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Australian Energy Market Commission
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Dear Declan

ERC0247: Wholesale Demand Response Mechanism – Draft Determination

Tesla Motors Australia, Pty Ltd (Tesla) welcomes the opportunity to provide the Australian Energy Market Commission (AEMC) with feedback on the Wholesale Demand Response Rule Change.

Tesla is supportive of the approach that the AEMC has taken, and the establishment of a new Demand Response Service Provider (DRSP) market classification.

It presents a major step towards recognising that the future of the NEM needs to be managed by both flexible generation and flexible load. As the AEMC notes, these benefits include the adjustment of consumption during scarcity of supply, and providing a low cost controllable resource option to correct the supply demand balance. As technology available to energy consumers continues to improve, then we would expect to see more active participation from the supply side, on a dynamic basis.

While we support the proposed rule change, and principles set out in the Draft Determination, Tesla has the following suggestions for the AEMC to consider:

- **Smaller energy consumers –** we would suggest that the proposed 1 July 2022 start time provides an adequate amount of time to manage customer protection issues, to allow smaller energy customer to participate from commencement.
- **Optimisation:** Optimisation of assets across different markets will continue to be critical for creating the most efficient market outcomes. There is still scope for improved optimisation for all distributed energy resource (DER) assets, including controllable loads.
- **Scheduling:** Tesla supports scheduling large controllable loads, but there are a number of factors to consider in making sure this requirement is designed appropriately.

More detail on each of these three areas is included below. For more information on Tesla's position on any of the matters discussed in this submission, please contact Emma Fagan at (efagan@tesla.com).

Kind regards

Mark Twidell

APAC Director – Energy Products

Small energy consumers

Tesla believes that a start date of 1 July 2022 should provide sufficient time to develop an approach that allows small energy consumers to participate from the operational commencement date of the demand response mechanism.

The inclusion of smaller energy consumers is a matter of customer choice and should be based on the ability of assets to respond as controllable load below a customer's baseline. The technical capability of this response is not limited to large-energy users. The AEMC notes that a key outcome of the proposed rule change is "promoting consumer choice and competition."[1] This principle should apply to all energy consumers in the NEM. A number of smaller energy consumers will likely prefer to manage only a single relationship with their electricity retailer. However, smaller energy customers (including small business and residential customers) should also have the option of establishing a relationship with both a retailer and a DRSP.

Limiting participation to large energy customers may also inadvertently exclude a number of new technology types. Stand-alone EV charging infrastructure – for instance, would be unlikely to fall within the threshold of large energy users, and would not be able to participate. Across US markets, aggregated electric vehicle charging infrastructure assets are already actively participating in day ahead markets.[2]

We agree with the AEMC that customer protections are a critical element to address in opening the scheme up to small energy consumers. A single DRSP creating a poor customer experience will have negative implications for all prospective DRSPs.

It will be critically important for consumers to have full access to a suite of customer protections. These include, but are not limited to the following:

- **Baselines** – baselines must be set in a manner that doesn't result in customers paying more for their electricity. The Australian Energy Market Operator (AEMO) Virtual Power Plants (VPP) Demonstrations Project has released a detailed Data Specification[3] that will result in AEMO being able to access dynamic data available from DER assets participating in a VPP. Given the timing of the WDR rule change, there could be sufficient scope to assess whether this approach could form the basis of establishing baselines for small energy consumers.
- **Customer education/ information** – as with all new energy products and opportunities offered to energy customers, it will be important that customers have all the relevant information to assist with them making an informed choice. DRSPs should have a minimum set of requirements in respect of what information they provide to small energy consumers.

We believe that there is scope to assess and work through all relevant customer protections required to include smaller energy consumers in the wholesale demand response rule change process prior to 1 July 2022.

We note that there are mechanisms that could be used to provide additional protections to consumers – the New Energy Tech Consumer Code, for instance. Similarly the work programs of both the Distributed Energy Integration Program (DEIP) and the Energy Security Board (ESB) DER work program, could play a coordination role in working through customer protections that are needed, regulations that require changing, and timelines for adoption.

[1] AEMC Draft Determination, Pg. 52
[2] https://www.greentechmedia.com/articles/read/emotorwerks-wholesale-markets-ev-charger-network#gs.2kjf6e
[3] https://www.aemo.com.au/-/media/Files/Electricity/NEM/DER/2019/VPP-Demonstrations/VPP-Demonstrations-Data-Specification.pdf

Optimisation and alignment with other work programs

A fully developed two way market will benefit significantly from bi-directional resources such as battery energy storage. These assets are designed to participate on both the load side and the generation side, and be optimised across energy and frequency control ancillary services (FCAS) markets.

We recognise the work that the AEMC has done to allow for energy and FCAS market participation on the load-side by combining the new DRSP classification with the existing market ancillary services provider classification (MASP). This is a positive step towards optimisation taken by the AEMC, however Tesla has several clarifying questions in respect to this:

- How will this impact on bi-directional generation assets that would have previously looked to register as an SGA to provide energy on the generation side, and a MASP to provide FCAS on the load side?
- How will the baselines interact with DRSPs who also register their assets as ancillary services loads? Optimising assets for frequency market participation will distort a customer's rolling load profile and baseline. Where assets are also being used to provide FCAS, it will be important that customers are not inadvertently penalised. Alternatively, if a DRSP elects to only register their aggregated assets as ancillary services load, do baselines apply?
- How will this interact with the AEMO VPP Demonstrations Trial? The AEMO VPP Demonstrations Trial currently limits participation to either market customers, with assets registered as ancillary services load, or to MASPs. We note that the timing of AEMO trial is stated to be 12 months with a discretionary extension. In the event that the trial is extended, the AEMC and AEMO will need to consider how, and if, DRSPs can participate.

As noted while this is a positive step towards optimisation it will not fully allow for optimisation of bi-directional assets. At the moment no market classifications allow for full optimisation of behind-the-meter resources, where these resources are made up of a mix of controllable generation and controllable load. AEMO is seeking to address some of these issues through the VPP trial which will address the load side limitations on aggregated behind the meter assets to provide FCAS, by allowing these assets to participate on the generation side also.

The WDRM rule change will result in the same limitations for bi-directional resources. Under the current arrangements, prospective third party aggregators are left with the following market classification options:

1. **Load side participation:** register as a DRSP to participate in wholesale energy markets and FCAS (where the aggregated asset base is also registered as ancillary services load).
2. **Generation side participation:** register as Small Generator Aggregator (SGA) to participate in only energy markets.

As a result energy consumers with bi-directional assets and a relationship with a DRSP, will receive wholesale market value for their load reduction, and a fixed feed-in-tariff (where appropriate) for their grid exports. As Tesla noted in our previous response to the AEMC in December 2018 –

> "if a participating [business was closed for a period], thus using only minimal electricity from the grid, but also had an existing solar and BESS assets, these assets would sit idle, rather than be used for export back to the grid in response to price and peak demand signals. This approach seems counter to the AEMC's aim of creating a combination of least cost resources, and does not create good market outcomes for either the customer or the DRSP."

While we understand that this is not the formal subject of this rule change request, it is an important area to be addressed.

Noting the many and varied work-streams underway currently, we would encourage the AEMC to undertake a review within the next 12 months, on optimal market participation categories for DER looking at both

controllable load and controllable generation. This work can build on the AEMO VPP Demonstrations Trial work, and the development of a bi-directional resource category under a rule change put forward by AEMO.

In this review we would suggest that the AEMC looks to any international examples where full optimisation is an operational reality. For instance, the New England ISO, "Price Responsive Demand" mechanism, allows third party aggregators to participate in all markets[4].

Scheduling of assets

While we agree with the rationale of the AEMC put forward in respect of the need for DRSPs to take part in central dispatch, the current generation dispatch arrangements are not fit for purpose for aggregated assets, and there will need to be work done by AEMO to set up appropriate processes.

The AEMC notes the position that AEMO has taken in respect of requiring that all battery energy storage assets above 5MW register as scheduled generators and scheduled loads. This forms the basis of the rationale that demand response units should be scheduled.

This position is not entirely consistent with the AEMO's position on battery storage assets. The current 5MW threshold for storage to register as scheduled generation assets and scheduled loads applies to individual assets only, however in this case, the AEMC has suggested that this should apply equally to aggregated loads cumulatively totalling more than 5MW. We note that AEMO has not yet taken a position of the scheduling requirements of aggregated DER.

There are several areas that require further consideration as this develops:

- Receiving dispatch targets. As the AEMC notes, receiving an automatic generation control (AGC) signal via a SCADA link, is not going to be readily available at the distribution level in most instances. While aggregated assets are able to respond in aggregate to AGC signals, as Tesla has previously demonstrated[5], this is not an approach that has been adopted to date. The AEMO VPP Demonstrations trial is limited to contingency FCAS, where aggregated assets respond autonomously to frequency fluctuations, rather than providing regulation FCAS services, which requires a co-ordinated response to a single AGC signal.
    - We suggest that AEMO should consider the most appropriate mechanism for dispatching aggregated assets, based on the cost-effectiveness of the solution for the market more broadly, and for DRSPs. We note that the AEMC has allowed for some flexibility in setting out the best approach for dispatch, by not specifying the granularity of response time.
- More clarity will also be required on the following: 1. Is there a maximum individual demand response unit size that can be included in an aggregated portfolio (for instance individual demand response units of >10MW must be registered separately)? 2. Is there a minimum individual demand response unit size that can be included in a portfolio? This question will be pertinent if the mechanism is expanded to smaller energy consumers from commencement date.
- Are aggregated portfolios <5MW treated as unscheduled?

The AEMC also notes that causer-pays factors should be applied to DRSP who deviate from their dispatch target. Again, Tesla supports this in principle, and thinks it is a critical step in treating demand response as equivalent to generation. However, this approach will also need to take into account the comments on dispatch targets noted above.

[4] https://www.energy-storage.news/news/breakthrough-moment-us-residential-solar-plus-storage-to-provide-20mw-capac
[5] https://www.energynetworks.com.au/sites/default/files/tesla.pdf