Facilitating CER in Australia’s two-way energy system

Export services network performance report 2025

December 2025

AUSTRALIAN ENERGY REGULATOR

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1 Executive summary

Electricity Distribution Network Service Providers (DNSPs) play a key role in facilitating the various distributed energy resources (DER)/consumer energy resources (CER) technologies into their distribution networks. Consumers are expected to drive the rapid uptake of electric vehicles (EVs), with ownership expected to increase from 300,000 in 2025 to almost 3.7 million in 2030 and then over 22 million in 2050.[1] The uptake will result in significant increase in electricity consumption, which will be delivered through public and private EV charging.

The report notes that private and public EV charging are managed through each DNSP's standard connection processes, with the load from the chargers not currently leading to widespread network issues. As demand increases over time, DNSPs would be expected to increase network expenditure and augment their networks to facilitate the increase. The need for network augmentation is already a factor in some public EV charging applications, where requirements for the connecting party to provide a capital contribution can cause projects to be delayed or abandoned.

Our report also explores the use of EV batteries for bidirectional EV charging through V2G services. As a growing service, V2G will allow EV owners to use their EV for transport, and also to export stored energy into the electricity grid.

Currently the number of V2G connections is very small and DNSPs are still developing connection policies to deal with the new service. In the future we expect this to change, as more V2G capable EVs become available in the Australian market, and they embrace the benefits of bidirectional charging.

CSBs can also play an important role in the decarbonisation of the energy system, as they can store locally generated electricity from residential households' rooftop solar photovoltaic (PV). The stored electricity in a CSB can be used to provide multiple services, which increases the CSB's economic value and the return on investment to its owners.

As a developing technology, there are current barriers to the widespread deployment of CSBs, some of which will decrease as the technology matures. Despite this, CSBs can provide demand management and network support services which can avoid or defer network investment. This provides a potential opportunity for CSBs to be used as an alternative to traditional network augmentation projects in the future as a more cost-efficient and reliable option.

1 That is, exports from small generating units as defined by Chapter 10 of the NER.

2 Scope and focus of 2025 report

This is our third export services network performance report, published under 6.27A of the National Electricity Rules (NER). The report provides information on the performance of electricity DNSPs in providing export services for embedded generators such as residential and small business customers with CER, to export into their networks.

Export services relates to exports into the grid from generating systems:

- with a nameplate rating less than 30 MW, and
- which Australian Energy Market Operator (AEMO) has exempted from the requirement to register as a generator. [2]

Embedded generators relate to generating systems with the following characteristics:[3]

- with a nameplate rating below 5MW which are fully connected to distribution (and transmission) networks. These generating systems are given a standing exemption.
- with a nameplate rating between 5MW and 30MW, which are not eligible for a standing exemption.

For our report, this means exports to the grid from current CER such as residential solar PV systems and batteries, as well as emerging services such as EV charging and V2G.

The 2025 Export services network performance report does not include the export services network performance data provided in the 2023 and 2024 reports. This is due to the export services network data now being reported by DNSPs through Annual Information Orders, which is not available in time for the publication of the 2025 report. The export service network data for the 2025 regulatory year will be reported in the 2026 calendar year.

This report provides information on how DNSPs are facilitating and optimising CER technology into their distribution networks with a focus on EVs, V2G and CSBs. This includes reporting on the current methods and future plans of DNSPs to manage network constraints and other system limitations in relation to CER services, whilst also enabling CER with stored energy to export into the grid.

This report is not intended as a comprehensive review, or AER analysis of the emerging technologies covered in the report, rather it details the current state of play of these new technologies as reported by the DNSPs. We are interested in stakeholder views on whether there is additional information that could be used to inform our export services network performance reporting in future. However any new additional data required in the future, would require a cost benefit analysis, to test whether the reporting benefits of the data outweigh the costs incurred by DNSPs in preparing the data.

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2 That is, exports from small generating units as defined by Chapter 10 of the NER.

3 AEMO, Guide to Registration Exemptions and Production Unit Classifications - Final, pp 6-7.

DER and CER

Distributed energy resources (DER) are devices or technologies that, as individual units, can generate or store electricity or have the 'smarts' to actively manage energy demand. These can be installed in "front of the meter' (located on the utility side of the meter) or 'behind the meter' (located on the customer's side of the meter).

Consumer energy resources (CER) are a type of DER that is privately owned (typically by consumers), rather than owned by a DNSP or for collective use. Examples of CER include solar photovoltaic (PV) installed on a residential rooftop, batteries, controlled load smart devices and EVs, which are commonly installed on the customer's side of the meter.

This year, our report also focuses on CSBs which are generally considered a DER because they are not typically owned by an individual consumer and are installed in 'front of the meter,' by being directly connected to the distribution network

2.1 Services provided by DNSPs to export services customers

The DNSPs we regulate offer varying levels of export services, technologies, and export capacity to the export service customers on their networks. Export services often include solar PV and home batteries.

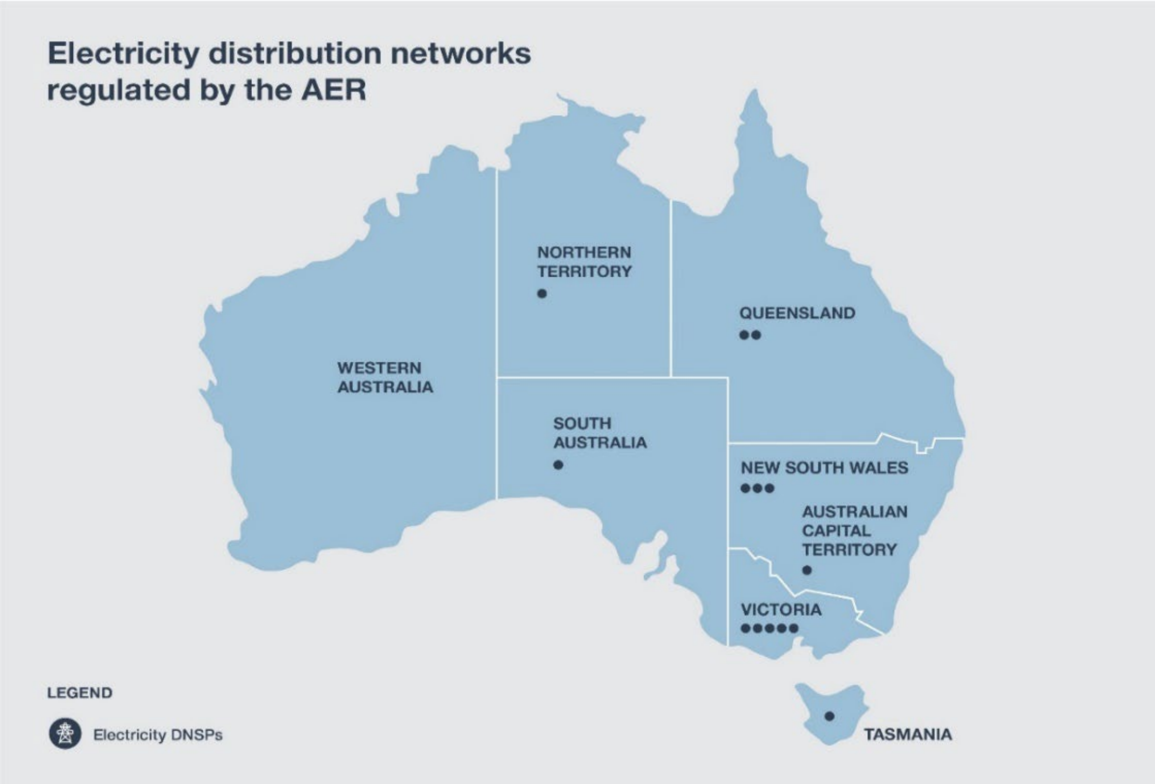
For this report an export service customer, is a customer who has made a request to export electricity into the network from on-site distribution connected CER generating systems which AEMO has exempted from the requirement to register as a generator.[4] If the DNSP does not allow the customer to export (i.e. applies a static-zero export limit), that customer is still considered to be an export service customer.

When an export service customer connects their CER to the network, the DNSP typically applies a maximum allowance for what the customer can export to the network (an export limit). In general, customers may install systems of a larger capacity than their export limit and use any excess capacity for self-consumption or to store in an onsite battery.

[4] That is, exports from small generating units as defined by Chapter 10 of the NER.

2.1.1 Electricity DNSPs regulated by the AER

Figure 2.1 Electricity DNSPs regulated by the AER



The electricity DNSPs regulated by the AER are located in all states and territories except Western Australia:

Queensland: Ergon Energy and Energex

New South Wales (NSW): Ausgrid, Endeavour Energy and Essential Energy

Australian Capital Territory (ACT): Evoenergy

Victoria: AusNet Services, CitiPower, Jemena, Powercor and United Energy

South Australia: SA Power Networks

Tasmania: TasNetworks

Northern Territory: Power and Water Corporation

2.2 Background to export service network performance reporting

Australia's electricity distribution networks were built to service a one-way flow of electricity; generators export electricity into the distribution network through transmission lines and customers import electricity from the distribution network for consumption. This has changed, as customers have installed CER, such as solar PV systems and batteries, to export electricity back into the grid. Over time, these electricity exports have increased, leading to parts of the network becoming congested. This presents challenges for DNSPs to host and orchestrate CER while efficiently maintaining a cost effective, safe and stable network.

In August 2021, the Australian Energy Market Commission (AEMC) published its access, pricing and incentive arrangements for distributed energy resources final determination.[5] The key aspects of this rule change included providing clear obligations on DNSPs to provide export services, enabling new network tariff options that can charge and reward export service customers and strengthening customer protections and regulatory oversight by the AER.

The rule change was designed to manage minimum demand issues, support effective CER facilitation and optimisation, recover the costs of providing export services from those who benefit from them and enable future market designs in which consumer generation and storage played a larger role.

In March 2023 we published our report *Incentivising and measuring export service performance,* which outlined our consultation and final decision for delivering against 3 different workstreams of the rule change, including the requirement to produce annual export services network performance reports.[6]

2.3 Information in this report

The information included in this report has been compiled from a variety of sources including discussions with DNSPs, responses from DNSPs to a voluntary information request and data from external sources including AEMO.

At the bottom of each figure and table the source and calculations (where relevant) are provided.

2.3.1 Stakeholder engagement

In developing this report, we:

- Held individual meetings with representatives from each DNSP to discuss our planned reporting approach and the information we planned to request.
- Sought a review of the draft report from DNSPs and consumer representatives for factual accuracy.[7]

5 AEMC, Access, pricing and incentive arrangements for distribute energy resources, August 2021.

6 AER, Incentivising and measuring export services performance, March 2023.

7 We completed this consultation in compliance with 8.7.4 (a), (b), & (c) of the NER.

3 Developments in policy, planning and rule changes

Over the last year, there has been significant activity from various Government and industry stakeholders that has driven positive progress in the facilitation and optimisation of CER. Some of these activities are highlighted in this section and referenced throughout this report.

3.1 2025 Inputs, assumptions and scenarios report

In August 2025, AEMO published their 2025 Inputs, assumptions and scenarios report (IASR), to be used for forecasting and planning in AEMO's Electricity Statement of Opportunities and Integrated System Plan (ISP) publications. The IASR details provides forecasts across three scenarios: slower growth, step change and accelerated transition. These are designed to represent plausible future 'worlds' that cover a range of circumstances and external variations that influence Australia's energy transition.[8]

In the step change scenario, consumers continue to provide a key role in the transition, with strong investments in electrification, CER and energy efficiency measures. There is also strong transport electrification, driven by consumer preferences and supported by ongoing government support across various government programs. The scenarios' investment in CER, particularly in solar PV and batteries, is based on households placing a high value on the benefits provided by these systems. This typically involves households installing relatively large residential household systems to improve self-supply.

Compared to the step change scenario in the 2023 IASR, the 2025 step change scenario forecasts consumers being more hesitant to share control of their CER with third-party aggregators or their retailer, such as via virtual power plants (VPPs) and V2G. Despite this, the step change scenario forecasts moderate long-term growth in coordinating these resources, with the aggregators of consumer resources becoming a strong contributor of the transition.[9]

In December 2025, AEMO published its draft 2026 ISP to outline the 'optimal development path' for generation, storage and network investments to meet consumer needs and government policies, at least cost, for at least the next 20 years.[10]

3.1.1 Demand side factors in the ISP

In December 2024, the AEMC made a rule determination to improve the robustness of the ISP and provide greater transparency and information on the expected development of demand-side factors (DSFs).[11] DFSs are the factors which affect demand or demand patterns (when and how electricity is used on a distribution network). They include CER, distributed resources, demand flexibility, electrification and energy efficiency.

8 AEMO, Final IASR, 2025 Inputs, Assumptions and Scenarios Report, August 2025 p 4.

9 AEMO, Final IASR, 2025 Inputs, Assumptions and Scenarios Report, August 2025 pp 18-19.

10 AEMO, Draft 2026 Integrated System Plan, December 2025.

11 AEMC, Improving consideration of demand-side factors in the ISP, accessed November 2025.

The final rule determination was made in response to a rule change request submitted by the Minister for Climate Change and Energy, seeking to require AEMO to expand its analysis of the uptake and availability of orchestrated CER and distributed resources in the ISP and provide greater detail about both the technical and non-technical assumptions that underpin the expanded analysis.

The final rule:

- Establishes a broad definition of DSFs that includes CER, distributed resources, demand flexibility, electrification and energy efficiency.
- Requires AEMO to publish a DSFs statement in the ISP and develop information guidelines which establish and provide clarity to stakeholders on information requirements and processes for demand side factors.
- Requires DNSPs to comply with the information requirements and processes in the information guidelines, subject to confidentiality obligations and requires AEMO to publish the public information provided by DNSPs in its ISP database.

In response to this final rule, AEMO developed draft DSFs information guidelines in October 2025, with the final guidelines required to be published by December 2025.[12]

3.2 Integrated distribution system planning rule change

In January 2025, Energy Consumers Australia (ECA) submitted the Integrated distribution system planning (IDSP) rule change request to the AEMC.[13]

ECA's rule change was based on their identification of issues with the existing distribution annual planning process in the NER in the context of increasing CER penetration. ECA notes this may lead to inefficient outcomes, such as underinvestment in some parts of the network, unnecessary network constraints or inefficient CER investment decisions by consumers. ECA has proposed changes to improve the annual planning process to make it better informed, more comprehensive and more proactive, so that DNSPs are more likely to maximise consumer benefits and minimise costs.[14]

In October 2025, the AEMC published a Directions paper, seeking the views of stakeholders on three proposed policy options to address the shortcomings with the current distribution annual planning process:[15]

- Policy option 1 - implement a new strategic planning process as part of the five-yearly revenue determination process to directly address the emerging challenges in distribution planning, while also reforming the existing distribution annual planning process to improve transparency and data availability.

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12 AEMO, 2025 Demand Side Factors Information Guidelines Consultation, accessed November 2025.

13 AEMC, Integrated Distribution System Planning rule change, accessed 19 October 2025.

14 AEMC, IDSP rule change - Consultation paper, June 2025, p 1.

15 AEMC, IDSP rule change - Directions paper, October 2025, p ii.

- Policy option 2 - reform the existing distribution annual planning process to not only improve transparency and data availability but also provide a longer term plan for DNSPs' distribution networks.
- Policy option 3 - replace the existing distribution annual planning process with a new strategic planning process while also improving transparency and data availability.

If the AEMC decides to propose changes to the NER, they will publish a draft determination and draft rule in March 2026.

3.3 National CER Roadmap

In 2024 the Energy and Climate Change Ministerial Council (ECMC) endorsed the National CER Roadmap ('Roadmap'). The roadmap sets out an overarching vision and implementation plan to unlock CER at scale across Australia.[16]

The Roadmap aims for a consistent approach across Australia by ensuring fair access to CER and stronger protections for consumers. The Roadmap also seeks to drive new opportunities by increasing competition and standardising technical requirements.

The Roadmap's implementation plan outlines priority reforms through four workstreams: consumers, technology, markets and power system operations which are detailed in Table 3.1. The ECMC committed to updating the Roadmap's implementation plan each year. It was first updated in 2025, with two additional priorities introduced.

Table 3.1 National CER Roadmap workstream priorities

National CER Roadmap workstreams	Priorities
Consumers	C1 - Extending consumer protections for CER
Consumers	C2 - More equitable access to benefits of CER
Consumers	C3 - CER information to empower consumers
Technology	T1 - Nationally consistent standards including V2G
Technology	T2 - National regulatory framework for CER to enforce standards
Technology	T3 - Establish secure communications systems for CER devices
Technology	T4 - Maximising opportunities for Electric V2G (New)
Technology	T5 - Cyber security for consumers and the grid (New)
Markets	M1 - Enable new market offers and tariff structures to support CER uptake
Markets	M2 - Data sharing arrangements to inform planning and enable future markets
Markets	M3 - Redefine roles for market operations

16 ECMC, National CER Roadmap Update - August 2025.

National CER Roadmap workstreams	Priorities
Power system operations	P1 - Enable consumers to export and import more power to and from the grid
Power system operations	P2 - Faster harmonised CER connections processes including EV chargers
Power system operations	P3 - Improve voltage management across distribution networks
Power system operations	P4 - Incentivising distribution network investment in CER
Power system operations	P5 - Redefine roles for power system operations

Source: Australian Government, National CER Roadmap - Implementation Plan Update, August 2025, p 13.

The roadmap's first update was published in August 2025, which highlighted some of the progress made over the last year, including complementary work that supports the roadmap's 4 workstreams.

To deliver priorities under the Roadmap's implementation plan, the ECMC agreed to establish an export CER taskforce, with members from governments, market bodies, industry and consumer representatives. The Roadmap's implementation update from August 2025 provided that the CER Taskforce had commenced work on 14 of the 16 National CER Roadmap workstream priorities.

In the technology workstream, one key area of progress relates to the standards and regulatory barriers for V2G technology, which is discussed more in detail below in section 6.2. This will allow export service customers to purchase and install bidirectional EV chargers that they can use for self-consumption and to export electricity into the grid. In addition, public consultations are also underway or about to commence on:

- The design of the national regulatory framework to support the integration of CER into Australia's electricity system.[17]
- A draft national technical regulatory framework for CER and technical standards for CER interoperability.

In the markets workstreams, public consultation has commenced on two projects, Redefining roles and responsibilities for power system and market operations in a high CER future and Data sharing arrangements to inform planning and enable future markets. Both projects aim to support well-aligned and optimised distribution networks which are underpinned by high-quality and consistent data.

Alongside the CER roadmap, several pieces of complementary work have also been completed:

[17] Australian Government, National CER Roadmap - Implementation Plan Update, August 2025, p 8.

- AEMO's ISP began including CER as a key variable in its modelling from 2024 onwards.[18]
- AEMO's 2024-25 NEM Engineering Roadmap Priority Actions Report outlined actions to support the integration of CER into the national electricity market (NEM) and maintain system security under a range of operational scenarios.[19]
- The AEMC made changes to the National Energy Retail Rules and the NER to unlock substantial benefits from CER for consumers and the system as a whole through flexible trading.[20]
- The Australian Renewable Energy Agency (ARENA) and Race for 2030 commissioned the National Roadmap for bidirectional EV charging. This roadmap sets out the critical path to achieving commercial adoption of bidirectional EV charging in Australia.[21]

3.4 CER Data Exchange

The CER Data Exchange will allow multiple industry organisations to share CER related information through a secure digital data exchange to coordinate for power system security and flexibility services, and to enable greater value for all customers.

In May 2025, the CER Data Exchange industry co-design project team led by AusNet Services and AEMO completed the co-design phase. The key outcome of this project was reaching a stakeholder aligned preferred option for the CER Data Exchange.[22]

The implementation stage for priority use cases under the CER Data Exchange is in progress with industry, and subject to financial approvals.[23]

3.5 Cheaper home batteries program

On 1 July 2025, the Australian Government introduced the Cheaper Home Batteries Program, designed to help with the cost of installing a small-scale battery system alongside new or existing solar PV.[24]

Under the program, households and small businesses may be eligible for around a 30% discount on the upfront cost of installing a small-scale solar battery. The Australian Government will fully fund the discount by purchasing small-scale technology certificates (STCs). This means no costs will be passed on to consumers through energy retailers.

As the Cheaper Home Batteries Program was introduced at the strt of the 2026 regulatory year, the impact of the program on battery penetration is not expected to be reflected in the export services network performance data for the 2025 regulatory year.

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18 AEMO, 2024 Integrated System Plan (ISP).

19 AEMO, Engineering Roadmap - FY2025 Priority Actions Report.

20 AEMC, Unlocking CER benefits through flexible trading, accessed August 2025.

21 ARENA, National Roadmap for Bidirectional EV Charging, accessed August 2025.

22 ARENA, AEMO - CER Data Exchange Industry Co-Design, May 2025, accessed November 2025.

23 Australian Government, National CER Roadmap - Implementation Plan Update, August 2025, p 27.

24 DCCEEW, Cheaper Home Batteries Program, accessed August 2025.

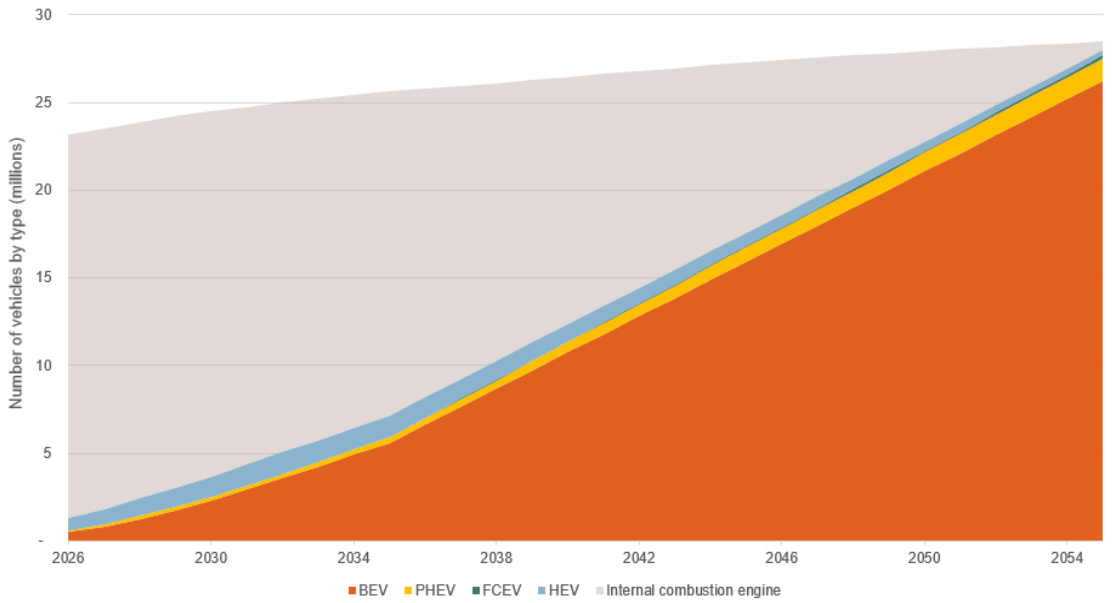
4 Electric vehicles

In comparison to conventional internal combustion engine vehicles which use fuels such as petrol or diesel to power the vehicle's motors, EVs use electricity stored in a chargeable battery to power at least one electric motor.

EVs enable EV owners to reduce their carbon footprint, as they create significantly less carbon emissions, noise and air pollution than comparable petrol and diesel vehicles. In Australia, the uptake of EVs is expected to increase, as state and federal grants incentivise more consumers to purchase an EV.

In AEMO's 2025 IASR, the step change scenario involves almost universal uptake of battery EVs by 2055 (Figure 4.1). This involves almost 3.7 million EVs by 2030, a significant increase from the expectation of 300,000 EVs in early 2025.[25]

Figure 4.1 AEMO 2025 IASR - Step change scenario - Number of vehicles by type



Source: AEMO's 2025-26 Inputs and Assumptions and Scenarios - 2025 IASR EV workbook - tabs BEV Numbers, PHEV Numbers, FCEV Numbers, Hybrid Numbers and ICE Numbers.
Note: Figure 4.1 data starts in 2026.

There are 4 types of EVs available in Australia.[26] They are:

- **Battery Electric Vehicles (BEV)** - solely powered by electricity stored in a battery with a capacity between 16kWh to over 100kWh.
- **Plug-in Hybrid Electric Vehicles (PHEV)** - combines a battery with a combustion engine; batteries tend to have a capacity between 7kWh and 20kWh.
- **Hybrid Electric Vehicles (HEV)** - combines a battery with a combustion engine, however the battery is much smaller and can only be charged when the car brakes or

25 Electric Vehicle Council, State of Electric Vehicles - 2024, December 2024, p 12.

26 CSIRO, Unlocking electric vehicles, accessed August 2025.

slows down, and by the vehicle's combustion engine. HEVs can't be plugged in to EV charging infrastructure to charge the battery, nor can electricity stored in the battery be exported into the grid. Battery capacity is usually around 0.5kWh - 2kWh.

- **Fuel cell electric vehicles (FCEV)** - generates electrons from a reaction between hydrogen and oxygen that generates electricity to either charge the battery or drive the motor.[27]

Depending on the type of EV, the battery used to power the motor typically has a storage capacity notably larger than that of the average home battery. This battery, and its ability to generate and store electricity makes EVs a CER for consumers in the energy transition.

4.1 Export services, EVs and V2G

The electrification of transport and decarbonisation of the supply of energy, will require future growth in both EVs and exports from CER such as solar PV and batteries.

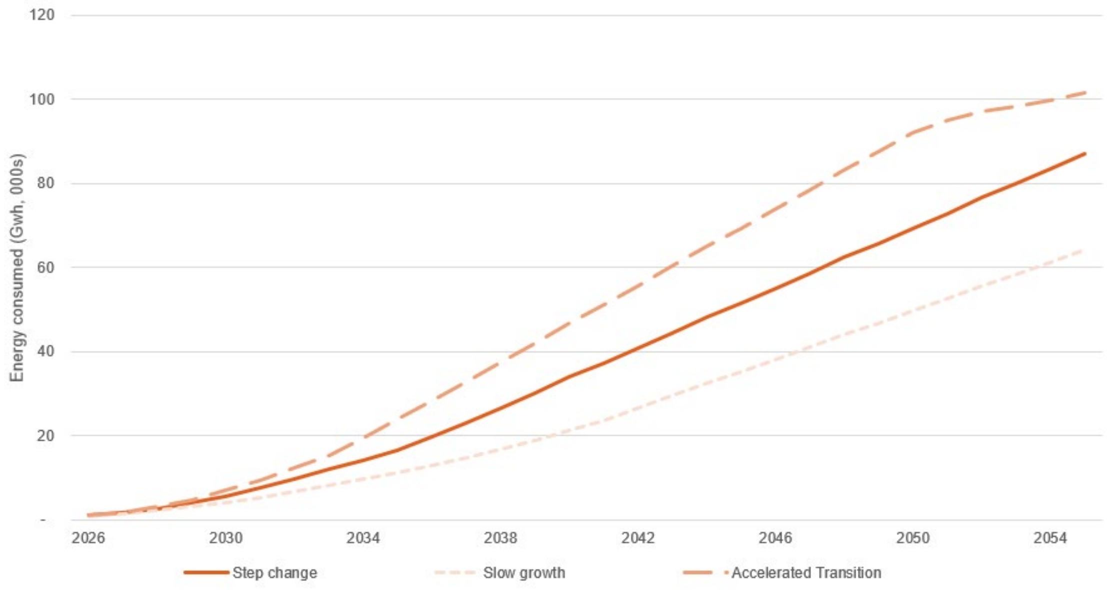
CER exports and EV charging and discharging currently represent a clear opportunity for mutual benefits to EV owners, export service customers and DNSPs. For EV owners, the high levels of CER exported during the middle of days is providing opportunities to take advantage of lower network (and retail) tariffs to charge their EV at a lower cost.

The growth in EVs will contribute to an increase in electricity consumption. In AEMO's 2025 IASR, the annual total energy consumption from BEV and PHEV is forecast to increase in the step change scenario from just over 1,000 GWh in 2026 to approximately 70,000 GWh in 2050.[28]

27 FCEVs were removed from the scenarios used for AEMO's 2025-26 Inputs, Assumptions and Scenarios Report, due to declining sales coupled with limited refueling station development.

28 AEMO's IASR forecasts also include the Wholesale Electricity Market (WEM) in Western Australia.

Figure 4.2 AEMO 2025 IASR - BEV & PHEV energy consumption



Source: AEMO's 2025 IASR - 2025 IASR workbook - tabs Battery & Plug-in EVs.
Note: Figure 4.2 data starts in 2026

The increase in consumption will require increased generation of electricity. To reduce the need for increased investment in remote generation and distribution and transmission infrastructure, electricity exported from solar PV systems and/or batteries can be harnessed. In the step change scenario in AEMO's 2025 IASR, in 2050 there is forecast to be over 23,000 GWh of annual total electricity generated from small scale non-scheduled generating PV systems.[29] This is a significant increase from the approximately 3,500 GWh forecast for 2026.[30]

For EV owners to benefit from the solar PV exports, EV charging will need to coincide with daylight hours, when there are higher amounts of solar PV generation exported to the grid by export service customers. This EV charging behaviour could be incentivised by retail tariffs such as time-of-use tariffs (with a possible solar soak element) for the EV owner, where some loss of charging flexibility can be offset by cheaper prices.

Incentivising EV owners to charge their EV during daylight hours can also improve a DNSP's export service performance. Increased load from EVs charging when there is excess solar on the grids may enable DNSPs to increase their network hosting capacity, possibly leading to higher export limits and a decreased need to curtail exports at times of extremely low grid demand. This increased load may also assist in decreasing the prevalence of minimum system demand events, which can impact the supply of electricity and grid stability.[31]

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29 AEMO, 2025-26 Inputs and Assumptions and Scenarios - 2025 inputs and assumptions workbook - tabs PVNSG - Step change scenario - 2049/50.

30 AEMO 2025-26 Inputs and Assumptions and Scenarios - 2025 inputs and assumptions workbook - tabs PVNSG - Step change scenario - 2025/26.

31 Minimum system demand events typically occur on sunny mild temperature days in autumn and spring where low levels of demand reduce the need for grid-scale generation. These low demand periods cause issues in relation to grid frequency and security.

Going forward, our export services reporting will also adapt as V2G services become widely available and EV owners can export stored electricity in their EV batteries into the electricity grid. This could allow EV owners to become export service customers and possibly use their EV to receive export rewards from methods such as two-way tariffs for exporting their stored electricity into the grid.

5 EV charging infrastructure

The forecast uptake and energy consumption of EVs in AEMO's 2025 IASR requires EV owners to have robust and accessible EV charging infrastructure. Concerns around the vehicle's battery range and lack of access to EV chargers are some of the key concerns of consumers when deciding to replace their internal combustion engine vehicle with an EV.[32]

Known as 'range anxiety,' consumers can have concerns in relation to the EV battery's capacity and their EV running out of battery before they reach their destination or an EV charger. One effective way to address these concerns is by expanding EV charging infrastructure at both the current and potential future EV owners' residential locations and in suitable locations across the various roads, highways, and streets in Australia. In this section, we discuss the intersection of DNSPs with private and public EV charging and the factors being considered when connecting EV charging infrastructure into a DNSP's distribution networks.

5.1 Types of EV chargers

There is a variety of EV chargers currently available to EV owners, depending on whether the charger is private (behind the meter and typically owned by the EV owners), or public.

EVs can be charged with either an alternating current (AC) or direct current (DC) of electricity. AC is what DNSPs deliver to homes and businesses across their network and is generally required for appliances. DC is seen in battery storage, solar PV and portable electronic devices such as phones, laptops and tablets. EV charging infrastructure can convert AC to DC, which is used for public fast chargers. EVs are typically able to be charged using both electricity currents due to in-built converters which converts AC to be stored in the DC battery.

There are 3 different EV charging levels.[33] The actual rate of charge is dependent on the charging level, whether the charger is connected to single-phase or 3-phase power supply,[34] whether the charger is AC or DC, and the EV's batteries charging capacity.

- Level 1/Mode 2 portable AC chargers do not require installation by an electrician. These charges use standard electricity wall outlets to charge the EV, with the manufacturer's supplied charging cable. Level 1 is the slowest charging speed at between 1.4 kW to 2.3 kW for a 10amp electrical outlet (the default in Australia) or up to 3.5kW for a 15amp outlet. Level 1 chargers can take more than 24 hours for a full charge of an EV, with this charge rate often called 'trickle charging'.

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32 Australian Automobile Association, New real-world tests will help overcome EV range anxiety, accessed 11 December 2025.

33 EV charging levels may also be referred to as modes in Australia, where level 1 is mode 2, level 2 is mode 3 and level 3 is mode 4.

34 Single-phase power is a two-wire AC power circuit and is standard for residential homes and small business. Three-phase power is a three-wire AC power circuit with each phase's AC signal 120 electrical degrees apart. Three-phase power is typically used by commercial and industrial customers; however, it can also be used by residential customers with larger energy demand.

- Level 2/Mode 3 AC chargers require installation but provides a faster charge - generally between 7 kW to 22 kW, although this can be lower where there are switchboard or supply limitations. The actual rate of charge depends on the EV model, type of charger and whether the electricity connection is single-phase or three-phase. Level 2 chargers can be public or private, and residential or non-residential.
- Level 3/Mode 4 fast public DC chargers are installed in public areas and generally output between 50 kW to 350 kW. Level 3 chargers can charge most EVs from 10% to 80% in approximately 20 to 60 minutes depending on the EV model and the power output of the charger.

5.2 Private EV chargers

For this report, we have defined private EV chargers as level 1 portable AC charges or level 2 AC chargers which are installed behind the meter at a private premises and are intended for private use.

5.2.1 Visibility and installation of private EV chargers

The visibility of private EV chargers differs across the DNSPs. The current visibility differs based on the availability of smart meter data, the use of data analytics tools and notification of installed EV chargers.

Table 5.1 Notification of private EV charge installation

Jurisdiction	DNSP	Notification of private EV charger installation
ACT	Evoenergy	New/upgrade connection only
NSW	Ausgrid	New/upgrade connection only
	Endeavour Energy	New/upgrade connection only
	Essential Energy	Required
Northern Territory	Power and Water Corporation	Required
Queensland	Energex	Required for some types
	Ergon Energy	Required for some types
South Australia	SA Power Networks	Required
Tasmania	TasNetworks	No requirement
Victoria	AusNet Services	No requirement
	CitiPower, Powercor and United Energy (CPU)	New/upgrade connection only
	Jemena	No requirement

Source: Responses of DNSPs to export services network performance information request - September 2025.

The notification of private EV charger installations differs across DNSPs, with most DNSPs not requiring notification in the absence of a new or upgraded connection.

Discussions with DNSPs indicate that notifications concerning EV chargers are typically issued during the engagement process associated with a new or upgraded connection. Further for the installation of a private EV charger, is only likely to occur if the customer also needs to upgrade from a single-phase to a three-phase power supply to meet the specifications of their installation.[35] This upgrade to a three-phase power supply is usually more expensive than the cost of the private EV charger system.

For DNSPs where notification of private an EV charger installation is not required, some noted that the number of installations and their current power requirements, were not having significant impact on their network's demand. However, they noted this position might change if there was a significant increase in the private EV charger installations and/or an increase in their power requirements.

Essential Energy, Power and Water Corporation and SA Power Networks,[36] advised that they require notification of all private EV charger installations, while Ergon Energy and Energex require notification for most EV charger installations. However, Essential Energy noted a belief that not all customers installing private EV chargers are notifying the DNSP, despite its inclusion in the technical compliance requirements.

To improve visibility, DNSPs are investing in analytical tools to detect EV charging behaviour, with most being in the trial phases of this technology. For non-Victorian DNSPs, the increase in smart meters and improved data will improve visibility and improve the capability of the analytical tools.

5.2.2 Voltage limits for private EV chargers

Across all DNSPs, the voltage limits for private EV chargers must meet the relevant Australian standards, and the various jurisdictional electricity codes and legislations.

The performance requirements of grid connected EV chargers and EV supply equipment when interacting with the low voltage grid are specified in AS/NZS 4777.2. This standard requires inverters within an EV charging system to respond in a defined way in response to voltage dips, improving system stability by minimising the sudden loss of CER during short duration low voltage events. In August 2024, an amendment to AS/NZS 4777.2 was published to address bidirectional charging and V2G technology, including new definitions to improve installation and compliance.[37] This is discussed further below.

As noted in last year's Export services network performance report, while not all inverters are required to be compliant yet, compliance with AS/NZS 4777.2 for installed CER assets has generally been low.[38] Non-compliance prevents the inverter within the CER asset responding to network fluctuations as intended, however, DNSPs are increasingly seeking to address this issue through implementing targeted compliance programs.[39] In last year's report we

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35 Other specifications may also be required in accordance with jurisdictional service and installation rules.

36 SA Power Networks advised they require notification for EV charger connections above a certain size.

37 Standards Australia, AS/NZS 4777.2:2020 Amd 2:2024.

38 The majority of inverters for all DNSPs are not yet required to be compliant because they were installed before the standard was introduced.

39 AER, Insights into Australia's growing two-way energy system, December 2024, p 34.

noted that in surveys conducted by 6 DNSPs[40] there was estimated inverter non-compliance ranging between approximately 25% to 50% of installed CER assets.

The non-compliance has improved based on AEMO's Compliance of DER with Technical Settings: 2025 update. This report considers all types of DER, including CER, and noted that based on available data from various sources, 80% to 90% of new DER inverters installed in early 2024 Australia-wide were correctly configured to the 2020 Standard grid code. AEMO noted that the improvements in compliance have been largely due to voluntary actions taken by inverter original equipment manufacturers. One such action was removing legacy standards from their product menus to better support installers in selecting the correct standard at the time of installation.[41]

Alongside this improvement, in September 2023, the AEMC made final recommendations to improve compliance with technical standards for CER,[42] which included the development of a national regulatory framework for CER technical standards.

The CER Taskforce is currently undertaking a number of projects in relation to technology workstream's priorities which are designed to improve compliance with the relevant Australian standards, and the various jurisdictional electricity codes and legislations. These include the:

- national regulatory framework for CER to set and enforce standards, which the CER Taskforce is on track to provide to the ECMC for consideration by the end of 2025[43]
- draft national technical regulatory framework for CER and technical standards for CER interoperability. The ECMC are expected to consider the outcomes of the recent consultation of this project in late 2025.[44]

5.2.3 Impact of private EV chargers on distribution networks

The current impact of private EV chargers differs across the distribution networks. This is expected, as each DNSP has differences in relation to its geographical location, customer consumption patterns and existing network capacity.

One of the factors which impacts a residential customer's electricity consumption patterns is whether they have gas appliances for heating and cooking. As residential customers begin to electrify these appliances, their consumption patterns throughout the day are shifting, especially during the winter months. The combined impact of the electrification of gas appliances and EV charging on distribution network was highlighted by Evoenergy and Victorian electricity DNSPs.

AusNet Services, Evoenergy and CPU noted that this electrification alongside EV charging was having an impact on load growth in their distribution networks, with CPU also noting it was leading to increased congestion within the distribution network. On the specific impact of

40 These trials were completed by CitiPower, Endeavour Energy, Essential Energy, SA Power Networks, Powercor and United Energy.

41 AEMO, Compliance of DER with Technical Settings: 2025 update, August 2025, p 3.

42 AEMC, Review into CER technical standards, September 2023, p ix.

43 Australian Government, National CER Roadmap - Implementation Plan Update, August 2025, p 23.

44 DCCEEW, National CER Roadmap - Consultation on technical priorities, accessed November 2025.

private EV charging, AusNet Services and Evoenergy noted that they currently could not distinguish between the impact of EV charging and broader electrification of gas appliances.

CPU noted that the increased load from electrification of gas appliances and EV charging was also leading to voltage issues within their distribution network, which had the potential to lead to slow or inconsistent EV charging for customers. If replicated across other DNSPs, this could restrict the use of EVs by consumers and decrease the uptake of EVs.

Other DNSPs noted however, that the increased load demand from EV charging is not leading to widespread network issues. This was based on the relatively low uptake of EVs and the current penetration of EVs being spread across their distribution networks. TasNetworks and Power and Water Corporation noted some isolated or specific issues on their distribution networks, however both DNSPs noted the impact to be limited.

Endeavour Energy noted that going forward EV charging would contribute to peak demand in some locations, however noted in other locations, it would help in soaking the excess electricity being generated by solar panels and reduce the amount of electricity being exported back into the grid. This was also highlighted by Ergon Energy and Energex, who noted absorbing the excess solar generation could assist the minimum demand challenges for grid stability.

5.3 Public EV chargers

For this report, public EV chargers are those chargers which are designated and designed for public use. These types of chargers are in public locations and typically charge the user based on the energy consumed ($/kWh).

5.3.1 Types of public EV chargers on distribution networks

Public chargers are essential, particularly for EV owners who do not have access to a private EV charger. Public chargers provide an opportunity for those EV owners who cannot use private EV charging, such as those who live in higher density residential housing including apartments, to own and operate an EV. Further, they also enable EV owners with private EV chargers to charge their EV on the road, enabling the EV owners to drive their EVs over longer distances.

Public chargers are most commonly level 2 or level 3 chargers and are often located in shopping centres, carparks, service stations and community centres. Public chargers can also be kerbside. Level 2 charging systems are often mounted to the utility poles within the distribution networks and enable EV owners to charge their EV through on-street parking.

A public EV charger installation can occur through a variety of sources, including investments by state/territory government, local councils and commercial businesses such as charge point operators. To assist in their installation there has been various jurisdictional programs to provide grants to some applicants to install public EV chargers.

Table 5.2 Jurisdictional grant programs for public EV charging

Jurisdiction	Program	Funding
ACT	Public EV chargers funded by ACT Government	N/A
Commonwealth	Net zero plan - Public EV charging network	$40m
Commonwealth	Dealership and Repairer Initiative for Vehicle Electrification Nationally (DRIVEN) Program	$**60m**
NSW	Electric vehicle destination charging grants Electric vehicle kerbside charging grants Electric vehicle ready buildings	$20m $10m $10m
Queensland	Electric Vehicle Charging Infrastructure Scheme	$10m
South Australia	Statewide EV charging network	$12.35m
Tasmania	Electric Vehicle ChargeSmart Grants	$567k
Victoria	Destination Charging Across Victoria Program	$5m

Source: Refer to hyperlinks provided in Table 5.2.

The grants in these jurisdictional programs seek to facilitate a network of EV chargers that will provide options for EV charging in both urban and regional locations. These programs also seek to address the 'range anxiety' in relation to EV charging by targeting areas where there is insufficient public EV charging infrastructure.

5.3.2 Register of public EV chargers on distribution networks

Currently, only one DNSP (Endeavour Energy) maintains a register of all the public EV chargers on their network.

Most DNSPs noted that EV public charger connections are treated in the same manner as other connections, and therefore tracking after the connection is approved and completed is no longer necessary. Other DNSPs noted that there was difficulty in identifying public EV chargers from other load connections, especially if the charger is located behind the meter. Jemena noted that this often occurs with large shopping centre car parks, where the public EV charger is connected to the embedded network, with Jemena not having visibility past the gate meter.[45]

A number of DNSPs noted that they kept a register of pole mounted public EV chargers on their electricity distribution networks. These registers are not designed to track EV charging but rather record the information necessary to manage the facilities access arrangement (FAA) between the asset owner and the DNSP.

The location of EV chargers can be found on commercial websites such as Plugshare or apps such as Chargefox, Evie and Exploren. Information on public EV chargers can also be

45 The gate meter is the single point where the total supply of electricity for the embedded network is received.

found on Victoria's Department of Energy, Environment and Climate Action website and NSW's Department of Climate and Energy Action website.

5.3.3 Public EV charger connection process

For all DNSPs, a public EV charger installation follows the same process as other standard connections. This involves the connection applicant providing the required technical information of the connection to the DNSP for their consideration. The DNSP will then assess the feasibility of the connection, taking into account the connection site's capacity, the expected load and any other relevant factors.

Based on this assessment, the DNSP can define the connections as a:

- basic connection service
- standard connection service
- neither a basic nor standard connection service.

If the DNSP defines the connection service as neither a basic connection service or standard connection, or if the connection applicant seeks to negotiate the terms and conditions of which the connection service is provided, it will become a negotiated connection under Chapter 5A of the NER.

Under a negotiated connection the DNSP will advise the options available to the connection applicant under their respective connection policy.[46] In determining the connection charge for a public EV charger, the DNSP noted they may require a capital contribution based on the network augmentation required to accommodate the connection. This connection charge would then be considered by the connection applicant, as the cost associated with the public EV charger installation. For Power and Water Corporation, in addition to the standard connection process, they noted the connection applicant needs to ensure and demonstrate alignment to their Electric Vehicle Supply Equipment Technical specification.

In discussion with DNSPs, they noted the capital contribution within the connection charge can be costly and time consuming for the connection applicant. Due to this some DNSPs provided that they may engage with the connection applicant to discuss and identify alternatives to network augmentation, such as dynamic connections.

SA Power Networks highlighted a case study where they had worked with a connection applicant to provide alternative solutions to network augmentation. This included combining a large public EV charger in a constrained network area with a battery behind the meter. This solution enabled the public EV charger connection to be smaller and the required network augmentation to be minimised.

In addition to the connection process, where the public EV charger requires installation on a network asset, a FAA will be required between the DNSP and the connection applicant. This typically occurs with public EV kerbside chargers, where the charger is connected to the DNSP's network pole.

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46 The AER's Connection charge guidelines for electricity customers provides guidelines for the development of connection policies for DNSPs.

The terms and fees for FAAs are not standardised across the distribution networks, nor is there a model FAA for connection applications, resulting in differences across the distribution networks in relation to cost and terms of access. This differentiation across the distribution networks could require the DNSP and connection applicant to negotiate and agree on a bespoke FAA agreement, which could take a longer period of time and delay the connection process. However, once an FAA is in place between the DNSP and connection applicant, there is no limit on the number of installations that can be installed under the FAA.

In the CPU ring fencing waiver application to provide and maintain kerbside EV chargers (which is discussed below), several stakeholders highlighted that the slow roll out of EV public chargers in Victoria is due to procedural and cost barriers within DNSP processes, rather than a lack of market interest. These stakeholders noted challenges regarding costs and delays faced by potential connection applicant accessing CPU's distribution poles, primarily due to high fees and restrictive FAA terms, which some stakeholders view as anti-competitive.[47]

5.3.4 CPU ring fencing waiver application to provide and maintain kerbside EV chargers

In October 2025, the AER decided to grant, with conditions designed to safeguard competition and maximise trial learnings, a time-limited waiver to CPU from clauses 3.1(b) and 4.2 of the Ring-fencing guideline (electricity distribution) to allow them to provide and maintain kerbside EV chargers in their distribution networks.

Summary of CPU kerbside EV charger trial

In this trial, ending on 30 June 2031, CPU will use 100 kerbside EV chargers to test:

- The ability of EV charging infrastructure to defer augmentation on the low voltage circuit in areas experiencing high EV growth and charging demand, which are experiencing or forecast to experience network constraints within the 5-year planning horizon.
- Dynamic network pricing using 'solar soak tariff' to test charging speed in periods of high solar export and low demand as a tool for managing minimum demand. This trial tariff is stated in CPU's proposed Tariff structure statement 2026-31.
- V2G charger application. CPU proposes that up to 10% of EV charging infrastructure will now be installed with V2G capabilities to enable two-way flows from EVs. This will test managing undervoltage (customers receiving less than 107V). In the waiver conditions, we have required that at least 5% of trial chargers must be V2G.
- Council deployment preferences for siting of kerbside EV chargers.
- Reliability of service to test potential synergies in CPU maintaining availability and reliability of EV charging infrastructure with their asset management obligations as part of their distribution network services.
- Charging behaviours. CPU will seek to understand how customers use kerbside EV chargers at a variety of locations and the relative utilisation of different sites, the

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47 AER, Reasons for decision - CPU ring-fencing waiver for EV charging infrastructure, October 2025, p 9.

implications for the wider scale roll out of kerbside EV charging infrastructure and where future capacity needs to be planned and managed. They will also obtain, and publish, insights into responsiveness to price signals, especially during periods of low or peak demand, for informing future tariff and incentive design.

Source: Ring-fencing waiver for an EV charging infrastructure trial from CPU, October 2025, p 5.

The trial waiver allows CPU to undertake a trial that is limited in scope and duration and is subject to requirements on site selection, competitive neutrality, transparency in processes and publication of learning. The specific set of objectives tested in this trial are expected to provide valuable insights into demand response, tariff design and modulation of EV chargers to manage local network impacts, which can be shared across DNSPs. This knowledge may potentially allow CPU and other DNSPs to expand the number of poles that can accommodate EV chargers without requiring network augmentation.[48]

The terms of the waiver also impose a number of conditions on CPU to safeguard competition and maximise the trial's learnings. In addition to these conditions in relation to the conduct and reporting of the trial, we encouraged CPU to improve its network visibility and publish information on pole suitability and available capacity in a user-friendly and accessible manner. Using Essential Energy's network map as an example to follow, we noted this increased network visibility would support the kerbside EV charging industry and reduce information barriers for third party connection applicants.[49]

5.3.5 Factors that can delay the DNSP making a public EV charger installation

There is no standardisation for the installation of public EV chargers, with each DNSP using a bespoke process. This may result in the installation being delayed by various issues or factors that occur outside of the DNSP's connection process. Many of these factors are common to any connection applicant on a distribution network. These include:

- network capacity constraints that require a capital contribution and/or network augmentation
- an application which does not include the necessary details for the DNSP to determine the connection
- land access issues and approvals from the Local Government Authority
- non-standard connection configurations which require additional consideration
- construction related delays.

Delays can also occur if an FAA agreement is required between the DNSP and the connection applicant for a public EV charger installation as provided above in section 5.3.3.

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48 AER, Ring-fencing waiver for an EV charging infrastructure trial from CPU, October 2025, p 1.

49 AER, Ring-fencing waiver for an EV charging infrastructure trial from CPU, October 2025, pp 22-24.

5.3.5.1 Barriers faced by connection applicant for public EV charger installation

The current delays and/or barriers to the connection of a public EV charger can also impact the connection applicant and its ability to effectively install and operate public EV chargers. Some of these issues were highlighted in the submissions by some stakeholders to CPU's ring fencing waiver application to provide and maintain kerbside EV chargers (which is discussed in section 5.3.4 above):

- Australian Energy Council's (AEC) submission noted the slower rollout of public kerbside EV chargers could be due to the bespoke negotiated connection agreements of DNSPs and the lack of standard connection charges for kerbside chargers. AEC's submission also noted the delays could be a function of the lack of performance guarantees on DNSP connecting times for public EV chargers and no universal pole mounting access framework.[50]
- EnergyAustralia,[51] Red Energy and Lumo Energy[52] and Nexa Advisory's[53] submissions highlighted the lack of transparency and access to network data, noting that DNSPs had an advantage in determining the locations that had a greater likelihood to higher demand from EV owners and be profitable.
- Other submissions raised the lack of EV charging specific network tariffs, indicating that the current traditional tariffs prevented connection applicants from making public EV chargers viable projects. Further, AGL's submission noted that the creation of specific EV charging network tariff could send price signals to EV owners to shift load away from high demand peak periods.[54]

Another potential barrier for the connection applicant, involves the "renting" of the network asset utility pole to 'host' the EV public charger. Recently, stakeholders have raised concerns in relation to the variability, transparency and fairness of access pricing and other terms of pole leasing arrangements between DNSPs and third parties.

To support the negotiation of access to Victorian DNSPs' kerbside poles for the use of EV public chargers, in our draft determination for the Victorian DNSP 2026-31 regulatory period we classified a new distribution service. This distribution asset rental service involves the rental of distribution assets (e.g. poles) to third parties who have installed EV chargers or associated hardware. This distribution service is to support the negotiation of access to kerbside poles on terms that are fair, reasonable and cost reflective.[55]

In making this decision, we noted that classifying this service as a negotiated distribution service will provide a 'soft start' to regulating the service. However, continued regulation will

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50 AEC, Submission to CPU ring-fencing waiver for EV charging infrastructure, June 2025.

51 EnergyAustralia, Submission to CPU ring-fencing waiver for EV charging infrastructure, June 2025.

52 Red Energy and Lumo Energy, Submission to CPU ring-fencing waiver for EV charging infrastructure, June 2025.

53 Nexa Advisory, Submission to CPU ring-fencing waiver for EV charging infrastructure, June 2025.

54 AGL Energy, Submission to CPU ring-fencing waiver for EV charging infrastructure, June 2025.

55 AER, Overview - Draft decision - CitiPower distribution determination 2026-31, September 2025, pp 29-30.

only eventuate if ultimately necessary in the long term or when the market for public EV charging locations develops further.[56]

5.3.6 Impact of public EV chargers on distribution networks

DNSPs have noted that the impact of the load from installed public EV chargers are less likely than private behind the meter EV chargers to have an unexpected impact on the distribution networks capacity.

This is due to the expectation of DNSPs that any constraints or impacts on network demand from the public EV charging are identified and resolved during the connection process and addressed through network augmentation or alternative approaches. Despite this, DNSPs provided that public EV chargers typically have ‘peaky’ load profiles (high demand relative to consumption levels) and can contribute to peak network demand.

In discussion with DNSPs, they noted that for some potential public EV charging stations, the required network augmentation or upgrades to accommodate the connection may result in the project not being economically feasible to continue. DNSPs highlighted this may occur in remote or regional locations where there may be a significant lack of capacity to accommodate a public EV charger, or a level 3 fast public EV charger.

Essential Energy noted that on major arterial highways, regional centres and small towns where there are constraints, the pre-emptive installations of public EV chargers without building additional capacity, may inhibit future public EV charging infrastructure. This was also highlighted by TasNetworks, who noted that large fast chargers connected to vulnerable areas of the network can limit available capacity and/or leads to voltage issues.

5.3.7 Public EV chargers in the future

There is an expectation across all DNSPs that the number and the electricity demand from public EV chargers will increase over the next five years.

To address this increased demand, some DNSPs highlighted non-network solutions they are investigating to accommodate the increased demand:

- TasNetworks noted they were looking for better utilisation of existing network infrastructure to support EV charging. To test ways to avoid network augmentation, TasNetworks was looking to initiate flexible load trials in the next 12 months as part of a longer development pathway towards flexible export limits.[57]
- In addition to pairing public EV chargers with solar PV and batteries, SA Power Networks also highlighted deploying DOEs for public EV chargers. Connection applicants are also able to use the quick guide for EV charging installations for fleets, commercial Sites and public chargers on the SA Power Networks website.

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[56] AER. Attachment 11 - Service classification - Overview - Draft decision - CitiPower distribution determination 2026-31, September 2025, pp 3-6.

[57] Flexible export limits can also be known as dynamic operating envelopes.

- Essential Energy highlighting the use of shared network augmentation in key locations in their planning process. Essential Energy provided they were preparing strategic plans which could highlight the investment opportunities for key locations.

The necessity of network expenditure investment to meet the increased demand from public EV chargers was noted by other DNSPs. CPU noted that increases in EV adoption and electrification would lead to less available capacity headroom for EV chargers, requiring augmentation expenditure to become more common for public EV charger connections. In addition, AusNet Services[58] and Evoenergy both noted they forecast capex for public EV chargers in their recent regulatory proposals, with Evoenergy noting the need to augment their network with high voltage feeders.[59]

When assessing the forecast capital expenditure investment for potential new public EV charging stations, only the net capital expenditure (gross capex less capital contributions) is included in the DNSP’s RAB. Due to this, any capital contribution received by the connection applicant as part of the public EV charger is not recovered from customers.

To enable the regulatory framework to have the requisite standards for effective EV chargers in the future, the CER Taskforce is currently undertaking a number of projects in relation to technology workstream’s priorities. These include:

- AEMO defining the EV supply equipment minimum technical standards for power system security.[60] This is on track for completion by the end of 2027.
- The National Electric Vehicle Action Plan Implementation Group reviewing the minimum operating standards (MOS) for government support public EV charging infrastructure. The MOS were delivered to the National Electric Vehicle Action Plan Working Group in 2024. The Department of Climate Change, Energy, the Environment and Water (DCCEEW) is undertaking a scheduled annual review of the MOS to ensure the Standards are fit-for-purpose.[61]
- A Code of practice for the management of public charging infrastructure. This project may be considered as part of a comprehensive and in-depth review of the National Electric Vehicle Strategy, to be undertaken in 2026.[62]

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58 AusNet Services, Electricity Distribution Price Review - 2026-31 Regulatory Proposal, January 2025, p 11.

59 Evoenergy, Regulatory proposal for the ACT electricity distribution network 2024-29 - Attachment 1: Capital expenditure, January 2023, pp 41-49.

60 This project would also apply to both public and private EV chargers.

61 Australian Government, National CER Roadmap - Implementation Plan Update, August 2025, p 23.

62 Australian Government, National CER Roadmap - Implementation Plan Update, August 2025, p 25.

6 Vehicle to grid services

As mentioned above, the battery used to power the motor of the EV, can be substantially larger than typically used for a residential home battery. This battery makes the EV a CER for consumers, as they can both generate and store electricity.

EV batteries may provide an opportunity for the EV owner to use their EV to participate in bidirectional EV charging, by enabling electricity to flow both ways between an EV and an external electricity system. This supports the EV owner to both load shift to more opportune times and/or act as a generator to their home or the grid.

Typically, this might involve the EV owner soaking up the excess solar PV generation during the middle of the day and then using the stored electricity to power their EV, for personal consumption or to export into the grid during times of peak demand (typically between 5pm and 9pm).

Types of bidirectional EV charging[63] includes:[64]

- Vehicle to grid (V2G) - EVs supply power to a mains electrical circuit that is electrically connected to the grid.
- Vehicle to homes and buildings (V2H/B) - EVs can supply power to a local electrical distribution system that is electrically separated from the grid, such as off-grid or during a power outage. When connected to the grid in V2H mode, they can also manage building loads without drawing from the grid, potentially alleviating demand constraints on the local network.
- Vehicle to load (V2L) - EVs supply power directly to one or more electrical appliances.

This report focuses on V2G, as this bidirectional charging involves the EV owner exporting the electricity stored in their EV's battery into the grid.

V2G has only recently commenced as a method for EV owners to participate in bidirectional EV charging. Currently there is a very small number of EV owners participating in V2G (assessed to be 10 in February 2025).[65]

This low participation may be due to only a small proportion of EVs in Australia being warranted by the EV manufacturer for V2G (and V2H/B) functionality, despite a larger percentage of EVs having V2G capability. This may indicate that the terms, or the absence of explicit coverage of V2G functionality in the EV's battery warranty, are possibly preventing wider use of V2G by EV owners.[66]

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63 The associated technology for bidirectional EV chargers is still developing and therefore these definitions are subject to change.

64 ARENA, National roadmap for bidirectional EV charging, February 2025, p 6.

65 The Guardian, 'A house battery you can drive around': how some Australians are selling power from their cars back to the grid, February 2025, accessed 14 October 2025.

66 University of Technology Sydney (UTS), A house battery you can drive - What will accelerate V2G, February 2025, accessed 26 November 2025.

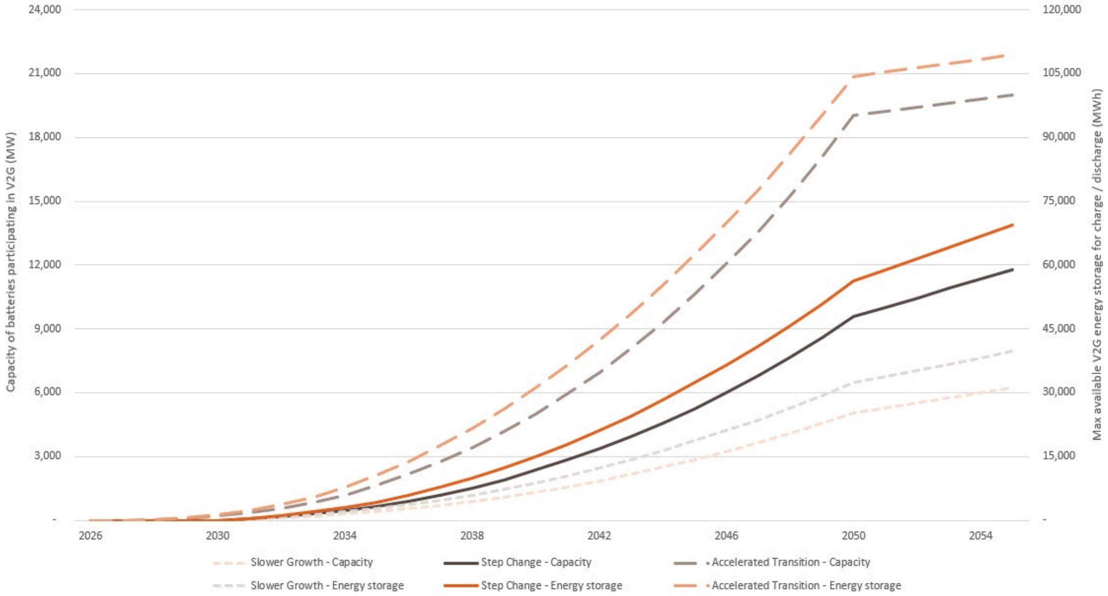
6.1 National Roadmap for Bidirectional EV Charging

In February 2025, ARENA and Race for 2030 commissioned the National Roadmap for Bidirectional EV Charging. This Roadmap is intended to provide guidance to industry and government to enact the policy settings and strategic initiatives to realise the benefits of bidirectional EV charging.

The recommendations in the Roadmap were based on achieving the proposed market objective for the project: Bidirectional charging is readily available to provide high-value services across the Australian economy by 2030, with several products available by 2027. This Roadmap also noted that many stakeholders considered uptake rates for bidirectional EV charging could be comparable to those achieved with solar PV in Australia. This would involve achieving 2.6 million residential V2G installations by 2040.[67]

The coordination of V2G as a CER is a key parameter in AEMO's 2025 IASR. In this report, for each scenario (slower growth, step change, and accelerated transition), AEMO forecasts the capacity of batteries participating in V2G and the max available V2G energy storage for charge/discharge.

Figure 6.1 AEMO 2025-26 Inputs and Assumptions and Scenarios - V2G battery characteristics



Source: AEMO's 2025-26 Inputs and Assumptions and Scenarios - 2025 inputs and assumptions workbook - tabs V2G.
Note: Figure 6.1 data starts in 2026.

These forecasts across the three AEMO scenarios indicate that the use of V2G as bidirectional EV charging service is not expected to increase in the short term to 2030. However, the capacity and storage associated with V2G will increase significantly to 2050.

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67 ARENA, National roadmap for bidirectional EV charging, February 2025, p 40.

6.2 Amendment to standards to address bidirectional charging

In August 2024, Standards Australia published an amendment to IAS/NZS 4777.2 (Grid connection of energy systems via inverters, Part 2 inverter requirements) to address bidirectional charging and V2G technology, including new definitions to improve installation and compliance. This amendment came into effect in August 2025.[68]

Following this amendment, export service customers with an eligible V2G battery in their EV will be able to connect to the grid to use the stored electricity for their own personal use or export the electricity back into the electricity grid.

Separate to AS/NZS 4777.2, ISO 15118-2 is a standard that specifies the communication protocols between an EV and EV charging infrastructure, with the majority of Australia's EV fleet operating on a variant of the standard. Whilst ISO 15118-2 will 'permit' V2G, it may be considered a barrier for the EV manufacturers who hold warranty concerns under this standard. The CER Roadmap's technology workstream T1 (discussed in Table 3.1) includes consideration around transitioning to the updated standard ISO 15118-20, which will provide defined message sets for V2G services.

The National Roadmap for Bidirectional EV Charging is also investigating the interoperability standards for EV charging infrastructure that will contribute to the CER Roadmap. It aims to formally establish and communicate a market direction towards ISO 15118-20 and Open Charge Point Protocol 2.0.1 (OCPP), as future minimum requirements for EV charging infrastructure.[69]

This may incentivise EV manufacturers to explicitly provide coverage to V2G functionality in the EV battery's warranty. Consultation around the standards in the T1 workstream was held by DCCEEW in August and September of this year. It is expected the ECMC will consider the outcomes of this consultation in late 2025.[70]

Previously, consumers were restricted in their options to purchase an EV with an eligible battery. This was due to bidirectional EV charging in Australia being limited to BEVs and PHEVs using a specific CHAdeMO plug, which typically related to cars manufactured in Japan (particular Nissan and Mitsubishi EVs).

The amendment to AS/NSZ 4777.2 included a number of changes to facilitate bidirectional charging, such as enabling the CCS2 (Combined Charging System Combo 2) plug type to also be used for bidirectional charging. This may enable other EV car manufacturers (Hyundai, Kia, BYD and Polestar) to offer V2G capabilities to their customers.[71]

In addition to this standard change, as mentioned above in section 3.3, the CER Taskforce has also commenced work to identify any remaining technical or regulatory barriers to V2G

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68 Standards Australia, AS/NZS 4777.2:2020 Amd 2:2024.

69 OCCP is a common communications protocol for EV chargers.

70 DCCEEW, National Consumer Energy Resources (CER) Roadmap - Consultation on technical priorities, accessed November 2025.

71 RACV, Guide to bidirectional charging in Australia: V2G, V2H & V2L, June 2025, accessed 14 October 2025.

across Australia’s jurisdiction. This involves reviewing the general planning and regulations, including the connection conditions for DNSPs. The CER Taskforce will provide a final report on Maximising opportunities for electric V2G to the ECMC in December 2025.[72]

6.3 Visibility of connections of V2G on distribution networks

While DNSPs acknowledge that V2G uptake is expected to grow in the future, only a small number of V2G connections have been reported to date (Table 6.1). Some DNSPs noted they currently do not support V2G connections or are yet to receive an application.

Table 6.1 V2G Connection details - DNSPs - June 2025

Jurisdiction	DNSP	V2G connection available	Notification of V2G installation	No. of V2G chargers
ACT	Evoenergy	Yes	Required	49
NSW	Ausgrid	Yes	Required	8
	Endeavour Energy	No dedicated connections	In review	0
	Essential Energy	Yes	Required	Not available
Northern Territory	Power and Water Corporation	Yes	Required	0
Queensland	Energex and Ergon Energy	Yes	Required	1
South Australia	SA Power Networks	Yes	Required	19
Tasmania	TasNetworks	No requests received	N/A	0
Victoria	AusNet Services	Not supported at this stage	N/A	0
	Jemena	Yes	Required	0
	CPU	Yes	New/upgrade connection only	Not available

Source: Responses of DNSPs to export services network performance information request, September 2025.

AusNet Services do not currently support V2G-only connection as part of their Model Standing Offer for their connection services, however, were reviewing their customer notification obligations for EV standard equipment to align with other DNSPs. Endeavour Energy are also reviewing its V2G connection requirements to consider the impact of V2G connections on network configurations (how multiple inverters are connected within the installation), compliance with AS4777.2 and export limits at the connection point.

72 DCCCEW. National CER Roadmap Update - August 2025, p 24.

Essential Energy and CPU did not specify the number of V2G connections on their distribution networks. CPU stated that they did not have visibility of V2G connections on their distribution networks, noting that retailers were the party who engages with customers regarding V2G installations.[73]

For the other DNSPs, there are differences in relation to the notification and details provided for the installation of a V2G connection, with the installation treated differently across the DNSPs. This includes treating the connection as a bi-directional EV battery, a standard battery system or an embedded generator. This reflects that the number of V2G connections are currently very small. However, there are projects underway to accelerate the adoption of V2G by EV owners.

Going forward, as more V2G eligible EVs become available to consumers and the impact of bi-directional EV charging distribution networks is more readily understood, we expect greater harmonisation in connection policies across the DNSPs.

This harmonisation will also be assisted by the CER Taskforce's project to review the DNSPs' connection conditions for V2G. This is part of their final report to the ECMC on Maximising opportunities for electric V2G.

6.4 Static and flexible export limits for V2G connections

When determining export limits, DNSPs assess their network hosting capacity, to ensure that the amount of energy exported is not adversely impacting power quality. These export limits can be:

- Static export limits which set the maximum level of export that an export service customer is allowed at any time. They do not guarantee a fixed or maximum level of export, because a customer's ability to export is still subject to local system constraints.
- Flexible export limits (FELs) which provide export service customers with a lower limit (minimum) and an upper limit (maximum) for the amount they may export. The customer's DNSP actively monitors and varies the customer's maximum allowable exports within the upper and lower limits in response to network demand and congestion.

Static export limits and FELs can help manage network congestion and maintain power quality, whilst not restricting customer exports altogether. We have discussed these further in our 2024 Export services report.[74]

In this report, we analysed the static export limits and FELs of DNSPs, and found:

- Static export limits were the primary source of export curtailment for DNSPs.

73 Where V2G is grid connected, DNSPs can generally expect compliance with notification requirements. For chargers installed as part of modularised 'all-in-one' DC bus systems, where the V2G is not directly connected to the grid, DNSPs are not likely to have visibility of these chargers.

74 AER, Insights into Australia's growing two-way energy system, December 2024, p. 19.

- FELs were being rolled out by AusNet Services, Energex, Ergon Energy and SA Power Networks, with SA Power Networks significantly increasing the number of customers on FELs in 2024.[75]

Export limit guidance note

In October 2024 we published our final guidance note on export limits, to provide guidance to DNSPs on the following key areas in relation to the design, implementation and use of export limits:

- Hosting capacity and capacity allocation: Guidance on the hosting capacity assessments and capacity allocation principles that apply to static and FELs. It also provides practical guidance on how DNSPs can seek to demonstrate compliance with the capacity allocation principles in developing their capacity allocation methodologies.
- Revenue determinations: Guidance on matters that DNSPs should seek to address in developing capital and operating expenditure proposals to implement FELs, CER integration strategy and connection policy.
- Key considerations in implementing and using FELs: Guidance on matters DNSPs should consider when offering FELs to consumers, areas where DNSPs need to raise consumer and industry engagement and awareness, compliance and conformance, and expectations on complaint and dispute handling processes.
- Reporting: Guidance on areas where DNSPs can seek to enhance data and information gathering on export services and self-reporting to promote greater confidence in the operation of FELs.

Source: AER, Export limit guidance note, October 2024, pp 3-4.

For most customers, export limits may limit exports from solar generated from their solar PV systems, which typically occurs during the middle of the day when there is high solar generation from other CER. For V2G (and residential batteries), the exports can come from energy stored within the EV's battery, which can be exported into the grid in peak periods (typically 5pm to 9pm), when solar generation is not available.

Exporting into the grid during peak periods can be beneficial for the export service customer through a retailer potentially offering higher feed-in tariffs, than during non-peak periods. EV owners could also decide to use retailers who provide access to the wholesale market (such as Amber Electric), to export their stored energy during peak periods.

For these customers, the current static or FELs for DNSPs may limit their ability to discharge their stored electricity and earn the highest cash flow possible. However, specifically increasing the static or export limits to accommodate the larger storage capacity of V2G

[75] FELs for Victorian DNSPs are expected to be rolled out in 2026.

batteries, may increase constraints and congestion on distribution networks, which may lead to an inequitable outcome of higher network costs for all customers.[76]

Currently, no DNSP has implemented a specific static export limits or FELs for V2G connections. For most DNSPs, the export limits set for their solar PV systems or residential batteries would also apply to their V2G connection.

Going forward, FELs may provide more opportunity for EV owners to export with a V2G connection, as they allow for greater volumes of electricity to be exported when congestion is low or there is more demand for the electricity. This could also benefit other customers in the future, as the exported electricity could be used as localised generation, reducing the need to source wholesale energy from other parts of the energy system.

76 Although a V2G specific FEL would allow a much larger amount of electricity to be exported, the amount of electricity exported would not be guaranteed. Network curtailment may occur to ensure that network power quality is not negatively impacted.

7 DNSP EV trials

The step change scenario from AEMO's 2025 IASR forecast that the transition from internal combustion engine vehicles to battery and plug-in hybrid EVs will add an additional 70,000 GWh of energy consumption to the electricity grid.

To plan for this increased consumption and impact on network demand and congestion, a number of DNSPs have undertaken several trials to test innovative ideas and technologies. The findings of these trials can then be shared across the sector to build knowledge and provided to policy makers in assessing whether changes are necessary to the regulatory framework.

7.1 The EIT and policy led sandboxing

The Energy Innovation Toolkit (EIT) is a service offered in in conjunction with our project partners, AEMO, AEMC, ESC and ARENA, and is designed to reduce barriers to innovation and make navigating energy regulation easy.

Since 2022, the AER has offered regulatory sandboxing, which enables proof-of-concept trials to operate under relaxed regulatory settings, through a demand or market-based approach. Through reporting on the outcomes of trial wavers and trial rules in-market, stakeholders and policy makers can assess the suitability of the current regulatory framework and whether policy changes are required.

From February 2025, the AER introduced policy-led sandboxing to test large-scale innovative trial ideas, providing an opportunity to move quickly to test things at scale and in-market. Policy-led sandboxing seeks to accelerate our understanding of the different models to overcome barriers for the access, deployment and orchestration of DER including CER.

The suitability of prospective trials is based on a set of principles, which guide the design and evaluation of regulatory sandboxing trials. These principles were designed after consultation with stakeholders, with their application to promote innovation and/or getting trials to market.[77]

Table 7.1 Principles to guide design and evaluation of trials

Principle	Design
Equitable access to CER/DER	Does the sandbox proposal facilitate different ways for consumers and their communities to access CER/DER and does it share the benefits equitably?
Facilitating deployment and orchestration	Does the sandbox proposal help facilitate CER deployment and orchestration?
Lowest whole-of-system cost	Does the sandbox proposal promote reduced whole-of system cost?

[77] AER, Policy-led Sandboxing - Accelerating access, deployment and orchestration of DER through the regulatory sandbox, February 2025, p 3.

Principle	Design
Meeting consumer needs	Does the proposal contribute to meeting diverse consumer needs, including by providing flexibility as those needs change?
Scalability and replicability	Can the proposal demonstrate potential to be reliably and efficiently scaled and replicated?
System challenges	Does the sandbox proposal contribute to addressing system challenges such as minimum load, network congestion and resilience?

Source: AER, Policy-led Sandboxing - Accelerating access, deployment and orchestration of DER through the regulatory sandbox, p 3.

Under policy-led sandboxing, the AER offers six conceptual trial buckets, one of which covers flexible metering and EV chargers. This is designed to encourage DNSPs to explore a suite of trials that collectively inform policy development, regulatory reform and the rollout of new models.

In March 2025, we granted a trial waiver to PLUS ES, to install up to 1,000 kerbside, pole-mounted EV chargers across NSW and South Australia.[78] The trial seeks to test an innovative metering solution for pole-mounted kerbside EV chargers that improves the efficiency and cost of public EV chargers.

The policy-led sandboxing framework is new and currently open for applications. The AER looks forward to receiving more trial applications that seek to accelerate access to, and deployment and orchestration of DER including CER.

7.2 EV charger and V2G trial and installation challenges

One of the benefits of conducting trials is to identify challenges with new technology under current regulatory frameworks. Depending on whether the trial requires a waiver from the current regulatory framework or not, they may be conducted via the AER's regulatory sandboxing function, or directly via the DNSP.

In conducting trials, and installations of public EV chargers and V2G connections, DNSPs have noted a number of current and potential challenges being faced by DNSPs, connection applicants and other stakeholders. These include:

- Navigating ring-fencing requirements for rental of streetlights or utility poles to install third party EV chargers and the time taken to complete the regulatory process.
- No recognised avenue of cost recovery of EV charger and V2G connections via current regulatory instruments, potentially stifling CER investment and coordination.
- The lack of capacity or inadequate network infrastructure in urban locations which could benefit from EV charging infrastructure. To enable connection, this may require the EV

[78] Energy Innovation Toolkit, PLUS ES - Trial Waiver, accessed December 2025

charger to have its own point or supply, or require the applicant to make a capital contribution, the cost of which may result in the project being financially unviable.

- The undersized (under-rated) connections in regional locations restricting the electricity that can be supplied by the public EV chargers and the speed of their fast charging. This makes the rollout of public EV charging infrastructure across regional areas more difficult and expensive.
- Social challenges with public EV charger locations, particularly where car parking spaces may already be limited and EV charger specific car parks may result in negative community sentiment.

In addition to these challenges, previous trials also highlighted issues in relation to the compliance of V2G connections and manufacturer compatibility or warranty terms for EV owners using the EV’s battery for V2G services. As noted above in section 6.2, some of these issues may be partly solved by the amendment to the standards to address bidirectional charging.

7.3 Completed, current and planned EV trials

In this section, we have summarised a number of EV trials, which are either completed, currently being undertaken or planned by DNSPs. Some of these trials could have been granted a trial waiver previously or may be included in a trial waiver application under current or future consideration.

7.3.1 Completed EV trials

The completed EV trials for DNSPs are provided in Table 7.2. The larger EV Smart Charging and EV Grid trials primarily related to EV charging behaviour. However, there were also smaller DNSP trials in relation to the use of V2G services as bidirectional charging and EV charging infrastructure.

Ausgrid’s EV Smart Charging trial findings noted that the majority of EV charging was at peak times, when most convenient to the EV owner. This trial findings also noted that smart chargers and customer incentives could decrease demand from EVs during peak times and shift demand to times of minimum demand and high solar PV generation. In the Jemena EV Grid trial, although the number of participants were small, the trial findings showed an interest from the majority of participants to have a managed charging model, with customers incentivised by the cheaper electricity tariffs.

Table 7.2 Completed EV trials - DNSPs

DNSP	Sandboxing / Ring-fencing waiver or tariff trial	Trial purpose/s	Trial findings / learnings
Ausgrid EV Smart Charging Trial March 2019 - August 2021 In partnership with: ARENA, EVenergi, EV Council of Australia, NRMA, and the NSW Government.	N/A	The trial sought to: • Develop vehicle and fleet modelling products and tools to guide network forecast and planning decisions. • Survey EV owners to inform network understanding of EV owner preferences. • Enrol EV owners into trials with electricity to understand charging behaviours and solutions with trial participants. • Develop network tariffs for EV charging in the future. • Estimate and forecast potential impacts from EV charging on Ausgrid's zone substations.	Trial findings: • The majority of residential EVs were charged at peak times when most convenient, which could drive a greater need for network upgrades to manage capacity constraints and avoid equipment failures. • Smart chargers and customer incentives can decrease demand from EVs peak times and increase demand from EVs at times of minimum demand and high solar PV generation. • Smart charging could assist constraints where network investment has been avoided or deferred. • Origin Energy's analysis identified that average network value from smart chargers was $28 per EV per annum.
Jemena EV Grid trial April 2022 - April 2023 In partnership with: AusNet Services, Evoenergy, TasNetworks, United Energy and Jet Charge	N/A	The trial sought to: • Test how DNSPs can manage EV charging without costly grid upgrades. • Explore the use of smart charging, demand response, and "solar soak" events to shift charging away from peak times and into periods of surplus solar generation, while maintaining customer preferences.	Trial findings: • Participants are already avoiding peak demand times, primarily driven by their energy tariff. • The larger customer cohort in Victoria has a higher probability of charging in the evening peak. • Majority of customers expressed an interest in moving to a managed charging model with a primary incentive for participation being cheaper electricity rates.

DNSP	Sandboxing / Ring-fencing waiver or tariff trial	Trial purpose/s	Trial findings / learnings
Endeavour Energy 2022 - 2023	N/A	V2G demonstration at Depot side to build internal capability and technical understandings of V2G systems.	Trial findings: • The technology stack for V2G chargers at the time of the trial were relatively immature. • Integrations into their system were going to be costly and not deliver the relative benefits of simply controlling charging rates. • Endeavor Energy decided to wait for the technology stack and product to mature.
Ergon Energy - EV SmartCharge Queensland Program trial January 2021 - August 2022	N/A	Trial sought to collect real-world, Queensland-specific data on EV charging and travel behaviour.	Trial findings were used to inform a range of functions within Ergon Energy and Energex, including: • Demand management and forecasting, • Customer segmentation, • Development of residential EV charging profiles, • Creation of the EV charging detection model.
Essential Energy - Streetlight EV charger and Distribution pole EV charger trials In partnership with Wagners, Chargepost and EVX Streetlight: May 2024 - June 2024 Distribution pole: July 2025 - October 2025	N/A	Trial sought to: • Maximise investment in existing network infrastructure by providing additional value stacked use cases. • Accelerate the deployment of EV chargers in regional NSW. • Prove concept in anticipation of a scaled roll-out and understand commercial models.	Trial findings: • Provided technical learnings and information on consumer requirements, desires, usage patterns and expectations.

DNSP	Sandboxing / Ring-fencing waiver or tariff trial	Trial purpose/s	Trial findings / learnings
Essential Energy - V2G test facility 2024 - 2025 In partnership with CSIRO	N/A	Trial sought to: • Trial V2G solutions in conjunction with behind the meter asset orchestration. • Build and develop a CCS2 V2G solution which is ready for the Australian market. • Test, understand and verify V2G behaviour and network integration.	Trial findings: • Provided requirements for a flexible V2G and behind the meter orchestration and energy optimisation test facility. • Identification of gaps in the framework and network opportunities. • Established an ongoing test facility focused on CER assets. • Released a network ready V2G solution, in partnership with SigEnergy, CSIRO and AusEV.
SA Power Networks - Diversify trial tariff 2024 - 2025	Tariff trial	Although technically a tariff trial, the tariff was a reward for the consumer's participation in a research project. The trial was in relation to DOEs being applied to their EV charger. The DOE were provided from an aggregate charging management system which was communicated to each EV charger. This communication was through OCPP.	Trial findings: • Testing was performed on SA Power Networks fleet vehicles and employee owned vehicles, which found a complete lack of interoperability between EV chargers and charging management systems. • Due to OCPP being a protocol and not a standard, there was no testing or certification requirements in place. The different chargers implemented different functions of the protocol in different manners. • Due to these barriers, the Diversify trial was paused.

Source: Responses of DNSPs to export services network performance information request

7.3.2 Current EV trials

The current EV trials for DNSPs are provided in Table 7.3. The current EV trials may be subject to current assessments of trial waivers.

Table 7.3 Current EV trials - DNSPs

DNSP	Sandboxing / Ring-fencing waiver or tariff trial	Trial purpose/s
Ausgrid, AusNet Services, Essential Energy, Endeavour Energy, SA Power Networks In partnership with Wevolt Pty Ltd, University of Technology Sydney Institute for Sustainable Futures, Flow Power and The Bright Group Trial waiver decision - May 2025	Sandboxing trial waiver (for PLUS ES)	The applicant for this trial was PLUS ES. PLUS ES is partnering with DNSPs as part of the trial to lease space on power poles for kerbside EV chargers. This trial involves the installation of 1,000 pole-mounted EV chargers in NSW and South Australia.
CPU Ring-fencing decision - November 2025	Ring-fencing waiver	Installation of up to 100 EV chargers (which must include at least 5% V2G chargers) to test, analyse and publicly report on how EV charging can be used to manage local network constraints, improve voltage stability, and shift demand away from peak periods.
Evoenergy Realising Electric Vehicle-to-grid Services (REVS) In partnership with: ActewAGL, Australian National University, The ACT Government, SG Fleet Australia, JET Charge, Nissan and Icon Distribution Investments June 2020 - November 2025	No	The trial aims to demonstrate V2G technology providing contingency FCAS to the NEM, complemented with a holistic roadmap for the mass deployment of the full value stack of V2G services. This is designed to lead to new V2G enabled service offerings for fleets and residential customers.

DNSP	Sandboxing / Ring-fencing waiver or tariff trial	Trial purpose/s
Ausgrid Commenced in February 2025	Tariff trial	Whether there is a market for flexible load tariffs on primary circuits that provide small low voltage business customers with pricing signals at times when use is likely to drive network costs. The tariff applies to EV charging applications however other business applications will also be considered.
AusNet Services Commenced in 2024	Tariff trial	EV Dynamic which rewards EV charging during the day and rewards dynamic response to network instructions. Findings from the trial will be used to better understand how responsive EV users are to tariff structures and dynamic instruction.
Essential Energy Commenced in 2025	N/A	Trial seeking to develop alternative V2G solutions and integrate these solutions into the distribution network. Trial also seeks the requirements for premise level export control.
Power and Water Corporation Commenced in mid-2025	N/A	Conducting an EV supply equipment trial at a Power and Water Corporation site. Trial seeks to comprehend the existing technologies and practical capabilities in the market for EV management. Trial is designed to bring in effective strategies to increase EV supply equipment uptakes in constrained environments.
SA Power Networks ARENA-funded pilot run in partnership with EnergyAustralia, Amber Electric and the South Australian Government Commenced in May 2024	N/A	Energy Masters program seeking to explore the deployment of flexible connections for residential customers. This seeks to expand FELs to include importing devices, including EV chargers, as well as to explore the potential for home energy management systems to best integrate EVs and homes into the network.

Source: Responses of DNSPs to export services network performance information request, September 2025.

7.3.3 Planned EV trials

The planned EV trials for DNSPs, which are yet to commence, are provided in **Error! Reference source not found.**. The planned EV trials may be subject to future assessments of trial waivers.

Table 7.2 Planned EV trials - DNSPs

DNSP	Sandboxing / Ring-fencing waiver or tariff trial	Trial purpose/s
CPU	N/A	Plan to undertake a trial in the late 2020s to shift flexible loads away from peak periods to reduce power quality issues for customers and utilise existing network capacity. Trial will also test the systems and processes we intend to implement for broader roll out of flexible load and the incentives for customers to sign up to flexible load products.
Endeavour Energy	N/A	Planning a dynamic load enabled tariff, which would trial the EV charging demand response.
Energex and Ergon Energy	N/A	Scoping a trial to investigate and test bidirectional EV charging as part of broader home demand flexibility solutions. The trial will focus on interoperability testing between customer-side and network-side management platforms.
Essential Energy	N/A	Planned trials include • Transformer rating for fast EV charge peaky loads - Study for extra capacity for distribution transformers for fast EV charger loads. • Commence phase 2 of transformer ratings for fast EV charge peaky loads - Study for extra capacity for distribution transformers for fast EV charger loads. Subject to Grid Enhancing Technology program funding.

8 Community-scale batteries

Community-scale batteries (CSB) are a type of DER which can potentially play an important role in the decarbonisation of the energy system. These energy storage systems, which are connected to the electricity distribution network are typically located in front of the meter and have power capacities of 100kW up to 5MW.[79] Also known as neighbourhood batteries, CSBs can help store the localised generated electricity from rooftop solar PV.[80]

In December 2024, the number of solar PV installations exceeded 4 million.[81] For some of these export service customers, the electricity generated from their solar PV system can be stored in batteries behind the meter. This electricity can then be used by the customer or exported into the grid, possibly taking advantage of feed in tariffs provided by their retailer.

For the majority of export services customers, their solar PV is not combined with an on-site battery, preventing any storage of the electricity generated from their solar PV system. Without storage, the excess solar being generated from solar PV systems could be exported into the electricity grid. However in periods of low demand, this may involve the export services customer in some distribution networks incurring an export charge.[82]

CSB provides an opportunity for solar PV generation to be stored locally. This stored electricity can then be used potentially for:

- Demand management for the private owner of the CSB. This could involve the CSB being installed with public EV chargers to avoid a capital contribution cost on installation or being used to provide backup power during blackouts.
- Non-network demand management and network support by the DNSP. This could be used to:
  - reduce network congestion issues on the distribution network
  - avoid the DNSP incurring additional costs for network augmentation and maintenance of the resulting network assets
- Participating in the wholesale energy market and frequency, control and ancillary services (FCAS) markets ("energy markets"), through using their electricity to arbitrage the NEM spot price or selling their electricity in FCAS markets to AEMO.
- Community owned storage, where local councils, community groups and other organisations, can coordinate their local generation and storage. This can enable the community to export the stored excess generation when needed.

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79 We note that there are differing views across DNSPs and other stakeholders on the definition of a CSB. For this report, we are defining CSBs as above, however we may review this CSB definition in the future to ensure it remains fit for purpose.

80 We are also aware of instances where CSBs have been installed behind the meter, for example at a regional community centres.

81 CER, Australia reaches 4 million small-scale renewable energy installations, accessed August 2025.

82 AER, Insights into Australia's growing two-way energy system, December 2024, pp 16-17.

CSB can perform one or more of these services. Known as 'value stacking,' the owner of the CSBs can decide to operate their battery to perform multiple services, where the combined revenues or cash flows from the services increases the economic value of the project and its return on investment. In addition to 'value stacking' services, the owner of the CSB may also be able to use grants received from governments, local councils and other bodies. However, it is unclear how much these grants contribute to the economic value of the project.

8.1 CSBs on electricity distribution networks

The number of CSBs connected to the distribution networks varies across the DNSPs. In total, there are 244 CSBs connected to the 14 distribution networks, with the high number of CSBs in the Energex and Endeavour distribution networks contrasting with zero CSBs in the Evoenergy and Power and Water Corporation distribution networks.

Due to uncertainty in relation to batteries connected to the distribution networks, the number of CSBs installed on the distribution network provided in Table 8.1 may not include third party installed CSBs connected to the distribution networks.

Table 8.1 CSBs installed and owned by DNSPs

Jurisdiction	DNSP	No. installed on network*	No. DNSP owned
ACT	Evoenergy	0[83]	0
NSW	Ausgrid	22	22
	Endeavour Energy	54	54
	Essential Energy	4	4
Northern Territory	Power and Water Corporation	0	0
Queensland	Energex	53	53
	Ergon Energy	13	13
South Australia	SA Power Networks	5	0
Tasmania	TasNetworks	2	2
Victoria	AusNet Services	11	1
	Jemena	2	2
	CPU	78	38
	All DNSPs	**244**	**189**

Source: Responses of DNSPs to export services network performance information request

In reporting their CSBs, some DNSPs noted:

83 Evoenergy advise they have three batteries in the network, which were energised for testing and commission purposes only. Evoenergy aim to have these batteries installed on the network by January 2026.

- There were large scale batteries which have been installed on their networks, which do not meet the definition of CSBs. These batteries can be used for similar purposes to a CSB, including supporting EV chargers, providing security and supply for commercial businesses or other commercial enterprises.
- There was difficulty in determining whether some batteries were being used as a CSB, as DNSPs do not have visibility of the business model associated with the battery and whether the battery was used for private purposes.
- There was difficulty in determining whether batteries with power capacities between 100kW and 200kW met the definition of a CSB as provided above.

These issues were highlighted by Energex and Ergon Energy, who only reported DNSP owned CSBs due to uncertainty in identifying whether privately owned batteries were CSBs.

8.1.1 Capacity of CSBs installed on distribution networks

The CSBs that have been installed on the distribution networks are not homogeneous, reflecting their varied purposes. When determining the capacity, there needs to be consideration of the CSB's physical location, the ability to integrate with existing network asset infrastructure and the required energy needs.

Due to uncertainty in relation to the use of batteries connected to the distribution networks, the capacities provided in Table 8.2 may not reflect the total capacity of CSBs connected to the distribution networks.

Table 8.2 CSBs capacities installed on distribution network

Jurisdiction	DNSP	No. installed	Total capacity	Average capacity
ACT	Evoenergy	0	0	0
NSW	Ausgrid	22	13,854 kWh	630 kWh
	Endeavour Energy	54	5,200 kW	96 kW
	Essential Energy	4	3,590 kWh	898 kWh
Northern Territory	Power and Water Corporation	0	0	0
Queensland	Energex	50	20,800 kWh	392 kWh
	Ergon Energy	13	72,300 kWh	5,562 kWh
South Australia	SA Power Networks	5	2,430 kWh	486 kWh
Tasmania	TasNetworks	2	515 kWh	257 kWh
Victoria	AusNet Services	11	13,335 kW	1,214 kW
	CitiPower	1	284 kWh	284 kWh
	Jemena	2	800 kWh	400 kWh
	Powercor	31	360,960 kWh	11,644 kWh
	United Energy	46	11,690 kWh	254 kWh

Source: Responses of DNSPs to export services network performance information request, September 2025.

The current capacities of CSBs differ across the DNSPs, with Powercor's capacity being significantly higher than other DNSPs. Powercor's higher capacity, is due to a significant number of CSBs being installed with a capacity of 4.99 MW. This 4.99 MW capacity is slightly below the threshold 5 MW nameplate rating, which requires the battery system to be registered with AEMO as an Integrated Resource Provider and classified within the integrated resource systems and as a scheduled or non-scheduled bidirectional unit.[84]

Essential Energy's response noted that there were large batteries connected to their distribution network with 4.99 MW capacity, that they did not believe were being used as CSBs. They noted these batteries could be used to support hybrid solar farms or a battery energy storage system (BESS) for commercial business who may participate in the energy markets.

8.1.2 Use of CSBs for demand management and network support

As mentioned above, the stored electricity in a CSB can be used by the DNSP to provide distribution services in relation to demand management and network support services. Currently, of the 189 DNSP owned CSBs connected to the electricity distribution networks, approximately 89% (168) are used to provide demand management and network support.

Table 8.3 CSBs used for demand management and network support

Jurisdiction	DNSP	No. DNSP owned	Used for demand management
ACT	Evoenergy	0	0
NSW	Ausgrid	22	11[85]
	Endeavour Energy	54	54
	Essential Energy	4	1
Northern Territory	Power and Water Corporation	0	0
Queensland	Energex	53	43
	Ergon Energy	13	13
South Australia	SA Power Networks	0	0
Tasmania	TasNetworks	2	2
Victoria	AusNet Services	1	3
	Jemena	2	2
	CPU	38	28
	All DNSPs	**189**	**168**

Source: Responses of DNSPs to export services network performance information request, September 2025.

84 AEMO, Registering a battery in the NEM, 2024, p 1.

85 All of Ausgrid's CSBs can provide network support. They are leased to third parties for commercial use when they are not actively being used.

We do not have information on the capacity of these CSBs, or the economic benefit they provide to distribution networks, through reducing network congestion or avoid augmentation expenditure.

Before a CSB can be a viable option for demand management or network support within their distribution network, DNSPs highlighted they need to consider a number of factors. These include:

- Location of the CSB - DNSPs highlighted that CSBs are most effective for demand management or network support when deployed in areas identified to have peak demand issues, voltage fluctuations and/or limited capacity. Further, they noted that the installation of CSBs on sites with existing infrastructure (i.e. substations, LV/HV feeders) will reduce connection costs and flexibility.
- Network compatibility - To enable CSBs to provide distribution services, DNSPs noted there needs to be compliance with required technical standards. This involves compliance with CSIP-AUS and appropriate Distributed Energy Resource Management System (DERMS) Supervisory Control and Data Acquisition (SCADA) systems. DNSPs provided that effective integration of these systems will optimise the use of a CSB and enable real time communication with the DNSP.
- Size and scale - DNSPs noted the capacity and the scale of CSBs are an important factor in their cost and function. Ausgrid noted that installing one larger CSB was preferable to installing multiple CSBs in different locations, as it could be delivered at a lower $/kWh. Conversely, other DNSPs raised that installing modular, scalable and replicable CSBs could enable strategic expansion and cost efficiencies across the distribution network.
- Use of spare capacity in energy markets - DNSPs highlighted that due to the significant investment costs to install and operate a CSB, the use of the spare capacity in the energy markets, may assist in the financial viability of a CSB project.

DNSPs noted that these factors were critical for ensuring that the CSBs could be cost-efficient in their installation and deployment. Under our regulatory framework, for CSBs to be part of an DNSP's distribution network, the forecast capital expenditure for their installation and operation needs to be prudent and efficient.

8.2 Ownership and use of CSBs

CSBs on an electricity distribution network can be either owned by the DNSP or privately owned by a third party (i.e. an energy retailer, community group or local council). This can create different ownership models for CSBs, as identified in Australia National University's (ANU) Implementing CSB report,[86] which include:[87]

- third party owned CSBs which are intended to be used as a community battery
- third party owned CSBs which are intended to be used for profit

86 This report was for the ARENA funded Community Models for Deploying and Operating DER Project, which was part of the Battery Storage and Grid Integration Program funded under the Renewable Energy Innovation Fund initiative, and the ANU.

87 ANU, Implementing community scale batteries, December 2020, p 7.

- DNSP owned CSBs which are intended to be used as a community battery
- DNSP owned CSBs which are intended to be used for profit.

For third party owned CSBs the stored energy can be used for the community's energy needs and/or participating for profit in energy markets. For these owners, the CSBs would be operated with the objective of the revenues or cash flows received from the CSB's operations being higher than the expenditures or cash outflows from the CSB's installation and operation.

For DNSP owned CSBs, as provided above, the stored energy is often first used for non-network demand management and network support, with the remaining capacity possibly used for participation in the energy markets. This is an example of a CSB being used for 'value stacking.'

For a DNSPs to participate in the energy markets, there needs to be compliance with the Ring-fencing Guideline for electricity DNSPs. An alternative, may involve leasing some of the CSB capacity to a third party market participant, who seeks to use the capacity to profit in the energy markets.[88]

The use and financial viability of CSBs is an important consideration for third parties and DNSPs. Without the revenue, cash flows or avoided costs exceeding the cost of installation and operation, it will be difficult for a widespread rollout of CSBs across the distribution networks.

8.2.1 United Energy low voltage battery trial

In May 2025 United Energy published their findings from their Low Voltage Battery Trial. In this trial, which was supported by ARENA funding, United Energy deployed 37 pole-mounted BESS across constrained low voltage areas in their distribution network.

This United Energy trial provides important insights in relation to CSBs on distribution networks. The key findings of the trial include:[89]

- The trial demonstrated the technical feasibility of community battery installations, with the battery units providing local network support and increasing solar hosting capacity of solar PV in the low voltage network.
- The delivery of the project was based on value stacking, being the combined benefits, revenues or cash inflows from avoided augmentation costs, retail lease revenue, external precommercial grants (e.g. ARENA funding), and potential for earnings through the energy markets. Due to changes in the FCAS market, the trial was unable to prove the value stacking model.
- Changes in the FCAS market, resulted in their retail partner advising that it was no longer economic to register for the Victorian contingency FCAS markets. This is due to

88 Leasing the capacity of a DNSP owned CSB will also need to comply with the Ring-fencing Guideline for electricity DNSPs.

89 United Energy, United Energy low voltage battery trial, May 2025.

contingency prices (and projected revenues) decreasing significantly and forecasts showing prices were unlikely to remain high in the future.

- The pole-mounted designs resulted in higher cost maintenance works, as the work on the batteries 3.6 metres above the ground, required an elevated work platform and support from traffic management.
- Although battery technology is maturing quickly, which will reduce installation costs and improve battery reliability, traditional network augmentation projects are more cost-efficient and reliable.
- Standardised, off-the-shelf BESS designs will make community-based battery projects more viable at scale, especially as DNSPs develop closer collaborative relationships with regulators, manufacturers and local communities.

Source: United Energy, United Energy low voltage battery trial, May 2025.

This trial reiterates responses received from some DNSPs, that they believed traditional network augmentation currently was more efficient than the installation of a CSB. However, with battery technology becoming more efficient and cheaper, some DNSPs noted there is an expectation that CSBs could be readily used by both DNSP and third parties in the distribution networks in the future.

8.2.2 Ausgrid Community Power Network trial

In December 2025, the AER decided to grant Ausgrid a trial waiver for a five-year period from compliance with the Ring-fencing Guideline (electricity distribution) 2025 to conduct a Community Power Network in Charmhaven and in Mascot/Botany.

Waiver to trial Community Power Networks in NSW

Ausgrid's trial will involve stimulation of investment in solar PV on both residential and commercial and industrial rooftops to increase local renewable generation. In the trial, Ausgrid will own and install local battery storage, to store and redistribute local generation within the trial areas. Ausgrid will also use this storage to participate in energy markets to generate a divided, which if realised, will be shared with the trial's customers.

Ausgrid will use this trial to test whether locally shared storage, pooled solar and network-led orchestration can:

- Get greater use from surplus solar from local homes and businesses and pass the benefits on to customers in the trial areas.
- Smooth evening demand peaks to use the existing distribution grid more efficiently and free up network capacity that could be used to support new or expanded customer connections. This could also reduce the need for additional network augmentation expenditure.
- Reduce reliance on the transmission network and centralised grid-scale energy generation by using locally generated energy.
- 'Value stack' the various services the distributed energy can deliver. This involves using batteries to access multiple benefits like participating in the energy markets and

supporting local network needs to get more value from each battery and from local energy sources.

In the trial waiver decision, we have provided the trial's conditions, how we will monitor the trial and our expectations on how Ausgrid will approach certain issues with the trial.[90]

Source: AER, Ausgrid Community Power Network -Trial waiver decision, December 2025.

8.3 Barriers to the deployment of CSBs

Although already installed on distribution networks, CSBs are a developing technology, with barriers to their widespread deployment. Typically, as technologies and the industry matures, barriers will begin to reduce, or businesses will find methods to avoid, mitigate or transfer the associated risks.

The barriers to the deployment of CSBs provided by DNSPs vary across distribution networks. These barriers can change based on the DNSPs' jurisdictional requirements, the geographical location and respective regional energy markets. These barriers apply to both DNSPs and third parties (energy retailer, community group or local council).

Currently, electricity DNSPs note the installation of CSBs by third parties are low, which they believe may be due to the current barriers to deployment of CSBs having a greater impact on third party connection applicants.

8.3.1 Financial viability and contract structure

Currently, CSB require a high upfront cost, with most projects being funded by government initiatives. In aggregate, DNSPs reported that most CSBs installed on their distribution network were funded partially by a jurisdictional grant, which may have enabled the project to be financially viable.

To enable the CSBs to increase its economic value and return on investment, some DNSPs have leased out capacity to third party market participants, who will use the capacity to seek revenue in the energy markets.[91] This additional service adds to the 'value stack' of the CSB.

DNSPs noted difficulty in contracting with third party market participants on terms in which the capacity could be available to also provide demand management and network support. DNSPs also noted challenges in consistent contractual terms across third party market participants, with different market participants seeking to use the capacity in different ways.

Going forward, as DNSPs and third-party market participants contract more for CSBs' capacity, DNSPs provided there is an expectation that contractual terms will become more standard and contracting with third parties more routine.

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90 AER, Ausgrid Community Power Network trial waiver application - Final decision, accessed December 2025

91 A class ring-fencing waiver granted by the AER enables DNSPs to lease battery capacity to third parties for batteries funded under the Commonwealth Government's Community Batteries for Household Solar Program.

8.3.2 Delays in the installation of CSBs

The time taken from initial application to an operational CSB is an important factor in the deployment of a CSB. A longer installation timeframe increases the risk for the projects to be impacted by increased costs, planned milestones to be delayed and supply chain issues. Across the DNSPs, the current timeframes to install a CSB, range from under 12 months to 2 years.

DNSPs highlighted that there are various factors that can delay the delivery of CSB projects, which include the barriers discussed in this section. DNSPs noted that typically the more complex the installation, the greater the need for more consideration of the planning and connection requirements.

DNSPs noted that third party installations, often had more delays when installing CSBs. This is due to possible issues with their initial connection application and the time taken to engage with the DNSPs on the available network capacity and the connection process.

8.3.3 Logistics and technical skill

As a relatively new technology, DNSPs noted the installation of CSBs required procuring certain parts and components and accessing technical skills. These parts and components may be limited and only available from overseas suppliers, which make procurement complex and subject to lengthy delivery times.

Similarly, a CSB installation requires qualified technicians, who may be required to work on other priorities or workstreams of the DNSP or may be difficult to recruit. Both this resourcing and the procurement would be further complicated for DNSPs which operate in regional locations.

These issues with procurement are expected to be more acute for third parties, as they may have less understanding of the logistics of procuring parts and components, especially when dealing with overseas suppliers. Third parties may also find resourcing technicians more difficult, as they may not have the same access to existing employees who hold the requisite experience and skills.

8.3.4 Land access and community concerns

The CSBs installed on electricity distribution networks can be pole-mounted or ground-mounted. Pole-mounted CSBs can be installed on utility poles, which are network assets owned by the DNSPs. Ground-mounted CSBs need to be installed on the ground, requiring selection of the appropriate location and land access for either the DNSP and/or third party.

DNSPs noted the selection of a CSB's location needs to be suitable from a civil engineering perspective, as land needs to accommodate the CSBs design and enable safe operation. The location also needs to be suitable from a network perspective with identified issues in relation to peak demand, voltage fluctuations and/or limited capacity. This will enable the CSB to provide the requisite demand management or network support services.

DNSPs also highlighted that land access requires engagement with local communities, planning authorities and local councils. This involves stakeholder engagement to discuss and address potential or perceived issues from the CSB connection in respect to noise, fire-risk, toxic fumes and visual amenity. Based on their experience in installing CSBs, DNSPs noted that early engagement with these parties can help alleviate these issues and other stakeholder concerns.

8.3.5 Insurance coverage for CSBs for third party connection applicants

Due to the high value of network assets, DNSPs seek insurance products from insurers, to transfer the financial risk from damage to their network assets.

The insurance premium costs from these products are included in a DNSP's opex allowance. When insurance costs change, DNSPs can seek a step change in their opex allowance in their next regulatory proposal or seek insurance coverage and insurance cap pass through events within the regulatory periods.[92] These insurance products can provide coverage for DNSPs in relation to damage to CSBs and any public liability claims from their operation.

For third parties installing a CSB, to avoid being responsible for damage to the CSB and/or public liability from its operation, the third party will need to seek an appropriate insurance product for their CSB.

Issues with third parties securing appropriate insurance coverage was highlighted by DNSPs to a key factor in delaying a CSB installation and increasing the costs of the project. These issues could also lead to a third party deciding to abandon a CSB project, as the potential insurance coverage could be inadequate or the higher than anticipated insurance costs impacting the CSB's return on investment.

92 AER, 2022 Electricity network performance report, July 2022, p 56.

9 Looking ahead

9.1 Export services network performance report 2026

In the 2026 Export services network performance report, we will be returning to the format of reporting DNSP performance in relation to export capacity, battery penetration, two-way tariffs, export limits and curtailment.

This data will be reported annually by DNSPs through Annual Information Orders, which replaces the information being reported by DNSPs through voluntary information requests. The Annual Information Orders formalises the export services reporting data instructions and definitions for DNSPs, which is expected to standardise the reporting by DNSPs and improve the quality of the data reported.

Our plan is to report export service network performance data for the 2025 regulatory year in the first half of 2026.

9.2 Future export services network performance reporting

As we will be reporting export services data from the Annual Information Orders for the first time in 2026, we are not planning to make any significant changes to our usual export services reporting data suite in 2026. Although we are not intending to make any changes to the data included in our report, from 2026 this report will be combined with our annual electricity and gas networks performance report, rather than published as a standalone report.

Going forward, we expect export services to evolve and change with the increasing penetration of CER, which will require DNSPs to change both the operation and planning of networks. Changes in CER technology, will also require the regulatory framework and technical standards to adapt, to ensure current rules and requirements are fit-for-purpose.

In addition, the National CER Roadmap's Implementation Plan has an established timeline for the projects outlined, which differ in relation to the project's aim and completion date. As these projects are completed and implemented, we expect the outcomes of the projects to be reflected in the performance of DNSPs in providing export services.

These factors will likely require changes to our export services reporting including the collection of additional data, which will also require consultation with stakeholders on the benefits and costs associated with the data collection.

Consultation will involve working with DNSPs to ensure consistency in methods of calculation to enable the data to be effective and any analysis is comparable across the DNSPs.

Similarly, we would also need feedback from other stakeholders including government departments, government agencies and consumers. Our aim is to ensure that any changes to our export services network performance data are meeting their needs to consider the performance of DNSPs in providing export services.

We welcome feedback from stakeholders on their views of our export services performance report and what information we should collect and report in future Export services network performance reports.

Glossary

Term	Definition
AC	Alternating current
AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
ARENA	Australian Renewable Energy Agency
BESS	Battery Energy Storage System
BEV	Battery Electric Vehicles
CER	Consumer energy resources
Curtailment	Any reduction on the capacity of an inverter to generate power. This could be caused by the inverter tripping in response to voltage disturbances or formally imposed through network static or dynamic export limits.
Connection agreement	An agreement between a DNSP and a customer by which the customer is connected to the distribution network and receives distribution services.
CSB	Community-scale batteries
DC	Direct current
DER	Distributed energy resources
DERMS	Distributed Energy Resource Management System
DNSP	Distribution network service provider
DOE	Dynamic operating envelope
ECMC	Energy and Climate Change Ministerial Council
EIT	Energy Innovation Toolkit
Energy delivered	The total amount of energy transported through a distribution network.
ESC	Essential Services Commission Victoria
EV	Electric vehicle
Export	Electrical energy that flows from a customer's premises to a distribution network via the connection point.
Export access against the agreed limit	The annual percentage of time that customers have the unconstrained ability to export to the distribution network up to the maximum export limit set in their connection agreement.
Export capacity	The maximum amount of electricity a customer's system is capable of exporting to the distribution network in accordance with the connection agreement.
FAA	Facilities access arrangement
FCAS	Frequency, control and ancillary services
FCEV	Fuel cell electric vehicles

Term	Definition
Flexible export limits (FELs)	The maximum level of export that a customer is allowed by a DNSP which can be varied based off network conditions.
Hosting capacity	The ability of a power system to accept energy generated by consumer energy resources without adversely impacting power quality such that the network continues to operate within defined operational limits.
HEV	Hybrid Electric Vehicles
HV	High voltage
kVA	Kilovolt-ampere
kW	Kilowatt
kWh	Kilowatt-hour
LV	Low voltage
Model standing offer	A document approved by the AER as a model standing offer to provide basic connection services in accordance with Chapter 5A of the NER.
MOS	Minimum operating standards
MW	Megawatt
NEM	National Electricity Market
NEO	National Electricity Objective
NER	National Electricity Rules
SCADA	Supervisory Control and Data Acquisition
Static export limit	A fixed maximum level of export a customer is permitted by their DNSP.
Static-zero export limit	A static export limit of zero, preventing a customer from exporting any electricity to a distribution network.
Overvoltage	The network voltage reaching a point where a customer's generating unit reduces its real power output in response to increased voltage.
PHEV	Plug-in Hybrid Electric Vehicles
PV	Photovoltaics
V2G	Vehicle-to-grid
V2H/B	Vehicle to homes and buildings
V2L	Vehicle-to-load
VPP	Virtual power plant