AEMO
AUSTRALIAN ENERGY MARKET OPERATOR

Level 12
171 Collins Street
Melbourne VIC 3000

Postal address
GPO Box 2008
Melbourne VIC 3001

T 1300 858 724
F 03 9609 8010
E info@aemo.com.au

12 December 2023

Ms Anna Collyer
Chair
Australian Energy Market Commission

By online submission

Dear Ms Collyer

Rule change request – Electric vehicle supply equipment (EVSE) standing data

The Australian Energy Market Operator (AEMO) requests that the Australian Energy Market Commission (AEMC) consider making a rule change under Section 91 of the National Electricity Law.

This rule change request details AEMO's proposal to extend the scope of the Distributed Energy Resources (DER) Register data and collection framework to include standing data for EVSE. The Energy Security Board (ESB) recommended AEMO deliver this proposal as part of their *Electric Vehicle Supply Equipment Standing Data Consultations Outcomes Report*[1].

This proposal would contribute to a more reliable, efficient, and secure system for all consumers by enabling AEMO and Distributed Network Service Providers (DNSPs) to improve their planning and forecasting to efficiently integrate electric vehicles (EVs) into the National Electricity Market (NEM). AEMO's forecasts indicate that by 2032-33, EVs will add between 7 TWh to 25 TWh to the NEM's annual consumption[2]. It will be critical to have a data and reporting framework in place before EV uptake accelerates. EVSE standing data would lead to improved decision-making, more efficient investments, and greater visibility of emerging challenges. Emergency services agencies would also be able to use this information in response to an emergency or for their planning purposes. Furthermore, this data is a key enabler for other reforms required to transition the NEM into a modern energy system fit to meet consumers' evolving wants and needs.

The proposed amendments place an obligation on AEMO to include EVSE standing data in the DER Register and on DNSPs to collect this information and share it with AEMO. Consistent with the treatment of DER generation in Rule 3.7E, the proposal does not contain specific requirements as these would be defined in AEMO's guidelines and specifications. If a rule is made, AEMO will consult on changes to the DER Register information guidelines and technical specifications. AEMO and DNSPs would also be required to make changes to their information technology systems, and in the case of DNSPs, changes to obligations in their connection agreements and/or service and installation rules in order to give effect to the new rule.

AEMO will work with the AEMC and DNSPs to identify opportunities for an efficient implementation, in terms of time and cost. These could include commencing consultation on guidelines prior to a final determination

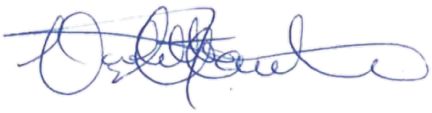
[1] Energy Security Board (June 2023), Electric Vehicle Supply Equipment Standing Data Consultations Outcomes Report, https://www.datocms-assets.com/32572/1688103470-attachment-b-evse-standing-data-consultation-paper-final-june-2023.pdf
[2] AEMO (August 2023), 2023 Electricity Statement of Opportunities, https://aemo.com.au/-/media/files/electricity/nem/planning_and_forecasting/nem_esoo/2023/2023-electricity-statement-of-opportunities.pdf?la=en&hash=D8CC2D9AC8D9F353194C9DD117095FB4

and aligning implementation with AEMO's industry-aligned IT release cycles (nominally in May and November). AEMO encourages the AEMC to leverage findings of the ESB's consultation to finalise the rule change consultation in 2024. AEMO expects that if the AEMC's rule change were completed by September 2024, the new data collection framework could commence in May 2026. If the rule change process were delayed, this could push commencement to November 2026 or to future release cycles.

AEMO looks forward to working collaboratively with the AEMC to support the implementation of this reform.

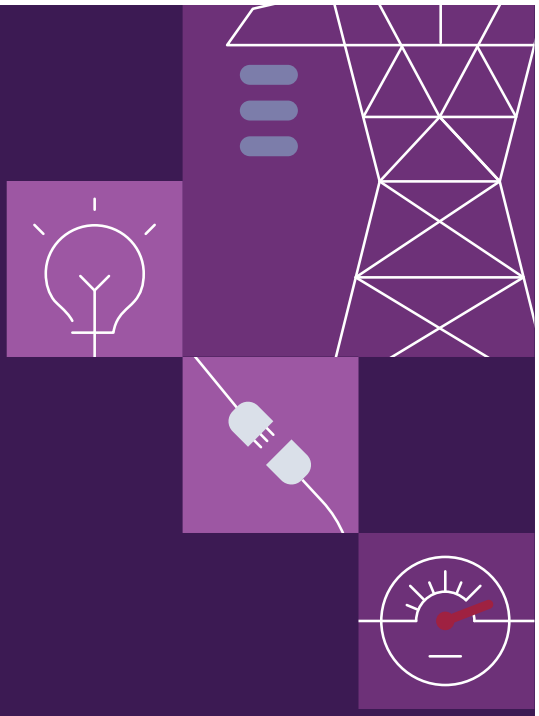
Any queries concerning this rule change proposal should be directed to Kevin Ly, Group Manager – Reform Development & Insights on Kevin.Ly@aemo.com.au.

Yours sincerely,



Violette Mouchaileh
Executive General Manager Reform Delivery

AEMO
AUSTRALIAN ENERGY MARKET OPERATOR



Electricity Rule Change Proposal

Electric Vehicle Supply Equipment Standing Data

December 2023

aemo.com.au

New South Wales | Queensland | South Australia | Victoria | Australian Capital Territory | Tasmania | Western Australia

Australian Energy Market Operator Ltd ABN 94 072 010 327

Contents

Tables

Figures

1. Summary

In June 2023, the Energy Security Board (ESB) released the *Electric Vehicle Supply Equipment Standing Data Consultations Outcomes Report*. The ESB recommended the Australian Energy Market Operator (AEMO) deliver a rule change proposal to the Australian Energy Market Commission (AEMC) to extend the scope of the Distributed Energy Resources (DER) Register to collect electric vehicle supply equipment (EVSE) standing data.

EVSE standing data is defined as data concerning the location and characteristics of EVSE to inform network modelling and forecasting. This data is necessary to guide planning processes in the energy sector and the planning of electric vehicle (EV) infrastructure.

The EV sales share across the National Electricity Market (NEM) as at end September 2023 is approximately one tenth of total sales and expected to increase. AEMO's 2023 Step Change scenario forecasts that battery EVs[1] and internal combustion engine vehicles will reach cost parity in 2026-27. This scenario also forecasts more than 4 million residential EVs on the road by 2032-33. AEMO's forecasts indicate that by 2032-33, EVs will add between 7 TWh to 25 TWh to the NEM's annual consumption[2].

It will be critical to have a data and reporting framework in place before EV uptake markedly accelerates. This visibility is an essential precursor to efficiently integrate this significant load into the NEM. EV standing data would lead to less uncertainty in AEMO and distribution network service providers' (DNSP) forecasting and planning models, which in turn can lead to improved decisions such as more targeted investments, a lower procurement margin for system services and greater visibility of emerging challenges (e.g., system security risks). EVSE standing data would enable AEMO and DNSPs to make evidence-based decisions when managing the bulk system and network, respectively. Furthermore, this data is a key enabler for other reforms required to transition the NEM into a modern energy system fit to meet consumers' evolving wants and needs.

Proposed changes to the National Electricity Rules (NER)

This rule change request proposes changes to Rule 3.7E, Clause 5.3.3, Clause 5.3A.5, Clause 5A.B.2, Clause 5A.B.4, Clause 5A.C.3, Schedule 5A, Chapter 10 and Chapter 11 of the NER. The amendments would:

- Place an obligation on AEMO to include EVSE standing data in the DER Register (DERR)
- Place an obligation on DNSPs to provide EVSE information to AEMO
- Place an obligation on AEMO to update its guidelines to specify requirements related to EVSE standing data collection
- Require DNSPs to enable the collection of EVSE information from customers by updating the requirements of connection enquiries, connection agreements, and connection offers
- Require AEMO to prepare and publish on its website a report of aggregated DERR information, which would include EVSE information

[1] The term EV is used in this report to describe both battery and plug-in hybrid EVs, unless otherwise specified.
[2] AEMO (August 2023), 2023 Electricity Statement of Opportunities, https://aemo.com.au/-/media/files/electricity/nem/planning_and_forecasting/nem_esoo/2023/2023-electricity-statement-of-opportunities.pdf?la=en&hash=D8CC2D9AC8D9F353194C9DD117095FB4

- Specify that DNSPs may use DERR information (which includes both EVSE information and DER generation information) for the purposes of delivering a distribution service
- Create transitional provisions to:
    - allow AEMO to make changes to its guidelines before the Rule commences
    - provide industry with a transition period between the publication of the guideline amendments and the commencement of the Rule
    - place an obligation on DNSPs to amend their rules governing the safety and technical requirements for connection to their networks (i.e., their service and installation rules, or SIRs) to require a person who wishes to install EVSE to apply to the DNSP before making the installation.

These changes would be the first step required to extend the DERR data and collection framework to include EVSE standing data. AEMO's view is that the changes to the NER should not contain specific requirements such as minimum capture size, required data fields, or frequency of reporting. These requirements should be defined in AEMO's guidelines and specifications and be subject to further consultation. This is consistent with the way in which DER generation information is treated in Rule 3.7E.

If a rule were made, AEMO would seek to make changes to its DERR Information Guidelines. In line with the ESB's recommendations, AEMO intends to consult on a requirement that applies to all new installations of hardwired EVSE with a connection of 15 Amps (A) or greater.

Contribution to the National Electricity Objective (NEO)

The proposed reform contributes to a more reliable, efficient and secure system for all consumers by:

1. *Supporting more efficient investment in, and operation of, electricity services.* EVSE standing data would be used by networks and AEMO to improve their planning and forecasting. This would promote more efficient investments in network capital expenditure and network operating expenditure and could support enhanced network utilisation. The data would also promote market efficiency by improving the assumptions behind procurement of system services and representation of network limits.

2. *Upholding the safety, security and reliability of the electricity system.* EVSE standing data would be used by AEMO to fulfil its obligation to ensure the safe, secure, and reliable operation of the NEM. The data could also be used by networks and AEMO to determine the risk of cybersecurity events and to implement risk mitigation controls.

3. *Contributing to the achievement of government targets for reducing, or that are likely to reduce, greenhouse gas emissions.* The collection of EVSE standing data would support the delivery of jurisdictional greenhouse gas emissions reductions by enabling the electrification of transport, as well as jurisdictional renewable energy and EV uptake targets. EVSE standing data is critical to support electricity network and system planning and to ensure there is sufficient capacity available to service this emerging load. Furthermore, EVSE standing data can support the design and delivery of solutions to modify EV charging in a way that maximises the amount of renewable energy that is used to service these loads.

Contents of this proposal

This rule change proposal provides relevant background on the previous work that informed the recommended approach. It also includes details on the statement of issue and how this proposal will address this issue. The proposal includes a description of the proposed Rule, and a high-level description of the implementation that would be required after the Rule is made. Its final sections detail how this reform would contribute to the NEO and its expected benefits and costs. This proposal is also accompanied by two appendices, as outlined below.

Appendix A	Summary of complementary measures
Appendix B	Proposed Rule amendments

AEMO looks forward to working collaboratively with the AEMC to support the implementation of this reform.

2. Relevant Background

2.1. Previous work

Between 2019 and 2021, the Australian Renewable Energy Agency (ARENA) hosted an EV Grid Integration Workstream through its Distributed Energy Integration Program (DEIP). The workstream included an AEMO-led EV Data Availability Taskforce which brought together a range of industry and government stakeholders to assess EV data availability and requirements to enable their effective integration into Australia's electricity grid. The taskforce delivered the February 2021 report *Distributed Energy Integration Program – Electric Vehicles Grid Integration*[3] which included a range of recommendations including the establishment of an EVSE standing data register.

In July 2021, the ESB released its *Data Strategy Final Recommendations*[4] which identified EVSE standing data as a priority data gap. The report was consistent with recommendations from the DEIP EV Data Availability Taskforce. It recommended an opportunity assessment to establish a minimum viable product for an EVSE standing data register under the existing electricity rules and regulatory frameworks.

In response, in November 2021 Energy Ministers requested the ESB to progress work to address this priority data gap. The ESB developed and released the *Electric Vehicle Supply Equipment Data Consultation Paper*[5] (the EVSE consultation paper) in December 2021. The paper consulted on matters related to data use cases, a draft data specification, data collection considerations and reporting triggers, data repositories and regulatory framework considerations. The ESB received 16 written submissions to its consultation paper, representing DNSPs, energy retailers, government and industry bodies. The consultation also included 17 targeted sessions with representatives from these sectors.

[3] AEMO on behalf of the DEIP EV Data Availability Taskforce (February 2021), Distributed Energy Integration Program – Electric Vehicles Grid Integration Recommendations, https://aemo.com.au/-/media/files/stakeholder_consultation/working_groups/der-program/deip-ev/2021/deip-ev-data-availability-taskforce-report.pdf?la=en

[4] ESB (July 2021), Data Strategy Final Recommendations, https://www.datocms-assets.com/32572/1657767015-esb-data-strategy-final-reccomendations-july-2021.pdf

[5] ESB (December 2021), Electric Vehicle Supply Equipment Data Consultation Paper, https://www.datocms-assets.com/32572/1670367035-esb-electric-vehicle-supply-equipment-standing-data-consultation-paper-december-2022.pdf

In June 2023, the ESB released the *Electric Vehicle Supply Equipment Standing Data Consultations Outcomes Report* (the EVSE outcomes report). This report included a core recommendation to collect EVSE standing data across NEM states, with AEMO taking the lead on actions to fulfil this recommendation.

The ESB progressed work on EVSE standing data in close alignment with its wider EV program under the *ESB's Consumer Energy Resources (CER) Implementation Plan*[6]. Furthermore, the third release of its Customer Insights Collaboration (a six-monthly forum where the ESB consulted on key customer issues relevant to its CER Implementation Plan) provided insights on ways to enhance customers' experience with and value from charging their EVs. This release also highlighted the need for better information regarding EVSE.

2.2. ESB recommended implementation path

Submissions to the ESB's EVSE consultation paper communicated broad support for:

1. Collecting EVSE standing data to support the primary use case of network planning, and commencing data collection in the near term, given rates of expected uptake.
2. Capturing all hardwired EVSE with a connection of 15 A or greater.
3. Using the current DERR as a database, as this was considered the only viable candidate.

The submissions also raised a range of challenges, including:

1. Data quality and process inefficiencies in the existing DERR process
2. Limited direct incentives or requirements on EVSE installers to report data impacting compliance levels.

Based on these findings, the EVSE outcomes report recommended a two-phase approach:

1. Expanding on existing frameworks to progress action in the short term, by including EVSE standing data in the DERR and undertaking complementary measures to improve on processes and engage installers
2. Longer-term policy consideration of new frameworks for installer requirements and compliance across CER technologies, including EVSE standing data.

The first phase would require AEMO to lead work to:

- Extend the scope of the DERR data and collection framework to require DNSPs to collect specified standing data for all hardwired EVSE with a connection of 15 A or greater (public, private, and commercial charging)
- Review current issues in the DERR data collection frameworks
- Work with industry to establish and obtain access to a national EVSE product database
- Pursue complementary measures to support compliance.

The second phase would require the consideration of EVSE installer reporting obligations as part of the policy work on long-term CER frameworks resulting from the AEMC's *Review into*

[6] ESB (July 2021), Clean and Smart Power in the New Energy System, Unlocking benefits of change for consumers: integration of distributed energy resources and flexible demand, https://www.datocms-assets.com/32572/1629954551-esb-final-report-explainer-clean-and-smart-power-der-pathway.pdf.

Consumer Energy Resources Technical Standards[7]. The AEMC's final report recommends energy ministers lead the development of a national regulatory framework for CER technical standards. In November 2023, Energy Ministers agreed to give consideration to implementing a national approach to technical regulatory settings for consumer energy resources in 2024[8].

This Rule change proposal is limited to extending the DERR collection and data framework to collect EVSE standing data by making amendments to the NER**.** However, the short-term complementary measures proposed by the ESB and the longer-term policy consideration of compliance frameworks are crucial to realise the expected benefits of this Rule change.

- AEMO has already commenced work with stakeholders to improve the quality and completeness of DERR data and to establish a national EVSE product database. A summary of these measures has been included in **Appendix A**.
- The long-term reform work on CER technical standards, including consideration of how to effectively regulate EVSE installations, should progress in parallel with this Rule change. Without this enduring regulatory framework, it will be difficult to achieve the level of data quality and completeness required for effective network and system planning.

2.3. Stakeholder engagement

This proposal is supported by findings from the ESB's public consultation on EVSE standing data. The findings of this consultation are summarised in the ESB's EVSE outcomes report and were informed by 17 targeted consultation sessions and 16 written submissions from DNSPs, energy retailers, government, industry, and peak bodies.

In addition to the ESB's consultation, AEMO consulted with DNSPs through its DERR working group to inform the following sections:

- DNSP use cases for EVSE standing data (Section 4)
- Distribution network benefits (Section 7)
- DNSP implementation process (Section 7)
- DNSP implementation costs (Section 7).

AEMO thanks the organisations involved in this working group for their input.

3. Statement of Issue

3.1. Importance of EVSE standing data

An EVSE is a stationary device which delivers energy between an electricity network and an EV. While these devices are commonly known as 'chargers' or 'charging stations', this proposal uses the term EVSE to avoid confusion with on-vehicle charging equipment. Although less prevalent, this proposal also uses the term EVSE to capture stationary devices with bi-directional charging, including vehicle-to-grid (V2G), vehicle-to-home (V2H) and vehicle-to-load (V2L) capabilities. These capabilities enable EVSE to use the energy stored in

[7] AEMC (21 September 2023), Review into consumer energy resources technical standards, Final report, https://www.aemc.gov.au/sites/default/files/2023-09/RCERTS%20Final%20Report.pdf

[8] Department of Climate Change, Energy, the Environment and Water, Energy and Climate Change Ministerial Council Meeting Communique Friday 24 November 2023, https://www.energy.gov.au/sites/default/files/2023-11/ECMC%20Communique_24%20Nov%202023.docx

an EV's battery to supply electricity back into the grid, back into the home or back into an external device (respectively). These scenarios are subject to the EV being bi-directional compatible.

EVSE standing data is defined as data concerning the location and characteristics of EVSE to inform network modelling and forecasting. This data is necessary to guide planning processes in the energy sector and the planning of EV infrastructure. EVSE standing data excludes ongoing operational data.

The EV sales share across the NEM (as at end September 2023) is approximately 10.5% of new sales. However, this penetration is expected to increase. State and federal governments have implemented a range of government strategies and policies that are expected to drive EV uptake. These include uptake targets (for example, 50% sales share for EVs by 2030), subsidies, public charging infrastructure funding and changes to road user charges[9]. Additionally, many car manufacturers have announced plans to become fully electric, or close to fully electric, by 2030[10].

AEMO's 2023 Step Change scenario, which is considered the Central scenario in the *2023 Electricity Statement of Opportunities (ESOO),* forecasts that battery EVs and internal combustion engine vehicles will reach cost parity in 2026-27[11]. This scenario also forecasts more than 4 million residential EVs on the road by 2032-33 (or approximately 30% of residential passenger vehicles) consuming 11 TWh per annum[12].

By 2032-33, 1.9 million to 6 million residential EVs are projected to be on the road, depending on the scenario, adding between 8% and 21% to residential consumption (5 TWh to 15 TWh per annum). In the same timeframe, the uptake of commercial EVs such as light commercial vehicles, electric trucks and buses is projected to contribute between an additional 2 TWh and 10 TWh across the scenarios[13]. In the 2023 Green Energy Exports scenario, which has the highest forecast CER uptake, EV consumption per annum is forecast to be almost 90 TWh by 2050 and could equate to almost half of today's operational consumption in the NEM. AEMO's Step Change scenario also forecasts that by 2050-51 around 11% of residential EVSE will have a V2G charging profile. This percentage rises to 17% in the Green Energy Exports scenario[14].

Figure 1 shows EV electricity consumption by 2023 scenario.

[9] AEMO (July 2023), 2023 Inputs, Assumptions and Scenarios Report, https://aemo.com.au/-/media/files/major-publications/isp/2023/2023-inputs-assumptions-and-scenarios-report.pdf?la=en

[10] RACV (July 2023), Electric vehicle plans of the world's top car brands, https://www.racv.com.au/royalauto/transport/electric-vehicles/car-brands-going-electric.html

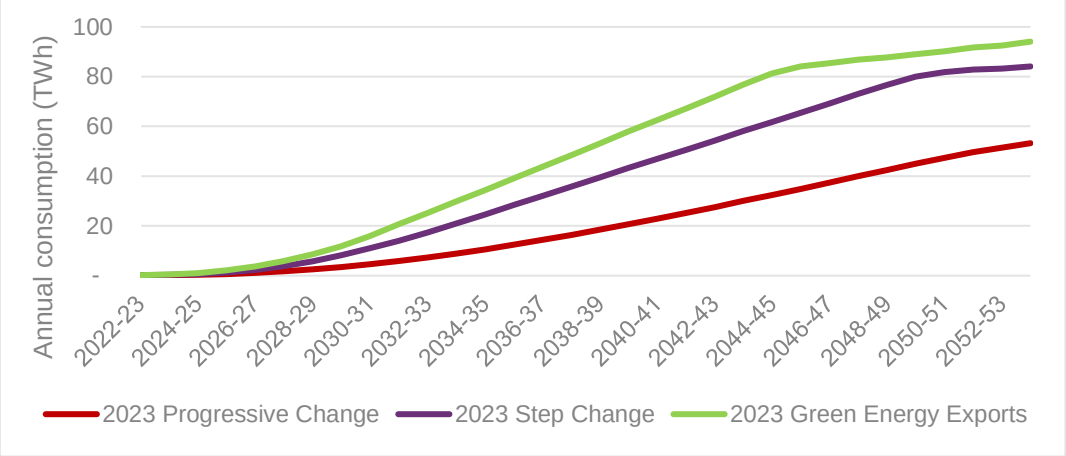
[11] AEMO (July 2023), 2023 Inputs, Assumptions and Scenarios Report, https://aemo.com.au/-/media/files/major-publications/isp/2023/2023-inputs-assumptions-and-scenarios-report.pdf?la=en

[12] AEMO (August 2023), 2023 Electricity Statement of Opportunities, https://aemo.com.au/-/media/files/electricity/nem/planning_and_forecasting/nem_esoo/2023/2023-electricity-statement-of-opportunities.pdf?la=en&hash=D8CC2D9AC8D9F353194C9DD117095FB4

[13] AEMO (August 2023), 2023 Electricity Statement of Opportunities, https://aemo.com.au/-/media/files/electricity/nem/planning_and_forecasting/nem_esoo/2023/2023-electricity-statement-of-opportunities.pdf?la=en&hash=D8CC2D9AC8D9F353194C9DD117095FB4

[14] AEMO (July 2023), 2023 Inputs, Assumptions and Scenarios Report, https://aemo.com.au/-/media/files/major-publications/isp/2023/2023-inputs-assumptions-and-scenarios-report.pdf?la=en

Figure 1 EV (battery and plug-in hybrid) electricity consumption by scenario[15]



It will be critical to have a data and reporting framework in place before EV uptake accelerates. While EVSE standing data would not directly address the challenges related to EV uptake, this visibility is essential to improve AEMO and DNSPs' demand forecasting and planning to support efficient EV integration.

The time of day, location, and rate that EVs consume (or export) energy will have a significant impact on the costs required to integrate them into the NEM, or alternatively, on the benefits that they create for consumers.

Wide-scale EV adoption will also pose challenges to DNSPs, as the impacts of EV charging will be felt first at a local network level. Distribution networks were traditionally designed to cope with After Diversity Maximum Demand (ADMD), with the design value for a single phase ranging from 3 kW to 7 kW per house (this value accounts for diversity in the time of use of electricity and demographics). Residentially charged EVs could draw around 7 kW of demand, and if localised could rapidly exceed the limits of an area's network infrastructure[16]. Conversely, timely charging or discharging from EVs could support electricity network operations, load factor improvements, and potentially reduce network pricing for all network users[17].

Similarly, if large numbers of EVs charged during peak energy demand conditions in the late afternoon, costly additional network and supply capacity could be required to ensure this extra energy demand can be met. However, if many EVs charged in the middle of the day during mild weather conditions, they could provide benefits to the energy system by mitigating minimum system load challenges.

The charging profiles that EVs may use are highly uncertain. In general, AEMO forecasts that charging will become 'smarter' over time, lowering the contribution to the evening peak. Depending on the scenarios, EVs may have a relatively larger impact in early years, and

[15] AEMO (July 2023), 2023 Inputs, Assumptions and Scenarios Report, https://aemo.com.au/-/media/files/major-publications/isp/2023/2023-inputs-assumptions-and-scenarios-report.pdf?la=en

[16] Nacmanson, William & Mancarella, Pierluigi (September 2022), Milestone 10 "Recommendations for Electric Vehicle Integration", https://www.researchgate.net/publication/364780301_Milestone_10_Recommendations_for_Electric_Vehicle_Integration

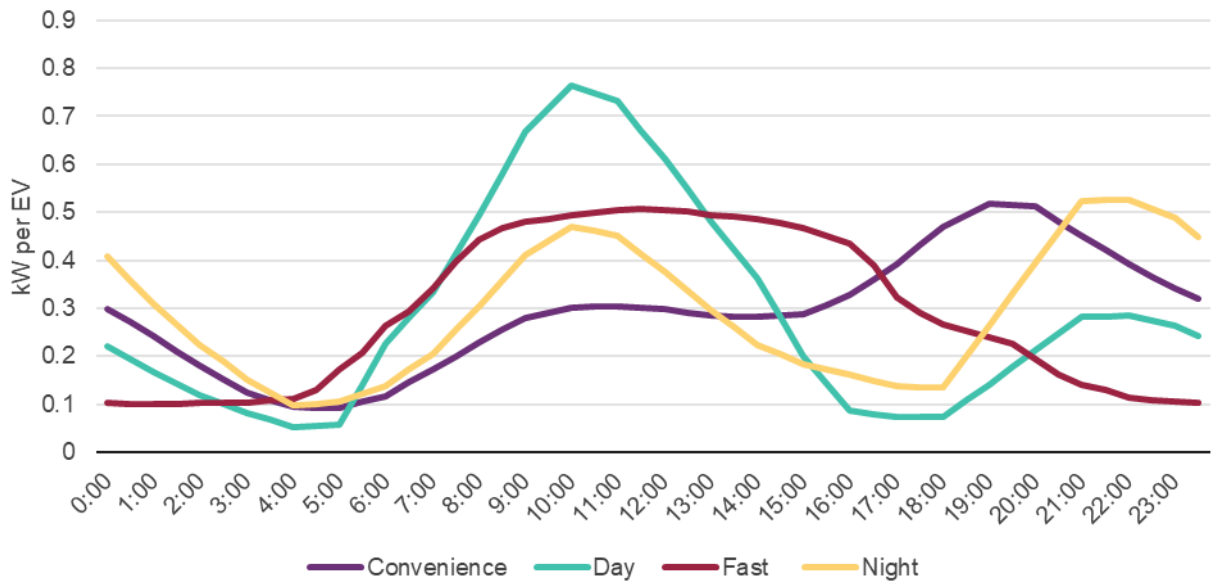
[17] Baringa Partners (June 2021), Potential network benefits from more efficient DER integration.

transition to a smaller impact in the longer term[18]. This lower impact relies on modifying charging patterns over time. This is achieved through increased:

- 'Smart' daytime and night-time charging, which are driven by consumer adoption of time of use (TOU) tariffs with charging targeted to reduce peaks
- Dynamic charging profiles which include coordinated charging (where the timing of EV charging is coordinated through a third-party to occur at times where supply is more readily available), V2G (where energy can be supplied back into the grid) and V2H (where energy can be supplied back into the home).

Figure 2 shows the 2023 half-hour charging profiles for a medium residential EV using different static charging types, normalised to 7 kWh daily energy use[19]. These profiles are shown for a typical January weekday in New South Wales (NSW), under the Step Change scenario.

Figure 2 Static charging profiles of medium residential EV in New South Wales[20]



If left unmanaged, EV uptake could trigger a range of network and bulk system challenges. Network impacts could include exceeding transformer or line thermal ratings, phase unbalances, voltage deviations, impairment of system restoration efforts, and step changes in load associated with external signals such as pricing. Bulk system impacts could include impacts to resource adequacy, a need to manage contingency events due to sudden changes

[18] AEMO (August 2023), 2023 Electricity Statement of Opportunities, https://aemo.com.au/-/media/files/electricity/nem/planning_and_forecasting/nem_esoo/2023/2023-electricity-statement-of-opportunities.pdf?la=en&hash=D8CC2D9AC8D9F353194C9DD117095FB4

[19] AEMO (July 2023), 2023 Inputs, Assumptions and Scenarios Report, https://aemo.com.au/-/media/files/major-publications/isp/2023/2023-inputs-assumptions-and-scenarios-report.pdf?la=en
Note: The V2G and V2H charging profiles are equivalent to daytime charging in this example. The Coordinated charging profile does not have a static time of day profile and is applied by AEMO's demand time series development to prefer operation in low demand periods.

[20] AEMO (July 2023), 2023 Inputs, Assumptions and Scenarios Report, https://aemo.com.au/-/media/files/major-publications/isp/2023/2023-inputs-assumptions-and-scenarios-report.pdf?la=en

in load, and hindered emergency recovery in the event of a system black. The uptake could also pose cyber security risks from both inadvertent and malicious activities.

These challenges could result in material costs to consumers such as:

- Costs to accommodate EV charging loads through DNSP expenditure
- Costs to procure system services (predominantly frequency control ancillary services, or FCAS) to manage contingency events
- Costs in additional large-scale generation and transmission infrastructure.

These potential challenges and costs are further described in the ESB's EVSE consultation paper.

As noted earlier, while EVSE standing data would not directly address the risks related to EV uptake it is a necessary precursor to efficiently integrate this significant load into the NEM. EV standing data would lead to less uncertainty in AEMO and DNSPs' forecasting and planning models, which in turn can lead to improved decisions such as more targeted investments, a lower procurement margin for system services and greater visibility of emerging challenges (e.g., system security risks). EVSE standing data would enable AEMO and DNSPs to make evidence-based decisions when managing the bulk system and network, respectively.

Overall, EVSE standing data is an enabler to transition the NEM into a modern energy system fit to meet consumers' evolving wants and needs. Solutions to support CER market and system integration must be progressed in a timely manner to ensure these resources can play a role in maintaining an efficient, reliable and secure system in the face of increasingly challenging operational conditions. AEMO, together with industry, is delivering a number of the ESB's Post 2025 and other energy market recommendations through its NEM Reform Program[21]. A subset of these initiatives relate to:

- the creation of new opportunities for consumers through the Integration of CER and flexible demand workstream
- improvements to digitalisation and data access through the Data Strategy.

Table 1 summarises the relevance of EVSE standing data to the package of initiatives currently being progressed to better integrate and support the accelerating uptake of EVs.

[21] AEMO (2023), NEM Reform Program, https://aemo.com.au/initiatives/major-programs/nem2025-program

Table 1 Interactions between EVSE standing data and the NEM Reform Program

Reform	Relevance of EVSE standing data
Integrating price-responsive resources into the NEM (Scheduled Lite)	Scheduled Lite is proposed as a voluntary mechanism that aims to lower barriers and offer incentives for price-responsive, distributed energy resources to provide visibility and participate in the market scheduling process of the NEM[22]. This would be achieved through two complementary modes: • Visibility Mode: to enable the provision of information to AEMO relating to market intentions. • Dispatch Mode: to integrate price-responsive distributed resources into the NEM dispatch and scheduling processes. There are opportunities to link the information collected through this reform with data from the DERR as part of its Stage 2 development. Both data sources could also be cross-referenced to improve the accuracy of AEMO's load forecasting.
Dynamic Operating Envelopes	Several DNSPs are currently considering the implementation of dynamic operating envelopes (DOEs) across their networks[23]. Furthermore, the Australian Energy Regulator (AER) recently published a draft interim guidance note on export limits[24]. While implementation has mostly been focused on flexible export limits (FELs) and would therefore only be applicable to EVSE with V2G capabilities, DOEs could potentially be applied to EVSE load in the future. In both circumstances, EVSE standing data could be used to improve their network load models and assist in the allocation of available capacity to CER more broadly. An improved allocation of capacity could also have flow-on effects on other reforms such as Scheduled Lite by maximising the amount of imported or exported electricity that can access energy and ancillary services markets. This reform also relies on the establishment of DER technical standards which could be informed by EVSE standing data.

[22] AEMC (3 August 2023), Integrating price-responsive resources into the NEM, Consultation paper, https://www.aemc.gov.au/sites/default/files/2023-08/ERC0352%20-%20Integrating%20price-responsive%20resources%20into%20the%20NEM%20-%20Consultation%20paper.pdf

[23] Cutler Merz (23 August 2022), ARENA - Review of Dynamic Operating Envelope Adoption by DNSPs, https://arena.gov.au/assets/2022/07/review-of-dynamic-operating-envelopes-from-dnsps.pdf

[24] AER (17 November 2023), Interim export limit guidance note – for consultation, https://www.aer.gov.au/system/files/2023-11/Draft%20export%20limit%20interim%20guidance%20note%20-%20November%202023.pdf

Reform	Relevance of EVSE standing data
Distribution Local Network Services	A range of initiatives led by DNSPs seek to identify ways to make it easier for CER aggregators to provide local network support services to DNSPs/Distribution System Operators (DSOs). Distribution local network services are expected to become more common in the future and the inherent flexibility of EVSE makes them a potential resource that could provide these services. More accurate EVSE standing data could help with network and load modelling which could result in more targeted procurement of network services. EVSE standing data also could help improve network planning processes, inform the procurement of external demand management solutions, and inform the design of dynamic network tariffs.
DER Data Hub and Registry Services	Data exchange approaches, such as establishing a DER Data Hub, are being explored to provide efficient and scalable data exchange and registry services for DER between industry actors. Such approaches could also consider the potential augmentation of the DERR to enable more efficient and permission-based sharing and access to information. EVSE standing data collected through the DERR could be subject to the enhanced data sharing provisions achieved through improved data exchange opportunities.
DER Operational Tools	Consideration of new operational tools to better integrate DER is required, in collaboration with DNSPs. These can work together to maintain efficient and secure power system operations at times when up to 100% of system load can be met with DER. New DER operational tools would rely on improved DER operational forecasting, and potentially scheduling, that could be informed by EVSE standing data.
Data Services	This initiative seeks to establish a new data service unit within AEMO. This unit would facilitate greater safe, timely and appropriate access to and public-good benefits from data sets held by AEMO and other market bodies, supporting improved policy, planning and research. The protected data shared through this service would be provided only to prescribed bodies – these include those who have statutory functions either specific to the energy industry, for public purposes, or who are listed in the National Electricity Law (NEL)/ National Gas Law, and public bodies and researchers who can create clear benefits for energy consumers.

3.2. Current Rules

The provisions relevant to the DERR are contained within Rule 3.7E of the NER. The current rules:

- require AEMO to establish, maintain and update a register of static data for DER in the NEM, which includes DER generation information
- require AEMO to develop, maintain and publish *DERR Information Guidelines*[25]
- require DNSPs to provide AEMO the specific DER generation information outlined in AEMO's *DERR Information Guidelines* (this information is limited to connection points in the DNSP's network)
- enable AEMO to use DERR information to perform its functions, including its power system security responsibilities
- require AEMO to periodically report aggregated information from the DERR on its website
- require AEMO to share disaggregated data from the DERR with DNSPs (the information must be in relation to their network areas and their regulatory obligations)
- allow AEMO to provide DERR information to emergency services agencies under certain circumstances
- allow AEMO to provide Consumer Data Right (CDR) data in accordance with the CDR provisions
- include provisions related to the protection of DERR information.

The way in which these provisions have been practically implemented is detailed below.

Rule 3.7E was made in September 2018 (commencing in December 2019) and was followed by the launch of the DERR on 1 March 2020. The data collection and reporting framework under the DERR is supported by a range of documents and processes. These include AEMO's *DER Register Information Guidelines* (the guidelines), the *DER Register Release Schedule and Technical Specification* (the specification) and AEMO guides on integration of the DER Register with Application Programming Interfaces (APIs), the Business to Business (B2B) Portal and the Installer Portal.

Details on the DER generation information that is to be collected by DNSPs, the size of small generating units to be captured[26], timing and frequency of reporting, and manner in which AEMO must store and report information are contained within the guidelines. The data collection framework captures all forms of small generation and storage resources connected to the electricity grid. This includes small scale batteries, small scale solar, tri/co-generation units and micro wind turbines. The batteries of EVs with V2G capabilities are intended to be captured in the DERR data collection framework as small generating units.

DNSPs collect information for the DERR as part of their DER connection processes. The processes vary by DNSP but are common in that they all ask DER installers to provide information about what is installed on site. In most jurisdictions, this information is provided to the DNSPs who then collate and report data into the DERR. In NSW, installer data is input directly into the DERR. Data collection is enabled by DNSP IT systems (e.g., DER connection webpages), processes, and obligations in their connection agreements, and SIRs. To streamline data collection and validate product details, the DERR system is designed to draw information from the Clean Energy Council's approved product databases.

[25] AEMO (September 2019), DER Register Information Guidelines, https://www.aemo.com.au/-/media/files/stakeholder_consultation/consultations/nem-consultations/2019/der-register/final/der-register-information-guidelines.pdf

[26] The minimum size is defined in the guidelines, while the maximum size is defined within the NER in relation to AEMO's Generation exemption framework.

The information collected within the DERR can currently be used by AEMO, DNSPs and by emergency services agencies. AEMO also publishes aggregated data (down to a postcode level) through its DER data dashboard and quarterly DER data files.

It should be noted that while the current Rule enables the collection of demand side participation (DSP) information, as defined in Rule 3.7D of the NER, this data is not collected through the DERR[27]. DSP information is currently collected by AEMO in accordance with its *DSP Information Guidelines* and sits on MarketNet (AEMO's private data network connection). The Guidelines specify the information that Registered Participants must submit to AEMO for AEMO's use when developing or using electricity load forecasts, with the objective of giving AEMO better quality information to further develop and improve its current load forecasting. At the time of drafting this proposal, AEMO was consulting on updates to its DSP forecasting methodology and information guidelines as part of its requirement to review each component of its Forecasting Approach at least once every four years[28]. Demand flexibility from EVs is modelled and forecast separately to DSP forecasts[29].

3.3. Issues with the current Rule

3.3.1. Issues this Proposal is seeking to address

The current Rule does not enable the collection and reporting of EVSE standing data through the DERR. EVSE standing data is also not captured within the framework for demand side participation information. While devices with bi-directional capabilities are captured under the framework as small generating units, this information is currently captured in association with an EV battery with associated V2G/V2H/V2L capabilities and not the EVSE[30].

Amendments to the Rule are required to ensure EVSE standing data can be captured under the DERR framework. This framework should include load-only and bi-directional EVSE. The remaining sections of this report (Section 4 onwards) focus on the changes required to address this specific issue and justification for how these changes meet the NEO.

3.3.2. Issues this Proposal is not seeking to address

There are existing challenges with compliance and enforcement of the current Rule that need to be and are being considered separately to this Rule change. These challenges are related to broader challenges with the governance of CER and AEMO does not consider they can be addressed by changes to the Rule.

- DNSPs rely on installers to provide accurate DERR data, and this obligation is included in each DNSPs' SIRs. However, DNSPs' contractual relationship is with their customer, not the installer, which means the installer is engaged directly by the customer and has no legal relationship with the DNSP.
- If an installer were in breach of this obligation (e.g., by providing incomplete or incorrect data), DNSPs have limited recourse to enforce compliance. DNSPs can

[27] At a high level, this includes contracted demand side participation and the curtailment of non-scheduled load or the provision of unscheduled generation in response to the demand for, or price of, electricity.

[28] AEMO (2023), Demand Side Participation (DSP) Forecasting Methodology and DSP Information Guidelines Consultation: https://aemo.com.au/consultations/current-and-closed-consultations/demand-side-participation-forecasting-methodology-and-dsp-information-guidelines-consultation

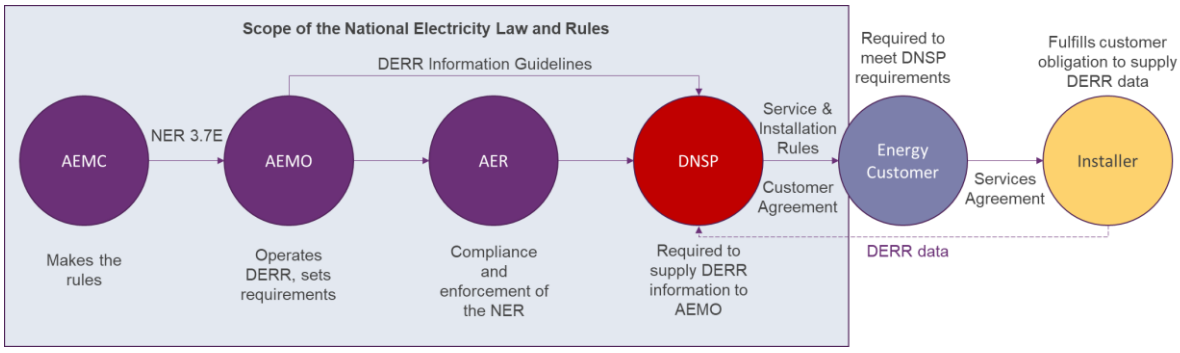
[30] As of November 2023, there are only 12 EV batteries captured in the DERR.

refuse a customer connection on the basis of non-compliance, but this sanction is disproportionately severe and directed at a party that is likely unaware of this breach.

- There are limitations in the AER's capabilities to monitor and enforce obligations in the NER. The AER's remit relates to DNSP obligations, who in turn have few options to enforce compliance with the requirements in the DERR Rule.
- Electrician installers must be licensed by jurisdictional regulators to undertake electrical work. Around 5% of licensed electricians are also accredited installers under the Clean Energy Council's Installer Accreditation Program[31]. This accreditation is required to access incentives for small generation units under the Clean Energy Regulator's Small-scale Renewable Energy Scheme (SRES) and state-based incentive programs[32]. To access incentives under the SRES, installers are also required to supply installation data and can be subject to enforcement and rectification actions by the Clean Energy Regulator. However, the SRES only applies to select types of small-scale technologies which do not include EVSE – including EVSE with V2G capabilities – and will be phased out by 2030.

The relationships between parties and their obligations are schematised in **Figure 3**. This figure was adapted from the ESB's EVSE consultation paper.

Figure 3 Overview of functions and responsibilities relevant to the DER Register[33]



Challenges in the compliance and enforcement framework have contributed to issues with data completeness and accuracy in the DERR. Other factors that have had an impact on inaccuracy include:

- the complexity and number of data fields required to be completed
- insufficient training and support for electrician installers
- insufficient incentives for accurate completion
- limitations to the current compliance and enforcement framework
- data integration issues between external systems and the DERR.

The issues in this section were considered in detail through the ESB's EVSE consultation process. They are detailed further in the summary of the DERR process in the ESB's EVSE

[31] As of 28 November 2023. Based on 189,400 electricians employed in Australia according to the Australian Government's Labour Market Insights report on electricians and 9,158 Clean Energy Council accredited installers.
[32] The Clean Energy Council is currently responsible for accrediting installers. The Clean Energy Regulator undertook a tender to appoint operators for their installer and accreditation scheme. Applications closed in March 2023 and outcomes are expected to be announced in February 2024.
[33] Adapted from ESB (December 2021), Electric Vehicle Supply Equipment Data Consultation Paper, https://www.datocms-assets.com/32572/1670367035-esb-electric-vehicle-supply-equipment-standing-data-consultation-paper-december-2022.pdf

consultation paper and the summary of consultation findings in the ESB's EVSE outcomes report.

These challenges are being addressed by other processes underway. In parallel with this Rule change proposal, AEMO is working with industry to deliver the ESB's short-term complementary recommendations (summarised in **Appendix A)**. In September 2023, the AEMC also released the final report of its *Review into Consumer Energy Resources Technical Standards* which recommends longer-term regulatory reform to address the broader governance challenges[34]. In November 2023, Energy Ministers agreed to give consideration to implementing a national approach to technical regulatory settings for CER in 2024[35].

Since the DERR commenced, the national framework for the *Data Availability and Transparency Act (DATA) Scheme* was implemented and the ESB released its data strategy[36]. AEMO's view is that these changes to information sharing provisions and national data privacy and protection frameworks do not impact the operation of the DERR and its data protection requirements. Therefore, amendments to data sharing provisions in the NER or the National Energy Retail Rules (NERR) are not required. However, the AEMC may wish to consider the impact of these frameworks.

4. How the Proposal will address the issues

4.1. Scope and materiality of the Proposal

This proposal seeks modifications to the NER to extend the data collection and reporting framework of the DERR to include EVSE standing data. The rules would place an obligation on DNSPs to provide EVSE information in line with the current requirements for small generating units in the DERR.

4.1.1. Type of EVSE

AEMO's view is that the changes to the NER should not contain specific requirements such as minimum capture size, required data fields or frequency of reporting. These requirements should be defined in AEMO's guidelines and specifications and subject to further consultation. This is consistent with the way in which DER generation is currently defined, and standing data collection requirements are specified.

In line with the ESB's recommendations, AEMO intends to consult on a requirement that applies to all new installations of hardwired EVSE with a connection of 15 A or greater. AEMO's view is that these reporting thresholds (amperage and 'hardwired' requirement) are warranted because:

- Demand from connections below this threshold would not differ substantially from other typical household loads

[34] AEMC (21 September 2023), Review into consumer energy resources technical standards, Final report, https://www.aemc.gov.au/sites/default/files/2023-09/RCERTS%20Final%20Report.pdf

[35] Department of Climate Change, Energy, the Environment and Water, Energy and Climate Change Ministerial Council Meeting Communique Friday 24 November 2023, https://www.energy.gov.au/sites/default/files/2023-11/ECMC%20Communique_24%20Nov%202023.docx

[36] ESB (July 2021), Data Strategy Final Recommendations, https://www.datocms-assets.com/32572/1657767015-esb-data-strategy-final-reccomendations-july-2021.pdf

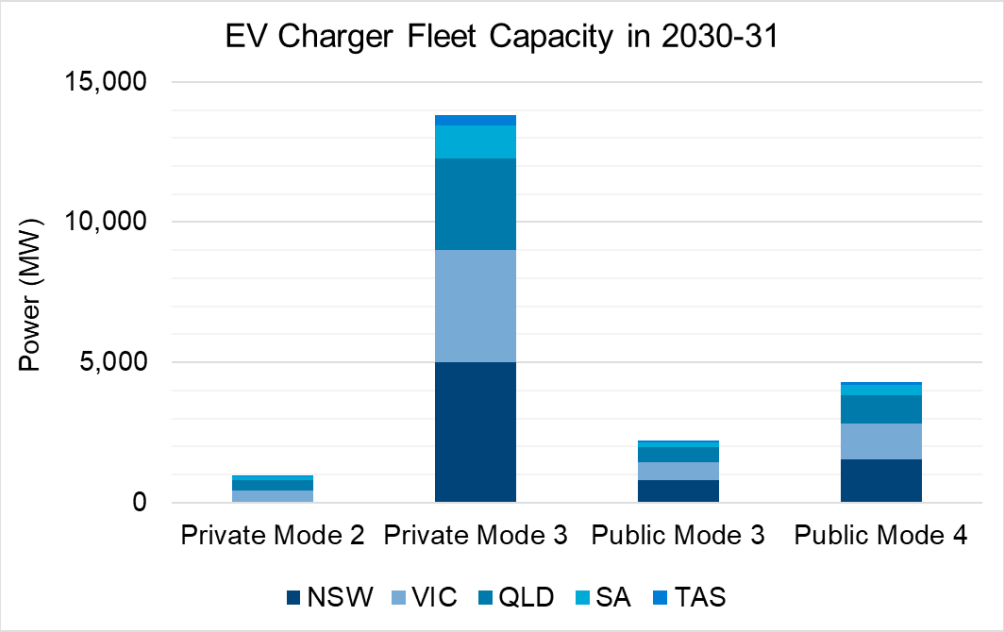
- Capturing non-hardwired electric vehicle 'chargers' would be an unenforceable requirement at this time[37].

In practice, this means the Rule would apply to most International Electrotechnical Commission (IEC) 61851-1:2017 Mode 3 and 4 private and public charging installations[38]. These installations would have a fixed location and require the connection of specific equipment, which would be located at the premises. The scope would exclude IEC 61851-1:2017 Mode 2 charging, informally referred to as 'trickle charging', as these chargers would not meet the 'hard-wired' requirement[39].

AEMO engaged the consultancy EnX to undertake an analysis of EV technical standards for grid operation – the report is set for release in early 2024[40]. EnX's analysis included an estimated breakdown of EV charger fleet capacity in 2030-31, which has been replicated in **Figure 4** below. The estimate is based on combined information from a quantitative study by the National Renewable Energy Laboratory, in collaboration with the Joint Office of Energy and Transportation of the United States Government[41], and AEMO Integrated System Plan data.

The analysis indicates that the scope specified above would result in a material coverage of EV charging. The ESB's EVSE consultation paper includes further analysis undertaken by the consultancy which indicates this materiality is expected to continue in later years.

Figure 4 Estimated sum of the rated capacity of the EV charger fleet in the NEM in 2030-31[42]



[37] For the avoidance of doubt, while 15 A outlets typically require the presence of an electrician during installation and have to be separately wired under AS/NZS 3000:2018, not all 15 A outlets are installed to service EV loads and enforcing a new requirement on these connections would be impractical. AEMO's starting point is to exclude non-hardwired 15 A 'chargers' from the data collection process.

[38] This is broadly equivalent to the informal Australian classification of Level 2 and Level 3 charging and SAE J1772 AC Level 2, DC Level 1 and 2 charging.

[39] For the avoidance of doubt, AEMO is not proposing at this stage to define requirements based on the EVSE's charging levels. This description has been included to clarify the types of installations that are intended to be captured by the requirement.

[40] AEMO – prepared by EnX, EV Technical Standards for Grid Operation – Insights for the National Electricity Market, To be released.

[41] NREL (2023), Building the 2030 National Charging Network, *https://www.nrel.gov/news/program/2023/building-the-2030-national-charging-network.html*

[42] AEMO – prepared by EnX, EV Technical Standards for Grid Operation – Insights for the National Electricity Market, To be released.

4.1.2. Impacted parties

This proposal sets out that the data collection obligation would fall on DNSPs. Practically, it is expected collection would be performed by electrician installers (which is consistent with the current process for generating system). After the AEMC's and AEMO's consultation concludes, DNSPs would need to impose the new requirements through their connection agreements and SIRs.

Details on the implementation pathway have been included in **Section 5**.

4.2. Issues addressed by this Proposal

This proposal would support the centralised collection of EVSE standing data across the NEM[43]. There was broad consensus across the ESB's EVSE consultation that a nationally consistent and coordinated method for data collection was required. While the EVSE consultation shortlisted two alternatives to collecting data through the DERR (state-based implementation through state safety legislation and the creation of a national CER regulator), most submissions supported expanding the DERR to include EVSE standing data and stakeholders did not raise credible alternatives to expansion of the DERR.

The collection of EVSE standing data would help address the challenges emerging from the forecasted rapid uptake of EVs in the NEM. This is summarised in **Table 2**, which refers back to the potential impacts of EV charging identified in **Section 3**.

Table 2 Role of EVSE standing data in mitigating impacts of EV charging

Risk	Mitigation of risk through EVSE standing data
Local network impacts	Data could be used to inform load forecasts for network planning to ensure network assets can meet EV charging / discharging needs. Data could help target investments to areas of accelerated EV growth, improve network operations, procure network support services from third parties, and inform tariff and incentive design to influence user behaviour. These measures could help lower the overall capital expenditure required to manage EV uptake while preserving electrical safety, quality and reliability.
Resource adequacy	Data could be used to improve longer-term system planning (which underpins the investment case for new large-scale generators) and improve load and generation forecasting to increase the efficiency of transmission curtailment decisions. These measures could help lower costs by supporting investment and market efficiency.
System security	Data could be used to inform the appropriate level of procurement of system services (predominantly FCAS) required to manage contingency risks, resulting in lower costs to consumers. Data could be used to inform emergency recovery planning in the event of a system black and to inform the technical performance requirements for large-scale generators (by better understanding potential changes to load on the transmission network). Data could be used to inform the development of smart charging and interoperability standards.

[43] While not covered by this rule change, from 2 October 2023 AEMO's Wholesale Electricity Market (WEM) DERR Information Procedure has been updated to support the collection of EVSE standing data.

Risk	Mitigation of risk through EVSE standing data
Cyber security	Data could be used to ascertain the risk of cyber security events (malicious or unintended) based on the overall uptake of smart charging and market concentration of EVSE suppliers. It can also help inform cyber security controls to mitigate these risks.

EVSE standing data could also be used to support the NEM-wide adoption of smart charging and interoperability standards. These standards can help reduce grid impacts and the development of consumer products that support charging flexibility, lower charging costs and access to new revenue streams. While standing data excludes operational information, installation data could provide insights into the voluntary adoption of standards and their market penetration.

A detailed description of potential uses cases for networks and AEMO are described in the ESB's EVSE consultation paper**.**

The uses of EVSE standing data are not limited to DNSPs or AEMO. AEMO has been receiving an increased number of DERR data requests from jurisdictions, emergency services, and the Australian Competition & Consumer Commission. Consumers have also been indirectly requesting information through the CDR. Between November 2022 and November 2023, AEMO had received nearly 40,000 requests for DERR data.

Section 7 provides further details on the benefits of EVSE standing data.

4.3. Long-term governance arrangements to support this Proposal

This proposal would not directly address the existing limitations in the compliance and enforcement framework for CER, which would have a direct effect on the quality and completeness of data collected. The ESB's recommended long-term regulatory reform[44] should be progressed in parallel to realise the full benefits of the proposed Rule.

National regulatory reform is needed to develop an enduring NEM-wide regulatory framework for CER technical standards. The AEMC's final report of their *Review into Consumer Energy Resources Technical Standards*[45] notes that one of the main limitations to universal compliance in the regulatory framework established under the NEL is an inability to regulate the full range of CER parties on a NEM-wide basis. This limitation would extend to the electricians responsible for EVSE installations and the reporting obligations in this proposal.

AEMO's report *Compliance of DER with Technical Settings*[46] presents evidence of the nature and scale of non-compliance across the NEM and the importance and urgency of improving DER compliance. AEMO's submission[47] to the AEMC's draft report on their review noted that to date there has been an over-reliance on the implementation of voluntary immediate actions to deliver an uplift in compliance, and there is a risk that longer-term regulatory reform does not progress at sufficient pace to ameliorate increasing risks and future costs. Without an

[44] This refers to the ESB's recommendation that the AEMC should consider EVSE installer reporting obligations as part of the policy work on long-term CER frameworks resulting from their *Review into Consumer Energy Resources Technical Standards*.
[45] AEMC (21 September 2023), Review into consumer energy resources technical standards, Final report, https://www.aemc.gov.au/sites/default/files/2023-09/RCERTS%20Final%20Report.pdf
[46] AEMO (27 April 2023), *Compliance of Distributed Energy Resources with Technical Settings*, *https://aemo.com.au/-/media/files/initiatives/der/2023/compliance-of-der-with-technical-settings.pdf?la=en*
[47] AEMO (25 May 2023), *Submission to Consumer Energy Resources Technical Standards Review (EMO0045) draft report*, https://www.aemc.gov.au/sites/default/files/2023-05/8.%20AEMO%20-%20Submission%20to%20draft%20report%20-%20EMO0045%20-%20250523.pdf

enduring regulatory framework, system security risks will continue to increase as DER deployment expands from a capacity perspective as well as a new device/technology perspective.

AEMO encourages jurisdictions to consider ways to enable the effective regulation of EVSE installations as part of their work to implement a national approach to technical regulatory settings for CER in 2024[48].

In the interim, AEMO continues to progress short-term complementary activities in collaboration with industry to strengthen the delivery of this Rule change proposal. AEMO's work to date is summarised in **Appendix A**.

5. Proposed Rule

5.1. Description of the proposed Rule

AEMO's view is that the Rule amendments required to expand the DERR to collect EVSE standing data would require changes to Rule 3.7E, Clause 5.3.3, Clause 5.3A.5, Clause 5A.B.2, Clause 5A.B.4, Clause 5A.C.3, Schedule 5A, Chapter 10 and Chapter 11 of the NER. The amendments are consistent with those used to establish the existing DERR and would:

- Place an obligation on AEMO to include EVSE standing data in the DERR
- Place an obligation on DNSPS to provide EVSE information to AEMO
- Place an obligation on AEMO to update its guidelines to specify requirements related to EVSE standing data collection
- Require DNSPs to enable the collection of EVSE information from customers by updating the requirements of connection enquiries, connection agreements and connection offers
- Require AEMO to prepare and publish on its website a report of aggregated DERR information, which would include EVSE information
- Specify that DNSPs may use DERR information (which includes both EVSE information and DER generation information) for the purposes of delivering a distribution service[49]
- Create transitional provisions to:
    - allow AEMO to make changes to its guidelines before the Rule commences
    - provide industry with a transition period between the publication of the guideline amendments and the commencement of the Rule
    - place an obligation on DNSPs to amend their rules governing the safety and technical requirements for connection to their networks (i.e., their SIRs) to require a person who wishes to install EVSE to apply to the DNSP before making the installation.

Error! Reference source not found. includes a summary of the proposed amendments, based o n version 203 of the NER. A draft of the proposed Rule amendments has been included in **Appendix B**. AEMO acknowledges that some of the clauses and terminology referenced in

[48] Department of Climate Change, Energy, the Environment and Water, Energy and Climate Change Ministerial Council Meeting Communique Friday 24 November 2023, https://www.energy.gov.au/sites/default/files/2023-11/ECMC%20Communique_24%20Nov%202023.docx

[49] The current Rule specifies Network Service Providers must only use this information for the purposes of meeting a regulatory obligation or requirement. The intent of this change is to ensure the Rules do not restrict the ability of DNSPs to use DERR information to unlock the benefits outlined in this proposal.

this rule change have been amended by other rule change determinations that are yet to commence. This is particularly the case for the *Integrating energy storage systems into the NEM*[50] rule change which commences in June 2024. If a Rule is made, these changes will need to be reflected through the AEMC's rule change process.

It should be noted that the proposed amendments to Chapters 5 and 5A seek to replicate the framework that currently applies to DER generation information. This framework would apply to EVSE installations within scope[51] from the date the Rule commences. The intent of these amendments is to ensure DNSPs have the necessary powers to collect EVSE standing data through their connection agreements.

Connection agreements are required when a new connection is established, or an existing connection is modified. There are currently requirements in the NER and NERR for customers to apply for a connection with their DNSP when an embedded generating unit / small generator is installed. However, there are currently no comparable provisions for load-only EVSE (which comprise most EVSE installations).

According to the ESB's EVSE standing data consultation paper, new EVSE connections are usually only visible to DNSPs when a connection is upgraded (e.g., 1 to 3-phase), when the EVSE has V2G capabilities, or in the case of non-residential and public chargers without V2G capabilities at a site level only.

AEMO's view is that to ensure the changes proposed to Chapter 5 and Chapter 5A are effective, there should be a clear requirement for customers to submit a connection application to their DNSP when EVSE within scope is installed[52]. The AEMC could consider two options to create this new requirement:

1. Amendments to the NER to require DNSPs to update their SIRs to create an obligation on consumers to submit a connection application before they install EVSE within scope.
2. Amendments to the model terms and conditions for deemed standard connection contracts in the NERR to create an obligation on consumers to submit a connection application before they install EVSE within scope.

AEMO's initial view is that pursuing updates to the SIRs, rather than amendments to the NERR, would be a preferrable solution as this would provide DNSPs with a degree of flexibility when implementing the requirement and would also contain the scope of the Rule change amendments to the NER, simplifying the extent of the change.

AEMO notes that the NERR model terms and conditions for deemed standard connection contracts require the customer to comply with their DNSP's SIRs. On that basis, if the SIRs are amended to require customers to submit a connection application to the DNSP to install EVSE, this would have the same effect as inserting an obligation directly in the NERR.

Furthermore, NERR model terms and conditions for deemed standard connection contracts do not cover all distributor customer relationships – for example, they exclude negotiated connection contracts and they do not apply in Victoria. From a compliance perspective, the electricians installing EVSE may also be more familiar with (and therefore more likely to

[50] AEMC (5 December 2021), Integrating energy storage systems into the NEM, https://www.aemc.gov.au/rule-changes/integrating-energy-storage-systems-nem

[51] This requirement would not apply to all EVSE. AEMO's proposed definition for EVSE in Chapter 10 of the NER is *a device used to charge an electric vehicle having the characteristics specified in the DER register information guidelines*. As noted in Section 4, AEMO intends to consult on a requirement that applies to hardwired EVSE with a connection of 15 A or greater.

[52] For the avoidance of doubt, this requirement would apply to EVSE as described in the footnote above.

comply with requirements contained in) SIRs as compared with requirements contained in customer contracts.

AEMO considers the proposed amendments to Chapters 5 and 5A, and the associated amendment in Chapter 11, can be implemented in a way that supports the customer journey for EV charging. AEMO looks forward to working with the AEMC and industry to ensure they do not result in a disincentive for customers seeking to purchase EVs or connect EVSE.

AEMO also notes the proposed amendments include transitional provisions that seek to provide AEMO and industry with time to make changes to their documents and systems before the Rule commences (more detail is provided in the following section). However, these should be considered a starting point for consultation and may be subject to change depending on the final design of the Rule and prioritisation based on other projects underway.

In AEMO's targeted consultation with DNSPs, only two businesses provided an estimated implementation time (12 months) – this duration is used in the proposed amendments, which are expected to be subject to consultation. One DNSP also noted a preference for Rule changes that make the provision of EVSE data from customers to DNSPs mandatory well before the commencement of obligations to implement DERR IT changes.

Table 3 EVSE standing data proposed Rule amendments

Clause	Amendment
3.7E(b)(1)	• Update to provide that the *DER register* must include *EVSE information* in addition to *DER generation information*
3.7E(d)	• Update to provide that NSPs must provide to AEMO, in accordance with the *DER register information guidelines*, *EVSE information* in relation to *connection points* on their *network* • Update to specify that NSPs are entitled to collect this information under their *connection contracts* or their safety and technical requirements for *connection* (in addition to the *Rules*) • The Rule should refer to new clauses under Chapter 5 and Chapter 5A (see below) which entitle NSPs to collect *EVSE information* in relation to *connection points* on their *network*
3.7E(g)(1)	• Update to provide that AEMO's obligation to develop, maintain and *publish* guidelines under this clause includes a requirement to specify details of the *EVSE information* that NSPs must provide to AEMO under paragraph (d) • The Rule should allow the guidelines to specify the minimum current rating of an electric vehicle supply equipment's connection for which a NSP is required to provide *EVSE information*
3.7E(g)(3)	• Update to provide that the *DER register information guidelines* can specify when NSPs must provide and update *EVSE information*
3.7E(g)(4)	• Update to provide that the *DER register information guidelines* can specify how *EVSE information* should be provided to AEMO by NSPs

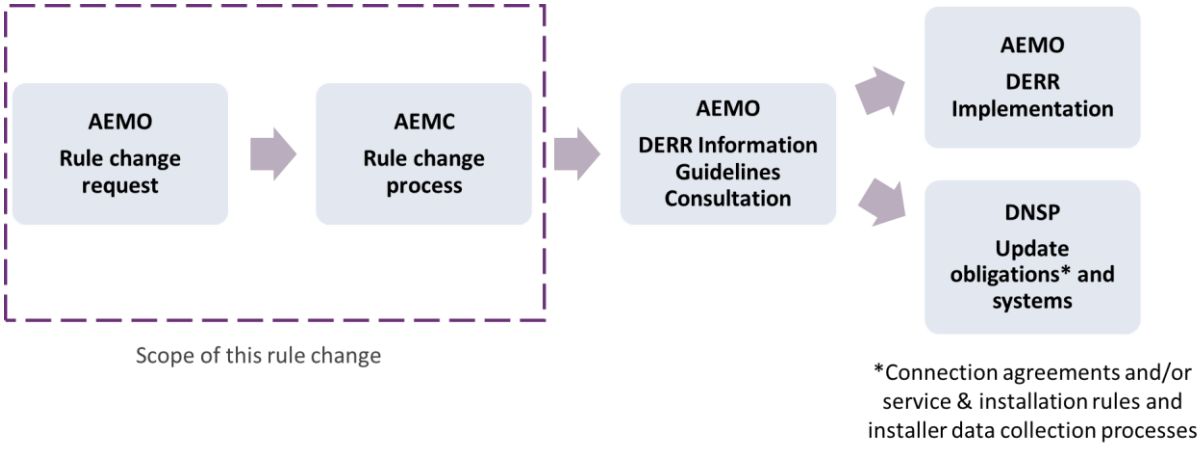
3.7E(h)(1)	• Update to provide that, in developing and amending the *DER register information guidelines*, AEMO must have regard to the reasonable costs of efficient compliance by NSPs with the guidelines compared to the likely benefits from the use of *EVSE information* as contemplated under rule 3.7E
3.7E(m)	• Update to clarify that information in the *DER register report* should include aggregated *EVSE information* as well as aggregated *DER generation information*
3.E(o)	• Update to provide that DNSPs may use *DER register information* in the delivery of a *distribution service*, as well as for the purposes of meeting a *regulatory obligation or requirement*
5.3.3(c)	• Update to include a reference to 'the *EVSE information* that the NSP requires' in the list of information that a NSP can require a *Connection Applicant* to prepare and obtain in conjunction with the NSP to enable the NSP to assess an *application to connect*
5.3A.5(c)	• Update to provide that an enquiry form must require the *Connection Applicant* to provide the *EVSE information* that the NSP requires
5A.B.2(b)	• Update to provide that the terms and conditions of the proposed *model standing offer* for *basic connection services* must include the *EVSE information* that the DNSP requires
5A.B.4(c)	• Update to provide that the terms and conditions of the proposed *model standing offer* for *standard connection services* must cover the *EVSE information* that the DNSP requires
5A.C.3(a)	• Update to provide that the *connection applicant* must, at the request of the DNSP, provide the DNSP with *EVSE information*
Schedule 5A.1, Part A	• Update to provide that the *connection offer* must contain details of the *EVSE information* required to be provided to the DNSP
Schedule 5A.1, Part B	• Update to provide that the *connection offer* must contain details of the *EVSE information* required to be provided to the DNSP
Chapter 10	• Update to include the following new definitions: ○ *EVSE information:* standing data in relation to *electric vehicle supply equipment* ○ *electric vehicle:* an automotive vehicle that can be powered fully or partially by electricity stored within a chemical energy battery and which can be connected to an external electric power source ○ *electric vehicle supply equipment:* a device used to charge an *electric vehicle* having the characteristics specified in the *DER register information guidelines*

Chapter 11	• Include transitional provisions which: ○ require AEMO to amend the *DER register information guidelines* to incorporate the additional matters relating to *EVSE information* incorporated in clause 3.7E(g) within a nine-month period ○ provide industry with a minimum period of 12 months between the date of *publication* of the amended *DER register information guidelines* and the date when the amendments to the *DER register information guidelines* commence ○ require DNSPs to provide AEMO with existing *EVSE information* no later than the commencement date of the amended rule ○ require DNSPs to amend their rules governing the safety and technical requirements for *connection* to their *networks* (i.e., their SIRs) to require a person who wishes to install *electric vehicle supply equipment* (including a person who has an existing connection) to apply to the DNSP before making the installation.

5.2. Implementation of proposed Rule

Extending the DERR data and collection framework to include EVSE standing data relies on a series of changes, most of which are outside of the scope of this Rule change proposal. These are represented in **Figure 5.**

Figure 5 Process to extend DERR framework to include EVSE standing data



Following the Rule change determination, AEMO would need to make changes to the DERR Information Guidelines. Based on the progression and feedback in the Rule change process, AEMO could initiate its guidelines consultation following the AEMC's draft determination. However, these changes would need to be finalised after the final Rule is made. This process would also be required to comply with the Rules Consultation Procedures set out in Rule 8.9 of the NER.

Following the guidelines consultation, AEMO would need to finalise its technical specifications. AEMO and DNSPs would then proceed to modify their current DERR information technology

(IT) systems. In the case of DNSPs, IT changes could include establishing data capture mechanisms (e.g, through an online portal) and systems to house data and report to AEMO. DNSPs would also need to undertake changes to obligations in their connection agreements and SIRs and update their installer data collection processes. These changes would need to be supported by education and communications for electrician installers, which could potentially be led by jurisdictions.

To reduce costs, the implementation date would need to align with AEMO and industry's six-monthly DERR release cycles (nominally in May and November). AEMO would also consider whether there are possible efficiencies in bundling its changes with other NEM Reform Implementation initiatives. In parallel, AEMO would continue to work on the development of a product listing for EVSE (through an external database) to reduce the complexity of data capture and work with networks and jurisdictions on improving data collection by installers.

AEMO encourages the AEMC to leverage the findings of the ESB's consultation to finalise the rule change consultation in 2024. If the AEMC's rule change were completed by September 2024 the new data collection framework could commence in May 2026 (this would mean the project is completed one month ahead of the proposed transitional provisions). If the rule change process were delayed, this could push commencement to November 2026 or to future industry release cycles.

6. How the Proposed Rule Contributes to the National Electricity Objective

When assessing a Rule change proposal, the AEMC must apply the rule making test set out in the NEL, which requires it to assess whether the proposed rule will or is likely to contribute to the NEO. Section 7 of the NEL states the NEO is:

… to promote efficient investment in, and efficient operation and use of, electricity services for the long-term interests of consumers of electricity with respect to –

(a) price, quality, reliability and security of supply of electricity;

(b) the reliability, safety and security of the national electricity system; and

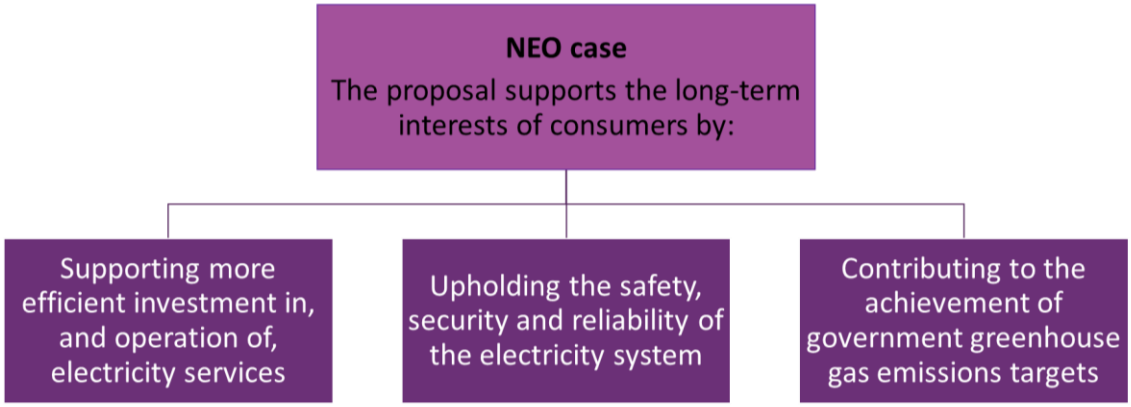
(c) the achievement of targets set by a participating jurisdiction—

(i) for reducing Australia's greenhouse gas emissions; or

(ii) that are likely to contribute to reducing Australia's greenhouse gas emissions.

Figure 6 and the sections below provide an overview of how this Rule change proposal contributes to the achievement of the NEO. More information on the benefits have been included in **Section 7** of this report.

Figure 6 Overview of the NEO case for proposed Rule



1. Supporting more efficient investment in, and operation of, electricity services

EVSE standing data would be used by networks and AEMO to improve their planning and forecasting. This would promote more efficient investments in network capital expenditure and network operating expenditure and could support enhanced network utilisation. The data would also promote market efficiency by improving the assumptions behind procurement of system services and representation of network limits. These decisions could lead to better outcomes for consumers by lowering costs. Specifically, the data collected could be used to:

- Reduce network capital expenditure by enabling demand management solutions and targeted investments
- Improve real-time network operations through the procurement of lower cost network management solutions
- Improve network utilisation by informing capacity allocation through dynamic operating envelopes and network tariff design
- Improve load and generation forecasting to increase the efficiency of transmission curtailment decisions
- Improve longer-term system planning, which underpins the investment case for new large-scale generators.

2. Upholding the safety, security and reliability of the electricity system

EVSE standing data would be used by AEMO to fulfil its obligation to ensure the safe, secure and reliable operation of the NEM. AEMO could use this information to:

- Inform the appropriate level of procurement of system services required to manage contingency risks
- Inform emergency recovery planning in the event of a system black
- Inform the technical performance requirements for large-scale generators, by better understanding potential changes to load on the transmission network.

The data could also be used by networks and AEMO to determine the risk of cybersecurity events and to implement risk mitigation controls.

3. Contributing to the achievement of government targets for reducing, or that are likely to reduce, greenhouse gas emissions

The collection of EVSE standing data would support the delivery of jurisdictional greenhouse gas emissions reductions by enabling the electrification of transport, as well as jurisdictional renewable energy and EV uptake targets[53]. EVSE standing data is critical to support electricity network and system planning and to ensure there is sufficient capacity available to service this emerging load. Furthermore, EVSE standing data can support the design and delivery of solutions to modify EV charging in a way that maximises the amount of renewable energy that is used to service these loads. These solutions could include smart charging standards, demand response programs and network tariffs or incentives.

Relevant jurisdictional targets for reducing the NEM's greenhouse gas emissions, and that are likely to contribute to reducing the NEM's greenhouse gas emissions, are summarised in **Table 4** below.

Table 4 Jurisdictional targets relevant to EVSE standing data proposal[54]

Policy type	Target
Greenhouse gas emissions targets	• Federal – 43% below 2005 levels by 2030 and net zero by 2050 • Australian Capital Territory – 65 to 75% below 1990 levels by 2030, 90 to 95% below 1990 levels by 2040 and net zero by 2045 • New South Wales – 50% below 2005 levels by 2030 and net zero by 2050 • Queensland – 30% below 2005 levels by 2030 and net zero by 2050 • South Australia – 50% below 2005 levels by 2030 and net zero by 2050 • Tasmania – net zero (or lower) by 2030 • Victoria – 45 to 50% below 2005 levels by 2030, 75 to 80% below 2005 levels by 2035 and net zero by 2045.

[53] The federal government's *National Electric Vehicle Strategy* notes that globally transport makes up nearly a quarter of total emissions and has the highest reliance on fossil fuels of any sector. Road transport contributes around 75% of that share. Decarbonising Australia's transport system will help reverse this trend. Secondary emissions from charging an EV from the electricity grid are already lower than emissions from equivalent ICE vehicles and will reduce further as Australia's grid decarbonises. More information: https://www.dcceew.gov.au/sites/default/files/documents/national-electric-vehicle-strategy.pdf

[54] AEMC (September 2023), Emissions targets statement under the National Energy Laws, https://www.aemc.gov.au/sites/default/files/2023-09/AEMC%20Emissions%20targets%20statement%20-%20final%20guide%20September%202023.pdf

Policy type	Target
Targets likely to contribute to reducing greenhouse gas emissions (Demand side – electrification of transport)	• Australian Capital Territory – *Zero Emissions Vehicles (ZEV) Strategy 2022-2030* - ZEV sales target for ACT of 80 to 90% by 2030 - No new ICEV into taxi or ride share fleets by 2030 - Cease registration of new non-ZEVs by 2035 - At least 180 chargers by 2025 • Queensland – *Zero Emission Vehicle Strategy 2022-2032* - 50% of new passenger vehicle sales to be zero emissions by 2030 and 100% by 2036 - 100% of eligible Qfleet passenger vehicles (incl. SUVs) to be zero emissions vehicles by 2026 - Every new TransLink funded bus added to the fleet to be a zero emission bus from 2025 in South East Queensland and from 2025–2030 across regional Queensland • South Australia – 170,000 EVs to be on the roads by 2030 and 1 million EVs integrated into the electricity system over the next 20 years • Tasmania – Target to convert government fleet to 100% electric by 2030 • Victoria – *Zero Emissions Vehicle Roadmap* - 50% of light vehicle sales to be ZEVs by 2030 - All public transport buses to be ZEVs from 2025 - Electric vehicle charging stations across Victoria by 2024.

7. Expected Benefits and Costs of the Proposed Rule

Benefits

This proposal seeks to provide visibility to DNSPs and AEMO on the location and characteristics of EV charging (in a hardwired connection 15 A or above) to inform their modelling and forecasting. Fundamentally, this Rule change would help AEMO and DNSPs plan their operations and investments to ensure the electricity system can service EV uptake over time. This planning is essential to maintain the safety, security and reliability of electricity services.

In the absence of this Rule, DNSPs and AEMO would have limited visibility of a substantial driver of operational consumption over time. This would significantly impact the organisations' ability to plan for electrification in the NEM and to manage system and network risks. Without enhanced visibility, these organisations could overestimate the network and system's needs, resulting in higher costs for all consumers, or underestimate their capacity resulting in unnecessary congestion and curtailment. DNSPs and AEMO could still seek to collect this data outside of the DERR, but any alternative process is expected to be more costly for these organisations and burdensome for industry compared to data collection through an existing and central database.

The Rule change could lead to lower network tariffs for the benefit of all consumers by promoting efficient network investment. This could be done by:

- developing historical trends from EV charging behaviours, potential areas of EV clustering on the network and trends in adoption of different technologies
- informing DNSP load forecasts when information is used in conjunction with meter data
- improving DNSP network operations by providing sufficient visibility to inform:
    - investment in network solutions and/or the procurement of third-party network services
    - the efficient implementation of emerging frameworks such as dynamic operating envelopes.

The Rule change could also support DNSPs' operational responses to manage public charging stations during extended grid outages (e.g., after a natural disaster) and to develop system emergency management measures.

The Rule change could also help inform the design of new network tariffs, retail prices, demand response programs and smart charging standards which would in turn allow EV owners to benefit from:

- lower EV charging prices compared to convenience charging, and/or
- payments for network and market services.

The Rule could also lead to improved market efficiency and lower wholesale prices for all consumers by:

- improving the efficiency of the operation of the system as a whole, maximising the amount of lower cost renewable electricity that can be dispatched into the NEM
- improving AEMO's longer-term forecasts, ensuring there is efficient investment in generation, transmission and storage.

Overall, EVSE standing data is an important enabler to deliver the ESB's recommended reforms to support the integration of CER and flexible demand and its Data Strategy (as detailed in **Section 3**). These reforms are needed to unlock value for consumers that invest in CER and to lower costs for all energy system users. The consumer benefits of delivering these reforms include:

- Delivering supplementary revenue streams beyond existing feed-in-tariffs and retail energy plans
- Reducing the frequency of intervention required to maintain the secure and reliable operation of the system
- Minimising unnecessary investments in additional generation and network resources.

In addition to the benefits arising from improved visibility by AEMO and DNSPs, emergency services agencies would be able to use this information in response to an emergency or for emergency planning purposes.

Costs

AEMO estimates its upfront costs to deliver this project are approximately $1.4M +/- 40% and total ongoing costs from 1 July 2026 to 30 June 2032 are estimated to be $0.9M. This is based on the reform being considered a small project with reference to other reforms delivered as part of the NEM Reform Implementation Roadmap[55].

The proposed Rule will create a new reporting obligation for DNSPs. To meet this obligation, DNSPs will be required to update their DERR IT systems, connection agreements, SIRs and installer data collection processes. AEMO sought an initial estimate of implementation costs from DNSPs through its DERR working group. Seven DNSPs provided an estimate, noting these were preliminary numbers and were subject to change as the scope of the Rule change and AEMO's guidelines were defined. The lowest estimate provided was $0.5M per DNSP (the business also provided an upper range estimate of $1.5M) and the highest estimate was $8M per DNSP (+/- 50%). The median cost was $3M per DNSP[56].

AEMO is also engaging with industry to gauge interest in establishing a product database for EVSE. This database would improve data quality by reducing the amount of information that needs to be manually captured by installers. AEMO does not currently have an estimate of the

[55] These costs were estimated using a methodology consistent with other NEM Reform initiatives. The implementation cost for each initiative was estimated based on its complexity (being one of very small, small, medium, large or very large). The methodology consisted of assessing the types resources, the estimated number of resources and the estimated number of days effort required to deliver a project of each complexity rating. The allocation and pricing of this total effort was prepared based on industry benchmarks and tested against Five-Minute Settlement and the Wholesale Demand Response implementation projects. AEMO validated this estimate against the costings of other recent projects of similar complexity.

[56] This is a conservative estimate. Two DNSPs provided a cost range – the median was calculated using the upper cost in these ranges. It should also be noted four of the DNSPs provided an estimate for their initial costs only (i.e., changes to their IT systems, updates to their documentation and establishing new data collection processes) and three DNSPs provided an estimate that included post-go-live support. The estimates with post-go-live support were also the highest estimates received.

costs to establish this database. However, in the case of rooftop solar and batteries these databases are a commercial service where costs are recovered through user payments.

Additional costs might also be required for installer training and communications, although the party responsible for this initiative has not been defined. This could potentially be funded by jurisdictions, in line with the AEMC's recommendation in their *Review into CER Technical Standards* that jurisdictions provide funded training on NER CER technical standards for installers[57].

In their feedback, some DNSPs noted there would likely be additional costs for compliance monitoring and enforcement by the relevant body. AEMO notes this relevant body has not been defined but encourages jurisdictions to consider this matter as part of their work on a National Consumer Energy Resources Roadmap and consideration on implementing a national approach to technical regulatory settings for CER in 2024[58].

It's important to note that all costs provided are preliminary and we look forward to working with the AEMC to define these further as the rule change process progresses. AEMO will also work with DNSPs to reduce costs by aligning the implementation date with the industry's six-monthly DERR release cycles and will consider efficiencies through its NEM Roadmap consultation.

8. Appendices

The appendices to this rule change are provided as separate documents as outlined below.

Appendix A	Summary of complementary measures
Appendix B	Proposed Rule amendments

[57] AEMC (21 September 2023), Review into consumer energy resources technical standards, Final report, https://www.aemc.gov.au/sites/default/files/2023-09/RCERTS%20Final%20Report.pdf

[58] Department of Climate Change, Energy, the Environment and Water, Energy and Climate Change Ministerial Council Meeting Communique Friday 24 November 2023, https://www.energy.gov.au/sites/default/files/2023-11/ECMC%20Communique_24%20Nov%202023.docx

9. Abbreviations

Acronym	Meaning
A	Amps
ADMD	After Diversity Maximum Demand
AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
API	Application Programming Interface
ARENA	Australian Renewable Energy Agency
B2B	Business-to-Business
CDR	Consumer Data Right
CER	Consumer Energy Resources
DATA	Data Availability and Transparency Act
DEIP	Distributed Energy Integration Program
DER	Distributed Energy Resources
DERR	Distributed Energy Resources Register
DNSP	Distribution Network Service Provider
DOE	Dynamic operating envelope
DSO	Distribution System Operator
DSP	Demand side participation
ESB	Energy Security Board
ESOO	Electricity Statement of Opportunities
EV	Electric Vehicle
EVSE	Electric Vehicle Supply Equipment
FCAS	Frequency Control Ancillary Services
FEL	Flexible export limit
GW	Gigawatt
IEC	International Electrotechnical Commission
IT	Information technology
kW	Kilowatt
MW	Megawatt
NEL	National Electricity Law
NEM	National Electricity Market
NEO	National Electricity Objective
NER	National Electricity Rules
PV	Photovoltaics
SIRs	Service and installation rules
SRES	Small-scale Renewable Energy Scheme
TOU	Time of use
TW	Terawatt
TWh	Terawatt-hour
V2G	Vehicle-to-grid
V2H	Vehicle-to-home
V2L	Vehicle-to-load

Appendix A – Summary of complementary measures

The ESB's *Electric Vehicle Supply Equipment Standing Data Consultations Outcomes Report* recommended undertaking complementary measures to improve on DERR processes and engage installers. These complementary measures would be undertaken in parallel with work to extend the scope of the DERR data and collection framework to collect specified standing data for all hardwired EVSE with a connection of 15 A or greater (public, private and commercial charging).

The ESB proposed that AEMO lead work on short-term complementary measures to **review current issues in the DERR, develop a National EVSE Product Database and pursue complementary measures to support compliance.** In parallel to this Rule change proposal, AEMO has been pursuing the following actions.

- **Review current issues in the DERR:** AEMO has been working closely with DNSPs to improve compliance and data collection and to meet evolving requirements. Work to date includes:
    - Offering bulk update services and assistance to DNSPs to correct systemic errors
    - Resolving substantive errors in individual records as needed (e.g., listings with capacity in W instead of kW)
    - Making changes in field sizes to accommodate changes in values from AS4777-2:2020 and the inverter and panel device count
    - Defining a forward work program to make changes to the DERR to promote compliance with AS4777-2:2020 and identify the presence of dynamic operating envelope/flexible export limit fields.
- **Develop National EVSE Product Database:** AEMO has reached out to the Clean Energy Council to explore whether it could develop and publish an EVSE product list. AEMO will continue to work with industry to establish a product database before new EVSE standing data collection requirements commence.
- **Pursue complementary measures to support compliance:** AEMO has led a suite of work to improve inverter compliance in the DERR and would pursue options to improve compliance with EVSE standing data if a rule were made. Work to date includes:
    - Correlating DERR with National Meter Identifier data and Clean Energy Regulator datasets to:
    - Identify missing records
    - Complete records with missing values
    - Finalise initial records in the DERR that have not been completed
    - Working with peak industry bodies (through the Clean Energy Regulator) to flag safety issues related to incorrect battery installation data
    - Working with NSW's Department of Planning and Environment and NSW DNSPs to improve the quality of existing data and to make improvements to their data collection process.

Appendix B – Proposed Rule amendments

1 AMENDMENTS TO CHAPTER 10

In Chapter 10 insert the following new definitions in alphabetical order:

EVSE information

Standing data in relation to *electric vehicle supply equipment*.

electric vehicle

An automotive vehicle that can be powered fully or partially by electricity stored within a chemical battery and which can be connected to an external power source.

electric vehicle supply equipment

A device used to charge an electric vehicle having the characteristics specified in the *DER register information guidelines*.

2 AMENDMENTS TO CLAUSE 3.7E (shown in mark-up)

3.7E Register of DER information

Definitions

(a) In this rule:

emergency means an emergency due to the actual or imminent occurrence of an event (such as fire, flood, storm, earthquake, explosion, accident, act of terrorism or cyber attack) that in any way endangers or threatens to endanger the safety or health of any person or animal, or that destroys or damages, or threatens to destroy or damage, any property.

emergency services agency means an agency or person prescribed, approved or accredited under jurisdictional emergency management legislation as an emergency services agency or equivalent (and includes without limitation the ambulance service, state emergency service, police force, fire and rescue service, community and rural fire agencies, and first responder agencies).

jurisdictional emergency management legislation means legislation of a *participating jurisdiction* that relates to the management of emergencies.

AEMO must establish a DER register

(b) *AEMO* must establish, maintain and update a *DER register*. The *DER register*:

(1) must include *DER generation information* and *EVSE information* reported to *AEMO* by *Network Service Providers* in accordance with paragraph (d);

(2) must include any *demand side participation information* provided to *AEMO* by *Registered Participants* in accordance with rule 3.7D(b) which in *AEMO's* reasonable opinion will assist *Network Service Providers* to meet their *regulatory obligations or requirements* and/or

assist *AEMO* in the exercise of its statutory functions under the *Rules*; and

(3) may include information of a type similar to the information referred to in subparagraphs (1) and (2) provided to *AEMO* by any person in connection with the performance of *AEMO's* statutory functions and which in *AEMO's* reasonable opinion will assist *Network Service Providers* to meet their *regulatory obligations or requirements*.

(c) *AEMO* will be taken to satisfy the requirement to establish and maintain a *DER register* in paragraph (b) if it stores *DER register information* in one or more databases, including without limitation the databases it maintains under the *Market Settlement and Transfer Solution Procedures*.

Obligation on NSPs to provide DER generation information and EVSE information to AEMO

(d) *Network Service Providers* must provide to *AEMO* in accordance with the *DER register information guidelines*, *DER generation information* and *EVSE information* in relation to *connection points* on their *network* which they are entitled to collect under the *Rules*, their *connection contracts* or their safety and technical requirements for *connection*, including but not limited to *DER generation information* and *EVSE information* they are entitled to collect under clauses 5.3.3(c)(4A) or (4B), 5.3A.5(c)(1A) or (1B), 5A.B.2, 5A.B.4, or 5A.C.3.

AEMO may use DER register information in performing its functions

(e) For the avoidance of doubt, *AEMO* may use *DER register information* for the purpose of the exercise of its statutory functions under the *NEL* or *Rules*, including performing its *power system security* responsibilities.

Note

Under section 53D of the *NEL*, *AEMO* may use information it collects under the *Rules* for any purpose connected with its statutory functions unless otherwise specified in the *NEL*, these *Rules* or the Regulations made under the *NEL*.

(f) *AEMO* must *publish* details, no less than annually, on the extent to which, in general terms, *DER register information* has informed *AEMO*'s development or use of *load* forecasts, or the performance of its *power system security* responsibilities under the *Rules*.

Note

AEMO is required under clause 4.9.1(c) to take into account *DER register information* received under this rule 3.7E when developing *load* forecasts.

DER register information guidelines

(g) *AEMO* must develop, maintain and *publish* guidelines that specify:

(1) details of the *DER generation information* and *EVSE information* that *Network Service Providers* must provide to *AEMO* under paragraph (d), including:

(i) any minimum size of *small generating units* for which a *Network Service Provider* is required to provide *DER generation information*; and

(ii) any minimum current rating of an *electric vehicle supply equipment's connection* for which a *Network Service Provider* is required to provide *EVSE information*;

(2) the type of *demand side participation information* provided to *AEMO* by *Registered Participants* under rule 3.7D(b) that *AEMO* will include in the *DER register*;

(3) when *Network Service Providers* must provide and update *DER generation information* and *EVSE information*;

(4) how *DER generation information* and *EVSE information* should be provided to *AEMO* by *Network Service Providers*, including, for example:

(i) the format in which the information must be provided; and

(ii) any additional information *AEMO* requires to assess the accuracy of the information;

(5) how the information in the *DER register* is stored by *AEMO*;

(6) the manner and form in which *AEMO* will publish details, in accordance with paragraph (f), on the extent to which *DER register information* has informed its *load* forecasts or the performance of its *power system security* responsibilities;

(7) details of how *AEMO* will provide *Network Service Providers* with access to *DER register information* under paragraph (n);

(8) the contents, form and timing of the *DER register report* to be published by *AEMO* in accordance with paragraph (l) and how the *DER register information* to be included in that report will be aggregated; and

(9) *AEMO*'s approach to the protection of any *confidential information* and personal information contained in the *DER register*.

(h) In developing and amending the *DER register information guidelines*, *AEMO* must:

(1) have regard to the reasonable costs of efficient compliance by *Network Service Providers* with the guidelines compared to the likely benefits from the use of *DER generation information* and *EVSE information* as contemplated under this rule 3.7E;

(2) consider any risk of unauthorised use or disclosure of *confidential information* or personal information that may arise from including information in the *DER register* compared to the likely benefits of including that information in the register; and

(3) subject to paragraph (i), comply with the *Rules consultation procedures*.

(i) *AEMO* is not required to comply with the *Rules consultation procedures* when making minor or administrative amendments to the *DER register information guidelines*.

(j) The *DER register information guidelines* must include a minimum period of 3 months between the date of *publication* and the date when the guidelines commence other than when the guidelines are amended under paragraph (i), in which case the guidelines may commence on the date of *publication*.

(k) There must be *DER register information guidelines* in place at all times after the first *DER register information guidelines* are published by *AEMO* under the *Rules*.

Reporting by AEMO

(l) *AEMO* must prepare and publish on its website a report of aggregated *DER register information* (*DER register report*) in accordance with the *DER register information guidelines*.

(m) The information in the *DER register report*, including *DER generation information* and *EVSE information*, must be aggregated such that it does not:

(1) directly or indirectly disclose *confidential information*; or

(2) result in a breach of applicable privacy legislation.

Enabling access to DER register information

(n) *AEMO* must provide or give access to *DER register information* to each *Network Service Provider* in relation to that *Network Service Provider*'s *network* in accordance with the *DER register information guidelines*.

(o) A *Network Service Provider* must only use the *DER register information* it receives or accesses under paragraph (n) for the purposes of meeting a *regulatory obligation or requirement* or in the delivery of a *distribution service*.

(p) Any information received or accessed by a *Network Service Provider* under paragraph (n) must be treated as *confidential information* by the *Network Service Provider*.

AEMO may provide DER register information to emergency services

(q) If requested by an emergency services agency, *AEMO* may provide relevant *DER register information* to that emergency services agency for the purpose of the agency's response to an emergency or for planning in relation to emergency responses.

CDR data

(qa) *AEMO* may provide or give access to *DER register information* that is CDR data in accordance with the CDR provisions.

Protection of DER register information

(r) Nothing in this rule 3.7E:

(1) requires *AEMO* to make available *DER register information* where the collection, use or disclosure of that information by *AEMO* would breach applicable privacy laws; or

(2) precludes *AEMO* from disclosing *confidential information* in the circumstances in which disclosure of *confidential information* is permitted under the *NEL* or the *Rules*.

3 AMENDMENTS TO CLAUSE 5.3.3(c) (shown in mark-up)

5.3.3 Response to connection enquiry

…

(c) Within 30 *business days* after receipt of the *connection* enquiry and all such additional information (if any) advised under clause 5.3.2(b) or, if the *Connection Applicant* has requested the *Local Network Service Provider* to process the *connection* enquiry under clause 5.3.2(d), within 20 *business days* after receipt of that request, the *Network Service Provider* must provide to the *Connection Applicant* written advice of all further information which the *Connection Applicant* must prepare and obtain in conjunction with the *Network Service Provider* to enable the *Network Service Provider* to assess an *application to connect* including:

(1) details of the *Connection Applicant's connection* requirements, and the *Connection Applicant's* specifications of the *facility* to be connected, consistent with the requirements advised in accordance with clause 5.3.3(b1);

(2) details of the *Connection Applicant's* reasonable expectations of the level and standard of service of *power transfer capability* that the *network* should provide;

(3) a list of the technical data to be included with the *application to connect*, which may vary depending on the *connection* requirements and the type, rating and location of the *facility* to be *connected* and will generally be in the nature of the information set out in schedule 5.5 but may be varied by the *Network Service Provider* as appropriate to suit the size and complexity of the proposed *facility* to be *connected*;

(4) commercial information to be supplied by the *Connection Applicant* to allow the *Network Service Provider* to make an assessment of the ability of the *Connection Applicant* to satisfy the prudential requirements set out in rules 6.21 and 6A.28;

(4A) the *DER generation information* that the *Network Service Provider* requires;

(4B) the *EVSE information* that the *Network Service Provider* requires;

(5) the amount of the application fee which is payable on lodgement of an *application to connect*, such amount:

(i) not being more than necessary to cover the reasonable costs of all work anticipated to arise from investigating the *application to connect* and preparing the associated offer to *connect* and to meet the reasonable costs anticipated to be incurred by *AEMO* and other *Network Service Providers* whose participation in the assessment of the *application to connect* will be required; and

(ii) must not include any amount for, or in anticipation of, the costs of the person using an *Independent Engineer*; and

(6) any other information relevant to the submission of an *application to connect*.

4 AMENDMENTS TO CLAUSE 5.3A.5(c) (shown in mark-up)

5.3A.5 Enquiry

...

(c) An enquiry form under paragraph (b) must require the *Connection Applicant* to provide:

(1) a qualitative description of the objectives of the project proposal the subject of the *application to connect*;

(1A) the *DER generation information* that the *Distribution Network Service Provider* requires;

(1B) the *EVSE information* that the *Distribution Network Service Provider* requires;

(2) the information specified in Schedule 5.4; and

(3) a list of the information required from the *Local Network Service Provider* in relation to its *application to connect* and supporting reasons for its requests.

5 AMENDMENTS TO CLAUSE 5A.B.2(b) (shown in mark-up)

5A.B.2 Proposed model standing offer for basic connection services

...

(b) The terms and conditions of the proposed *model standing offer* must cover:

(1) a description of the *connection* (and the *premises connection assets* of which it is to be comprised) including a statement of its maximum capacity; and

(2) timeframes for commencing and completing the work; and

(3) the qualifications required for carrying out the work involved in providing a *contestable* service (including reference to the jurisdictional or other legislation and statutory instruments under which the qualifications are required); and

(4) the safety and technical requirements (including reference to the jurisdictional or other legislation and statutory instruments under which the requirements are imposed) to be complied with by the provider of a *contestable* service or the *retail customer* (or both); and

(4A) the *EVSE information* that the *Distribution Network Service Provider* requires; and

(5) details of the *connection charges* (or the basis on which they will be calculated) including details of the following (so far as applicable):

(i) the cost of any necessary *extension* to the *distribution system* for which provision has not already been made through existing *distribution use of system* charges or a tariff applicable to the *connection*;

(ii) **[Deleted]**

(iii) the cost of any other relevant *premises connection assets*;

(iv) the costs of common components of minor variations from the standard specifications;

(v) any other incidental costs; and

(6) the manner in which *connection charges* are to be paid by the *retail customer*; and

(7) if the service is a *basic micro EG connection service*, the particular requirements with regard to the export of electricity into the *distribution system* including:

(i) the special requirements for metering and other equipment for the export of electricity; and

(ii) the required qualification for installers of relevant equipment (including reference to the jurisdictional or other legislation and statutory instruments under which the qualifications are required); and

(iii) the special safety and technical requirements (including reference to the jurisdictional or other legislation and statutory instruments under which they are imposed) to be complied with by the provider of a *contestable* service or the *retail customer* (or both); and

(iv) the *DER generation information* that the *Distribution Network Service Provider* requires; and

(v) the requirement that the new or replacement *embedded generating unit* the subject of the *basic micro EG connection service* must be compliant with the *DER Technical Standards*.

6 AMENDMENTS TO CLAUSE 5A.B.4(c) (shown in mark-up)

5A.B.4 Standard connection services

...

(c) The terms and conditions must cover:

(1) a description of the *connection* (and the *premises connection assets* of which it is to be comprised) including a statement of its maximum capacity; and

(1A) the *DER generation information* that the *Distribution Network Service Provider* requires; and

(1B) the *EVSE information* that the *Distribution Network Service Provider* requires; and

(2) timeframes for commencing and completing the work; and

(3) the qualifications required for carrying out the work involved in providing a *contestable* service (including reference to the jurisdictional or other legislation and statutory instruments under which the qualifications are required); and

(4) the safety and technical requirements (including reference to the jurisdictional or other legislation and statutory instruments under which the requirements are imposed) to be complied with by the provider of a *contestable* service or the *retail customer* (or both); and

(5) details of the *connection charges* (or the basis on which they will be calculated) including details of the following (so far as applicable):

(i) the cost of *premises connection assets* to which the *connection charges* relate;

(ii) the cost of any necessary *augmentation* of the *distribution system* for which provision has not already been made through existing *distribution use of system* charges or a tariff applicable to the *connection*;

(iii) the costs of common components of minor variations from the standard specifications;

(iv) any other incidental costs; and

(6) the manner in which *connection charges* are to be paid by the *retail customer*.

7 AMENDMENTS TO CLAUSE 5A.C.3(a) (shown in mark-up)

5A.C.3 Negotiation framework

(a) The following rules (collectively described as the **negotiation framework**) govern negotiations between a *Distribution Network Service Provider* and a *connection applicant*:

(1) each party must negotiate in good faith.

(1A) the *connection applicant* must, at the request of the *Distribution Network Service Provider*, provide the *Distribution Network Service Provider* with *DER generation information*.

(1B) the *connection applicant* must, at the request of the *Distribution Network Service Provider*, provide the *Distribution Network Service Provider* with *EVSE information*.

(2) the *connection applicant* must, at the request of the *Distribution Network Service Provider*, provide the *Distribution Network Service Provider* with information it reasonably requires in order to negotiate on an informed basis.

Note

The information might (for example) include estimates of average and *maximum demand* for electricity to be *supplied* through the *connection*.

(3) the *Distribution Network Service Provider* must provide the *connection applicant* with information the *connection applicant* reasonably requires in order to negotiate on an informed basis including:

(i) an estimate of the amount to be charged by the *Distribution Network Service Provider* for assessment of the application and the making of a connection offer for a negotiated *connection contract*; and

(ii) an estimate of *connection charges*; and

(iii) a statement of the basis on which *connection charges* are calculated; and

(iv) if the *connection applicant* has elected to extend the negotiations to *supply services*— an estimate of any applicable charges for *supply services* and a statement of the basis of their calculation; and

(v) if the *connection applicant* is proposing to connect a new or replacement *embedded generating unit* by way of a *basic micro EG connection service*, that the *embedded generating unit* must be compliant with the *DER Technical Standards*.

Note

The *Distribution Network Service Provider* might, according to the circumstances of a particular case, need to provide further information to ensure the *connection applicant* is properly informed – for example, information about:

- technical and safety requirements;
- the types of *connection* that are technically feasible;
- *network* capacity at the proposed *connection point*;
- possible strategies to reduce the cost of the *connection*.

(4) the *Distribution Network Service Provider* may consult with other users of the *distribution network* who may be adversely affected by the proposed *new connection* or *connection alteration*.

(5) in assessing the application, the *Distribution Network Service Provider* must determine:

(i) the technical requirements for the proposed *new connection* or *connection alteration*; and

(ii) the extent and costs of any necessary *augmentation* of the *distribution system*; and

(iii) any consequent change in charges for *distribution use of system* services; and

(iv) any possible material effect of the proposed *new connection* or *connection alteration* on the *network power transfer capability* of the *distribution network* to which the *new connection* or *connection alteration* is proposed to be made and any other *distribution network* that might be affected by the proposed *new connection* or *connection alteration*.

(6) the *Distribution Network Service Provider* must make reasonable endeavours to make a *connection offer* that complies with the *connection applicant's* reasonable requirements.

Example

Reasonable requirements as to the location of the proposed *connection point* or the level and standard of the *distribution network's power transfer capability*.

(7) the *Distribution Network Service Provider* must comply with its *connection policy*.

8 AMENDMENTS TO SCHEDULE 5A.1, PART B, PARAGRAPH (a) (shown in mark-up)

Schedule 5A.1 Minimum content requirements for connection contract

Part A Connection offer not involving embedded generation

(a) A *connection offer* must contain:

(1) a provision stating that a *connection contract* will be formed, and will come into operation, on acceptance of the *connection offer*; and

(2) details of the *connection point*, the maximum capacity of the *connection*, and the *connection assets* required at the *connection point*; and

(2A) details of the *EVSE information* required to be provided to the *Distribution Network Service Provider* by the *retail customer*; and

(3) details of the *premises connection assets* and additional equipment to be installed on the premises and responsibility for undertaking the work; and

(4) details of any *distribution network extension* or other *augmentation* required for the purposes of the *connection*; and

(5) an undertaking to complete the work required to establish the *connection* within a specified time frame; and

(6) a requirement that the *retail customer* have appropriate metering installed; and

(7) the relevant technical and safety obligations to be met by the *retail customer* relating to the installation; and

(8) the *retail customer's* obligation to allow access to the premises by the *Distribution Network Service Provider's* agents, contractors and employees; and

(9) the *retail customer's* obligation to accommodate on its premises, and protect from harm, any equipment necessary for the *connection*; and

(10) details of the *retail customer's* monetary obligations including billing arrangements and any security to be provided by the *retail customer*; and

(11) details of the *Distribution Network Service Provider's* monetary obligations (if any) to the *retail customer*; and

(12) a provision requiring the *Distribution Network Service Provider* to provide information about the *connection* to the *retail customer*; and

(13) provision for amendment of the *connection contract* by agreement between the *Distribution Network Service Provider* and the *retail customer*.

...

Part B Connection offer involving embedded generation

(a) A *connection offer* to an *embedded generating unit operator* or a person who proposes to *be an embedded generating unit operator* must contain:

(1) a provision stating that a *connection contract* will be formed, and will come into operation, on acceptance of the *connection offer*; and

(2) details of the *connection point*, the maximum capacity of the *connection* to import and export electricity, and the *embedded generating operator's* installation required at the *connection point*; and

(2A) details of the *DER generation information* required to be provided to the *Distribution Network Service Provider* by the *embedded generating unit operator*; and

(2B) details of the *EVSE information* required to be provided to the *Distribution Network Service Provider* by the *embedded generating unit operator*; and

(3) details of the *premises connection assets* and additional equipment to be installed on the premises and responsibility for undertaking the work; and

(4) details of any *distribution network extension* or other *augmentation* required for the purposes of the *connection*; and

(5) an undertaking to complete the work required to establish the *connection* within a specified time frame; and

(6) a requirement that the *embedded generating unit operator* have appropriate metering installed; and

(7) the relevant technical and safety obligations to be met by the *embedded generating unit operator* relating to the installation; and

(7a) if the *connection applicant* is proposing to connect a new or replacement *embedded generating unit* by way of a *basic micro EG connection service*, a requirement that the *embedded generating unit* must be compliant with the *DER Technical Standards*

(8) the *embedded generating unit operator's* obligation to allow access to the premises by the *Distribution Network Service Provider's* agents, contractors and employees; and

(9) the *embedded generating unit operator's* obligation to accommodate on its premises, and protect from harm, any equipment necessary for the *connection*; and

(10) details of the *embedded generating unit operator's* monetary obligations including billing arrangements and any security to be provided by the *embedded generating unit operator*; and

(11) details of the *Distribution Network Service Provider's* monetary obligations (if any) to the *embedded generating unit operator*; and

(12) a provision requiring the *Distribution Network Service Provider* to provide information about the *connection* to the *embedded generating unit operator*; and

(13) provision for amendment of the *connection contract* by agreement between the *Distribution Network Service Provider* and the *embedded generating unit operator*.

...

8 AMENDMENTS TO CHAPTER 11

Insert the following new clause at the appropriate location in Chapter 11.

The Amending Rule should provide for these transitional provisions to commence on or about the day the Amending Rule is made. The operative provisions of the Amending Rule should commence approximately 21 months after the day the Amending Rule is made – this allows 9 months for AEMO to amend the DER register information guidelines and a period of 12 months after publication of the amendments before the new obligations become effective.

Part XXX Register of distributed energy resources (EVSE information)

11.XXX Rules consequential on the making of the National Electricity Amendment (Register of distributed energy resources – EVSE information) Rule [20XX]

11.XXX.1 Definitions

For the purposes of this rule [11.XXX]:

amended clause 3.7E means clause 3.7E of the *Rules* as will be in force immediately after the commencement date.

Amending Rule means the *National Electricity Amendment (Register of distributed energy resources – EVSE information) Rule [20XX]*.

commencement date means [*insert date approximately 21 months after the Amending Rule is made*].

11.XXX.2 AEMO to amend the DER register information guidelines

(a) By *[insert date 9 months after the transitional provisions commence] AEMO* must amend the *DER register information guidelines* to provide for the additional matters relating to *EVSE information* under amended clause 3.7E and in doing so must comply with the *Rules consultation procedures*.

(b) The amendments to the *DER register information guidelines* made under paragraph (a) must include a minimum period of 12 months between the date of *publication* and the date when the amendments to the *DER register information guidelines* commence.

11.XXX.3 NSPs to provide AEMO with existing EVSE information

(a) No later than the commencement date, *Network Service Providers* must provide *AEMO* with all information that they hold which would be *EVSE information* under the Amending Rule.

(c) *EVSE information* provided to *AEMO* under paragraph (a) must be provided in the form and manner specified in the *DER register information guidelines*.

(d) Despite paragraph (a), a *Network Service Provider* is not required to provide to *AEMO EVSE information* under paragraph (a) where the collection, use or disclosure of that information by *Network Service Providers* would breach applicable privacy laws.

11.XXX.4 NSPs to amend or supplement service and installation rules

No later than the commencement date, *Network Service Providers* must ensure that their rules governing the safety and technical requirements for *connection* to their *networks* include a requirement that a person who wishes to install *electric vehicle supply equipment* (including a person who has an existing *connection*) must apply to the *Network Service Provider* before making the installation.