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Re: ERC0301 - Technical standard for distributed energy resources

Reposit Power Pty Ltd (Reposit) thanks the AEMC for the opportunity to contribute to the rule making process currently considering the proposed Distributed Energy Resources (DER) technical standards rule change. The following submission constitutes Reposit's response to the AEMC's Consultation Paper on this proposed rule change.

QUESTION 1: ASSESSMENT FRAMEWORK

Do you agree with the proposed assessment framework? Should the assessment framework include any additional considerations, and if so, what are they and why?

Reposit agrees with the AEMC's assessment framework for this proposed rule change, however suggests that the AEMC should also include the impact on investment efficiency that a rule change of this nature would have.

The creation of a subordinate document in the National Electricity Rules (NER) that obligates DER to various behaviors will impact the investment decisions made by the developers and marketers of DER products. The regime by which any subordinate document is created, maintained and updated will be of keen interest to these people. DER delivered capacity will carry additional uncertainty of returns when compared to non-DER capacity due to the existence of any subordinate document. Investment efficiency will be degraded where the administration of any subordinate document is considered to operate differently, or is operated by different bodies, to that which governs the wider NER.

QUESTION 2: SETTING THE INITIAL STANDARD AND DEFINITION OF DER

1. Should the initial DER technical standard be set by AEMO?

Reposit's position is that this would degrade investment efficiency. DER should be regarded by the market operator simply as a generator or a load at a given point in time – and in exactly the same way that any other generator or load is regarded. For the market operator to do otherwise creates a different class of load and generator in the market, for which there are no Rules and hence no means of assessing investment risk.

There are many technical regulatory bodies that are better placed to set technical standards for DER including Standards Australia, the Australian Cyber Security Centre (ACSC), Distribution Network Service Providers (DNSPs), the AEMC's Reliability Panel and state and territory technical regulators.

2. *Should the minimum standards be inserted into the minimum content requirements of connection contracts, negotiation frameworks and model standing offers or terms?*

Reposit believes that there is a place for minimum standards to be placed in connection contracts, just as AS4777 is now very often referenced in inverter energy system connection contracts. Minimum standards inclusion in negotiation frameworks and model standing offers will break the electrical/economic separation that currently contributes to investment efficiency in the NEM.

3. *What should the standard apply to and is a DER definition needed in the NER?*

A technical standard for DER should apply to electrical devices that are able to deliver power to a load other than itself. This naturally includes solar PV, energy storage systems and vehicle-to-grid capable electric vehicles. Reposit argues that this standard already exists as AS4777.

Reposit's position is that a definition of DER should not be included in the NER as technology agnosticism is a key component of the regulatory environment. The NEO and NERO specifically reference "services" and not any specific type of technology to deliver those services. Including a definition of DER in the NER is not consistent with the service-centric nature of the NEO and NERO.

4. *Do stakeholders agree that the standard should only apply to new and replacement devices? Will this meet the objectives of the desired policy outcome of this rule change request?*

The proposed rule change says that its effect will be to align DER performance with NEM system needs to maintain system security, balance supply and demand, keep consumer-led DER connected, and optimise the power system¹. Reposit contends that these goals are better achieved using market mechanisms – many of which already exist.

The NEO and NERO are explicit in their focus on electricity services. Reposit and other technology vendors are already operating DER to provide electricity services (wholesale energy, FCAS, network support, voltage regulation, etc.) in exactly the way that the NEO and NERO address. The DER providing these services is tested against AS4777 and is responsive to NEM price signals where they exist.

Where capacity is required in a service the market should publish a price signal sufficient to create investment in resources that are able to deliver this capacity, in the required timeframe. Where this happens, new capacity (DER and non-DER) will deliver the service, but more importantly existing capacity has the opportunity to be reconfigured for new service delivery.

There is more than 4GW of solar PV in the NEM with a projected remaining lifetime of more than eight years. Implementing a technical standard for new and replacement devices ignores this capacity and potentially disadvantages new

¹ AEMO rule change request, page 18.

buyers of DER when compared to owners of existing DER. Reposit contends that a price signal is a fairer and more efficient means of operating the system than a technical standard for new and replacement devices.

Reposit suggests that sustained periods of negative energy pricing during daylight hours in SA1 will achieve the outcomes that the system operator requires at a much lower cost and in considerably less time. This can be achieved by providing strong price signals for inertia and system strength. This could be via Network Support and Control Ancillary Services (NSCAS) or through introducing new markets for these services. Providing synchronous generation with a means of outcompeting solar PV via negative prices is more efficient than implementing system controls to curtail solar PV. Doing so will also contribute to avoiding situations similar to that in SA1 in other market regions, and will actively support the efficient operation of the system.

As such, Reposit does not agree that the policy outcomes of the rule change proposal are likely to be met where only new and replacement DER assets are used to effect it.

QUESTION 3: CONTENT AND DURATION OF THE INITIAL MINIMUM TECHNICAL STANDARD

1. *Should the scope of the initial technical standard be limited by the NER?*

Reposit's position is that any subordinate document to the NER must be limited in scope to the NER, as a broadening of scope in a subordinate document is likely to create conflicts with the other parts of the NER. A technical standard outside of the NER, for example within Standards Australia, is not limited in scope in this way.

2. *If so, should there be arrangements to allow for a review of the scope at a future date?*

If the minimum technical standard is implemented as a subordinate document to the NER then a future review of the scope is redundant. Time cannot remove the structural conflict that comes with a broadened scope in a NER subordinate document.

Should the minimum technical standard be implemented in a mechanism outside of the NER, then Reposit believes that regular reviews of the standard should be scheduled. Scheduling regular reviews will help stakeholders manage investment risk in DER development. By focusing stakeholders on key points in time, they can be sure of a forum where standards development will take place, and the likely timing of changes. This will aid in the resourcing of efforts required to participate in standards development and in implementing modifications to the standard.

3. *Should the role of AEMO in setting DER minimum technical standards (the subordinate instrument) be limited in time, with the ESB's governance review outcomes to be introduced into the framework at a later date?*

Reposit does not support AEMO in setting DER minimum technical standards. It is not appropriate for the system and market operator to manufacture distinctions between one source of capacity and energy, and another. The NEO and NERO are

explicit in their focus on services, and as such the regulatory environment should strive to define and price services in which any capable plant can participate. Where a need is urgent, an investment signal of corresponding urgency should be provided. Ideally increased service capacity requirements are identified well before they become urgent, leading to that capacity being efficiently procured by the market operator.

Reposit's position is that it is unlikely that the ESB will be in a position to take control of this subordinate document in the future. The ESB was created to implement the Finkel blueprint and has no scope for the maintenance of a technical standards document of the type proposed². In addition, the ESB is currently being reviewed by the COAG Energy Council with the "cessation or continuation" of the ESB explicitly included in the terms of reference for the review³.

The ESB is the incorrect regulatory body for the management of this document. Likewise AEMO is the incorrect market body to be authoring minimum technical standards for DER. If an electricity sector regulatory body must be the originator and maintainer of technical standards for DER (and Reposit is not convinced that this is true), the AEMC's Reliability Panel is considered to be best placed for the role.

QUESTION 4: APPLYING THE STANDARD AND MONITORING COMPLIANCE

Reposit's position on the proposed rule change is that even if it were successfully made into a rule, it would be extremely costly, if not impossible, to enforce compliance. This is based upon Reposit's detailed understanding of DER technology, its manufacture, and the nature of the mechanisms by which DER assets are deployed and operated in modern electricity grids. Reposit suggests that the complexities in enforcing compliance of sophisticated and market-linked behavior in DER may have already been faced by various state governments in the implementation of their various battery subsidy schemes.

In all cases, very simple characteristics have been defined as part of the subsidy scheme due to the difficulties in monitoring compliance of any sophisticated, market/system responsive behavior. Part of this difficulty comes from the large number of devices that will require monitoring. An additional part comes from the potentially large number, and varying technical sophistication of DER vendors. Another part comes from realisation that fine-grained standards that shape market behavior, defined by a technical regulator will damage innovation in the most innovative part of the electricity industry.

1. *How can the proposed solution be applied in Western Australia, Victoria and the Northern Territory?*

In much the same way as AS4777 is applied, the proposed solution will need to be applied at connection-time, and by DNSPs. DNSPs are the natural compliance monitoring body as DER is always connected to the NEM via DNSP assets.

² http://www.coagenergycouncil.gov.au/sites/prod.energycouncil/files/publications/documents/Energy%20Security%20Board%20ToR_0.pdf

³ <http://www.coagenergycouncil.gov.au/sites/prod.energycouncil/files/publications/documents/ESB%20Review%20ToRs.pdf>

Presently AS4777 compliance must be demonstrated via a passing test certificate from a Standards Australia recognized testing facility. No installed device is tested for compliance at any stage of its life, it is simply assumed that the device is behaving exactly as its testing sample did at the test facility regardless of installer, or firmware evolution. A device not meeting AS4777 in the field is unlikely to be detected. This is not an ideal circumstance, however it has been deemed too costly to do anything otherwise given the large number of devices subject to the standard.

This process already operates in Western Australia, Victoria and the Northern Territory by virtue of state and territory electrical legislation typically deferring standards compliance decisions to the DNSPs, or local technical regulators who interact with the DNSPs.

For this process to operate in action of the proposed solution each DNSP will need to adopt the technical standards defined in the subordinate document and seek a testing certificate from DER vendors who wish to connect their equipment to the DNSP's network. Several independent testing facilities will need to be certified to test against the standard, and then periodically be recertified as the standard evolves. DER vendors will then need to submit their devices to these testing facilities for testing, and then support the testing facility in completing the tests. Upon successful testing, a passing test certificate can be provided to the DER vendor, who can then pass it on to the DNSP.

Unfortunately, as with AS4777, an installed device not meeting the standard is unlikely to be detected. As a result it is likely, as with AS4777, that the desired outcomes will not be achieved at all times, across all devices. It is safe to assume that a more complex DER minimum technical standard is even less likely to be successful than a simpler one.

2. *Is it sufficient to specify a commencement date for the DER minimum technical standard only and have the implementation dates for the individual standard components set out in the standard itself?*

Reposit suggests that the answer to this depends on the urgency with which the outcomes must be delivered. The rule change proposal and the consultation paper suggest that there is an immediate requirement in SA for system strength and inertia. However the rule change proposal then introduces a variety of other concerns with DER. Reposit suggests that each of these concerns should be considered separately and on timescales commensurate with their risk to the efficient operations of the NEM.

3. *What level of compliance monitoring is needed?*

In general the correct level of compliance monitoring in any situation is determined by the cost of risk that is associated with non-compliance. Reposit finds it difficult to assess that metric when considering the rule change proposal, as it is difficult to ascertain the precise risks that the rule change proposal is addressing.

It should be noted that any compliance monitoring on DER will consume significant resources if it is conducted at the individual device level. Reposit suggests that any

level of compliance monitoring for DER will have metrics applied at an aggregation of DER.

4. Who should monitor compliance with the technical standards?

This depends on where the technical standards are applied. If they are applied in a subordinate document to the NER, then the Australian Energy Regulator (AER) should be resourced to monitor compliance. Should these standards be applied at the connection point, then DNSPs should be resourced to monitor compliance.

5. How can compliance be enforced?

Given that the majority of DER is a consumer or small/medium enterprise product, compliance should be enforced under Australian Consumer Law. If a DER product fails to meet minimum technical standards then it fails the "Acceptable Quality" test as it is not "fit for the purpose the business told the customer it would be fit for and for any purpose that the customer made known to the business before purchasing"⁴.

QUESTION 5: COST OF THE INITIAL STANDARD

1. Considering AEMO's proposed initial standard in section 5.2, Box 1, what are the expected costs and benefits of implementing the initial standard for consumers, other affected parties and DNSPs?

The following table contains Reposit's response to this question. Please note that section 5.2, Box 1 was not found in either the rule change proposal, or the consultation paper and so Reposit has extrapolated likely minimum technical standard content from the rule change proposal.

Party	Cost/ Benefit	Description
VPP Provider	Benefit	Implementation of a minimum technical standard that includes third party control of DER will increase the competitiveness of some VPP providers.
Consumer	Benefit	Implementation of a minimum technical standard that includes third party control of DER will remove the consumer lock-in that currently exists where DER manufacturers do not provide local control to third party controllers.
Consumer	Cost	Degradation of the financial opportunities provided by assets owned by consumers. Minimum standards may have the unintended consequence of inhibiting revenue generating and cost saving functionality of DER now and into the future.
VPP Provider	Cost	Minimum technical standards implemented at a lower control layer may inhibit the ability for a DER asset to participate in a market service. For example, anti-islanding behavior in AS4777 precludes distributed energy storage from participating in SRAS today. This

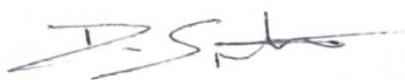
⁴ <https://www.accc.gov.au/consumers/consumer-rights-guarantees/consumer-guarantees>

		decreases competition in the market and increases the cost of the service.
Consumer	Cost	A minimum technical standard has the potential to effectively exclude DER from large portions of wholesale market value. This will increase the costs of wholesale services and increase prices for consumers via market cost-recovery mechanisms.
Hardware OEM	Cost	Implementation of behavior significantly more complex than AS4777 will create additional development costs specific to the Australian market.
Consumer	Cost	Increased development costs for Australian versions of product will create disincentive for manufacturers to supply to the relatively small Australian market. This will reduce choice and increase cost for Australian DER consumers.
Consumer	Cost	System strength and inertia should be paid for by the market, rather than categorising some MWh as "over-generation". Failing to do this creates disincentive to provide these services and ultimately leads to higher costs for the consumer via market cost recovery processes.
VPP Provider	Cost	Minimum technical standards that interfere with the free operation of DER at times of system stress will reduce the revenue opportunities provided by contributing to the alleviation of system stress. This will reduce the economic value of a VPP and the software that powers it.
Standards Australia	Cost	A minimum technical standard that replaces AS4777, AS4755 and other related standards, removes the role of Standards Australia setting standards for the Australian market.
Consumers	Cost	A duplication of the process, testing facilities and authority of Standards Australia is likely to be a costly exercise. Ultimately consumers will pay for this via market cost recovery mechanisms and/or AER network determinations.

Continued Engagement

Reposit would welcome the opportunity to more fully discuss this rule change proposal with the AEMC and other stakeholders.

Kind Regards



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