



Energy Security Board (ESB)

Sent via email: info@esb.org.au

17 November 2022

Dear Energy Security Board team

Energy Security Board (ESB) Interoperability Policy for Discussion – Directions Paper

Tesla Motors Australia, Pty Ltd (“**Tesla**”) welcomes the opportunity to provide the Energy Security Board (ESB) with feedback on the “Interoperability Policy for Discussion – Directions Paper”.

Interoperability is an important topic and becoming increasingly important as more and more states and networks are looking to adopt dynamic or flexible exports. We appreciate the starting position from the ESB recognizing that these are customer assets with the statement up front that the customer benefits are driven by allowing customers to take up “different products and services *where they wish to*”. Maintaining an opt in approach for customers in any smart service that they may offer from their distributed energy resource (DER) is critical as many customers are installing home solar and storage for their own self consumption benefits – particularly as electricity and gas prices continue to increase.

However, it must be acknowledged that in designing the lowest cost “step change” scenario, AEMO has assumed that ~60% of the market storage requirements will be met by orchestrated DER. Therefore, it is critical that the market continues to evolve so that customers **want** to participate in aggregation or orchestration schemes because it is financially attractive for them to do so. It is also critical that the approach taken to interoperability and developing flexible export arrangements is developed in a nationally consistent manner that does not interfere with the ability of DER to participate in markets.

There are a number of governance issues that still need to be addressed before the ESB recommends mandating CSIP-Aus. While it may be technically feasible to expect that inverter systems are set up to be “flexible export ready”, it does not address many of the underlying points considered by the ESB:

- It does not address the lack of clarity on roles and responsibilities that exist in developing, implementing and enforcing DER standards, particularly new DER standards that potentially have an outsized impact on customer utility of assets.
- While it provides a common language, mandating CSIP-Aus does not ensure that all NSPs will adopt a common approach to introducing flexible exports or dynamic operating envelopes (DOEs).
- The business case for mandating that all “embedded generation”, rather than just solar inverters has been well made. It will be critical that different asset types are given different considerations (see point below as a related point).

- It will not ensure that network requirements are developed in a way that are consistent with market integration of DER.
- It does not address all of the remaining governance concerns specific to the expectations on the development of DOEs and/or flexible exports.

To this end, rather than mandating that assets are “flexible export capable” in accordance with CSIP-Aus, we recommend that ESB revisits a version of the original governance of DER technical standards rule change that was put to the Australian Energy Market Commission (AEMC) in 2020 – specifically the development of a body responsible for the development, and enforcement of, DER technical standards.

This body could be any of:

- A new body, specifically set up for the development of new DER technical standards.
- New functionality given to the Australian Energy Market Operator (AEMO) with associated legislated oversight.
- New functionality given to the Clean Energy Regulator (CER) with additional regulatory oversight.

It will be critical that this body addresses some of the key gaps highlighted in the roles and responsibilities review below.

Review of roles and responsibilities and improved governance of setting DER standards

Tesla appreciates the overview of the different bodies that the ESB has provided in the Directions Paper, but the summary misses some key areas in respect of the “regulation and governance of DER technical standards”.

As noted by the original ESB Rule Change¹ to AEMC on the need for improved DER governance, technical rules for DER are set by seven different bodies – not just the AEMC. Currently DER are required to comply with rules or requirements set by:

- The AEMC (noting that even though “DER technical standard” is defined in the National Electricity Rules, there is no definition of “DER”)
- State Government legislated requirements (i.e. SA Smarter Homes Regulations)
- NSPs through their connection standards
- Australian standards as called up in state electrical legislation
- AEMO requirements for market participation
- State based incentive schemes (i.e. Solar Victoria specific requirements)
- Federal incentives (i.e. STCs)

Tesla has provided a visual of the governance and regulation approach from a residential customer buying solar and a battery system through to that system being registered for market services (see **Attachment A**).

¹ https://www.aemc.gov.au/sites/default/files/documents/210806_erc0319_rrc0040_rule_change_request_pending.pdf

This raises a number of issues. The DER sector is both significantly over-regulated, while a number of key gaps exist that are not filled by any of the agencies mentioned above. More importantly, there is no single agency that is responsible for ensuring the work is done in a compatible manner.

Introducing a separate body that has national oversight of the development of new DER standards (related to interoperability or not) would reduce the risk of new requirements being developed in inconsistent manners.

Compatibility with market services

National consistency, and technical oversight is particularly important to ensure that new DER standards and requirements are not developed in a way that undermine the market integration potential of DER.

An example of this is the recently proposed Energy Queensland requirement to include third party ripple control devices on all inverters that will force the device into DRM0 mode, switching if off. Having a third-party device capable of switching off the inverter at any point in time effectively makes it impossible for that system to provide market services because compliance cannot be guaranteed. If a frequency event coincided with an “emergency backstop event” that system would be non-compliant for market purposes and subject to action from the Australian Energy Regulator (AER) for breaching obligations under the National Electricity Rules (NER).

All work done on interoperability needs to provide further guidance on the prioritisation of different services and create a suitable exemption framework for assets providing critical grid services etc.

National CSIP-Aus mandate for “flexible export ready” installations

General comments

In respect of the ESB recommendation to mandate “flexible export ready” installations of DER by 2024, Tesla makes the following general comments:

- It is technically feasible to expect the majority of **solar inverters** in the market to be “flexible export” ready by mid-2024 since the current compliance requirements in South Australia commence a year before. We note that this compliance date has been pushed back to 1 July 2023, not 1 December 2022 as referenced in the ESB Discussion Paper, due to industry challenges in meeting compliance timelines.
- AC coupled batteries will need more consideration. Currently South Australia only has battery compliance commencing March-24, and this is potentially subject to change as battery specific considerations are worked through. A major part of this consideration should be considering the cost benefit analysis of including batteries as flexible export assets. The primary reason for developing flexible exports is to improve network hosting capacity for new DER. More work should really be done on the incremental benefits of improving hosting capacity from batteries being “flexible export capable” above and beyond solar systems. Particularly where those batteries are providing self-consumption services to end use customers.
- Establishing a proper governance framework to manage coordination and national consistency in how flexible exports are introduced and ensuring that they do not interfere with market integration of DER should be the first priority and progressed before anything is mandated.

Tesla has included a list of principles for new DER standards development particularly in respect of interoperability at Attachment B.

Implementation model

As above, national consistency is critical in managing interoperability. While putting an obligation on NSPs to use CSIP-Aus is a starting point, it by no means ensures that DOEs or flexible exports will be deployed in a consistent manner. There are still a number of different ways that CSIP-Aus can be interpreted and introduced by NSPs which may lead to the following inconsistencies:

- Different platform providers can be used by every NSP.
- Every NSP may choose different implementation methods (i.e. gateway integration, cloud integration, native device level integration).
- DOEs may be sent to the primary connection point, a child connection point (in order to be compatible with the AEMO flexible trading arrangements), or to the inverter (see native inverter integration above).
- Different elements of CSIP-Aus might be adopted. For example the Energy Queensland [SEP2 handbook](#) uses CSIP-Aus to enable both import limits and generation limits, as well as export limits.
- Different asset types that could be included (i.e. electric vehicle (EV) charging infrastructure)
- Different approaches to behind the meter interoperability might be mandated.

In addition to all of the above, the ESB proposed timelines will likely precede CSIP-Aus work being done by Standards Australia, so there will not be a consistent test framework and the NSPs will be free to choose their own testing approach. Regardless of CSIP-Aus forming the basis of frameworks developed by the NSPs, they still might be developed in widely varied manners that make it expensive and administratively burdensome for OEMs to continue to supply products in all Australian jurisdictions.

Governance gaps

Before CSIP-Aus is adopted and dynamic operating envelopes become the default there are a number of outstanding governance points that need to be considered. We understand that the AER is undertaking a related piece of work with a “Flexible export limits issues paper” consultation, and will reiterate these points in more detail in our response to them.

1. What are the minimum service levels that customers can expect and how is capacity allocated across customers?
2. What is the cost benefit of including flexible import or flexible generation in NSP DOE connection agreements? Mandating CSIP-Aus compliance will enable any NSP to introduce these requirements into flexible connection standards, even though there has been no cost benefit considering the customer impacts vs value of introducing requirements beyond flexible exports.

3. The threshold requirements for new NSP investments, compliance obligations and expectations on reporting and transparency (i.e. how will the AER measure success within an NSP jurisdiction and in comparing one NSP against another).
4. Allocation of capacity across customers including whether there is a higher preference for capacity that is scheduled by AEMO under the proposed scheduled lite arrangements.
5. Interaction with market services – both existing and proposed (Scheduled Lite and Flexible Trading Arrangements).

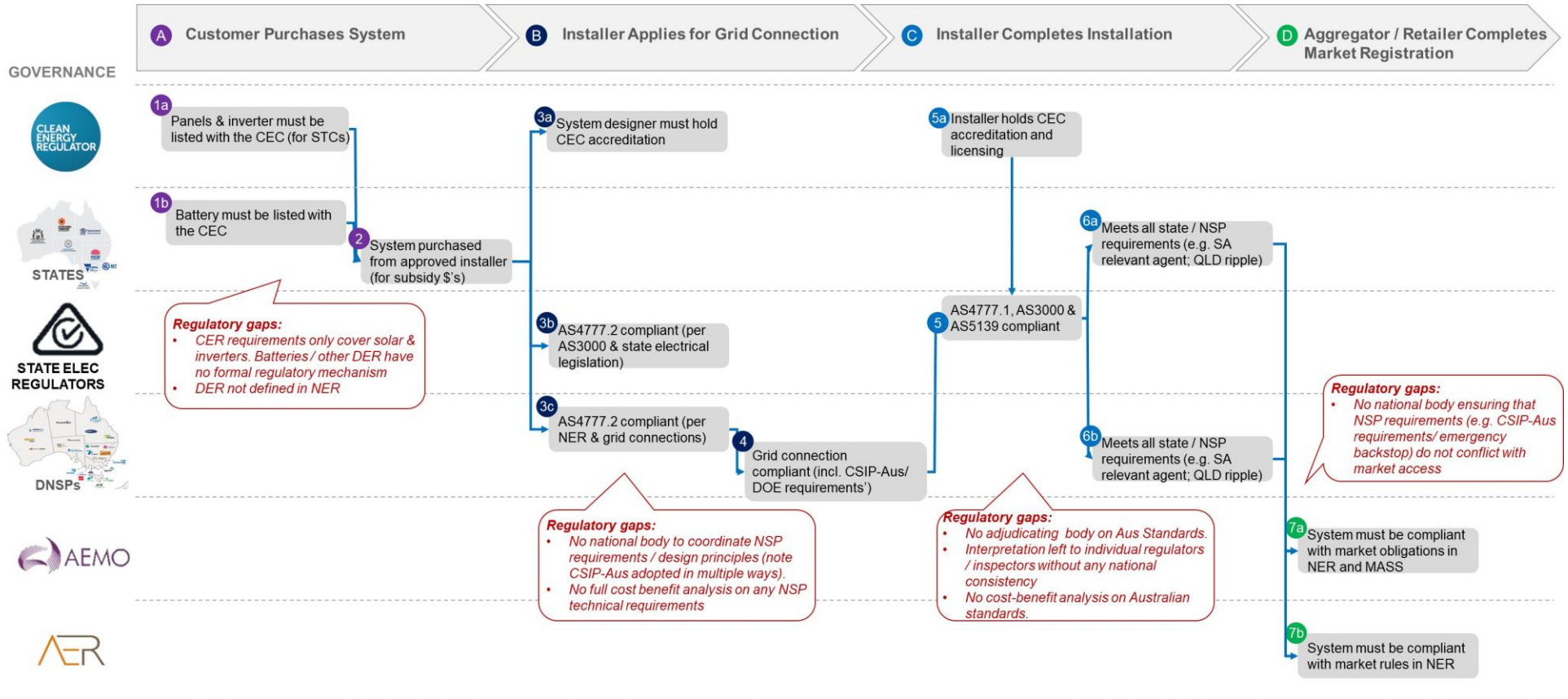
Tesla looks forward to supporting the ESB in the continued work on DER governance.

Yours sincerely,



Emma Fagan
Head of Energy Policy and Regulation | Tesla

Appendix A – DER regulatory flowchart



Appendix B – principles for new DER standards development

1. Need for national consistency for dynamic operating envelopes, interoperability and other DER standards that are developed

- Lack of consistency in standards development results in OEMs and aggregators developing jurisdictional specific platforms. This adds cost and complexity that will be passed through to consumers.
- A lack of consistency within states will create even greater issues. Aggregated DER participating in markets do so on the basis of a single registration per state. Trying to manage multiple NSP frameworks across a single market registration will be difficult, if not impossible, and will create significant disincentives for DER to be orchestrated for market purposes.

2. Product standard development needs to be used to solve clear market or network needs following a cost benefit analysis and with transparent and open consultation

- This process will ensure that all alternatives to solve market or network concerns are considered.
- It also provides transparency and a cost/benefit trade off to customers where their DER is used to solve for market or network issues.
- Interpretation of standards/ enforcement of standards
- Higher quality requirements on “traders”

3. There needs to be a focus on the broader compliance framework as well as product compliance

- This work should be broad and consider:
 - i. Installer and product retailer training and expectations.
 - ii. Registration requirements for aggregators and any third parties with direct relationships with customers to increase accountability and provide AEMO with more visibility on participating entities.
 - iii. Governance frameworks for NSPs considering how interoperability and solar curtailment requirements are being used.

4. Interoperability cannot be explored without concurrent work on customer protection frameworks

- There are a number of customer protections that need to be considered in respect of interoperability that have not yet been developed.
- With a focus on enhanced orchestration of customer owned assets, customers need to be provided with choice, and suitably protected.

5. Network developments such as DOEs must be compatible with DER market integration and VPP development

- It will be critical that dynamic export agreements are developed in a way that does not impact on the ability of DER to participate in markets. This includes consideration of:
 - i. Prioritisation of services and exemptions for grid/ critical market services.
 - ii. Management of non-compliance risks where assets are controlled by a party who is not the registered market participant.