



Australian Energy Regulator (AER)

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20 January 2020

Assessing DER integration expenditure - Consultation Paper – Tesla Response

Tesla Motors Australia, Pty Ltd. (Tesla) welcomes the opportunity to provide the Australian Energy Regulator (AER) with feedback on the “Assessing DER Integration expenditure” Consultation Paper (the Consultation Paper). Distributed Energy Resources (DER) are an important part of the Australian energy supply mix and the penetration of DER in the National Electricity Market (NEM) will continue to grow at a rapid rate – supported by state incentive programs and declining costs. Orchestrated, controllable DER in particular can play an integral role in contributing low cost, zero emissions energy resources during times of peak demand, providing critical system security services and network support, and in reducing Australia’s emissions.

We support the position that the AER has taken in respect of zero exports, specifically that “[t]he offer of zero-export or significant augmentation does not represent a long-term sustainable solution to the continuing deployment of consumer DER”. Limiting export of DER assets limits the potential market benefits of these assets, and there are a number of other options that can be considered for minimising risk without reducing output.

We believe that any future approach to assessing network investment associated with DER should focus more on the benefits arising from the orchestration of DER, rather than focusing on management of the risks of high penetrations of DER. The final iteration of the Guidelines should work to encourage greater uptake of DER by distribution network service providers (DNSPs). DER assets, particularly controllable assets, provide numerous benefits to a number of NEM players, which are only partially captured at the moment. Our below response provides feedback on additional factors that should be considered when assessing the appropriateness of the proposed DER integration expenditure.

Further, we’ve included general feedback on areas that the AER should consider as other priorities to better enable uptake of DER without limiting output.

For more information on any of the below, please contact Emma Fagan (██████████).

General feedback

To fully support DER integration by DNSPs, Tesla believes two key areas need to be considered:

- Review of the five year investment timeframes.
- Improved transparency regarding current DER connection requirements.

Under current arrangements, DNSPs are asked to provide their best estimate of appropriate expenditure. Key thing to consider is whether the 5 year determination pathways are appropriate for considering DER expenditure.

As noted in the Consultation Paper the rate of speed at which rooftop solar has been taken up over the last decade is significant. Figure 1 shows that the installed capacity of rooftop solar grew from a negligible amount in 2010 to over 10GW at the end of 2018. ~6GW was installed over a less than five year period between 2014 and 2018. The speed of change makes it difficult for DNSPs to properly forecast the levels of DER integration that will occur over the succeeding five year period.

Residential storage installations and the uptake of electric vehicles (EVs) is expected to also increase significantly over the next decade. Therefore it is critical for the AER to consider whether the current

regulatory framework timeframes are appropriate for supporting the increased DER penetrations. In addition to the content in the Consultation Paper, we would suggest that AER considers reviewing whether five year investment timeframes are still fit-for-purpose.

As a second priority, the AER should also consider approaches for improved transparency regarding the connection requirements and expectations of each DNSP. At the moment there is no singular platform that can be accessed by DER installers and manufacturers to understand the different treatment and performance expectations for installed DER. This includes clarity on NSP export limitations, generation limitations, hard capacity limitations and voltage-support requirements (volt-var and volt-watt settings). Having a consolidated landing page with the latest information, would allow the AER to directly compare the current approaches being taken by different NSPs to manage DER integration, which would allow for a more considered approach to what is best practice.

Question i - are the assessment techniques outlined in our Expenditure Forecast Assessment Guideline (the EFA Guideline) sufficient to assess DER integration expenditure?

Tesla believes there are a number of other considerations that should be included in the AER approach for effectively assessing DER integration spend. These are outlined below.

1. DER value streams

It is important to consider all services and market benefits of DER when considering the benefits (market and otherwise) of DER. The SAPN cost benefit analysis for dynamic export considered energy market participation and the marginal cost of energy of DER assets, replacing the next most expensive generation asset in South Australia.

This approach could go even further. In addition to factoring in the market benefits of DER providing energy, frequency control ancillary services (FCAS) should be included as it's already been demonstrated that DER assets can participate in contingency FCAS markets through the AEMO Virtual Power Plant (VPP) Demonstrations trial. The South Australian Government Tesla VPP¹, for instance, has 2 MW currently registered with AEMO to participate in all contingency FCAS markets. The value that DER can contribute by providing ancillary services is not explicitly included in the "Application Guidelines - Regulatory investment test for distribution" (Application Guidelines) released by the AER² in 2018.

Further, the Application Guidelines do not recognise the value of data provided by DER. DER assets can provide NSPs with increased visibility regarding voltage levels on the low voltage component of their network. This can provide an alternative to network investment in capital infrastructure to achieve the same purpose.

In short, the value streams that should be included in the market benefit classes of the Application Guidelines include:

- Energy exports from the DER asset, including controlled energy exports to respond to peak energy price signals.
- System security services – including contingency FCAS values.
- Dynamic network service support that can be provided – including dynamic voltage support.
- Data that can be provided directly from aggregated DER assets to DNSPs to provide increased visibility in respect of voltage levels and activity on the low voltage network.

¹ <https://virtualpowerplant.sa.gov.au/>

² https://www.aer.gov.au/system/files/AER%20-%20Final%20RIT-D%20application%20guidelines%20-%202014%20December%202018_0.pdf

2. Pre-empting network problems

In the Consultation Paper, the AER notes the factors that are considered when a Distribution Network presents a business case for DER integration expenditure. The first factor is “is there evidence of a problem that needs to be solved”. As noted above, there is a significant amount of change that can occur over a five year investment timeframe, and we’ve suggested that these time periods are reconsidered. In the event that the five year investment timeframe remains, we would suggest that this factor is updated to also include “*problems that may occur over the relevant investment timeframe*”. Take Victoria for instance. The Solar Homes program all but ensures substantial growth in solar penetration over the next five years and a likely uptick in customer issues as a result.

If NSPs are only approved for DER funding to address an existing issue, rather than preventing a likely issue from arising, the solution will likely be a reactive and static, rather than a dynamic solution which will take more time and collaboration to implement. As a result, customers are likely to experience negative outcomes such as sustained periods of high voltage, causing their DER assets to trip, or having their assets forced into certain response patterns (this will be particularly pertinent with some of the proposed AS/NZS 4777.2 changes), or customers will have their export reduced.

If the AER would allow NSPs to pre-empt likely problems that may arise over the five year period, as well as addressing problems that currently exist, it would allow for the exploration of more innovative solutions.

3. Emissions reduction

The EFA should also consider the importance of recognising the zero emissions output of DER. This is particularly important in states that have a clear renewable energy target that incorporates the output of DER, but are not explicitly incentivised to do so.

We would suggest that the AER consider working with state governments to align DER expenditure integration with state based expectations on how DER will contribute to delivering state-based RETs.

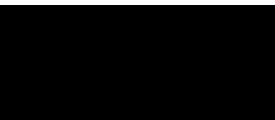
Question ii- Feedback on the guidance material

The EFA guidelines with respect to DER integration will need be flexible or capable of being updated regularly to account for changes in costs and technology, and to account for new business models and services that DER are able to provide.

The DER expenditure model should not be based on extrapolation of past trends. Incorporating ENERF into EFA guidelines will provide solution to these problems as it recognised importance of fast evolving technologies and cost changes within the DER network.

We look forward to continuing to work with the AER in progressing this important initiative.

Kind regards



Emma Fagan

Head of Energy Policy and Regulation