19 August 2022

Ms Anna Collyer
Chair
Energy Security Board
John Gorton Building
King Edward Terrace
PARKES ACT 2600

Submitted via email to info@esb.org.au

Dear Ms Collyer

Energy Security Board Electric Vehicle Smart Charging Issues Paper

Energy Queensland Ltd welcomes the opportunity to provide comment to the Energy Security Board (ESB) on its Electric Vehicle Smart Charging Issues Paper (Issues Paper).

The transition to electric vehicles (EVs) is one of the most significant challenges facing the electricity industry today. Although the EV fleet is currently small, the long-term impact of the expansion of electric transportation on the electricity system will be profound.

Energy Queensland recognises that this situation presents many risks - to networks, retailers and customers - and requires a prudent approach to ensure that these risks can be managed appropriately to avoid disruptions to the electricity system. However, this situation also presents many opportunities, including the ability to influence how this transition proceeds.

Energy Queensland seeks to create an environment where private and commercial EV users are empowered to make choices which balance convenience and cost, and where users can be rewarded for adopting responsible charging behaviour with minimal inconvenience, to benefit the network, and other electricity users. However, the path forward will require significant effort to create the conditions for this to occur.

History is useful to demonstrate the importance of taking prudent actions to minimise costs. Traditional load control services prove that it is possible to exercise control over equipment with little loss of customer utility, while the rapid uptake of air-conditioning and solar photovoltaic generation shows what can happen without control measures.

It is our view that stakeholders should take early, no-regrets actions in relation to EV charging, and continue to collaborate to drive effective, proactive change rather than waiting until there is a problem to respond to.

Energy Queensland's responses to the consultation questions in the Issues Paper are provided in the attached document.

Should the ESB require additional information or wish to discuss any aspect of this response, please contact me on 0438 021 254 or Peter Wall on 0436 423 112.

Yours sincerely

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Encl: *Energy Queensland response to the Issues Paper.*

Energy Queensland response to ESB Issues paper - Electric Vehicle Smart Charging

Consultation questions	Energy Queensland response
Questions on domestic EV smart charging	
1. ESB welcome stakeholder views and input on smart charging equipment standards settings including any input to inform the likely costs.	Energy Queensland acknowledges the importance of common standards to promote compatibility and support effective interoperability of devices. Given that the manufacture of electric vehicles (EVs) and charging systems will largely occur overseas, adopting international standards wherever possible will promote international interoperability while also reducing implementation costs in Australia. We expect that standardised safety requirements, testing and validation procedures, and holistic environmental requirements, such as the sustainability of parts and equipment, will assist manufacturers to de-risk their development, enabling them to focus on improving their products, reducing development costs and lowering prices. We also note that minimum standards create a basis for consumer acceptance and trust by providing a method for verifying that a device is suitable for its intended purpose and may reassure consumers that they can trust their purchase. With specific reference to EV charging systems, we are particularly supportive of the following "no-regrets" mandatory minimum functionalities: • Randomised delay function - to prevent/reduce demand peaks at the boundaries of tariff time periods • Demand response capability - based on an open, interoperable standard • Consumer over-ride capabilities – to promote consumer choice • Volt-VAR, volt-watt and frequency-watt response - to equitably contribute to voltage and frequency management (already required for solar photovoltaic (PV) inverters and Battery Energy Storage Systems (BESS)). We note that in the 2022 Integrated System Plan (ISP), AEMO projects in the most likely "Step Change" scenario that the EV share of vehicle fleet is expected to increase to 58 per cent by 2040.[1] Given the

[1] AEMO (2022), *2022 Integrated System Plan,* p32.

	inevitable growth in EV volumes and associated increased electrical demand for charging, and the likely need for upgrades to electricity networks, we support the introduction of minimum standards for smart charging equipment as soon as possible. Minimising delays in implementation avoids lost opportunities during early adoption and enables the realisation of potential benefits for various stakeholders. We note that Electric Vehicle Supply Equipment (EVSE) installed today may last 10 years or more before requiring replacement, thereby locking in the current level of technology until equipment failure or significant financial or technological incentives compel early replacement. For clarity, in this document where we refer to 'EVSE' we are referring to Mode 3 EVSE (as defined in IEC 61851-1) and therefore excluding mobile connectors utilising General Power Outlets.
2. ESB welcome stakeholder views on the introduction of minimum EVSE equipment standards without remote management, and whether this will provide future optionality for managing peak demand.	Energy Queensland strongly supports the inclusion of remote management capability as a minimum mandatory requirement in EVSE based on an open, interoperable standard. We expect that the benefits to stakeholders, and the electricity system more generally, will greatly outweigh any additional short-term costs which may be borne by the EVSE industry and EV owners. However, for clarity, we do not support the mandatory use of remote management functionality. This is a decision for the customer in response to offers from the market. When remote management functionality is enabled, we support the ability for customers to over-ride control when necessary, including when charging is required urgently or when remote communication is intermittent or unavailable, particularly in regional areas.
3. ESB understands that most EVSEs on the market today come with smart charging as a minimum functionality – is this the case or do stakeholder see this as still an emerging functionality?	Energy Queensland suggests that, as part of this policy discussion, an agreed definition of 'smart charging' is required for the Australian market to ensure that: • there is consistency in the development and application of standards and, • consumers are protected from marketing that could result in poor customer outcomes.
4. What are stakeholder views regarding the adoption of these standards in the Australian context?	Energy Queensland supports the implementation of an open, supported standard. We acknowledge that OCCP 1.6-J is the most widely supported standard on EVSE which is open, interoperable and internationally applied. However, we note that there are a number of other standards that could deliver these capabilities and it may be too early to focus only on this standard.

Do stakeholders consider the OCCP1.6(J) the most appropriate international standard to adopt? Are there any additional standards or options that should be considered in the short term?	Our network businesses, Energex and Ergon Energy Network, have the capability to communicate dynamic operating envelopes and charging envelopes via IEEE 2030.5 Smart Energy Profile 2.0 (SEP2) CSIP-AUS and this could be intermediated by aggregators or gateway devices like Home Energy Management Systems.
5. Is there a need for EV to EVSE communications (such as ISO 15118) to be minimum functionality, alongside the communications protocol from the Charge Point Operator to the EVSE (such as OCPP)? The ESB welcomes stakeholder views on why this might be necessary.	Energy Queensland expects there will be consumer benefits which arise from increased functionality in EV-to-EVSE communications. For example, smart charging using data on the state of charge (SoC) of an EV battery will enable the charging of EVs with low SoC to be prioritised so that the minimum SoC can be provided in the time available. Since IEC61851-1 does not communicate the SoC to the EVSE, we suggest that an approach which enables more functional EV-to-EVSE communication would be beneficial for consumers.

6. The ESB welcomes views in requiring default tariffs at the point of installation of a charging system.
Do stakeholders have views on the merits of using network specific tariff windows of time or are state-wide default more appropriate?
	Energy Queensland acknowledges the importance of managing load to ensure the integrity and resilience of the network. While default tariffs and default settings for EV charging systems appear to be an attractive mechanism to shift EV charging load away from or towards certain times of the day, we do not support their use for several reasons:
	
	• From a technical perspective-
	  ○ default arrangements are an unnecessarily restrictive way to influence charging behaviour to minimise adverse network impacts
	  ○ preconfigured default tariff settings reduce diversity and could create new demand peaks at the boundaries of tariff time periods (even if start is randomised)
	  ○ blanket/state-wide default tariff settings ignore the localised nature of network constraints which are expected with EV charging
	
	• From a customer perspective-
	  ○ may disadvantage consumers with usage profiles not suited to the default tariffs or default equipment settings

	○ dynamically controlled tariffs are likely to be preferred to traditional daily scheduled controlled load tariffs, as they will enable customers to charge their EV during the day to take advantage of low-cost energy from their own generation or from the grid. However, Energy Queensland notes that flat "anytime" retail tariffs used in domestic settings are not appropriate for EVSE connections as consumers or charging point operators (CPO) will have little incentive to respond dynamically to conditions in the network, with consequences for system strength and reliability leading to increased costs to all end-users. As such, it may be appropriate to exclude the connection of EVSE to flat "anytime" retail tariffs. We consider that any discussion of default EVSE settings and more appropriate tariff development requires further consideration by industry and stakeholders with respect to enforcement and compliance settings, variations in tariffs between jurisdictions, and customer experience and protections. While we do not support the application of default settings, we are supportive of the installation of a smart meter and allocation of a cost-reflective network tariff before installation of an EVSE (where they do not already exist). This measure would facilitate a more comprehensive suite of tools for distribution network service providers (DNSPs), retailers, aggregators and others to better understand and coordinate EV charging, and would also facilitate a broader range of cost-saving and benefit-enhancing solutions for EV owners, and broader electricity user and system benefits. Further, the Queensland Electricity Connection Manual will be regularly updated to facilitate the integration of emerging technologies as they become available to the mass market, aiming to increasing customer choice without compromising local network security and reliability.
7. The ESB welcomes stakeholder views on the appropriate timing considerations to enable a roll out of minimum technical standards for domestic EV charging systems. Do stakeholders see other considerations that need to be taken into account to facilitate jurisdictional policy settings?	As noted in our response to question 1, in light of the expected rapid growth in EV volumes over the next few years, Energy Queensland supports a prompt implementation of minimum standards. Such an approach is expected to: • support a more equitable mid-term outcome where most EV users with EVSE are influenced by the same requirements • aligns with the relatively quick implementation of minimum standards related to solar PV which are now considered best practice, and

	• aligns with and takes advantage of government support programs for domestic EVSE. Australia can learn from the rapid uptake of solar PV and adopt and adapt the EVSE standards of other countries and regions relatively easily and before rapid increases in EV penetration compel urgent action.
8. What are stakeholder views regarding the potential costs and benefits of requiring consumers to participate in remote coordination capabilities for smart EV charging?	Energy Queensland considers that there are currently insufficient EV volumes in Australia to demonstrate the adverse impact of uncontrolled EV charging. However, the historical experiences of the rapid uptake of air conditioners and solar PV are useful examples to guide discussion and identify opportunities where value can be maximised with little loss of customer utility. Further, this has revealed the importance of preparing early for future disruptions. We agree with the ESB's statement "*[…]making smart charging easy and attractive for consumers will need to be at the heart of the design and implementation of smart charging policy*".[2] Consumers value their own personal utility over the interests of other users and the challenge for the industry is how to sufficiently engage with EV customers so that they understand the impact of their actions. As previously stated, we consider that participation in remote coordination of EV smart chargers should be the choice of the consumer, and it is the role of the market participants to develop offers which are attractive to customers to foster participation. To give consumers greater confidence, consumer protection frameworks such as the National Energy Customer Framework (NECF) should be extended to protect a consumer's ability to use their EV as a way of transport at any given time by ensuring sufficient level of charge.
9. What are stakeholder views in regard to the use of CPOs for residential charging? What are stakeholder views on which parties (Traders (retailers, aggregators), DNSPs, OEMs, other parties) should be able to take on the function of CPO?	Energy Queensland considers that it is unnecessary to mandate the existence or role of a CPO for controlling residential EV charging. The decision to engage with a CPO (or similar) should be left to the customer and it falls on CPOs to demonstrate the value of their approach to customers. In scoping such a role, we note the similarities with the traditional customer-retailer relationship and suggest the following elements should apply:

[2] Energy Security Board (2022), Electric vehicle smart charging issues paper, p23 - https://www.datocms-assets.com/32572/1658376992-esb-electric-vehicle-smart-charging-issues-paper-final-for-publication.pdf

Should the requirement for a CPO be mandatory?	• appropriate customer protections to govern the relationship • customers may churn CPO providers without 'lock in' contracts • the extent of remote charging controlled by the CPO can be adjusted by the customer (e.g. opt out of remote control charging on the weekend) • CPOs are monitored closely for compliance We acknowledge that the concept of a CPO appears to align with the Flexible Trader Model 2 recommended by the ESB in its Post-2025 Market Design Final Advice to Ministers[3] - i.e. a second financially responsible market participant (FRMP) behind the consumer's primary connection point. We note this function may be attractive to many participants, including EV vendors and Integrated Resource Providers.
10. What are stakeholder views in respect of the relevant and appropriate responsibilities that should be taken on by CPO: e.g., ensuring rate limits, customer support, etc?	As noted above, given the similarities with the traditional customer-retailer relationship, it is appropriate and equitable for the NECF to be extended to CPOs to capture the delivery of electricity services which impact a consumer's use of their EV. Exemption frameworks can then be used to refine the obligations for CPOs. We consider that key responsibilities for a CPO include: • ensuring appropriate and accurate charging rates • accurate and transparent billing and payments • managing ramping to avoid or limit the impact of increases in demand • controlling smart chargers in accordance with equipment standards to ensure safe operation, and • ensuring that the operation of the charger falls within the vehicle manufacturer's standards so that warranties with the vendor are not voided.
11. What functions would CPOs be required to perform on behalf of customers? e.g. off peak charging	Energy Queensland expects that CPOs will likely have a number of functions. From a customer perspective, we expect that CPOs will have a role in managing the rate and timing of charging, including taking advantage of low market prices or high availability of renewable energy, and potentially the SoC of the EV battery in

[3] Recommendation 7(a) of the Energy Security Board and endorsed by National Energy Cabinet

	accordance with customers' requirements or preferences. However, the functions of the CPO must be consistent with what has been agreed with the customer. From a network perspective, we expect that CPOs would manage charging activities to ensure they comply with changing dynamic operating envelopes published by DNSPs.
12. What obligations would be required by CPOs to ensure there are adequate protections for end consumers?	Given the similarities in the customer-CPO relationship and the traditional customer-retailer relationship, Energy Queensland considers that consumer protection obligations on CPOs should be built on, and be consistent with, the obligations on electricity retailers, i.e. the NECF. Although charging an EV through a CPO may be considered a non-traditional arrangement, we consider that this is still an interaction with a consumer and the NECF protections should be extended to these new energy products and services. As such, it is important that CPOs are obliged to clearly communicate to the customer how their EV charger will be operated by the CPO. CPOs should be expected to adequately communicate to participating EV owners the requirements on them, the structure of financial arrangements, what they should expect from participation, and contact and escalation channels. We note that there may be value in regulators providing guidance to CPOs and customers to promote clarity and understanding. For example, a form of a standard contract between a CPO and consumer for management of EV charging could include common features and clear customer information provisions. Further, CPOs should comply with the *Privacy Act 1988* (Cth) and cybersecurity standards and be registered with the Energy Ombudsman in their respective jurisdictions.
13. Should there be a minimum requirement to capture installation of EVSE, to assist with effective planning and operational management, similar to that already in place for solar?	Energy Queensland supports the development of minimum requirements to capture the installation of EVSE. In our experience, voluntary registration approaches are inadequate and of little value. Further, given EVSE take up will be low for some time, active engagement campaigns will be difficult to sustain over long periods. An approach similar to the requirements for other Inverter Energy Systems which features an application lodged with the DNSP, and approval, before installation, guarantees a minimum level of visibility of EVSE for DNSPs to assist with planning and operational management, thereby ensuring grid stability and reliable energy solutions. The Distributed Energy Resources Register and associated DNSP application portals are logical existing processes and channels to collect EVSE installation data. However, we recognise that EVSE

	(not including bi-directional EVSE) are not generators and therefore are not easily incorporated into the existing framework. As such, revision of these requirements will be required. Further, we also note that higher power portable Mode 2 EVSE up to 22kW supplied from industrial power outlets are not easily managed within smart charging requirements.
14. Are there any minimum technical requirements that should be considered for EVSE interoperability?	Energy Queensland offers no comment.
15. Do stakeholders have any views on aspects of cybersecurity for EV charging that are specific to Australia, or that would require a departure from European and/or US standards?	Energy Queensland acknowledges the growing importance of cybersecurity and considers that software security requirements are fundamental to protect EVs and EVSE from malicious control. As such, cybersecurity must be included in equipment planning and production to ensure 'security by design' based on international standards.
16. The ESB welcomes stakeholder views on barriers in existing regulatory and legislative frameworks that may be acting to limit the introduction of more advanced EV services such as Vehicle-to-Home (V2H), Vehicle-to-Grid (V2G), and Vehicle-to-Anything (V2X)?	As noted in the Issues Paper, the development of the bi-directional EVSE market in Australia has been slow, mainly due to being cost-prohibitive to most owners of V2G-capable EVs, and this will likely remain so for some time. Nevertheless, Energy Queensland recognises that V2G and other capabilities are exciting developments. However, at this stage we urge responsible communication in public-facing material to dispel the growing misconceptions in the market that all EVs have V2G capability, and that specialised charging/discharging equipment is not required. We are unaware of any new EV models with V2G capability due to be released in Australia over the next 12 months, and as a result, we expect their market share to fall below five per cent in 2023, before rising steadily from around 2025 (provided V2X capability (including ISO15118-20) is incorporated). We have no data to suggest that this market composition would be materially different on a national basis.
17. The ESB welcomes stakeholder views on the issues raised in respect of residential charging, including whether there are further issues that should be considered?	Energy Queensland acknowledges that there are significant benefits to all parties by considering EVSE as part of a larger, interrelated system which includes solar PV systems, BESS, tariffs, remote management, and standards. Open discussions and collaborations among stakeholders and the development of innovative initiatives are necessary to break inertia, spread costs and value and unlock the potential of this technology.
Questions on public EV smart charging	

18. What are stakeholder views on the use of technology specific tariffs, approved by the regulator, but operate under different metrics. Would there be any unintended consequences of introducing EV CPO specific tariffs?	Energy Queensland recognises that the development and expansion of public charging infrastructure is a key element in the expansion of EVs. Energy Queensland believes it is not appropriate "for networks to take the volume risk"[4] by providing a simple volume tariff to all CPOs. Such an approach would not reflect the true costs to the networks and additional costs would be borne by all other users. However, we recognise the importance of enabling the development of a sustainable and equitable model for the CPO industry and we remain ready and willing to play a constructive role – with regulators, governments, our customers and other stakeholders – in exploring new business models and tariff structures as the market and technologies evolve.
19. What measures might be helpful to consider to streamline the connections process for public charging infrastructure?	Energy Queensland offers no comment.
20. Aside from the grandfathering issues for existing equipment, are there any other metrology issues concerning public charging that should be considered?	The fundamental purpose of metering is to inform accurate billing. If measurement approaches must evolve with the transition to EVs, this process must be transparent to ensure public confidence in public charging.
21. What mix of arrangements might facilitate flexibility in charge-point pricing to encourage more drivers to charge during times of excess renewable energy?	Energy Queensland offers no comment.
22. What do stakeholders view to be important considerations for ensuring protections are fit for purpose for consumers using public EV chargers with regard to payments and any associated disputes?	Energy Queensland considers that charging an EV at a public charging station should have similar standards of convenience and transparency as refuelling at a traditional service station. Information requirements and payment methods should be clear and standardised to avoid consumer uncertainty and facilitate a similar customer experience. Further, measurement and invoicing should be clear and easily understood.
23. The ESB welcomes stakeholder views on when they consider the issues associated with roaming might become a policy issue to address in Australia?	Energy Queensland offers no comment

[4] Ibid, p29.