Energy Security Board

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Dear Energy Security Board

Energy Security Board – Moving to a two-sided market

Tesla Motors Australia, Pty Ltd (Tesla) welcomes the opportunity to provide the Energy Security Board (ESB) with a response on the "Moving to a two-sided market – Consultation paper" (Consultation Paper).

Tesla strongly believes that distributed energy resources (DER) will play a critical role in the future of Australia's energy supply mix. Residential solar and increasingly home storage systems are increasingly participating in energy markets as virtual power plants (VPPs). As electric vehicles become more common, charging infrastructure will also be able to provide frequency and load balancing services.

We agree with the majority of the key features of a two-sided market outlined by the ESB – particularly in respect of the importance of customer choice and creating obligations on services/ activities rather than on specific participant categories.

We also agree with the principle of linking with the ahead market design work. At this juncture it is key that any broader market development work that is undertaken considers that DER will be actively participating alongside utility scale assets.

However, it should not be a starting assumption that all entities trading in the wholesale market need to be scheduled. This immediately creates a divide between utility scale assets (which can be non-scheduled, semi-scheduled or scheduled) and DER. A level of control, dispatchability and market visibility is absolutely critical, however consideration needs to be given to whether this requires scheduling or an alternative mechanism. Further, we would expect any scheduling of DER to be considerably different to scheduling of utility scale assets so as not to impose prescriptive costs.

To support the continued shift to a two-sided market, Tesla believes a two-fold approach is needed:

- Continued market development and valuation of the services that can be provided from DER.
- Structural regulatory changes to better enable DER to provide these services once markets are in place.

These two pieces of work need to be undertaken concurrently in order to fully support the transition to a two-sided market. More information on both the market reform elements and the structural changes required are outlined below. Our views on the work needed for continued market development support, as well as the work on structural reform is included below. For more information on any of the information included in this response, please contact Emma Fagan (efagan@tesla.com).

Kind regards

Emma Fagan

Head of Energy Policy and Regulation

Market development

To support a long-term shift to a full two-sided market, it is critical that there is a near term focus on proving out the capability of DER to provide services in existing markets. Work also needs to occur on proving out the capability of DER to provide new services, and most importantly work needs to occur on establishing the value of these services. As a general rule, Tesla believes that the highest value work-streams are those that incorporate physical trials to demonstrate system capability and influence market design.

The Consultation Paper lists a number of work-streams that are currently underway:

- The Wholesale Demand Response Rule Change
- The Australian Energy Market Operator (AEMO) VPP trial
- The Open Energy Networks work

Of these pieces of work, the Open Energy Networks piece needs to progress significantly to provide value to the Two Sided Market transition. The provision and valuation of network services, and optimising these with energy and frequency market participation is a critical piece of work, and the Open Energy Networks work is needed to support this.

While work has been done over the last 24 months on high level design elements, there has been little work done on the network services that may be provided. For this work-stream to be effective it needs to move beyond desktop consultation into trial phase as a matter of priority. There is also a lack of clarity for industry on the next steps.

Separately we note that the current form of the Wholesale Demand Response Mechanism will need to evolve to provide valuable insights for the two-sided market transition. It is currently limited to large loads (or DER) only, and assets are treated as scheduled loads. This is not a model that will support the participation of most DER assets into in existing or emerging markets.

The AEMO VPP Trial provides a good example of how rapidly shifting from consultation into physical trial form provides valuable market insights. The technical capability to provide a wide variety of services already exists. However a structured trial framework is required to demonstrate the value and potential of DER in providing these services. “Learning by doing” also provide valuable insights into structural regulatory changes required, which often cannot be gained from desktop consultation alone.

Structural considerations

In addition to the continued work on market development, it is critical that the shift to a two-sided market considers structural changes to the existing asset treatment under the National Electricity Rules and associated regulatory environment. This includes consideration of the following elements.

Bi-directional energy flows:

- Any two-way market integration should be managed at the customer connection point and consider energy in and energy out. This allows sites to take advantage of controllable loads – such as EV charging infrastructure, as well as generation and controllable bi-directional assets. This allows for better use of assets at all times – including when generation or storage is not being used to serve customer load.
- We note that the most recent Wholesale Demand Response Mechanism draft rule change considers the inclusion of the export of energy from generation located behind the meter. This is a great step towards two sided markets.
- The AEMO VPP Demonstrations Trial, and subsequent finding released in December 2019[1], addresses a similar issue with the development of the market ancillary services provider (MASP) and ancillary services load classifications.

[1] https://www.aemo.com.au/-/media/Files/Electricity/NEM/Participant_Information/New-Participants/Interim-Arrangements-for-FCAS-from-DER.pdf

- Under these classifications, assets were anticipated to provide frequency control ancillary services (FCAS) on the load side only. The AEMO VPP Trial enables bi-directional assets to participate on both the load and generation side.

Full market optimisation:

The best market outcomes will be achieved where assets are fully co-optimised. Ideally a two-sided market should enable co-optimisation across both energy (generation and load side) and frequency services (generation and load side). This should also capture any future markets that are developed, particularly in respect of network services.

Single connection point and multi-party trading relationships

A key design feature of two-sided markets will require consideration of the number of connection points required for DER to actively participate in markets.

Under the current regulatory environment, DER can only participate in the wholesale energy markets under the Small Generator Aggregator (SGA) classification. This requires two separate connection points. For the vast majority of residential customers, maintaining two separate connection points is not a feasible option. There is a high cost associated with setting up a separate connection point, and it raises a number of other issues such as whether to locate associated solar PV and storage behind the EV connection point, or the customer load connection point. As such, the SGA framework is highly unlikely to be a successful mechanism for the majority of DER. This is evidenced by the lack of SGA offerings currently available for any other behind the meter residential asset.

The alternative approach to multi-party trading relationships is to enable customers to maintain more than one relationship behind a single connection point. This would reduce customer cost and energy flows, and frequency responses, and can still be managed through appropriate metering (see point below).

We note that many customers will only wish to maintain a single relationship behind their connection point, however enabling multi-party trading relationships will improve customer choice, and better allow for the development of new business models. This innovation has been clearly demonstrated for VPPs, particularly in South Australia, where a range of retailers, technology providers, and aggregators are partnering, competing and iterating on customer propositions. By streamlining the SGA framework in a way that further simplifies and minimises costs for all parties, this innovation will be vastly accelerated once EVs are integrated into the energy market.

Metering requirements:

Related to the point above, all work done on developing two-sided markets and looking further at multi-party trading relationships, should also consider the current metering requirements of the National Measurement Institute and the *National Measurement Act.*

Under the Act, all meters used for trade must be of a basic standard, which is the National Measurement Institute's pattern approval. Pattern approval is mandatory for measuring instruments used for trade in Australia and the National Measurement Institute is responsible for evaluating measuring instruments to ensure they meet Australian standards.

While it is critically important that meters used for any kind of customer trade are fit for purpose in respect of accuracy of measurement, the relevant data-points for new energy market services are increasingly capable of being delivered by asset level devices (such as the Tesla Powerwall Gateway). Considering whether the *National Measurement Act* should be reviewed to better enable assets to directly provide this data will be an important enabling factor in the development of two-way markets.

The current process for gaining pattern approval for new meters is cumbersome and time-consuming, and the process should be reviewed to focus more on outcomes and meeting all requirements of the National Electricity Rules chapter 7. The process for obtaining pattern approval should be reviewed and streamlined to encourage more suppliers to go through the process, and create more customer choice.