Dear Sir/Madam,

Please find attached the Centre for Smart Power and Energy Research (CSPER), School of Engineering, Deakin University's submission to the Australian Energy Regulator consultation on Essential Energy's ring-fencing waiver application for kerbside electric vehicle charging infrastructure.

Prepared by Dr Alireza Ganjovi and Associate Professor Saman A. Gorji, the submission is titled *Regulatory Observability, Consumer-Risk Visibility, and Adaptive Governance in Essential Energy's Plug-and-Play EV Charging Infrastructure Trial*.

The submission provides technical, engineering, competition, consumer-protection, and governance-focused commentary on Essential Energy's proposed Plug-and-Play EV Charging Infrastructure Trial. It broadly supports the objective of improving public EV charging access in regional and underserved communities, where low utilisation, dispersed demand, higher deployment costs, and uncertain commercial returns may limit private-sector investment.

The submission does not oppose the proposed trial or the use of existing network infrastructure to facilitate regional EV charging access. Rather, it focuses on how temporary Distribution Network Service Provider participation in contestable EV charging infrastructure can remain transparent, bounded, evidence-based, competitively neutral, and reviewable throughout the waiver period.

The central proposition is that the trial should be assessed not only as an infrastructure deployment initiative, but also as an evidence-generation and governance experiment. Regulatory confidence should depend on transparent and measurable evidence relating to regional market failure, charger performance, consumer outcomes, competitive effects, digital readiness, cost allocation, and transition pathways.

Accordingly, the submission proposes a lifecycle observability framework covering market-failure visibility, infrastructure-performance reporting, consumer-risk visibility, competition monitoring, digital-energy readiness, flexibility optionality, adaptive review triggers, and clear exit and transition arrangements.

Particular attention is given to the need to distinguish installed infrastructure from delivered consumer value. The submission recommends reporting on charger availability, fault rates, repair times, utilisation, failed charging sessions, payment accessibility, consumer complaints, CPO participation, lease arrangements, maintenance responsibilities, and potential crowding-in or crowding-out effects. The submission also highlights that public EV charging infrastructure should be regarded as digital energy infrastructure rather than solely as a physical charging asset. Future value will increasingly depend on interoperability, communication standards, metadata quality, cybersecurity, remote diagnostics, and compatibility with managed charging, demand response, virtual power plants, battery interaction, and vehicle-to-grid technologies.

While the submission does not recommend mandating these advanced flexibility functions during the present trial, it argues that the infrastructure should preserve sufficient technical and commercial optionality to avoid becoming digitally or operationally stranded as EV-grid integration develops. The submission further recommends that any waiver granted by the AER be time-bound, condition-based, and supported by annual reporting and a formal mid-term review. Review triggers should consider changes in private investment, CPO participation, consumer outcomes, technology maturity, infrastructure reliability, maintenance costs, and competitive conditions.

Drawing on our research and regulatory engagement in areas including consumer energy resources, electric vehicles, distributed flexibility, digital energy infrastructure, inverter-dominated power systems, regulatory observability, and adaptive governance, we believe that the proposed trial can provide significant regulatory and consumer value if it is designed to generate clear, decision-useful evidence throughout its lifecycle.

We appreciate the opportunity to contribute to this consultation and trust that the submission will assist the Australian Energy Regulator in assessing Essential Energy's ring-fencing waiver application and determining appropriate conditions for the proposed trial.

Yours sincerely,

Associate Professor Saman A. Gorji, PhD, SMIEEE, FHEA
Director, Centre for Smart Power and Energy Research (CSPER)
School of Engineering, Deakin University, Victoria, Australia
[redacted]

Regulatory Observability, Consumer-Risk Visibility, and Adaptive Governance in Essential Energy's Plug-and-Play EV Charging Infrastructure Trial

Submission to the Australian Energy Regulator

Essential Energy Ring-Fencing Waiver
Kerbside EV Charging Infrastructure
Consultation Paper, June 2026

Authors

Dr Alireza Ganjovi
Associate Professor Saman A. Gorji
Centre for Smart Power & Energy Research (CSPER), School of Engineering, Deakin University

Submission Context

This submission responds to the Australian Energy Regulator's consultation on Essential Energy's ring-fencing waiver application for the Plug-and-Play EV Charging Infrastructure Trial. It is prepared within the Centre for Smart Power & Energy Research (CSPER)'s broader research program on inverter-dominated electricity systems, consumer energy resources, electric vehicles, distributed flexibility, digital energy infrastructure, regulatory observability, and adaptive governance. We do not oppose Essential Energy's proposed trial or the objective of improving public EV charging access in regional communities. The submission focuses on how temporary Distribution Network Service Provider (DNSP) participation in EV charging infrastructure can remain transparent, evidence-based, consumer-focused, and adaptive as market conditions, technologies, and consumer participation evolve. The central proposition is that the Plug-and-Play trial should be assessed not only as an infrastructure deployment program, but also as a governance experiment. Its value depends on whether it produces decision-useful evidence on regional market failure, charger performance, consumer outcomes, competitive effects, digital readiness, and transition pathways.

Executive Summary

We support the objective of accelerating regional electrification and improving access to public EV charging in underserved communities. Regional EV charging inequity is a material issue because low population density, uncertain utilisation, long travel distances, higher deployment costs, and lower early EV uptake can weaken the commercial case for private charging investment [1-7].

A time-bound waiver may therefore be appropriate where it is used to test whether DNSP-enabled shared infrastructure can reduce deployment barriers and support market participation. However, the waiver should be treated as an evidence-generation mechanism, not as implicit approval of an enduring DNSP role in contestable EV charging infrastructure.

The central regulatory issue is not whether EV charging is desirable. It is whether DNSP involvement remains observable, bounded, competitively neutral, and reviewable throughout the waiver period. Regulatory confidence should depend on lifecycle transparency: where chargers are installed, why those sites were selected, how the assets perform, how consumers benefit, how CPOs participate, whether private investment is crowded in or crowded out, and when DNSP involvement should reduce, transfer, or cease.

We recommend a light-touch observability framework built around measurable indicators rather than narrative assurance. Table 1 summarises the key recommendations proposed in this submission to enhance transparency, observability, and adaptive governance throughout the lifecycle of the Plug-and-Play EV charging infrastructure trial.

Table 1. Summary of recommendations

Theme	Recommendation
Market-failure visibility	Require location-based evidence showing where commercial deployment is absent or insufficient.
Infrastructure-performance observability	Report charger availability, faults, repair times, utilisation, sessions, and energy throughput.
Consumer-risk visibility	Make ownership, maintenance, lease arrangements, cost recovery, consumer exposure, and dispute pathways transparent.
Competition observability	Track CPO participation, failed tenders, sites with no interest, and evidence of crowding in or crowding out.
Digital-energy readiness	Report interoperability, metadata quality, communication standards, and future integration capability.
Flexibility optionality	Preserve technical optionality for managed charging, flexible demand, VPP participation, battery interaction, and behavioural dispatch without mandating these functions now.
Adaptive governance	Introduce review triggers linked to market, technology, consumer, competition, and cost outcomes.
Exit pathways	Require a clear transition plan covering transfer, lease expiry, decommissioning, and competitive transition.

Figure 1 illustrates the lifecycle observability framework proposed in this submission. It treats the Plug-and-Play trial not only as an infrastructure deployment initiative, but also as an evidence-generation mechanism in which infrastructure performance, consumer outcomes, competition effects, digital readiness, and future flexibility remain observable throughout the asset lifecycle, thereby supporting adaptive governance and informing eventual transition and exit pathways.

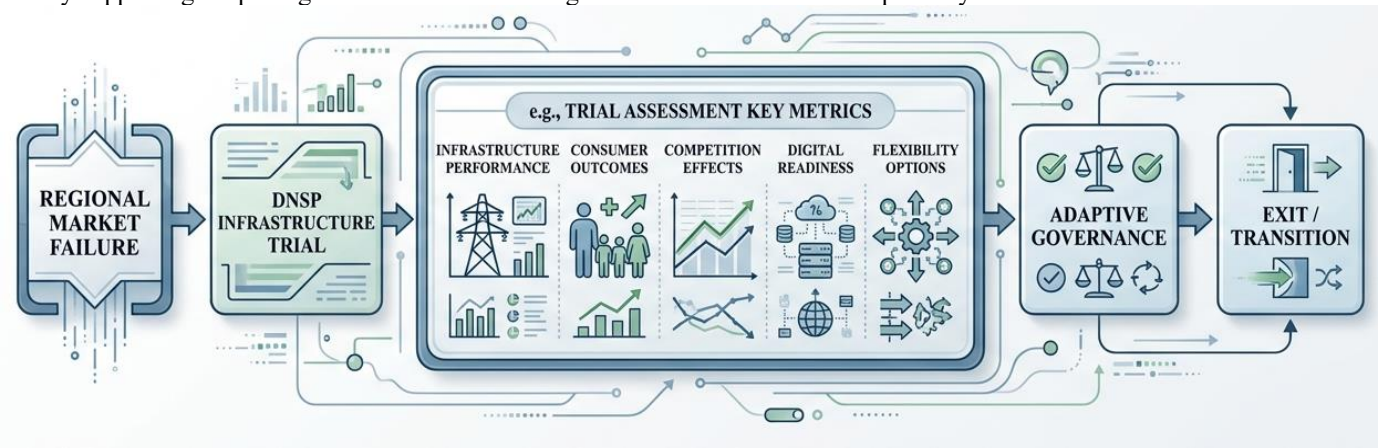

Figure 1. Lifecycle observability framework for Essential Energy's Plug-and-Play EV Charging Infrastructure Trial.

1. Introduction and Scope

We support the objective of accelerating regional electrification and improving access to public EV charging in underserved communities. Public charging infrastructure is an important enabler of EV adoption and supports transport decarbonisation, consumer participation, and regional economic development [3-6].

The issue considered in this submission is not whether EV charging infrastructure is desirable. Rather, it is whether temporary DNSP involvement in contestable charging infrastructure can remain transparent, measurable, and reviewable throughout the waiver period. Essential Energy's trial seeks to address thin-market conditions where commercial deployment has been limited. Such conditions are characterised by uncertain utilisation, high deployment costs, site-specific connection processes, and low early EV penetration [1, 2, 7-9].

This submission does not oppose the trial or the use of existing network assets to facilitate regional charging access. It focuses on the governance framework surrounding the waiver. In particular, it examines whether the assumptions, market impacts,

operational outcomes, and consumer benefits associated with DNSP participation remain sufficiently visible to support evidence-based regulatory oversight.

Ring-fencing arrangements are intended to preserve competitive neutrality and protect consumers from inappropriate cross-subsidisation [10]. Confidence in a long-duration waiver should therefore depend not only on initial justification, but also on observable outcomes over time. The trial should be viewed as both an infrastructure experiment and a governance experiment.

Consistent with our broader work on regulatory observability and adaptive governance, the central proposition is that temporary DNSP participation should remain transparent, bounded, auditable, and adaptive as EV markets evolve.

2. Regional Market Failure and Consumer Equity

We recognise Essential Energy's diagnosis that regional kerbside EV charging faces thin-market conditions. These conditions arise where expected utilisation is low, deployment costs are spatially dispersed, network connection processes are site-specific, and private revenue recovery is uncertain. In such locations, the commercial case for CPOs may remain weak even where the social value of charging access is material [1-4, 7-9].

The underlying constraint is a coupled adoption-infrastructure feedback loop. Low EV penetration reduces charging demand and charger revenue. Limited public charging then reduces consumer confidence, especially for regional travel, renters, visitors, and households without reliable off-street charging. This creates a "chicken-and-egg" problem in which neither EV uptake nor charging deployment reaches efficient scale without targeted intervention [2, 7-9].

This problem has an equity dimension. Public charging access is not evenly distributed across geography, housing type, income, and travel need. If infrastructure deployment follows only near-term utilisation and revenue signals, charging networks are likely to concentrate in higher-demand urban corridors and commercially attractive sites, leaving lower-density communities underserved [4, 5, 11].

A time-bound trial is therefore reasonable where it is designed to test whether targeted infrastructure deployment can reduce market-entry barriers and improve regional charging access. However, the waiver should not rely only on qualitative claims of market failure. It should generate measurable evidence. We recommend that the AER require a Market-Failure Observability Framework for the trial.

Table 2. Market-failure indicators

Indicator	Purpose
Charger density	Number of public chargers per population, road-km, town, or regional travel corridor.
EV penetration	Registered EVs by local area, compared with regional and metropolitan benchmarks.
Utilisation rates	Charging sessions, energy throughput, occupancy, peak-use periods, and idle time.
Unserved communities	Towns, corridors, or customer groups with limited charging access or high distance-to-charger.
Commercial interest indicators	CPO expressions of interest, tender participation, failed tenders, connection enquiries, and sites excluded due to active private deployment.

As expressed in Table 2, these indicators would allow the AER to distinguish persistent market failure from temporary market immaturity, and consumer-beneficial intervention from inefficient public infrastructure deployment. The objective should be practical: identify where the market is not delivering, quantify the access gap, observe whether DNSP-enabled infrastructure changes utilisation and market participation, and determine whether DNSP involvement should continue, reduce, transfer, or cease.

Figure 2 illustrates the conceptual pathway through which DNSP-enabled infrastructure can address thin-market conditions and support the transition from limited regional EV charging availability to more mature and competitive market outcomes.

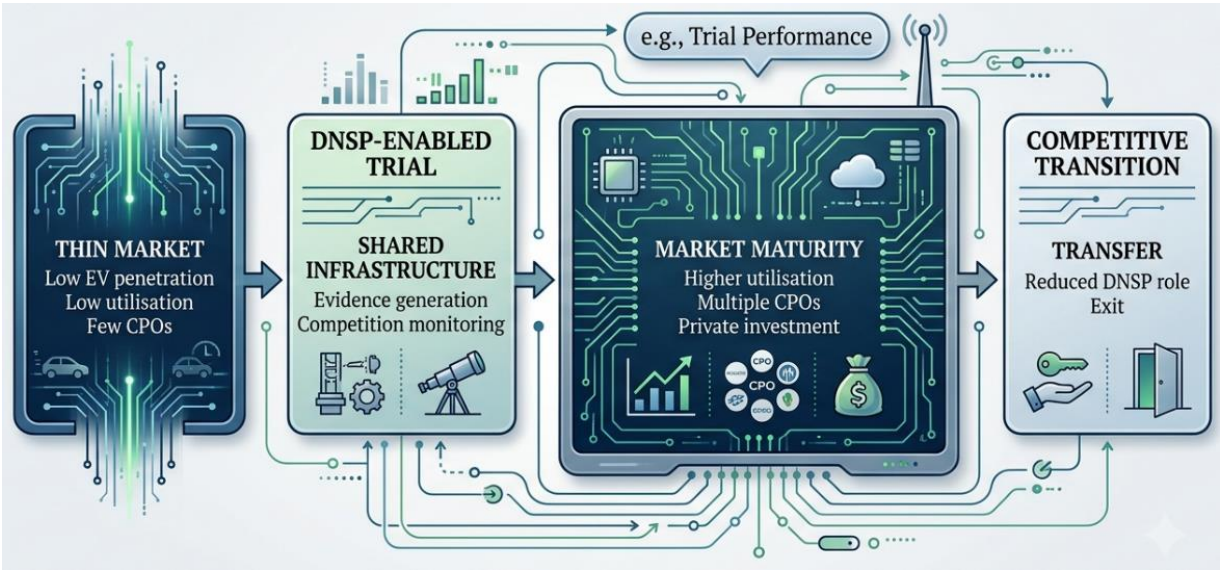

Figure 2. Conceptual pathway from regional market failure to competitive market transition through evidence-based DNSP facilitation.

3. Competition and Competitive Neutrality

The relevant competition question is not simply whether DNSP participation harms competition. The more useful regulatory question is whether the competitive effects of DNSP participation can be observed, measured, and reviewed during the waiver period. In emerging EV charging markets, competition impacts are dynamic. A DNSP-owned infrastructure model may crowd in CPO participation where private deployment is currently uneconomic, but it may also crowd out private investment if sites, data access, connection processes, or commercial terms create structural advantages for the network business or selected operators [1, 2, 10, 12-14].

Competitive neutrality requires that no participant receives an advantage solely because of ownership, regulatory status, monopoly network position, privileged information, or access to regulated assets [10, 13, 14]. This is important in EV charging because CPO investment decisions are sensitive to utilisation, site access, connection cost, network capacity, maintenance cost, and revenue uncertainty [7-9].

Essential Energy's proposed role is limited to owning, installing, maintaining, and leasing embedded charging infrastructure, while CPOs provide customer-facing charging services. This separation reduces some competition risks, but does not remove the need for observable safeguards. We recommend that the AER assess competitive neutrality through annual competition-impact reporting.

As summarised in Table 3, these indicators would enable the AER to assess whether the trial promotes market entry, preserves competitive neutrality, avoids crowding out private investment, and supports eventual transition towards competitive operation. The purpose of the waiver should be to test whether shared infrastructure can facilitate market development under thin-market conditions, rather than normalise an enduring DNSP role in contestable EV charging infrastructure.

Table 3. Competition-observability indicators

Indicator	Purpose
Number of CPOs participating	Measures whether the trial enables market entry or concentrates access.
Failed tenders	Identifies locations or bundles where no viable commercial operator emerged.
Sites with no commercial interest	Distinguishes persistent market failure from temporary procurement failure.
Sites excluded due to active private interest	Tests whether the trial avoids crowding out planned private deployment.
Lease allocation outcomes	Shows whether access terms are transparent and non-discriminatory.
Transition pathway indicators	Tracks whether monopoly-enabled infrastructure is moving toward competitive operation, transfer, or exit.

4. Consumer-Risk Visibility

Consumer risk in the proposed waiver is not limited to end-user charging prices. It also includes uncertainty about asset ownership, maintenance responsibility, lease terms, cost recovery, service reliability, outage response, data quality, and dispute pathways. These risks are amplified where infrastructure is embedded in DNSP-owned poles and operated commercially by third-party CPOs. The technical asset, commercial service, network interface, and customer-facing transaction are separated across different entities.

We recommend that the AER require a Consumer-Risk Visibility Framework as a waiver condition. The framework should make explicit the allocation of responsibilities across Essential Energy, CPOs, retailers, metering parties, local councils, and consumers. This is consistent with emerging public charging regulation, which increasingly focuses on uptime, transparent pricing, payment accessibility, interoperability, and accountable customer support [15, 16].

As summarised in Table 4, this information should be reported in a structured format covering ownership, maintenance responsibilities, lease arrangements, cost recovery pathways, consumer exposure, and dispute pathways. The minimum dataset should include charger availability, failed-session rate, mean time to repair, number of complaints, average and maximum outage duration, price transparency compliance, payment failure rate, and unresolved disputes. These indicators would enable the AER to distinguish asset-performance problems from commercial-service problems and consumer-protection gaps from routine operational faults.

Table 4. Consumer-risk visibility requirements

Risk area	Required visibility
Ownership	Clear identification of who owns the pole, embedded charger, metering equipment, communications equipment, and associated civil works.
Maintenance responsibilities	Allocation of responsibility for charger hardware, pole assets, electrical safety, communications systems, payment interfaces, site access, fault response, and repair timeframes.
Lease arrangements	Non-confidential summary of lease duration, access model, site allocation method, exclusivity conditions, renewal rights, termination rights, and transfer options.
Cost recovery pathways	Confirmation that trial costs are not recovered through regulated network charges, plus reporting of lease revenue, maintenance cost allocation, and any cost pass-through to CPOs or users.
Consumer exposure	Reporting of prices, fees, failed charging sessions, outage duration, availability, payment failures, complaints, accessibility issues, and geographic service gaps.
Dispute pathways	Clear public guidance on whether complaints should be directed to the CPO, retailer, Essential Energy, local council, ombudsman, or another body.

Reliability reporting is particularly important. Field studies of public DC fast chargers show material gaps between nominal uptime and observed charger functionality, with failures linked to hardware faults, software errors, payment problems,

communication failures, and inaccurate charger-status data [17-19]. For regional consumers, these failures carry higher consequences because alternative charging options may be limited.

Accordingly, the waiver should require transparent responsibility mapping and outcome reporting across the full consumer-risk chain. This does not imply that Essential Energy should become responsible for all customer-facing services. Rather, it should ensure that responsibilities, failure reporting, cost allocation, and dispute-resolution pathways remain visible and accountable throughout the lifecycle of the trial.

Figure 3 illustrates the allocation of responsibilities across the consumer-risk chain, highlighting the interactions between consumers, charge point operators, and Essential Energy, and emphasising the importance of transparent accountability for service quality, maintenance, pricing, and dispute resolution.

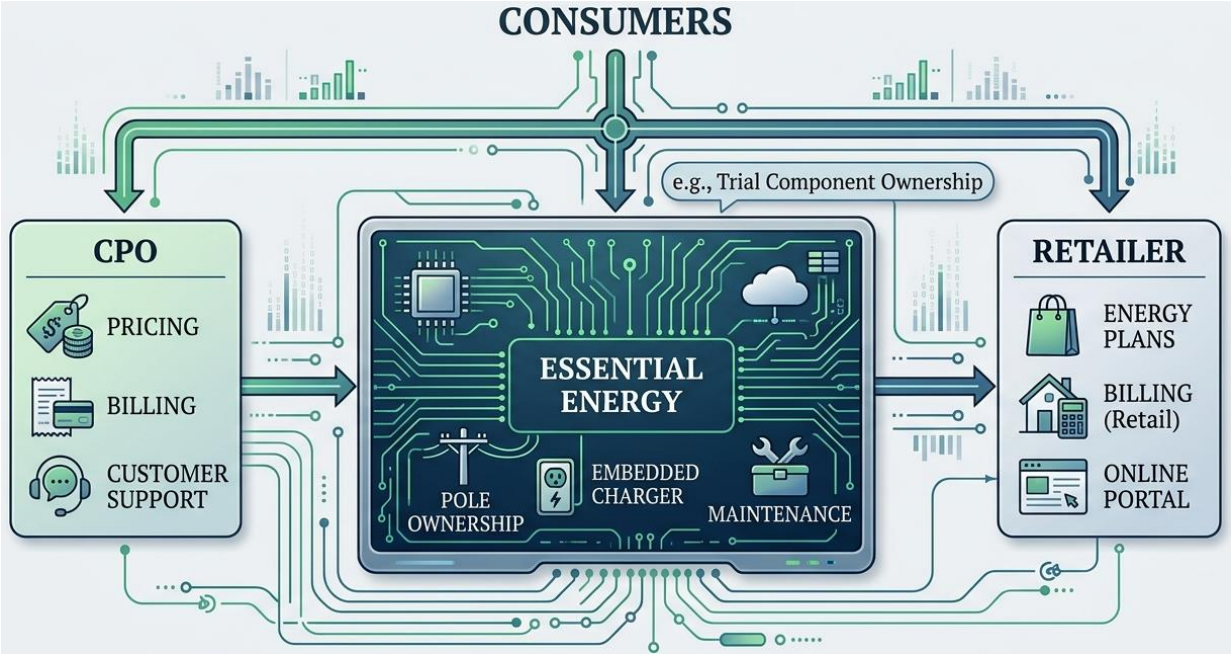

Figure 3. Consumer-Risk Responsibility Map.

5. Infrastructure Performance Observability

The waiver should require infrastructure-performance reporting that distinguishes physical deployment from delivered service. Counting installed chargers is insufficient. A charger creates consumer and market value only when it is available, functional, accessible, utilised, and integrated into a reliable operating model. International charging standards increasingly recognise this distinction by requiring uptime, pricing transparency, operational data, and reliability reporting rather than relying only on asset counts [15-19]. We recommend that the AER require Essential Energy to publish an annual Infrastructure Performance Observability Report for the trial.

As summarised in Table 5, these indicators should be reported by site, region, charger type, CPO, and reporting period, subject to reasonable confidentiality protections. Aggregated reporting alone is insufficient because regional charging value is spatially dependent. A high average utilisation rate may conceal unserved communities, while low utilisation may still be justified where a charger provides critical corridor coverage or regional accessibility benefits.

Table 5. Infrastructure-performance metrics

Metric class	Required indicators	Regulatory purpose
Technical performance	Availability, number of faults, fault type, mean time to repair, outage duration, charging sessions, energy throughput, failed-session rate.	Measures whether deployed chargers provide reliable service.
Utilisation	Sessions per charger, kWh per charger, occupancy, peak-use periods, idle time, utilisation by location and season.	Distinguishes underutilised infrastructure from high-value regional access.
Consumer performance	Accessibility, wait times, service reliability, payment failures, charger-status accuracy, complaints.	Measures whether users can practically access and complete charging.
Market performance	CPO participation, CPO turnover, tender participation, site occupancy, lease continuity, operator replacement events.	Measures whether the trial enables sustainable market participation.

Reliability should be assessed from the user's perspective. A charger should not be considered effectively available if payment systems fail, connectors are damaged, communications are interrupted, status information is inaccurate, or users cannot successfully complete charging sessions [17-19]. Similarly, utilisation should be interpreted within its engineering and market context, recognising the influence of EV penetration, charger density, charging power, travel patterns, pricing, and location characteristics [8, 20].

The performance framework should also capture asset condition and service degradation over time. Annual reporting should therefore include asset age, repeated faults, maintenance history, component replacement, communications outages, and post-commissioning performance trends.

6. EV Charging as Digital Energy Infrastructure

Public EV charging infrastructure should not be assessed only as physical infrastructure. A charger is also a digital energy asset that authenticates users, communicates with vehicles, exchanges operational data with back-end platforms, supports payment and transaction services, and may eventually participate in managed charging, demand response, V2G, and broader DER coordination [21-26].

This is directly relevant to the proposed waiver. Although Essential Energy's embedded-pole model may reduce physical deployment barriers, the long-term value of the trial will depend on whether the infrastructure remains interoperable and capable of supporting evolving charging markets, customer interfaces, network operation, and flexibility services. Proprietary or poorly specified digital interfaces can create switching costs, reduce CPO contestability, weaken maintenance diagnostics, impair consumer information, and limit future participation in grid-support functions [21-24].

We therefore recommend that the AER treat digital readiness as a core element of trial observability. As summarised in Table 6, reporting should provide visibility of interoperability, metadata quality, communication standards, and future integration capability.

Table 6. Digital-readiness indicators

Digital-infrastructure area	Required visibility
Interoperability	Compliance with relevant open protocols for charger-backend, roaming, payment, and vehicle-charger communication.
Metadata quality	Accuracy and completeness of location, connector type, power rating, availability status, tariff, outage, fault, and accessibility data.
Communication standards	Protocol versions, cybersecurity settings, remote diagnostics, firmware update capability, data privacy controls, and communication failure rates.
Future integration capability	Readiness for managed charging, dynamic load control, demand response, tariff integration, V2G, V2H, V2B, and aggregator/DSO coordination.

The reporting framework should distinguish nominal protocol support from operational performance. For example, a charger may claim OCPP compatibility but still provide incomplete diagnostics, unreliable status reporting, weak remote fault management, or limited portability between charging networks. Similarly, location and availability data may be published but operationally poor if they are delayed, incomplete, inconsistent, or not machine-readable.

Open standards should be preferred wherever technically feasible. OCPP supports communication between charging stations and central management systems, ISO 15118 enables vehicle-to-grid communication and smart charging, OCPI supports roaming and session-data exchange, while OpenADR and IEEE 2030.5 provide pathways for demand response and utility-grid coordination [21-26].

Figure 4 illustrates the role of public EV charging infrastructure as a digital energy interface connecting vehicles, consumers, charge point operators, network businesses, aggregators, and electricity markets through interoperable communication and data exchange.

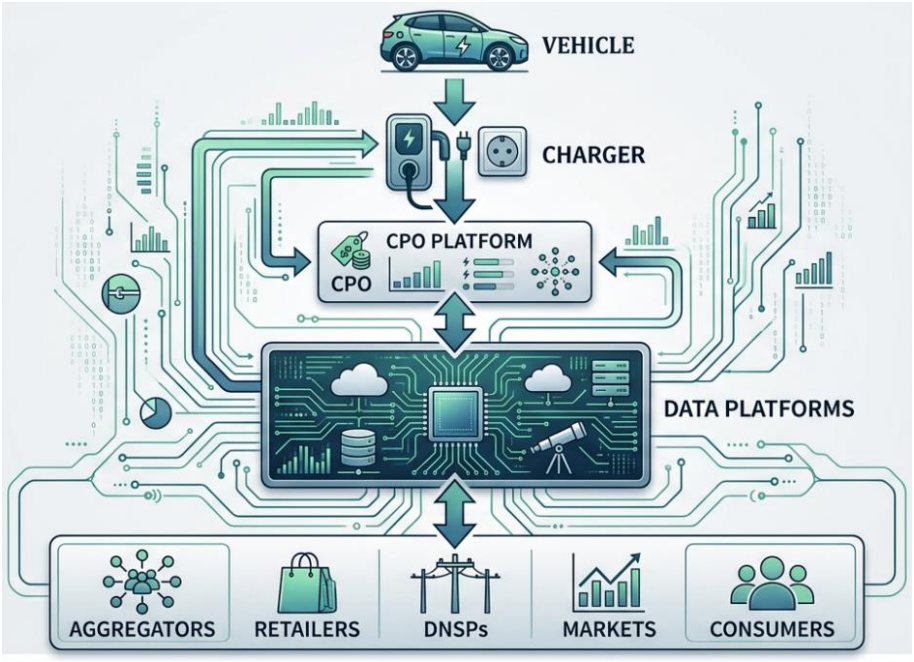

Figure 4. EV charging infrastructure as a digital energy interface within the evolving electricity ecosystem.

We recommend that Essential Energy publish a Digital Readiness Register for the trial. The register should identify protocol versions, supported functions, metadata fields, update frequency, data-quality issues, communications outages, cybersecurity controls, and known interoperability limitations.

7. DER Coordination and Future Flexibility

Public EV charging should be assessed not only as transport infrastructure, but also as a potential future flexibility interface linking vehicles, consumers, networks, retailers, aggregators, and electricity markets. As EV uptake increases, charging demand may influence local network loading, minimum-demand conditions, solar utilisation, and system flexibility requirements [27-31].

This submission does not recommend that Essential Energy's trial implement managed charging, demand response, VPP participation, V2G, or dynamic tariff control at this stage. These functions raise additional questions regarding consumer consent, data access, interoperability, market participation, battery degradation, cybersecurity, and role clarity. However, the trial should avoid closing off these future opportunities through restrictive technical specifications or commercial arrangements.

Managed charging can shift EV demand towards periods of higher renewable availability and reduce network stress when implemented with appropriate consumer safeguards [27-32]. Flexible demand, behavioural dispatch, VPP participation, and battery interaction may also become increasingly relevant as EV chargers, stationary batteries, rooftop PV, and aggregators become more closely integrated [28-33]. We therefore recommend that the AER require the trial to preserve flexibility optionality.

As summarised in Table 7, reporting should provide visibility of future capability for managed charging, flexible demand, VPP participation, battery interaction, and behavioural dispatch. The required reporting should be capability-based rather than activation-based. Its purpose is not to mandate future flexibility services, but to ensure that the infrastructure does not become digitally or technically stranded before EV-grid integration matures. Relevant reporting should include charger controllability, telemetry granularity, response time, protocol compatibility, metering configuration, data latency, customer override capability, and the separation of control functions from customer-facing retail services.

Table 7. Flexibility-optionality indicators

Future capability	Required visibility
Managed charging	Ability to receive, execute, and record controlled charging instructions, subject to future consumer consent and market rules.
Flexible demand	Capability to support time-varying operation, load shifting, and tariff-linked charging behaviour.
VPP participation	Compatibility with aggregator or fleet-management platforms, without locking access to a single operator.
Battery interaction	Ability to coordinate with stationary storage, local solar generation, or site-level energy-management systems.
Behavioural dispatch	Availability of data needed to assess whether pricing or information signals shift charging behaviour into useful operating periods.

Future flexibility value depends on decision-useful data, not only installed hardware. If charging data are delayed, incomplete, poorly timestamped, unavailable to authorised parties, or incompatible with market and network systems, managed charging and VPP participation become difficult to verify or optimise [21, 27].

8. Adaptive Governance

The proposed waiver should not be treated as a static approval for the full period. EV charging markets, managed charging capability, V2G readiness, consumer expectations, and CPO investment conditions may evolve materially before 2033. A time-bound waiver should therefore incorporate adaptive review triggers that allow the AER to reassess whether DNSP participation remains necessary, proportionate, and consumer-beneficial [1, 2, 12, 29, 33].

We recommend that the AER require Essential Energy to report against explicit review triggers. These triggers should not automatically terminate the waiver, but should initiate structured review when market conditions, technology capability, consumer outcomes, competition effects, or cost exposure change materially.

As summarised in Table 8, review triggers should cover market, technology, consumer, competition, and cost dimensions. These triggers should be supported by measurable indicators rather than qualitative assurance. Market triggers should be informed by CPO participation, tender outcomes, connection enquiries, and evidence of private investment. Consumer triggers should be supported by utilisation, availability, outage duration, failed sessions, complaints, and accessibility indicators. Cost triggers should be linked to maintenance expenditure, repeated faults, repair times, revenue recovery, and asset replacement requirements.

Table 8. Adaptive review triggers

Trigger class	Review trigger	Purpose
Market triggers	Evidence of sufficient private investment; multiple CPOs seeking access; commercially viable sites emerging without DNSP ownership.	Tests whether DNSP participation remains necessary.
Technology triggers	Managed charging becomes operationally mature; V2G-capable chargers and vehicles become commercially available; relevant standards mature.	Tests whether infrastructure specifications remain future-ready.
Consumer triggers	Persistently low utilisation; repeated complaints; poor accessibility; high failed-session rates; material service unreliability.	Tests whether consumer benefits are being delivered.
Competition triggers	Evidence of private investment being displaced; low tender participation; repeated single-operator outcomes; discriminatory access concerns.	Tests whether the waiver remains competitively neutral.
Cost triggers	Unexpected maintenance costs; repeated asset faults; lease revenue insufficient for maintenance; hidden cost-transfer risks.	Tests whether consumer and shareholder-risk assumptions remain valid.

Technology triggers should be treated carefully. The emergence of managed charging, V2G, dynamic tariffs, or VPP integration should not automatically expand Essential Energy's role. Although these capabilities may create future value, they also raise issues relating to consumer consent, data governance, battery degradation, cybersecurity, market participation, and role separation [21, 27, 29, 33]. The immediate objective should be to preserve optionality rather than encourage premature functional expansion.

Figure 5 illustrates how market, technology, consumer, competition, and cost indicators can support periodic review and adaptive governance throughout the waiver period.

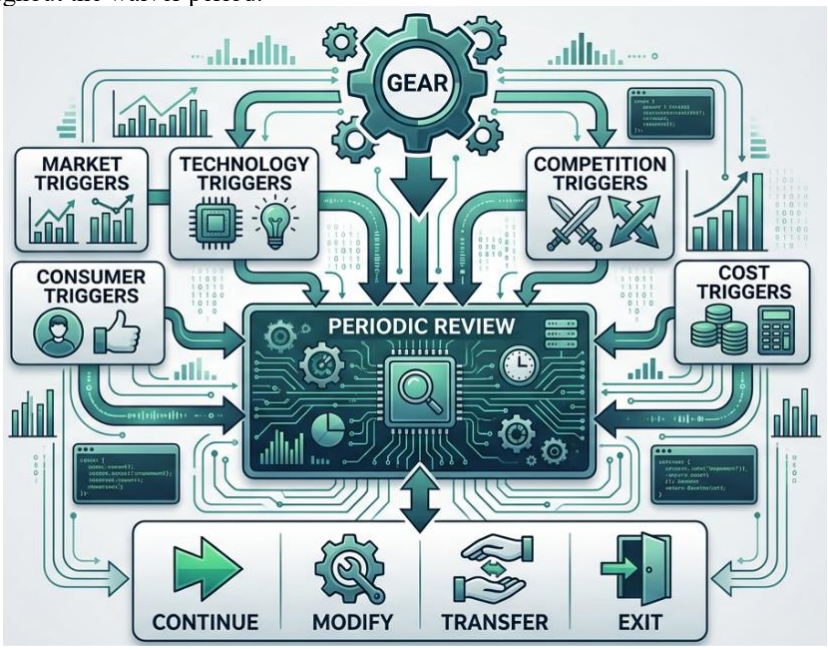

Figure 5. Adaptive governance framework for periodic review of the Plug-and-Play EV charging infrastructure trial.

We recommend a formal mid-term review, supported by annual trigger reporting. The review should assess whether the trial remains within its original purpose: targeted, time-bound infrastructure facilitation in underserved regional markets.

9. Exit and Transition Pathways

DNSP participation in contestable EV charging infrastructure should be treated as a temporary, evidence-based intervention rather than an enduring market role. Essential Energy's proposed waiver is justified by regional market failure, thin commercial conditions, and the need to test whether shared infrastructure can support market development. If these conditions change, the governance framework should provide a clear pathway for transition, transfer, or exit [1, 2, 10, 12].

We recommend that the AER require Essential Energy to publish an Exit and Transition Plan as a waiver condition. The plan should be prepared before full deployment and updated periodically to define the operational, commercial, technical, and consumer-protection conditions under which DNSP involvement would reduce, transfer, or cease.

As summarised in Table 9, the framework should provide visibility of transfer arrangements, lease expiry, decommissioning processes, and competitive transition pathways. These arrangements should be linked to measurable triggers, including increasing CPO interest, successful private deployment, sustained utilisation, commercially viable operation, and continued consumer access. Conversely, low utilisation, repeated service failures, or high maintenance costs should trigger review of whether continued operation, relocation, redesign, or decommissioning remains in consumers' interests.

Table 9. Exit and transition visibility

Transition area	Required visibility
Transfer to private ownership	Conditions under which chargers, lease rights, operating rights, or service responsibilities could transfer to CPOs, retailers, councils, or other market participants.
Lease expiry	Expiry dates, renewal rights, termination rights, retendering obligations, site-bundle treatment, and consumer-continuity arrangements.
Decommissioning	Technical process, safety requirements, cost allocation, residual asset treatment, site restoration, waste handling, and responsibility for embedded equipment.
Competitive transition	Criteria for moving from DNSP-enabled infrastructure to competitive market provision, including CPO interest, private investment, utilisation, and consumer access indicators.

Lease design is central to this process. The AER should therefore require reporting on lease duration, renewal mechanisms, retendering arrangements, asset-transfer options, and service-continuity obligations. Decommissioning should also be treated as an engineering and consumer-risk issue rather than an administrative afterthought. The exit framework should clearly identify

responsibilities for equipment removal, cost allocation, site restoration, waste management, and consumer communication when services are withdrawn.

10. Conclusion

We support the objective of improving public EV charging access in regional and underserved communities. Regional charging gaps can create a practical barrier to EV adoption, particularly where low utilisation, dispersed demand, and higher deployment costs weaken the private investment case. The central issue is not whether regional EV charging should be accelerated. It should. The central issue is whether temporary DNSP participation in contestable EV charging infrastructure can remain transparent, evidence-based, consumer-focused, competitively neutral, and adaptive as EV markets evolve. The Plug-and-Play trial should therefore be governed as an evidence-generating intervention. The AER should require measurable reporting on market failure, infrastructure performance, consumer risk, competition impacts, digital readiness, flexibility optionality, adaptive review triggers, and exit pathways. These requirements would not prevent the trial from proceeding. They would strengthen its regulatory value. If the trial demonstrates persistent market failure and clear consumer benefit, continued DNSP-enabled facilitation may be justified for defined locations and conditions. If the trial demonstrates increasing CPO participation, sufficient private investment, or commercially viable operation, DNSP involvement should reduce, transfer, or cease. If the trial demonstrates poor utilisation, unreliable service, high maintenance costs, or material consumer risk, the model should be reviewed before it becomes embedded. Accordingly, We recommend that any waiver granted by the AER be time-bound, condition-based, and supported by lifecycle observability. The trial should not only deploy chargers. It should generate the evidence needed to determine when DNSP involvement supports regional electrification, when it supports competition, and when it should transition back to the market.

References

1. Australian Energy Regulator. (2026). *Essential Energy ring-fencing waiver - Kerbside EV charging infrastructure*. https://www.aer.gov.au/industry/networks/ring-fencing/essential-energy-ring-fencing-waiver-kerbside-ev-charging-infrastructure
2. Essential Energy. (2026, April). *Essential Energy Plug and Play ARENA funding trial: Ring-fencing waiver application* (PDF). Australian Energy Regulator. https://www.aer.gov.au/system/files/2026-05/Essential%20Energy%20Plug%20and%20Play%20ARENA%20Funding%20trial%20-%20Ring-fencing%20waiver%20application%20-%20April%202026.pdf
3. Australian Renewable Energy Agency. (2025). *Plug and Play Asset Based Destination Charging Project*. https://arena.gov.au/projects/plug-and-play-asset-based-destination-charging-project/
4. International Energy Agency (IEA). (2025). *Electric vehicle charging*. In *Global EV Outlook 2025*. https://www.iea.org/reports/global-ev-outlook-2025/electric-vehicle-charging
5. Department of Climate Change, Energy, the Environment and Water. (2025). *National Electric Vehicle Strategy annual update 2024-25*. Australian Government. https://www.dcceew.gov.au/sites/default/files/documents/national-electric-vehicle-strategy-annual-update-2024-25.pdf
6. New South Wales Department of Climate Change, Energy, the Environment and Water. (2026, April). *NSW Electric Vehicle Strategy*. NSW Government. https://www.energy.nsw.gov.au/sites/default/files/2026-04/nsw-electric-vehicle-strategy-april-2026.pdf
7. Cenex & ICF. (2024, January). *Understanding the business case for electric vehicle charging infrastructure*. International Zero-Emission Vehicle Alliance (ZEV Alliance). https://zevalliance.org/wp-content/uploads/2024/01/Understanding-the-Business-Case-for-Electric-Vehicle-Charging-Infrastructure_jan24.pdf
8. Borlaug, B., Yang, F., Pritchard, E., Wood, E., & Gonder, J. (2023). Public electric vehicle charging station utilization in the United States. *Transportation Research Part D: Transport and Environment, 114*, 103564. https://doi.org/10.1016/j.trd.2022.103564
9. Nigro, N., & Frades, M. (2015, March). *Business models for financially sustainable EV charging networks*. Center for Climate and Energy Solutions (C2ES). https://www.c2es.org/wp-content/uploads/2015/03/business-models-ev-charging-infrastructure-03-15.pdf
10. Australian Energy Regulator. (2025). *Ring-fencing guideline (electricity distribution) 2025* (Version 4). https://www.aer.gov.au/industry/networks/ring-fencing/ring-fencing-guideline-electricity-distribution-2025
11. Hall, D., & Lutsey, N. (2020, August). *Charging infrastructure in cities: Metrics for evaluating future needs* (ICCT Working Paper 2020-17). International Council on Clean Transportation. https://theicct.org/wp-content/uploads/2021/06/EV-charging-metrics-aug2020.pdf
12. Australian Energy Regulator. (2025, October). *Reasons for decision paper*. https://www.aer.gov.au/system/files/2025-10/AER%20-%20Reasons%20for%20decision%20paper.pdf
13. Capobianco, A., & Christiansen, H. (2011). *Competitive neutrality and state-owned enterprises: Challenges and policy options* (OECD Corporate Governance Working Papers No. 1). OECD Publishing. https://www.oecd.org/content/dam/oecd/en/publications/reports/2011/05/competitive-neutrality-and-state-owned-enterprises_g17a1fbe/5kg9xfgjdhg6-en.pdf
14. Organisation for Economic Co-operation and Development (OECD). (2024). *Competitive neutrality toolkit: Promoting a level playing field*. OECD Publishing. https://doi.org/10.1787/3247ba44-en
15. U.S. Department of Energy. (n.d.). *Alternative fuel infrastructure tax credit*. Alternative Fuels Data Center. https://afdc.energy.gov/laws/13185
16. European Parliament, & Council of the European Union. (2023). *Regulation (EU) 2023/1804 of the European Parliament and of the Council of 13 September 2023 on the deployment of alternative fuels infrastructure, and repealing Directive 2014/94/EU*. *Official Journal of the European Union, L 234*, 1-119. https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32023R1804
17. Rempel, D., Cullen, C., Vianna Cezar, G., et al. (2023). Reliability of open public electric vehicle direct current fast chargers. *Human Factors, 66*(11). https://doi.org/10.1177/00187208231215242
18. Bernard, M. R., & Hall, D. (2023, March). *Improving public charging infrastructure reliability*. International Council on Clean Transportation. https://theicct.org/wp-content/uploads/2023/03/public-charging-reliability-mar23.pdf
19. National Renewable Energy Laboratory. (2024). *Electric vehicle charging station reliability evaluation and improvement* (NREL Report No. TP-5400-89896). U.S. Department of Energy. https://docs.nlr.gov/docs/fy24osti/89896.pdf
20. Greene, D. L., Kontou, E., Borlaug, B., Brooker, A., & Muratori, M. (2020). Public charging infrastructure for plug-in electric vehicles: What is it worth? *Transportation Research Part D: Transport and Environment, 78*, 102182. https://doi.org/10.1016/j.trd.2019.11.011
21. Neaimeh, M., & Andersen, P. B. (2020). Vehicle grid integration. *Energy Informatics, 3*(1), Article 1. https://doi.org/10.1186/s42162-020-0103-1
22. Open Charge Alliance. (n.d.). *Open Charge Alliance: Connecting the EV charging industry*. https://openchargealliance.org/
23. EVRoaming Foundation. (2024, November). *OCPI 2.2.1-d2: Open Charge Point Interface*. https://evroaming.org/wp-content/uploads/2024/11/OCPI-2.2.1-d2.pdf

24. International Organization for Standardization. (2025). *ISO 15118-20:2025 Road vehicles - Vehicle to grid communication interface - Part 20: 2nd generation network layer and application layer requirements*. ISO. https://www.iso.org/standard/94025.html
25. enX Consulting. (2023, December). *EV technical standards for grid operation: Insights for the National Electricity Market*. Australian Energy Market Operator. https://www.aemo.com.au/-/media/files/initiatives/engineering-framework/2023/enx---ev-technical-standards-for-grid-operation---insights-for-the-nem.pdf
26. Department of Climate Change, Energy, the Environment and Water. (2023). *Minimum operating standards for government-supported public electric vehicle charging infrastructure*. Australian Government. https://www.dcceew.gov.au/sites/default/files/documents/minimum-operating-standards-electric-vehicles-charging-infrastructure.pdf
27. Australian Energy Market Operator. (2025, May). *Electric vehicle data recommendations paper*. https://www.aemo.com.au/-/media/files/initiatives/electric-vehicles/electric-vehicle-data-recommendations-paper.pdf
28. Department of Climate Change, Energy, the Environment and Water. (2025). *National Consumer Energy Resources (CER) Roadmap: Consultation on technical priorities*. Australian Government. https://consult.dcceew.gov.au/natl-cer-roadmap-tech-priorities-consult
29. Graham, P. (2025). *Electric vehicle projections 2025*. Commonwealth Scientific and Industrial Research Organisation (CSIRO). Prepared for the Australian Energy Market Operator. https://www.aemo.com.au/-/media/files/stakeholder_consultation/consultations/nem-consultations/2025/draft-2026-fau/csiro-electric-vehicle-projections.pdf
30. Dwyer, S., Nagrath, K., Paevere, P., Spak, B., Pellow, M., Chhaya, S., Barnfather, P., Jafari, B., Fick, J., Dargaville, R., Anwar, M., Tomka, K., Thorpe, A., Kuch, D., Milton, A., & Hasan, K. (2021). *Electric vehicles and the grid: Final report*. RACE for 2030 Cooperative Research Centre. https://www.racefor2030.com.au/content/uploads/N1-EV-Opportunity-Assessement-Report-FINAL_05112021.pdf
31. enX Consulting. (2025, February 12). *National roadmap for bidirectional EV charging*. Australian Renewable Energy Agency (ARENA) and RACE for 2030 Cooperative Research Centre. https://arena.gov.au/assets/2025/02/Bidirectional-Bidi-ROADMAP-2025-01-15-1.pdf
32. Sadeghian, O., Oshnoei, A., Mohammadi-Ivatloo, B., Vahidinasab, V., & Anvari-Moghaddam, A. (2022). A comprehensive review on electric vehicles smart charging: Solutions, strategies, technologies, and challenges. *Journal of Energy Storage, 54*, 105241. https://doi.org/10.1016/j.est.2022.105241
33. Tirunagari, S., Gu, M., & Meegahapola, L. (2022). Reaping the benefits of smart electric vehicle charging and vehicle-to-grid technologies: Regulatory, policy and technical aspects. *IEEE Access, 10*, 114657-114672. https://doi.org/10.1109/ACCESS.2022.3217525