onboarded EMSPs who set the tariff price for customers. We have therefore mapped demand against time of use tariff periods that are passed onto the EMSPs.



Time of Use Tariff Period	# of Charges initiated
Off Peak	8
Solar Saver	21
Peak	14

Electricity Supply Outage Log

No outages recorded during reporting period.

Performance of Chargers

Across the reporting period, EV charging assets achieved an average uptime of 100%, reflecting a consistently high level of operational availability. A small number of momentary outages were observed during the period; however, these were short in duration, promptly resolved, and did not materially impact charger availability or user access. No sustained faults or extended service interruptions were recorded.

Overall, performance demonstrates strong reliability across both the charging infrastructure and supporting network connections, with monitoring and maintenance processes effectively supporting issue identification and resolution. This outcome indicates that the design, installation, and operational approach adopted for the trial are well-suited to delivering stable and largely uninterrupted charging services in a real-world environment.

Energisation of Chargers

The energisation of electric vehicle charging infrastructure is a controlled, multi-stage process that ensures assets are safely connected to the distribution network, compliant with regulatory requirements, and operationally ready for customer use.

From the point of receipt of connection service orders issued by the electricity retailer, the average duration to achieve charger energisation was 4 days.