

Energy Policy WA

Response sent by email: submissions@energy.wa.gov.au

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Low Load Responses – Distributed Photovoltaic Generation Management: Tesla Response

Tesla Motors Australia, Pty Ltd (Tesla) welcomes the opportunity to provide Energy Policy WA (EPWA) with a response to the “Low Load Response – Distributed Photovoltaic (DPV) Generation Management – Discussion Paper”. Our experience in South Australia has given us a unique perspective as the Virtual Power Plant (VPP) operator for over 4000 Powerwall systems, as well as the owner of up to 4000 solar systems installed on SA Housing Authority properties. As such, our feedback below is based on both our experience in consulting with the SA Government as they were setting up the remote disconnect and reconnect requirements for solar PV systems in South Australia, as well as our ongoing management experience in complying with the requirements.

For more information on any of the content included in the submission below please contact Emma Fagan (efagan@tesla.com).

Introduction

Tesla’s mission is to accelerate the world’s transition to sustainable energy. We recognise that the current penetration of rooftop solar is creating minimum operational demand issues in Western Australia (WA) (and the NEM), however our preference will always be to better utilise this excess solar generation – either through storing it for later use, or through increased load to soak it up at the point of generation (e.g. through increased uptake of electric vehicles). In Tesla’s opinion any consideration of remote curtailment of rooftop solar PV exports should be part of a broader strategy that also incentivises uptake of storage, electric vehicles and smarter home loads, and be used only as an emergency backstop.

In considering the introduction of these new requirements, EPWA should also consider the relatively low per-capita uptake of residential storage in WA and consider the barriers that may be causing fewer (and smaller) storage systems to be installed relative to the total quantum of rooftop solar PV installed. As per the AEMO DER Database¹, WA has the lowest overall amount of storage installed of any state or territory in Australia (not including the NT).

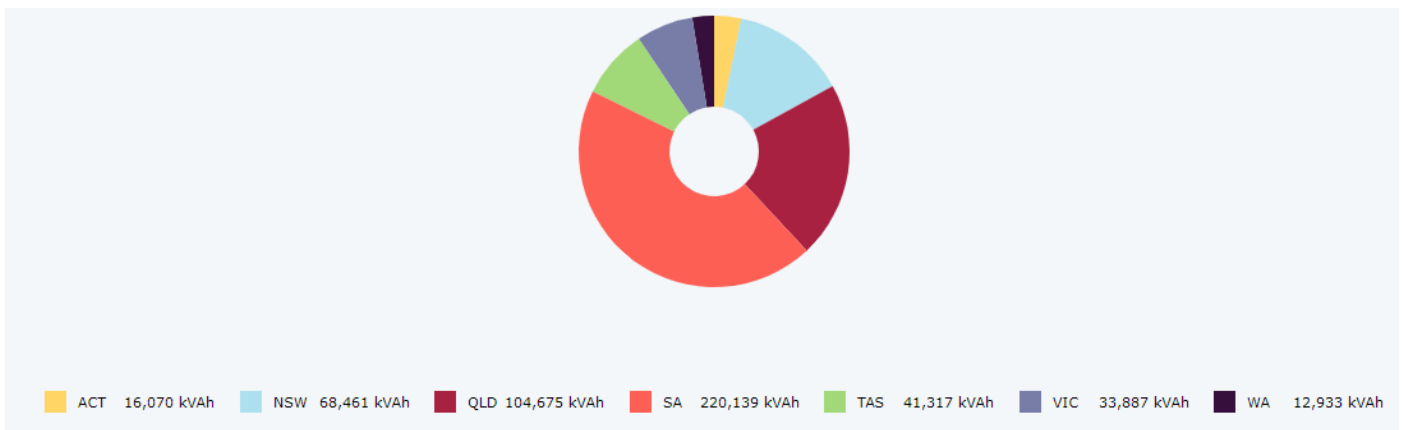


Figure 1: DER totals - storage capacity by state (AEMO DER Database)

¹ <https://aemo.com.au/energy-systems/electricity/der-register/data-der/data-dashboard>

On a per capita basis, WA is by the far the lowest in terms of storage uptake (refer Figure 2²).

	DER - Storage		
	Total (kWh)	Population	Per Capita (Wh/person)
ACT	16,070	431,484	37.2
NSW	68,461	8,172,505	8.4
QLD	104,675	5,194,879	20.1
SA	220,139	1,770,790	124.3
TAS	41,317	541,506	76.3
VIC	33,887	6,661,736	5.1
WA	12,933	2,670,241	4.8

Figure 2: Storage on a per capita basis

In Tesla’s experience there are two aspects of the Western Power “Network Integration Guideline: Inverter Embedded Generation Guideline” (Connection Requirements) that make the installation of residential battery storage in WA more challenging when compared to other jurisdictions:

1. **Generation limit:** The Western Power Connection Requirements are the only network connection requirements that include a “generation limit” rather than an export limit. This means that customers are limited to generating up to 5kVA to serve their own load. If a customer has a 5kW solar PV system as well as a 5kW battery system and is drawing 7kW of load from their appliances in the middle of the day, they will only be able to serve their load with the 5kW generated from their solar PV system. Their battery, which may be fully charged, is required to sit idle so as to not breach the 5kW generation limit. This reduces the functionality of the battery and increases the payback period, which reduces the incentives for customers to invest in their own home storage. Conversely in other jurisdictions the networks are not concerned with what happens behind the meter, and instead impose “export” limitations.
2. **Maximum phase imbalance:** the Connection Requirements also have a maximum phase imbalance of 3kVA per phase. This effectively limits the storage size to 3kW per phase. Larger storage systems need to be artificially reduced in size to meet this requirement, which again impacts on the customer payback and makes the installation of residential storage less attractive to customers.

We also note that whilst WA’s DER Roadmap is achieving promising outcomes with respect to the roll-out of community-scale storage, with the exception of Tasmania, WA is the only other Australian state or territory to have never introduced any form of incentive for the installation of residential battery storage.

As the WA DER Roadmap continues to progress, and the need to curtail DPV systems becomes more pronounced, we would encourage EPWA to consider whether there is more to be done in WA to incentivise the uptake of residential storage systems and reduce the need to curtail solar. This should include an independent review of the Connection Requirements to remove those disincentives as well as considering whether there are incentives that could be introduced to further accelerate storage uptake at the household level. Both of these options would ensure consumer costs are minimised and consumer protections are maintained.

² Source - <https://aemo.com.au/energy-systems/electricity/der-register/data-der/data-dashboard> and <https://population.gov.au/>



Timelines

The timelines for compliance and meeting the new DPV management requirements will be challenging. The key difference between the approach proposed by the SA Government and what is being proposed by EPWA is that WA is not currently providing any optionality in respect of relevant agents. Captured OEMs will need to integrate with Synergy prior to February to receive any of the Synergy led signals. It is not entirely clear yet what this process will look like and therefore there is significant uncertainty on the work to be done to ensure that these requirements can be met for the majority of DPV inverter OEMs that supply to WA.

General comments on proposed DPV requirements

While there are similarities to the South Australian remote disconnect and reconnect requirements (RDR), the process proposed by EPWA does have some noticeable differences in respect of the approach taken to management of DPV. If there was greater alignment in the relevant agent processes, then this would be a simpler process for inverter OEMs to implement.

Tesla also has the following general comments:

- The Discussion Paper notes that the DPV management requirements will be implemented through the Western Power Connection Requirements. The Discussion Paper appears to apply solely to distributed PV, however this should be made extremely clear in any updated Connection Requirements so as to not create any confusion for other inverters (such as battery storage inverters) that are also captured by the Connection Requirements.
- The industry is moving toward adoption of the Australian Common Smart Inverter Profile (CSIP-Aus) for implementation of IEEE2030.5, commencing July 2022 in SA. WA should consider aligning with SA in this approach.
- It will be very important to explain how the new regulatory requirements integrate with the WA Distributed Energy Resources (DER) Roadmap. Manufacturers are understandably reluctant to invest significant time and resources into product development if they think it will be made redundant if/when the rules change again.
- EPWA should consider the best mechanisms for managing customers that do not have home internet to ensure that the methods are future proofed. The metering method looks to be suitable for customers that don't have home internet, but EPWA should ensure that this method is consistent with the future steps of the WA DER roadmap and any orchestration ambitions.

Response to EPWA questions

Note that Tesla has provided input to the Clean Energy Council (CEC) and agree with all of the points raised by the CEC in response to the questions asked by EPWA.