Australian Government
Australian Renewable Energy Agency

ARENA

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ARENA submission to Consultation on the governance of distributed energy Resources (DER) technical standards

This submission offers insight from ARENA projects and other engagements as relevant to the development of standards for DER and DER standards governance.

In summary -

- We strongly support the need for a governance framework around DER standards. The current processes are not integrated and do not adequately consider the emerging needs of the electricity system and the long-term interest of consumers.
- The DER Governance Framework must allow for a broad scope of standards. In some areas, there will be substantial consumer benefits in bringing forward new device and service standards and accelerating the adoption of international standards where there is strong industry alignment.
- The AEMC should consider how standards compliance will be exercised and the limitations in relying only on customer connection contracts and whether compliance obligations should be extended to other parties such as retailers and non-retail aggregators.
- ARENA welcomes the opportunity to support this rule change process by sharing information and insights from our $144 million DER project portfolio. We are open to considering further collaborative studies and trials where they align with ARENA's investment priorities.

ARENA's relevant projects and engagements

DER is currently being adopted at a rate of >3GW per annum and electric vehicles and other sources of flexible demand are expected to greatly increase in their rate of deployment in the coming years. Australia is only at the beginning of its transition to a more distributed energy system and ARENA is focussed on demonstrating the technologies and supporting frameworks that will ensure DER reaches its full economic potential as a part of a broader, optimised energy transition.

ARENA is actively engaged in various collaborations, studies and demonstrations that highlight the importance of effective standards for DER and more proactive and consistent standards governance. Current and recent initiatives include:

- The development of frameworks for the trialling and implementation of Dynamic Operating Envelopes.[1]
- Various trials that involve the integration of DER into market and network management systems including the Evolve Project, Project EDGE, SAPN Flexible Exports for Solar PV, and others yet to be announced.
- Trialling the participation of virtual power plants in FCAS markets which has been a key input into the current Market Ancillary Services Standard (MASS) review.[2]
- Supporting the Distributed Energy Integration Program (DEIP) Interoperability Steering Committee[3] and the DER Integration API Technical Working Group.
- Delivery of the DEIP EV Grid Integration Working Group.[4]
- A Customer Energy Management System study that is assessing the readiness of behind the meter technologies for DOEs and the limitations of current device-to-device interoperability standards.
- The State of the DER Technology Integration Report that assessed the functional maturity of DER including standardised communications and interoperability requirements.

Demand flexibility has recently been identified as a key investment priority for ARENA[5] and national standards for device capability, and device-to-device and device-market interoperability are considered a critical enabler for efficient levels of demand-side participation in energy markets.

The scope of required standard governance

Existing approaches to the development of standards are often slow, voluntary or inconsistent between jurisdictional schemes, and the market will benefit from clear long-term signals for product development built around a strategic view of future market development. The AEMC's active engagement and leadership will be instrumental to this outcome and we support an approach where the AEMC is accountable for ensuring that standards development processes

[1] https://arena.gov.au/[...]/dynamic-operating-envelopes-workstream/
[2] https://aemo.com.au/[...]/mass-consultation
[3] https://arena.gov.au/[...]/interoperability-steering-committee/
[4] https://arena.gov.au/[...]/ev-grid-integration-workstream/
[5] https://arena.gov.au/about/strategic-priorities/

are adequate and aligned with the developing needs of the electricity system and in the long-term interest of consumers.

The scope of future standards extends well beyond the current referencing of AS 4777.2 in the National Electricity Rules (NER). It will need to include the consideration of standards for smart energy device communication (e.g. IEEE 2030.5) and demand response enablement (e.g. AS 4755) for a range of conventional and novel end-user devices. To illustrate the benefits of a broad scope for standards development, ARENA is currently working with the market bodies on modelling the electricity system benefits of enabling greater demand flexibility for electric vehicles and other sources of flexible demand. Early results indicate that the potential savings are a substantial fraction of total system costs and may warrant more active and urgent consideration of standards for electric vehicle charging and smart devices to ensure costs for electricity consumers are kept to a minimum as transport and heating services electrify. This work will be published in late 2021.

We note that it will be necessary to define the scope of the DER standards governance body. There are many interactions that DER has across the energy sector. Some standards are the responsibility of state jurisdictions, others are federal, some private, and some through government agencies. Examples of related standards include voltage, harmonics, cyber security, fast frequency response, synthetic inertia, safety and many others. It will be a challenge to ensure that the scope of the body is broad enough to be effective, but does not extend into areas that are already adequately covered by other entities. Ultimately we see the AEMC has a role in identifying any inadequacies in standards development, and being accountable to Ministers for ensuring inadequacies do not threaten the long term interest of consumers.

We also support the broad representation of the proposed body that extends beyond incumbent interests. The profound implications of DER standards on innovation and market development require that consultation with consumer groups and new technology providers are a key part of the governance process.

Enforcement through customer connection contracts

The rule change request by the ESB proposes that standards be implemented through National Energy Law (NER) Chapter 5A connection contracts. While this is a sensible starting point, this approach may have limitations that could necessitate complementary reforms to other parts of the NER and National Energy Retail Law (NERL). In particular, it is important to consider that a consumer's compliance with a connection contract will be impacted by the actions of third party vendors, retailers and non-retail aggregators. This could relate to the compliance of devices 'as installed' or 'as operated'. Some matters such as device interoperability, communications channels and cyber security may be impacted by software changes that are outside of a consumer's awareness or control.

There are also substantial potential changes in the roles of customers and aggregators under emerging 'energy-as-a-service' models[6] and if DOEs and network tariffs are to be assigned to

[6] See for example: https://www.irena.org/[...]/IRENA_Energy-as-a-Service_2020.pdf

local portfolios of retail customers rather than to individual customers[7]. Such innovations would further challenge the reliance on individual connection contracts as the basis for compliance with DER design and performance standards.

Through this rule change process it will be important to consider how consumers, as a direct party to a connection contract, can be appropriately protected and when it is appropriate to transfer compliance liabilities onto other parties. It may not always be appropriate for these parties to be deemed 'an agent of the customer' as is provided for, for example, under rule 5A.A.3.

The ESB Post 2025 recommended reforms include an obligation on retailers/aggregators to operate DER within technical limits (e.g. dynamic operating envelopes). This is consistent with the view that compliance obligations should sit with those parties who are best placed to manage them.[8]

About ARENA

The Australian Renewable Energy Agency (ARENA) was established in 2012 by the Australian Government. ARENA's function and objectives are set out in the *Australian Renewable Energy Agency Act 2011.*

ARENA provides financial assistance to support innovation and the commercialisation of renewable energy and enabling technologies by helping to overcome technical and commercial barriers. A key part of ARENA's role is to collect, store and disseminate knowledge gained from the projects and activities it supports for use by the wider industry and Australia's energy market institutions.

ARENA welcomes the opportunity to support this rule change process by sharing information and insights from our DER project portfolio and is open to considering further collaborative studies and trials where they align with ARENA's investment priorities.

Please contact Jon Sibley, Principal Policy Advisor (jon.sibley@arena.gov.au) if you would like to discuss any aspect of ARENA's submission.

Yours sincerely

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[7] For example under AGL's bulk network tariff proposal: https://thehub.agl.com.au/articles/2020/09/agl-supports-reforms-to-better-facilitate-der-integration

[8] Post 2025 Market Design Final Advice to Ministers, Part B, p76.