



Keeping Up With the Standards

Submission in Support of the Governance of DER Technical Standards (Ref. ERC0319) Proposal

Executive Summary

The Energy Security Board submitted the Governance of Distributed Energy Resources (DER) Technical Standards (Ref. ERC0319) rule change proposal to the Australian Energy Markets Commission (AEMC) on 16 September 2020. The rule change proposal seeks to introduce new governance arrangements for DER technical standards under the National Electricity Rules (NER) and, if required, the National Energy Retail Rules (NERR). The request includes changes to create 'DER technical standards' in the Rules or subordinate instrument to establish the AEMC as the responsible decision maker for creating DER technical standards and to provide for the enforcement of those standards.

The AEMC has published a consultation paper on this rule change with submissions due by 7 October 2021 and a draft rule determination expected in December 2021. This paper constitutes the Institute for Energy Economics and Financial Analysis (IEEFA)'s submission to that consultation paper.

DER technical standards are well overdue in the National Electricity Rules.

The Energy Security Board (ESB) spent more than a year consulting on how best to govern the development of DER technical standards and where they should best sit in the NER. DER stakeholders regarded this as probably the most urgent and important issue to be resolved for efficient and effective DER integration. Given the ESB's prior consultation on this issue, including a Review and Consultation Paper, there should be no doubt this rule change is needed and indeed overdue.

The AEMC Consultation Paper clearly sets out the problem statement and proposed approach to putting DER technical standards in the rules. IEEFA recommends the rule change be assessed not only against security and reliability, price and safety but also an expanded framework that takes into account the benefits of DER integration more broadly, including the electrification of transport and decarbonisation.

IEEFA supports the inclusion of DER technical standards in a subordinate instrument under the Rules in order for them to be able to be amended and updated in a timely fit-for-purpose manner. It is vital that standards can be created or revised in response to technological or market changes without going through a long-winded rule change process.

IEEFA supports the establishment of a new DER Standards Committee to oversee the development of DER technical standards as proposed in the ESB's July 2020

Consultation Paper. Legal advice should determine whether this Committee is ultimately determinative or advisory to the AEMC. If the Committee advises the AEMC, this should be in strong terms, such that the AEMC should be required to adopt the Committee's recommendations or provide specific reasons for not doing so.

The Committee should be selected through a nomination and merit-based process and preferably have independent co-chairs. IEEFA supports the proposed membership mix, that the Committee Members should be drawn from:

- Market bodies
- Consumers/consumer representatives with DER experience
- Distribution Network Service Providers (DNSPs)
- Original equipment manufacturers (OEMs)
- Jurisdictional safety regulators
- Aggregators
- Standards Australia.

Given the importance of the Committee's role and the need for members to devote significant time to its operation, members should be renumerated for their time and expertise. Without this remuneration, there is a risk that those members with the greatest access to resources and expertise through their paid employment have the greatest sway in the Committee's decision making.

Importantly, the role of the Committee should be broader than simply determining standards. As set out the ESB's July 2020 Consultation Paper, the DER Standards Governance Committee should be responsible for:

1. setting a vision for DER technical standards;
2. developing a technical standards work program;
3. monitoring, reviewing and setting DER technical standards,
4. considering issues related to compliance and enforcement of standards in their development; and
5. providing advice on standards and undertaking related reviews.

The level of prescription as to the Committee's operation should be comparable to that regarding the Reliability Panel, balancing clarity and scope for the Committee to make standards in a timely manner that are fit-for-purpose. This should allow for the Committee to have discretion, for example, in how it sets its own policies and procedures. The Rules should state the outcomes the Committee should achieve but not detail how it goes about achieving those ends.

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Definitions: DER Technical Standards

Distributed Energy Resources (DER) can be summarised as 'resources located on the distribution system that generate, manage demand, or manage the network'. This is inclusive of, but not limited to: rooftop solar, battery storage, electric vehicles and vehicle-to-grid services, solar hot water, other generators, smart appliances (eg, air-conditioning, pool pumps), small diesel, building electrification (eg, heat pumps), energy management and demand response systems and software (eg, microgrid controllers) and stand-alone power systems (SAPS).

DER technical standards [currently] consist of a suite of interlocking documents that set out dozens of technical, safety and performance standards for typical DER systems. These include, for example, various voluntary Australian Standards mandated by different legal instruments, as well as network connection agreements and technical standards included in Stage legislation, incentive schemes and other mechanisms.¹

Background

In 2019, many stakeholders raised the need for timely DER technical standards in the NEM. In response, the ESB commissioned a review into the Governance of DER technical standards (the Review) in December 2019.²

The Review found that:

The current lack of coordination, planning, and resourcing, and slow pace of decision-making within the various governance arrangements for DER technical standards in place across Australia, together mean that DER systems deployed today are unlikely to be able to deliver the performance levels and service levels required.³

And:

The most critical gaps and weaknesses are:

- *An overall lack of leadership and coordination and clear objective as to how DER technical standards should be governed, particularly in a divided and distributed regulatory environment*
- *The lack of an adaptive regulation system where the good (enough for now) is not blocked by the perfect, and practical and enacted standards evolve at a pace similar to technology and industry*

¹ Sapere Research Group and Cutler Merz for the Energy Security Board, March 2020, [Review of governance of Distributed Energy Resource \(DER\) technical standards](#).

² Ibid. Sapere Research Group and Cutler Merz for the Energy Security Board, March 2020, [Review of governance of Distributed Energy Resource \(DER\) technical standards](#).

³ Sapere Research Group and Cutler Merz for the Energy Security Board, March 2020, [Review of governance of Distributed Energy Resource \(DER\) technical standards](#). p. 10.

- *Inability to implement technical standards related to emerging system security challenges – none of the governance models (other than voluntary Australian and International Standards) currently enable [Australian Energy Market Operator] AEMO to impose technical standards for managing system security risks*
- *The Standards Australia process which, in some stakeholders' view is too slow, not sufficiently transparent, does not enable participation from a broad range of stakeholder groups (especially customer groups) and decision-making is not explicitly aligned with NEO [National Electricity Objective]*
- *Lack of harmonization in network connection standards across DNSPs in terms of both decision-making processes and the technical standards themselves*
- *The lack of planning in terms of how the broadly successful processes adopted by the Clean Energy Council (CEC) and Clean Energy Regulatory (CER) under the Small Scale Renewable Energy Scheme (SRES) will transition as the SRES is wound down*
- *Under-resourcing of compliance and enforcement activities, and gaps especially for non-safety related standards in a divided and distributed regulatory environment*
- *Lack of coverage of existing governance models to electric vehicle technology, potentially leaving the industry exposed to technical risks at network and system level, should penetration increase rapidly.⁴*

In summary, the governance of DER technical standards has been fragmented, with a lack of clarity of roles and coordination and is not fit-for-purpose, especially not to keep pace with the rapid change in DER products and services.

In response to the findings of this Review, the ESB issued the ESB Governance of DER Technical Standards Consultation Paper⁵ in July 2020 proposing the establishment of a new Governance Committee, convened under the AEMC, to oversee the development of DER technical standards to meet electrical system security requirements, support distribution network management and provide long-term affordability and choice for consumers, including through the sale of DER services.

Many submissions were received to this consultation, almost all in support of the proposed changes. Given the broad stakeholder support, the ESB decided not to undertake further consultation and the ESB submitted the Governance of distributed energy resources (DER) Technical Standards (Ref. ERC0319) rule

⁴ Sapere Research Group and Cutler Merz for the Energy Security Board, March 2020, [Review of governance of Distributed Energy Resource \(DER\) technical standards](#).

⁵ Energy Security Board, [Governance of DER Standards Consultation Paper](#), July 2020.

change proposal to the AEMC on the 16 September 2020.

It should be noted that while the rule change proposal was broadly consistent with the July 2020 Consultation Paper, the ESB board decided not to focus the request on the establishment of a new Governance Committee (comparable to the Reliability Panel), but rather put forward options for advising the AEMC on the making of DER technical standards. This went against the majority of stakeholder views in submissions to the ESB.

The rule change request stated:

The request seeks to amend the NER:

1. *To create 'DER technical standards' either in the NER or in a subordinate instrument under the NER.*
2. *That the NER provide for the enforcement of any National Electricity Market (NEM) DER technical standards as well as relevant Australian Standards for distribution connected inverters.*
3. *To establish the Australian Energy Market Commission (AEMC) as the responsible body for setting DER technical standards, including the related procedures for AEMC to:*
 - a. *monitor, review, develop, consult on and set a vision and work program for DER technical standards for the national electricity system (updated annually);*
 - b. *update or develop new DER technical standards as needed*
 - c. *carry out public consultation in relation to a and b above which may be the same or similar to the current AEMC rule change processes or be a bespoke process.⁶*

AEMC's Consultation Paper

Problem Statement and Context of Inverter Technical Standards

The AEMC Consultation Paper clearly sets out the problem statement:

Any delay implementing new DER technical standards as the market and technology evolves may lead to significant amounts of new DER capacity in the NEM that is not fully capable of supporting security and reliability objectives.⁷

⁶ Dr Kerry Schott, Rule change request – Governance of Distributed Energy Resources (DER)./
technical standards, September 2020.

⁷ AEMC, Consultation paper: Governance of DER technical standards 2 September 2021

It categorises the range of existing governance arrangements impacting DER technical standards from voluntary to mandatory and from local to cross-border (NEM or national).

Due to an earlier rule change request from the Australian Energy Market Operator (AEMO), from December 2021, Distribution Network Service Providers (DNSPs) will be required to ensure that embedded generating units (inverters) meet minimum DER technical standards (Australian Standard AS 4777.2:2020) when connecting under a Model Standing Offer (MSO – also known as a standard connection agreement). In addition, the Australian Energy Regulator (AER) will be responsible for enforcing DNSP compliance with DER technical standards.

The AEMC Consultation Paper then gives an overview of the ESB's rule change request which we won't restate here.

In what follows, we respond to the questions in the AEMC's Consultation Paper.

Assessment Framework

The AEMC sets out the proposed assessment framework for the rule change focused on the efficient investment in, and operation of, electricity services with respect to the security and reliability, price and safety of supply of electricity (see table 4.1 in the Consultation Paper).

Question 1: Assessment Framework

1. Do you agree with the proposed assessment framework?

It is very important that the assessment include all the proposed objectives:

- For security and reliability, this needs to include both the grid-scale and at the distribution-level.
- For price, the benefits of any DER technical standards need to be comprehensively considered against any costs. The benefits need to be considered at all scales and compared to alternative ways of ascertaining those benefits. The benefits should look to the ESB's objective of integrating DER to maximise the benefits for all electricity system users.
- For safety, this could include cyber-safety and climate-safety as well as electrical safety.

2. Should the assessment framework include any additional considerations?

If so, what are they and why?

Somehow the assessment framework needs to move beyond the National Electricity Objective (NEO) to understand that DER is at the interface of electricity, digitalisation and transport. There are DER technical standards (for example, for EV charging) that could have substantial impacts on how quickly the NEM and the transport sector decarbonise and at what cost.

Given that all states and territories have at least adopted net zero by 2050 targets, it would be valuable for the assessment framework to consider decarbonisation.

Issues for Consultation: Governance Problems

Question 2: Identifying Governance Problems

1. Do you agree with the problems identified by the rule change request? Why?
2. Do you agree with the rule change request on the causes of identified problems? Why?

The rule change request sets out in summary all the governance issues with DER technical standards. Further details are available in the ESB commissioned review into the Governance of DER Technical Standards, the ESB's Consultation Paper and the submissions to that Consultation Paper.

3. To what extent has the Commission's recent rule change on DER technical standards resolved or likely resolve the identified governance issues?

The Commission's recent rule change simply set one initial DER technical standard in the Rules and does nothing to address the identified governance issues.

4. When do longer term issues such as interoperability and cyber security need to be addressed? Can existing governance arrangements and the recent rule change address these issues in a timely manner or is further governance reform required?

Interoperability and cyber-security need to be addressed as soon as possible – as set out in the ESB's recent post-2025 market design final advice. Existing arrangements are insufficient to address how to incorporate standards for interoperability and cyber-security into the NER.

5. Are there any other governance problems not identified by the rule change request? If so, why does the AEMC need to consider these issues?

See answer to 1 and 2.

Issues for Consultation: Market Impact

Question 3: Assessing the Market Impact of Identified Problems

1. Do you face any costs from governance arrangements in place prior to the commencement of the new DER technical standards rule change on 18 December 2021? Can you quantify these costs?
2. Alternatively, how would you be impacted if the Commission does not establish new governance arrangements for DER technical standards?
3. How certain are you about any forecast future costs?

IEEFA is not a technology provider or market participant so does not have the experience to comment on these issues. However, IEEFA commends the AEMC for examining the impacts of not establishing new governance arrangements for DER technical standards.

Issues for Consultation: Potential Solutions

Question 4: DER Technical Standards in the Rules

- 1. Should DER technical standards relevant to the NEM be included in the NER, or a subordinate instrument?**

As recommended in the ESB's Consultation Paper, DER technical standards should be in a subordinate instrument under the Rules to enable them to be amended and updated without going through resource- and time-intensive rule change processes on each occasion. This is in keeping with how reliability standards and guidelines are updated by the Reliability Panel. Given the fast pace of DER change, it is vital to have timely processes for updating standards.

- 2. How could any new governance arrangements interact with Standards Australia existing processes in a way which avoids duplication, while ensuring standards are developed in a timely manner?**

This could be done by ensuring that the governance arrangements allow for standards to be developed in a fit-for-purpose manner. The AEMC (or Standards Committee) would decide on a case-by-case basis whether to develop the standards in-house (through, for example, a technical expert sub-committee); draw on Standards Australia existing processes; adopt an international standard or undertake an alternative process. In this way, the decision making could ensure the standard is set in the most efficient, effective and appropriate manner depending on the nature of the standard being developed.

- 3. What would be the main benefits from including DER technical standards in the NER, NERR, or a subordinate instrument? Are there any risks?**

There are multiple benefits from including DER technical standards in the NER, NERR, or a subordinate instrument. Possibly the most important is to ensure that the benefits of DER are optimised, for example, to provide network support, participate in energy or frequency control and ancillary services (FCAS) markets or future demand response or two-sided markets. Without appropriate DER technical standards, the collective benefits of DER are likely to be limited.

The main risk of putting DER technical standards into the Rules or a subordinate instrument is that they are established in such a way that they are difficult and/or time-consuming to change. This would defeat the purpose of the governance reform proposed here. It would also create further ossification in the NEM rules that already suffer from being iteratively updated in comparison to the transformational change underway in the energy system.

4. Did the recent rule change on DER technical standards partly address problems identified by [ESB Chair] Dr Schott's rule change request?

No. The recent rule change was about a single DER technical standard, not about the overarching governance arrangements.

5. If so, does the recent rule change on DER technical standards reduce the need to adopt the new governance arrangements proposed by the rule change request?

N/A.

Issues for Consultation: Who Develops and Maintains DER Technical Standards?

Question 5: Who Develops and Maintains DER Technical Standards

1. Should a new committee be responsible for determining or advising on DER technical standards in the NEM?

A new Committee should be established to oversee the development of new DER Technical Standards – as set out in the ESB's Consultation Paper. Whether this Committee is ultimately determinative or advisory is a question best answered through legal analysis, especially in terms of liability for any decisions made. If advisory, the AEMC should be required to action the Committee's recommendations or provide specific reasons for not doing so.

2. If so, how should members be appointed to the new committee?

The original Consultation Paper's approach to committee appointments is supported:

It is proposed that all roles be selected through a nomination and merit-based selection process. The following is proposed regarding the selection process for the membership of the Governance Committee:

- *Committee members are selected on the basis of their expertise in DER technical standards. Consideration is also given to balancing Committee membership representation according to geographical location and participating jurisdictions. Membership must also be considerate of balanced representation to cover for National Electricity Market (NEM) networks, non-NEM networks and SAPS standards considerations.*
- *Members who are appointed to represent 'Registered Participants' must be agreed to by at least one third of the category of Registered Participant they represent (for example, market aggregator, network service*

*provider).*⁸

3. What knowledge and experience would be needed to develop and maintain DER technical standards in the NEM?

The rule change proposal's range of knowledge and experience is supported. An independent chair (or preferably co-chairs) would be key to a well functioning committee.

4. Should membership of a new committee be paid or voluntary?

Given the importance of the committee's role and the need for members to devote significant time to its operation, membership should be renumerated. A voluntary committee risks members with the greatest access to resources having a disproportionate influence on decisions. This is particularly important given the membership should include consumer and start-up/new technology representatives.

5. Should the committee report to the Commission as proposed by the rule change request? Or should the new committee report to another entity? If so, who?

As the rule maker, AEMC is the most appropriate body for the Committee to report to. This matter was canvassed extensively in the ESB's consultation and the vast majority of stakeholders agreed the AEMC was the appropriate convening body.

6. How would the governance arrangements proposed by the rule change request interact with existing governance arrangements and the recent DER technical standards rule change? Are there any risks of duplication or divergence?

If new governance arrangements are carefully established, there should not be any risks of duplication or divergence. The recently established DER technical standards would come under the responsibility of the new arrangements. However, there may need to be consideration of transition arrangements to put the existing standard into a subordinate instrument for ease of updating.

7. Are the proposed governance arrangements likely to reduce how long it takes to develop and implement new DER technical standards for the NEM? If not, would any alternative approaches increase the pace of setting standards for the NEM?

Yes, this is a key objective of the rule change request.

8. Is there a trade-off between how quickly new technical standards are developed and other NEM objectives such as the safety, security and reliability

⁸ Energy Security Board, Governance of Distributed Energy Resources (DER) technical standards: Consultation Paper, July 2020.

of power supply?

Any trade-offs should be carefully managed by the DER Standards Governance Committee and the AEMC. What is most important is to give the committee the broad responsibilities set out in the ESB's original consultation paper:

The DER Standards Governance Committee should be responsible for:

1. *setting a vision for DER technical standards;*
2. *developing a technical standards work program;*
3. *monitoring, reviewing and setting DER technical standards,*
4. *considering issues related to compliance and enforcement of standards in their development; and*
5. *providing advice on standards and undertaking related reviews.*

Issues for Consultation: How Prescriptive Should New Governance Arrangements Be?

Question 6: How Prescriptive Should New Governance Arrangements Be

1. How much prescription should be included in the NER to implement the proposed new governance arrangements?

As much as is necessary to ensure the responsibilities (as above) are clear, that good governance is assured and that expertise and consultation are given appropriate roles in the arrangements. The ESB's July 2020 consultation paper suggests how the Committee should have discretion, for example, to sets its own policies and procedures. The Rules should state the outcomes the Committee should achieve but not detail how it goes about achieving those ends.

2. Should the AEMC periodically review DER technical standards to determine if further regulatory intervention is needed? What level of prescription should be included in the NER to implement this option?

As set out in the ESB's consultation paper, a forward work program and policies and procedures around regular reviews should be set out in the Rules. These need to be detailed in the rules, comparable to the level of prescription below:

...be responsible for developing a work program for the development, update and monitoring of DER technical standards. This would include the following:

- *Leadership, management and supervision of the standards work;*
- *Setting priorities for the technical work of standards development and updates;*

- *Supervising the timeliness of the work and taking the necessary corrective actions;*
- *Establishing and reviewing a technology roadmap to ensure timely investigation in new fields of technology;*
- *Ensuring compliance and enforcement is appropriately considered; and*
- *Monitoring and identifying emerging technologies and markets and initiating any necessary changes to the work program. This work program will set a clear forward agenda while being flexible enough to keep pace with the evolving technical needs for DER hardware and software, including vital system security and distribution network operation needs.*

And:

...will develop policies and procedures around:

- *The frequency of review of DER technical standards*
- *Reviewing and updating the standards*
- *The use of modeling, including cost-benefit analysis or other methods for assessing the efficiency and effectiveness of proposed standards*
- *Public consultation*
- *Monitoring and amending compliance and enforcement of DER Technical Standards*
- *Any other matters relevant to its objectives.*

3. Are there any solutions that can complement voluntary initiatives to address DER technical standards? For example, how could new governance arrangements in the NER support DEIP?

New governance arrangements could use processes such as the Distributed Energy Integration Program (DEIP) auspiced by the Australian Renewable Energy Agency (ARENA) to develop DER technical standards, as appropriate (as set out above).

4. Is it feasible to amend the role of the Reliability Panel to cover DER technical standards? Would this be preferable to creating a new advisory committee on DER technical standards?

Distributed Energy Resources are a specific area of expertise, beyond the focus of the Reliability Panel on large-scale generation and networks. DER technical standards should be overseen by a new committee; expanding the role of the Reliability Panel would be inappropriate and unwieldy.

5. Are there other alternative solutions to address the issues identified in the rule change request? What level of prescription in the NER is required to successfully implement these solutions?

The ESB explored the issue of the governance of DER technical standards for more than a year and as a result Dr Schott lodged the rule change request. The issue, including alternative solutions, has been thoroughly investigated. The level of prescription should be comparable to that regarding the Reliability Panel in the rules, balancing clarity and scope for the Committee to make standards in a timely manner that are fit-for-purpose.

About IEEFA

The Institute for Energy Economics and Financial Analysis (IEEFA) examines issues related to energy markets, trends and policies. The Institute's mission is to accelerate the transition to a diverse, sustainable and profitable energy economy. www.ieefa.org

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