Australian Energy Market Operator (AEMO)

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15 July 2022

Dear AEMO team

**AEMO Scheduled Lite Consultation Paper – Tesla Response**

Tesla Motors Australia, Pty Ltd (Tesla) welcomes the opportunity to provide the Australian Energy Market Operator (AEMO) with some feedback in respect of the "Scheduled Lite Consultation Paper" (the Consultation Paper). Tesla is fully supportive of work done to increase the distributed energy resources (DER) in the system that are active or orchestrated rather than passive.

Encouraging the transition to more orchestrated DER will require significant ongoing work over the coming years. Tesla acknowledges that increased visibility, and access to data, will be an important piece of this work. Equally important will be the impact on, and benefit to, consumers. While historically energy and system security services have been provided by large, utility scale assets, these services are increasingly being provided by consumer-owned resources (referenced as consumer energy resources (CER)) in the Consultation Paper. AEMO has therefore, rightly, considered the key question as being how customers can be properly incentivised to provide increased visibility and control over their systems.

Tesla's feedback below considers the practical elements of participating in both Scheduled Lite models, as well as the proposed incentive structures. We recognise that this Consultation Paper is an early step in a significant work program, and we are happy to support AEMO in the continued development of this work over the coming years.

For more information on any of the content included in this submission please contact Emma Fagan (efagan@tesla.com). Tesla is happy to support with all stages of the development of this work.

Kind regards

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**Discussion on participation elements**

The below table provides some high-level feedback on each of the design elements proposed by AEMO in the Consultation Paper.

| Participation element | Tesla feedback |
|---|---|
| Voluntary participation supported by an incentive framework and an "opt-in" model. | Tesla is strongly supportive of any scheduled lite mechanism being developed for use on an "opt-in" basis. While we support all work done to encourage greater participation by customers in virtual power plants (VPPs), Tesla also believes that customers should have full choice regarding whether they participate in a VPP or whether they use their DER for their own self-consumption purposes. |
| Flexible participant registration in accordance with the National Electricity Rules (NER) registration framework | Tesla is supportive of this approach and limiting participation to registered market participants. We would encourage AEMO to use the same aggregation approach as is currently used for FCAS registration where hundreds or potentially thousands of NMIs and customers are aggregated. It will not be feasible to register individual assets.<br><br>We do, however, support AEMO's proposal to streamline the current, manual registration process and look at options for adding or removing sites from a bidding list via API. |
| Classification and zonal aggregation of resources into Visibility Units or Dispatchability Units, based on which model a Trader is opting into. | Tesla is not supportive of zonal aggregation.<br><br>The current aggregation and registration model of limiting aggregated units by state works effectively. Further zonal limitations will add cost, operational complexities, and registration inefficiencies (i.e., meeting a 1MW minimum registration threshold on a zonal basis is more complicated than meeting the same requirement on a state registration basis).<br><br>As dynamic operating envelopes are developed, it may make sense to apply some zonal considerations however there is much uncertainty regarding how these will be developed in the future, and pushing for a new, zonal aggregation approach now does not provide any value. |
| A minimum aggregated capacity threshold enabling Traders to 'graduate' from Visibility into Dispatchability when their portfolio reaches an appropriate size. | It may be confusing to have additional registration thresholds linked to total capacity requirements.<br><br>The simplest way to implement "Scheduled Lite" will be to allow aggregators to opt into either the visibility or dispatchability models provided they have a minimum 1MW of capacity. |

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| | It is most likely that aggregators will only opt into the "Dispatchability Model" when the MW capacity that justifies the increased cost and complexity associated with this model.<br><br>Notwithstanding this feedback, if AEMO does introduce an additional threshold then the proposed 5MW is the most sensible as it aligns with the current registration threshold requirements for utility scale storage. |
| Self-management of aggregated resource portfolios, with automated re-aggregation of resources where required by constraints or changing zonal boundaries. | As above Tesla does not support a shift to zonal aggregation. Zonal aggregation is creating challenges in other jurisdictions that AEMO has so far managed to avoid. We would not recommend adding additional, unnecessary complexity to an emerging area. |
| Flexibility in participation models, with optionality around whether (and how) flexible DER resources are separately traded in accordance with flexible trading arrangement models | Tesla supports flexibility.<br><br>Ultimately to decision to participate, or not, will be driven by the attractiveness of the incentives associated with participation. Feedback on this is provided in more detail below. |

**Visibility Model**

AEMO's proposed visibility model appears to be relatively simple to implement, based on the information provided. We note that the proposed visibility model largely mirrors the API integration used by VPPs participating in the AEMO VPP Demonstration Trial, so it is somewhat disappointing that this API was not just maintained. Tesla is supportive of AEMO's desire to increase DER visibility, however the stop-start nature of looking to increase visibility adds cost. VPPs that were participating in the AEMO Demonstration Trial will effectively incur twice the expenditure and need to spend double the effort in reintegrating with the AEMO API, than would have been expended had the VPP Demonstrations Trial API not been decommissioned.

For this reason, we are not supportive of the proposal to link the visibility model with contingency FCAS market access. This should certainly be encouraged, but should not be a mandated requirement, noting the efforts that have already been made in this space, and AEMO's decision to decommission a functional API that was already providing the level of visibility.

In respect of forecasting bids, the AEMO VPP Demonstrations trial also provided some valuable insights in respect of the challenges associated with providing accurate forecasts. These challenges were largely due to participants needing to forecast customer load as well as generation. For the purposes of progressing with the Scheduled Lite Visibility Model, Tesla would recommend limiting forecasting requirements to controllable load/ generation and using existing AEMO processes/ forecasts for passive solar generation and non-controllable customer load. Tesla encourages AEMO to work with participants in the VPP Demonstrations trial to better understand the challenges associated with accurate DER and VPP forecasting and incorporate this feedback into the Scheduled Lite structure.

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It will also be helpful for AEMO to consider the impacts of inaccurate forecasting. VPPs are still a reasonably emerging space, with continued lessons in responding to the changing market volatility. Attaching penalties to inaccurate forecasting will further disincentivize aggregators and VPPs from opting into Scheduled Lite.

Tesla also appreciates the thought that AEMO has given to potential incentives for participating in Scheduled Lite, Tesla notes the following:

- Reduced energy and non-energy costs: the benefit here is nominal and will be challenging to pass through to end-use customers in any meaningful way. They also primarily benefit customer retailers, so may be challenging for aggregators to benefit from.
- Payment for service/ capability: it would be good for AEMO to provide more information on the scale of this potential payment. The payments will need to be sufficient to cover costs for aggregators/ OEMs to provide this service on an ongoing basis, as well as covering additional customer incentives as a trade-off for providing ongoing access to data.

**Dispatchability Model**

The Dispatchability Model will be vastly more complicated to implement, and Tesla is supportive of the extended timelines which will provide sufficient time to properly work with industry on the practicalities of implementing such a model.

Tesla has not provided detailed feedback on the dispatchability model at this stage, but we are happy to continue working with AEMO over the next 12 – 24 months on the more detailed design elements that will be necessary to ensure a functional model. The key consideration will be what is bid under the Dispatchability Model. Will the bids be limited to export, or to bi-directional flows? Will bids be based on orchestrated or controllable capacity (load and generation) or will the bids also need to account for passive generation and load. These questions should be worked through in detail.

Some additional high-level comments are below:

- We are supportive of AEMO's proposed approach of linking the dispatchability with regulation FCAS market access. This is a clear incentive and sends a strong signal to traders.
- As noted by AEMO, telemetry/ SCADA requirements need to be fit for purpose for residential customers, and AEMO should focus on working with industry to test DER functionality. Additional SCADA will be cost prohibitive and limit the ability of most assets to participate in the dispatch model. Alternatively, AEMO should consider options for sending signals to a single source that can then pass those dispatch signals down through the full fleet.
- 100kW incremental bids are worth exploring, however if there is a 5MW minimum registration threshold then this may not be necessary. We would encourage AEMO to do a cost benefit analysis on the necessary changes to NEMDE that need to made to enable these incremental bids. It is, however, very encouraging to see AEMO actively looking at ways to make bidding more compatible with the market realities of aggregated small-scale DER.
- Tesla is supportive of the proposed inclusion of 20 price bands.

**Response to AEMO questions**

| Question | Response |
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| Would AEMO's proposed participant registration process be suitable for large energy users, or should AEMO consider alternative means of registration for these participants? | N/A |
| Are the proposed participation models for end user connection points appropriate to support participation of these resources?<br><br>Are there other arrangements that should be considered? | AEMO have considered the primary options for participation with any other current customer use cases likely to be edge case. The simplest approach (single connection point – accessing markets through existing retailer) is likely to be the one most taken up by consumers, so it will be important for AEMO to get the basic model right. |
| Do you agree with the proposed classification and zonal aggregation process? Are there any further considerations that should inform this aspect of the proposed design? | Tesla does not believe that a move away from regional to zonal has been suitably justified. It adds complexity and cost and will make it more challenging for aggregators to meet the minimum 1MW bid. Depending on the zonal boundaries that are drawn, it may make it impossible in some zones for aggregators to participate.<br><br>While we acknowledge AEMO's linkage to the design elements of the wholesale demand response (WDR) program, there are key differences with what AEMO is trying to achieve here – particularly in respect of DER. The Scheduled Lite mechanism should be seen as a mechanism focused on transitioning passive DER, or orchestrated DER that is currently invisible to AEMO, into the visibility or dispatch mechanisms. This is not necessarily going to result in increased or changed market responsiveness, just increased visibility for AEMO. Therefore, the same risks associated with WDR do not apply, and are not sufficient to warrant a shift to zonal registration approach.<br><br>The Scheduled Lite mechanism is already an additional level of complexity and AEMO should look to avoid any additional costs or administrative burdens that might force aggregators to elect not to opt-in. |
| Do you agree with AEMO's proposed approach to implementing an aggregated | As noted above, including an additional limit seems arbitrary and may not be necessary. |

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| capacity threshold of 5 MW for participation in the Dispatchability Model, including the ability for participants to 'graduate' from Visibility to Dispatchability once the threshold is met? | If the 5MW limit proposed is useful for AEMO from a systems management perspective, then Tesla will support it. It is unlikely that VPPs <5MW would opt into the dispatch model anyway due to the complexity.<br><br>We also note that a 5MW limit will further support the proposal to keep registration at a regional level, rather than a zonal level. 5MW capacity on a zonal basis may be very difficult to achieve. |
| Are there any hurdles to providing the data that has been identified? Are there other data types that are of value to the market and/or the networks that should be considered? | As noted above, AEMO identified a number of challenges with accurate forecast information provided during the AEMO VPP Demonstrations trial. When considering the forecast information that is provided it would be good for AEMO to undertake a deep dive with industry to better understand these challenges, and how they may be managed going forward.<br><br>One potential way to manage this is to only require forecast information for the controllable generation/load located at a particular site, rather than passive generation and customer load. |
| Are there any additional incentives that could be considered to encourage participation in the Visibility Model? | Rather than considering linking the Visibility Model with contingency FCAS participation, AEMO should consider which new services are likely to valued ahead of 2024 that can be linked to the Visibility Model. Linking it to new services from the outset is a much more attractive proposition to traders.<br><br>One potential option to consider is the ability to link the Visibility Requirements with potential paid, primary frequency response (PFR) incentives. This would provide AEMO with the dual benefits of 1. Considering how DER can provide PFR and support the grid; and 2. Incentivizing more participants into the Scheduled Lite Visibility Model. |
| For market participants already providing contingency FCAS: do you consider that participating in the Visibility Model would add significant additional costs? | There are both integration costs, ongoing management costs and data costs associated with Scheduled Lite. Tesla is not supportive of AEMO retrospectively making this a condition of FCAS market participation for the reasons outlined above. As noted, VPPs that participated in the AEMO VPP Demonstration Trial (and associated API), would be incurring double the costs of integration due to AEMO decommissioning a functioning API. |
| Does the proposed straw design for Visibility Model represent a feasible model? | It represents a feasible model, and it is quite clear that it would add value for AEMO. The key will be in ensuring that the incentive structure is sufficient to encourage traders to opt-in. AEMO should consider worked examples |

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| | that quite clearly set out the value that a trader may expect to see for a portfolio of a certain side, when compared to BAU. |
| Would there be any hurdles for a VPP to participate in the Visibility Model? | N/A |
| Based on your understanding of participation requirements, would there be sufficient incentives to participate in the Visibility Model? | The incentives still appear to be nominal. More information on the proposed payment for service to see if it is sufficient to cover the cost of participating. |