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Consultation on regulatory changes for smarter homes in South Australia

Proposed Smart Meter Minimum Technical Standards in South Australia

10th July 2020

South Australia Department for Energy and Mining,

Sonnen Australia sonnen is one of the global market leaders in smart solar energy storage with more than 50,000 residential sonnenBatterie systems installed worldwide. sonnen is driving forward the move towards decentralized and digitalized electricity supply through the sonnenCommunity – a pioneering energy sharing platform which enables sonnenBatterie owners to achieve 100% independence from the grid.

The sonnenBatterie is an intelligent energy storage system which allows its owners to use solar electricity day and night, whilst also enabling users to change the way that they manage and control their energy. It saves money by storing the surplus energy generated by solar panels when not needed and makes it available at times when it is needed.

At sonnen Australia, we believe in clean, affordable energy for everyone. We are passionate and driven to have a positive impact on our environment, and on the people within it. We are customer focused, inventive, audacious, inclusive, clear thinkers who make learning a habit and always maintain a winning attitude.

Sonnen Australia welcomes the opportunity to provide feedback on the Government of South Australia (SA) Department for Energy and Mining consultation on the proposed new low voltage ride-through requirements for smart inverters in SA.

It is widely accepted that more storage is required in the Australian market to support the higher penetrations of variable renewable energy (VRE) seen across the NEM. The 2020 AEMO Integrated System Plan (ISP) estimates significant penetration of distributed storage needed for the optimal national energy market (NEM) generation mix. The ISP Central Scenario assumes 1.1GW of behind the meter batteries – participating in a VPP or as a stand-alone asset by 2030. The High DER scenario assumes >15GW VPP and stand-alone BESS assets operating by 2030. This will only be possible if installs are not physically prohibited or subject to major cost-increases for installation.

Although in principle sonnen Australia understands the challenges presented by low minimum demand and the reasons why the SA Government and the Australian Energy Market Operator (AEMO) would want to ability to remotely curtail PV generation and load in an emergency. It is worth noting that an alternative to curtailing generation would be to increase load on the network, using options such as heating water, charging of electric vehicles and installation of community-scale batteries on the distribution network. Although we are focusing within this submission on the remote curtailment proposals using the smart meter and/or the inverter, we would encourage utilization of excess zero marginal cost electricity in preference to spilling it, wherever possible.

We prefer a 'technology neutral' approach to achieving the capability for remote disconnection and reconnection and strongly oppose a prescriptive solution. Mandating multi-element smart meters for connections where there is a distributed energy resource (DER) system and an inverter that could provide a superior solution is not a sensible approach. Although we understand the desire for dual-element smart meter at connections that do not have an

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inverter, where AEMO might wish to disconnect load for an individual site rather than an entire suburb. The multi-element smart meter proposal should only be mandated for connections without DER.

It would be very helpful if the SA Government could clarify in writing whether the proposed requirements for remote disconnection and reconnection of smart meters would be deemed to satisfy the requirement for remote disconnection and reconnection of distributed energy resources (DER). We also seek confirmation that any product using demand response mode zero (DRM0) as per the mandated requirements of AS/NZS 4777.2 would meet the product-level requirement for remote disconnection and reconnection. If both solutions are acceptable for remote curtailment of DER then for DER systems there should be an option of using either one solution or the other, but not a requirement to use both.

In addition to multi-element smart meters or DRM0, there are also other options that would work (e.g. a separate control circuit breaker that works the same as the proposed smart meter, or direct control of the inverter, rather than explicitly via DRM0). These alternatives should also be allowed.

The SA Government should not attempt to specify the method used to achieve remote disconnection and reconnection where there are alternatives. Where there is an inverter involved, the Government should only specify the required outcome and allow all suitable solutions to meet it. Use of smart meters for remote disconnection and reconnection should only be mandated where there is no inverter and no alternative way to achieve the remote disconnection and reconnection capability.

The best solution to the 'problem' of too much zero marginal cost electricity is to find economically productive uses for the excess energy available. Options such as heating water for domestic use, turning on pool pumps or there's, charging of electric vehicles and installation of community-scale batteries on the distribution network should always be considered in preference to curtailing PV generation. Curtailing generation should be at a level of last resort.

The SA Government has proposed to mandate that there must be an ability to remotely disconnect and reconnect DER. Separately, the SA Government proposes to mandate smart meter minimum technical standards to enable remote disconnection and reconnection. AS/NZS 4777.2 has mandated DRM0 which specified that any DER is capable of accepting a remote command to disconnect and/or reconnect to the network as required. We do not therefore understand why the SA Government published two consultation papers on achieving the same end goal where in fact a mandatory requirement already exists.

If the proposed smart meter technical standards become mandatory it is not clear why an additional requirement for remote disconnection and reconnection is required. We strongly request that the SA Government to clarify in writing whether the proposed mandatory new requirements for smart meters would meet the requirement for the capability to remotely disconnect and reconnect DER, or if additional capability within the inverter will also be required.

All grid-connected inverters installed in SA the introduction of the 2015 version of AS/NZS 4777.2 have been required to be capable of remote curtailment. It is called 'demand response mode zero' (DRM0). Again, we call on the SA Government to confirm in writing that any product that uses DRM0 for remote disconnection and reconnection would meet the product-level requirement for remote disconnection and reconnection that is being sought. One accepted capability to remotely disconnect and reconnect should suffice

If the proposed new requirements for smart meters are deemed to meet the requirement for the capability to remotely disconnect and reconnect and if any product that uses DRM0 is also deemed to meet the product-level

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requirement for remote disconnection and reconnection of DER then for DER systems, there should be an option of using either the new smart meter arrangements or DRM0.

We understand that multi-element three phase smart meters are not available on the Australian market. Three phase customers make up about 25 to 30 per cent of SA Power Networks customers. Use of DRM0 should be considered as a more practical alternative to searching for a manufacturer who can develop a six-element or nine-element three phase meter.

South Australians have already been experiencing significant delays in the installation of smart meters. We are concerned that the new requirements will exacerbate those delays. We urge the SA Government to undertake and publish analysis regarding the capacity of the smart meter installation workforce (noting the implications of SA licensing regulations) and how delays in smart meter installation will be avoided.

We also understand that even though the intention of the new smart meter arrangements is to still permit net metering and existing billing arrangements to continue, nevertheless the data from both generation and load meters will be exposed. Separating the metering of generation and load data could enable the creation of new markets in future. However, customers might not want that data to be made available. It would be worthwhile consulting Energy Consumers Australia and consumer advocacy organisation's for their perspective on this matter.
General technical comments.

We have a series of concerns about the practicality of wiring, placement of current transformers and unintended consequences of the new wiring requirements.

- The dual element meters will require separate wiring of the conductor from the PV generator breaker to the meter, this is a large change from the current practice of wiring the PV generator conductor to a 'solar breaker' on the main or sub board.

- Having a separate PV connection to the meter will mean that no solar can be installed without the metering provider being present (added time/cost/complexity) as the meter is not the customer's asset and not safely accessible.

- For export-limited systems or storage systems, these sites require a net load meter to be installed (that is the fundamental control signal for export limiting or battery system operation). The proposed approach creates technical challenges in respect of installing the net load conductor, and it's not clear whether this can be done in compliance with AS 3000.

- For AC-coupled storage systems: a separate PV connection will completely disconnect solar in a blackout and prevent customers from having solar in a backup (reduce storage efficacy).

- For DC-coupled storage systems, remote disconnect of the PV will result in the system entering backup and the backup loads circuit islanding. This will result in the loss of critical load circuits when the grid is connected and PV remotely disconnected.

- Solar self-consumption will be adversely impacted as the power flow will be from the PV meter to the meter and then back to the load circuit (significantly increasing losses) as no local consumption of solar will be undertaken.

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- Typically, inverters need their connected meter / current transformers to measure the net value of the PV generation and load to operate export limitation settings. The proposed smart metering wiring requirements would necessitate development and testing of a specific algorithm with specific wiring requirements to be used specifically in South Australia. This would definitely be a poor result for South Australian customers.

If you have any further questions or seek any further clarification please contact me via j.sturcht@sonnen.com.au.

Yours faithfully,

James Sturch
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