



Andrew Swanson

Australian Energy Market Commission (AEMC)

Submitted via online portal

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Dear Andrew

### **AEMC Review into Consumer Energy Resources Technical Standards Draft Report**

SolarEdge Technologies (Australia) PTY LTD (SolarEdge), Enphase Energy Australia (Enphase), Tesla Motors Australia, Pty Ltd (Tesla), sonnen Australia Pty Ltd (sonnen), Redback Technologies (Redback), SMA Australia Pty Ltd (SMA), and Fronius Australia Pty Ltd (Fronius), are jointly writing today to provide the Australian Energy Market Commission (AEMC) with a response to the “Review into Consumer Energy Resources (CER) Technical Standards Draft Report”.

We recognise that compliance with CER Technical Standards and other technical requirements is necessary and agree with the AEMC statement that improved technical compliance is important. Within the context of this submission, when we refer to Technical Standards, we use the term “Technical Requirements” to capture a much broader group of requirements that also includes things like network service provider (NSP) led flexible export requirements as well as state government led requirements such as emergency backstop mechanisms. This means that the response below should be read as having broader coverage than the existing CER Technical Standards currently captured in the National Electricity Rules (NER) – specifically AS/NZS 4777.2.

With this context, in respect of CER governance, we are equally focused on how to create a framework that allows for efficient development and implementation of new CER Technical Requirements as well as retrospectively addressing issues with existing standards or Technical Requirements. We would also like to see changes to roles and responsibilities to enable compliance gaps to be dealt with efficiently. Our broad concerns and recommendations on what the future of CER governance should look like are twofold:

1. **There is no coordinated or central approach to developing new CER technical requirements:** technical requirements are set by a myriad of different agencies and are generally passed straight through to installers or OEMs rather than being considered within the broader pool of work underway. A centralised process would ensure greater prioritisation and provide more guidance to industry on both the “why” and the “when” of CER issues that need to be addressed; and
2. **Industry has little engagement in the development of CER technical requirements:** OEMs and installers are often handed final, or near final, standards or technical requirements that are deemed to have solved a specific network issue. Greater industry involvement during the technical requirements development stage would negate some of these risks.

This response to the AEMC also includes a proposal with a future-focused approach to developing new CER Technical Requirements. This includes a central policy development approach and the

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establishment of a new CER Technical Board or Panel to coordinate and develop these technical requirements (an overview of these recommendations is included as Attachment A).

While these recommendations are very focused on the future for CER technical requirements, an improved governance structure will also go a long way to ensure ongoing compliance issues raised by the AEMC in the Draft Report, are negated or mitigated in the future.

As established by the AEMC, the existing compliance framework results in issues being addressed on a voluntary basis, or through an ad hoc process per region via networks or electrical inspectors. Alternatively, compliance fixes can be introduced through either a lengthy rule change process or the introduction of a new, or updated, Australian Standard.

The latter two processes take a significant amount of time, which creates risk if the compliance issues remain unresolved for an extended period. As an industry, we recognise the implementation challenges faced with the 2020 version of AS4777.2, which mainly came down to a lack of installer consideration. Collectively however, the industry has since been working with AEMO on a voluntary basis to address and rectify the identified compliance issues.

In this response we consider each of the recommendations made by the AEMC. The long-term CER governance arrangements will also be supported by our future-looking model for how new CER technical standards/requirements can be developed in a way that will drive greater compliance from the beginning, by introducing greater industry involvement in the design process.

In addition, we make recommendations on enhanced roles and responsibilities to enable a more streamlined approach to addressing compliance risks after a new technical requirement has been introduced. It is also important to recognise that technical rules and standards are introduced through a variety of different agencies. Addressing compliance gaps through a Rule Change process will only ever be appropriate to managing a small subset of these technical requirements, as the majority are adjacent to the NER or outside of the process altogether.

For these reasons we were happy to see the AEMC release this document as a Technical Report. Addressing CER technical standards – both development and compliance – requires coordination and agreement across multiple agencies, many which fall outside of the remit of the AEMC. We recognise that the majority of the recommendations made here in respect of the new or enhanced roles and responsibilities, as well as establishing a centralised structure for setting new technical requirements, which also sit outside of the remit of the AEMC and will require separate discussions with a range of different organisations to make these requirements a reality.

We look forward to collectively and iteratively working with the AEMC, and related entities on an improved process for creating and implementing new CER technical requirements. For more information, please get in touch with Emma Fagan ([efagan@tesla.com](mailto:efagan@tesla.com)).

Kind regards



James Sturch  
Technical Director  
Rest of World Region  
**SolarEdge Technologies (Australia)  
Pty Ltd**



Wilf Johnston  
General Manager  
Australia, New Zealand &  
Pacific



Emma Fagan  
Energy Policy Manager  
APAC  
**Tesla Motors Australia, Pty Ltd**  
1062 Ann Street

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33 Agnes Street  
East Melbourne VIC 3002



Leonid Kukarin  
Head of Technical Operations  
APAC  
**sonnen Australia Pty Ltd**  
Tenancy 6, Lionsgate Business  
Park  
180 Philip Highway  
Elizabeth South SA 5112

**Enphase Energy Australia Pty Ltd** Brisbane QLD 4066  
88 Market Street  
South Melbourne VIC 3205



Mariella Doppelbauer  
**Fronius Australia Pty Ltd**  
90-92 Lambeck Drive  
Tullamarine VIC 3043



Doris Spielthener  
Managing Director Australia  
and APAC  
**SMA Australia Pty Ltd**  
213 Miller Street  
North Sydney NSW 2060

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### **AEMC recommendations:**

#### **Stage one: simplify devices at manufacture and supply**

##### General comments

For the most part these fixes can simply be retrospectively applied to all products via remote software updates. These are currently being dealt with through proposed updates to AS/NZS 4777.2:2020. The proposed changes to the CER governance framework will benefit from more involved drafting and advice from OEMs which would identify some of these issues ahead of introduction, rather than retrospectively, as well as by better installer education and training.

In respect of addressing non-compliance gaps identified after a technical standard has been released, voluntary updates present the quickest pathway to rectification. These rely on OEMs operating with a good social licence. Alternatively, additional carrot/stick initiatives could be explored to provide preferential treatment to those OEM manufacturers that are willing and able to provide remote compliance fixes to their products. Some initial ideas are explored below but will require further consultation.

##### Draft recommendation 1: Remove historical device settings

This is already being built into the amendment of AS/NZS 4777.2:2020. A number of OEMs have already implemented this as per the requirements of DNSPs on a voluntary basis. We support the AEMC recommendations on voluntary rectification but note that it will be challenging to mandate this in the absence of the changes to AS/NZS 4777.2:2020. We are open to working with the AEMC on potential incentives that could be put in place to reward good social licence behaviour.

It is also important to note that some Pacific Island nations using AS/NZS4777.2 still use previous versions for compliance purposes. Previous versions of the Standard can also be used for warranty replacements. Any push for voluntary updates should be managed in a way to not disadvantage either customer warranty claims, or the uptake of solar in Pacific Island nations.

##### Draft recommendation 2: Make 'Region A' the default setting

This is currently under consideration for the amendment of AS/NZS 4777.2:2020. Most OEMs have already implemented this as per the requirements of DNSPs.

From a terminology perspective, it will be important for the AEMC to specify that default should just be the #1 setting, rather than an "out of the box pre-set" setting. This is important for several reasons:

- Mandating a default, product 'out-of-the-box' is default to Region A is not realistic or necessary for global OEMs that have products in markets cross-cutting jurisdictions, as this would create the need for an Australia specific product range being manufactured which can be problematic and increase product price plus create global logistics challenges. Instead, within the commissioning process, when the inverter is being set the 'Region A' code should be orchestrated to become the first option for an Australian system.
- Australia also includes Region B and Region C (Region B & C areas are areas outside the NEM, such as Western Australia, remote areas in Australia, and including TasNetworks are all *not* Region A).

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- Some OEMs have already pre-configured requirements for individual NSPs which makes things simpler for installers. If Region A becomes the default this would undo some of the work done to simplify the installation process.

### Draft recommendation 3: Update devices remotely to support compliance

Principally this is an installation issue and an issue created by a relatively fragmented approach to ensuring compliance in a governance framework that places obligations on both DNSPs and state electrical inspectors. It is not technically an OEM problem to fix. However, since the situation was brought to light many OEMs have (where feasible) voluntarily, and at their own cost, implemented a process to have all non-complaint inverters re-set to the correct regional setting.

To attract more wide-spread remote uptake of devices, we should also be considering possible incentive or preferential treatment arrangements to attract greater OEM compliance. This might include:

- Fast-tracked or tiered connection processes for inverters with different levels of compliance.
- One-off payments to inverter OEMs for firmware updates that solve for grid or network issues.
- Preferred treatment under the flexible exports or export pricing regimes.

All these options would require further consideration but may result in quicker processes for improving compliance rates.

It will, however, be important that any remote updates are also considered in parallel to the broader cyber security and customer data requirements to manage risks associated with malicious fleet wide remote updates that may threaten grid stability, or customer utility.

What is a sensible recommendation in this context though would be to make it a requirement that OEMs always have remote access to the installed product base. Currently when some 3<sup>rd</sup> party monitoring systems or HEMs devices are installed alongside and inverter system, the remote communication connection is diverted to the 3<sup>rd</sup> party device thus locking out the OEMs ability to access the inverter and make any change to settings as required to implement compliance requirements.

### **Stage two: promote compliant installation**

#### Draft recommendation 4: Make CER technical standards mandatory for New Energy Tech Consumer Code (NETCC) Approved Sellers

- CER product standards are already required at the point of connection. Currently compliant product lists are necessary for all grid-connections.

Separately, the application of state electrical wiring rules also requires compliance with AS3000 which includes reference to standards such as AS/NZS4777.2:2020. So, any solar or battery inverter installed is already legally required to be compliant with relevant CER technical standards.

- Rather than creating a third separate regulatory pathway, (in addition to the grid-connection process and through the electrical safety rules) it would be preferable to focus on a more robust process for developing new CER technical requirements and for embedding them into the existing processes. This will also require work on considering what CER encompasses (noting this definition is likely to change and evolve over time).

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### Draft recommendation 5: Mandate CER technical standards training for Small-scale Renewable Energy Scheme (SRES) accreditation

- This already exists and is implemented. However, there are some clear limitations to this process:
  - The SRES training and accreditation requirements are limited to CER that is captured within the SRES scheme – specifically solar panels and inverters. The regulatory authority of the Clean Energy Regulator does not allow for further extension to battery storage or any new forms of CER unless they are captured under the SRES scheme. This naturally creates a very narrow remit for installer training.
  - In addition to the above, the current SRES remit also does not include training on the connection or set-up of devices for technical requirements such as flexible exports – which are based in communications and not linked to the creation of STCs.
  - To gain accreditation, an installer only needs to be trained once. When the technical standards and requirements change there is no way to ensure that all accredited installers will receive appropriate updated training.
- There are some potential solutions for addressing these issues within the existing regulatory framework. If the proposed Cheaper Home Batteries Bill is passed, then battery storage will be included in the SRES which will partially address the first point raised above.
- To address the second point, the industry needs to think more strategically around the ongoing incentive and penalty structures for CER installers. By giving a single agency the policy remit for CER technical standards, we can consider new agencies to take on training to fill gaps as well as solutions to improve installer knowledge.
- Ensuring that as part of an annual accreditation renewal process, mandatory training units covering technical requirements for compliance should also be considered.

### Draft recommendation 6: Funded training on CER technical standards for installers

This is a good recommendation and one that should be considered as an option to address the gaps that exists within the regulatory framework for mandatory installer training.

Given the speed and frequency of additional or new technical requirements for installers mandatory funded annual training should be implemented to ensure an ongoing minimum threshold of knowledge.

### Draft recommendation 7: Guidance on CER technical standards for installers

As above, this will be helpful if it is linked to addressing gaps in the existing installer training and accreditation requirements – specifically to address the narrow product definitions that exist within the SRES regulatory framework.

The current AEMC recommendation is that this training comes from DNSPs and/or jurisdictions. However, the network's role is to ensure technical/functional compliance and not installation compliance, this is the role for electrical inspectors. We note a technical risk in 'delegating-up' the responsibility from the implementation stage [commissioning] which the installer carries out and is trained to do and we believe this warrants further consultation. Further, the issue is that the AEMC has not addressed is the fact that electrical inspectors are often not qualified solar installers so find it hard

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to appropriately understand the technical nuances of what they are inspecting, so they are unlikely to be a suitable agency to provide this training.

A problem may also arise in states with multiple DNSPs as it may be challenging for installers to access the right information. We are supportive, in principle, of additional guidance being published to support installers, however more thought needs to be given to the entity or process that is best placed to provide this guidance.

As a secondary point, a major governance gap that exists is the lack of an adjudicating body for Australian Standards. No agency is tasked with interpreting Technical Standards set by Standards Australia and ensuring that there is consistent interpretation or can provide guidance to installer or OEMs who have questions on “grey” areas. As part of the broader roles and responsibilities review, we would like to see an agency given authority to provide this role.

### Draft recommendation 8: Introduce commissioning sheets for CER devices

There are a few concerns with this recommendation:

- “Commissioning sheets” are *online processes* rather than hardcopy “sheets”.
- This recommendation has the potential to be problematic for installers if the DNSP commissioning sheet inadvertently contradicts anything in the OEM installation manual for different products. Different OEMs have different commissioning processes, so it would not be possible to create a single CER commissioning sheet, even one broken down by different product types.
- Conflict could also arise if the guidance contained in the commissioning sheet provided by the DNSP does not align with the information contained within the OEMs instruction manual. AS/NZS 3000 dictates that the installation shall conform to the instructions contained within the manufacturers manual/s. Under the current regulation framework this requirement would therefore override the DNSPs documentation.

In addition to product specific installation manuals, there is already general installer training material as referenced above in respect of accreditation programs. Many OEMs also run training programs and their own accreditation modules specifically on new product standards when released. An additional commissioning sheet would run the risk of creating confusion for installers or being so high level that it does not provide any additional benefits.

Where DNSP specific commissioning sheets would be useful would be for DNSP specific requirements – where external equipment is required, such as for the Queensland Emergency Backstop scheme. However, we would note that the key requirement in such a case, would be to make sure that the DNSP commissioning guidance complies with the wiring rules and other state electrical safety requirements. This group also does not support mandating the use of an external device to provide emergency backstop services.

## **Stage three: support ongoing compliance**

### Draft recommendation 9: Accelerated smart meter deployment with improved data access

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Accelerated deployment of smart meters will not help enforce compliance as smart meters will not be able to see anything of the inverter other than retrospectively the ability to record power flow values. Smart meters don't capture voltage, frequency, power factor etc. There is also such a delay in the meter polling speed it's not an accurate way to validate CER compliance.

Smart meters also will not be able to differentiate between products where there are multiple assets installed behind the meter. So, in the event that smart meter capabilities were updated to capture voltage etc. they would not be able to differentiate between individual products. Even with a single CER asset behind the meter, if data is recorded at the site meter level it will still be challenging to determine asset level compliance.

The AEMC smart meter reform work should continue as a separate workstream and should not necessarily be considered as a potential CER technical standards solution.

### Draft recommendation 10: Access to OEM compliance data

In respect of NSPs the best solution would be for remote verification via a common communication protocol such as CSIP-AUS as this will be able to inform the DNSPs or other/entities of exactly what the inverter is, how it has been setup and configured as well as its function compliance. This position is caveated on the general principle of wanting a centralised approach to CER standards development which may result in phased CSIP-AUS implementation and data integration.

It will be challenging for AEMO to capture live data. The DER register is static, and there is no current way for AEMO to access live data. This is a topic that could be explored further in respect of data sharing arrangements between DNSPs and AEMO.

As previously mentioned with regards to draft recommendation number 3, there should be a requirement that OEMs always have remote access to the installed product base to address the issue created when remote communication connection is diverted to the 3rd party device locking out the OEMs ability to access the inverter and make any change to settings as required to implement compliance requirements or access and analyse compliance data.

### Draft recommendation 11: Defined process for contacting consumers

Ideally where compliance breaches are detected, they should be able to be rectified by the OEM remotely rather than by the customer. Asking a customer to rectify a compliance breach will potentially create more issues.

In general, for a successful energy system transition at the CER scale, customers will require reduced complexity, rather the burden of responsibility with more complexity. This recommendation speaks to the "National Coordinating Body" or centralised policy process to define responsibilities on, for example, the process to reconfigure inverters to meet DNSPs changing requirements. We believe that the customer is not the right category or 'agent' and placing the customer in this position is likely to create future implementation issues.

### Draft recommendation 12: Subsidized re-configuration of non-compliant devices.



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Again, many OEMs have already implemented a process to have all non-compliant installations re-set to the correct grid code settings. For some, this was a manual remote process that has been rolled out over tens of thousands of systems at the cost of the OEM.

If, however this is a process to be implemented moving forward, there is a risk that installers will use this as a route for less focus on compliance as the outcome for not setting the system correctly is that the OEM will be paid to commission it for them. It would be good to explore further what this option might look like to ensure it is not developed in a way that potentially results in an increased non-compliance risk. The installers are responsible for installation and software commissioning and this issue is related to improved education and training.

We would welcome further consultation and development in this area of “who pays”, for example, we are aware that from a CBA perspective, that DNSPs have well-developed CBAs, but that CER assets (and services) are not considered within this context. From a ‘systems perspective’ it could be argued that the answer to “who pays” is fundamentally all Australian energy consumers (the traditional “poles & wires” costs) but the shift here to consumer-owned resources should also logically shift to incorporating a CER cost benefit analysis, given the assets/resources are generally consumer owned.

# Introduction

- This attachment accompanies the joint OEM submission to the AEMC Review of Consumer Energy Resources (CER) Technical Standards, with the below companies represented.



# Vision for the future

- Tesla, sonnen, Fronius, SMA, Solar Edge, Enphase and Evergen support an Australian energy mix that is focused on clean, renewable energy, with distributed consumer energy resources (CER) playing a critical role.
- Collectively we support the creation of pathways to achieve AEMO “1.8C Orchestrated Step Change” scenario. By 2030 we want to support:
  - 2 million electric vehicles
  - 33GW of installed rooftop PV
  - 6GW of behind the meter battery storage
  - 3.7GW of behind the meter storage aggregated for Virtual Power Plants (VPPs).
- There are a number of key principles that sit behind achieving these goals:
  - Industry will continue to lead innovation and design new products and implement new strategies to provide the best customer experience; to maximise the amount of renewables on the grid.
  - CER should have the ability to provide benefits the grid – with payments for grid services.
  - The majority of these assets will be customer owned, with customers making the choose on how they want their asset to be used, if at all.
- To achieve this scale we need a level of coordination that does not currently exist, and a centralised approach to establishing new technical requirements for CER including all those asset types mentioned above.
- **Efficient development of CER technical requirements will be critical to achieving the above. We consider the CER technical requirements space to encompass all requirements developed by regulatory bodies, networks and governments. Anything that impacts on how a CER asset is used, or requires back-end development work.**

# What are the Governance problems we're trying to solve?

- CER policy design and design of technical requirements currently sits across multiple agencies – state governments, state electrical regulators, AEMC, AER, AEMO, NSPs, CER.
- The range of policy makers can lead to a disconnect in how policy is developed. This leads to inconsistencies and potential “rail-gauge” issues. It also results in duplicative effort and additional engineering work. It also creates opportunity cost as the reactive approach to managing competing technical standard requirements reduces the ability of industry to innovate and focus engineering efforts on new product or offering design.
- The current approach also has clear governance gaps which makes it challenging for enforcing compliance. Where compliance gaps are identified the current approach to bridge these gaps is to either redo Australian standards or undertake lengthy rule change processes.
- The ESB has played the role of being the de-facto coordinating body for the last few years. However it has not changed the approach taken to how technical standards have been introduced.
- As a result, industry is playing catch-up and focusing engineering efforts on these solutions at the expense of developing new products, new customer offerings etc.
- We want to create a CER governance approach that is focused on:
  - Early identification of key network, market and safety concerns that are then fed into a **central** process that drives prioritisation and provides clear, forward looking timelines to OEMs and installers.
  - More robust policy implementation, with independent accountability and clear cost benefit analysis undertaken for all new standards (that consider customer, industry and network/market costs).
  - All design and cost benefit analysis work to be done ahead of technical drafting instructions provided to Standards Australia or AEMO to create fast-tracked, more streamlined implementation of CER technical standards.
  - Enhanced governance processes – improved roles and responsibilities at the implementation stage.
- **The recommendations in this attachment are designed to be iterative, with more work done to form the basis of a new, and lasting, approach to CER governance.**

# Proposed solution

## 1. A centralised approach to developing new CER technical standards

- This would require a single agency to take the policy lead on coordinating the network, market and safety needs.
- Two options for ownership of policy:
  - DCCEEW owned – integrated with the broader Electrification work-program.
  - AEMC owned – model originally considered by the AEMC in the original DER Governance consultation paper where it talked about setting up a standing committee (similar to the Reliability Panel) to develop DER technical standards.
- The central policy agency would take the lead on prioritising requirements, based on most critical need. All requirements would feed into a CER Technical Requirements Roadmap which would be updated [annually].
- The policy approach should consider things such as consumer impact, costs to consumers/ costs to industry, as well as the benefits of introducing new requirements.

## 2. Establishment of a new independent CER Technical Panel or Board to develop technical requirements.

- The Panel should have the appropriate expertise to be able to suggest solutions that result in the least impact to customers, are future proofed and can be implemented in a way that creates the most benefits to industry while solving for technical risks.
- Proposed make-up of independent CER Technical Panel/ Board:
  - Consumer rep/s.
  - OEM industry representatives
  - Network representative/s
  - Electrical Safety representative
  - AEMO
- The scope of the Board or Panel should be on all technical requirements – not just AS/NZS4777.2, but all technical requirements. Note that the Board/ Panel make-up may need to be reviewed to include technology providers, installers or others depending on the technical requirement that is being considered.

# Governance and principles for standard development

## Governance

- **Panel/Board Charter:** Clearly defined roles and responsibilities of the Chair and representatives. This includes the overall purpose of the panel, the duties and expectations of members, and how the panel will interact with other parts of the governance framework.
- **Trusted Leadership:** An Independent Chair appointed by the central agency with input from the Panel/Board members.
- **Principles:** Would be required to design standards consistent with a set of principles established by the central agency which have been consulted on with industry and consumers.
- **Decision making:** Decision making based on a collaborative and consensus building approach with members able to publish a dissenting opinion.
- **Consultation and engagement:** Agreed upon mechanisms for engaging with and taking input from the stakeholders, to ensure that the panel's work reflects broader industry and consumer views.
- **Transparency and Accountability:** The Panel/Board would be required to operate transparently, with key decisions and the rationale behind them required to be communicated publicly.

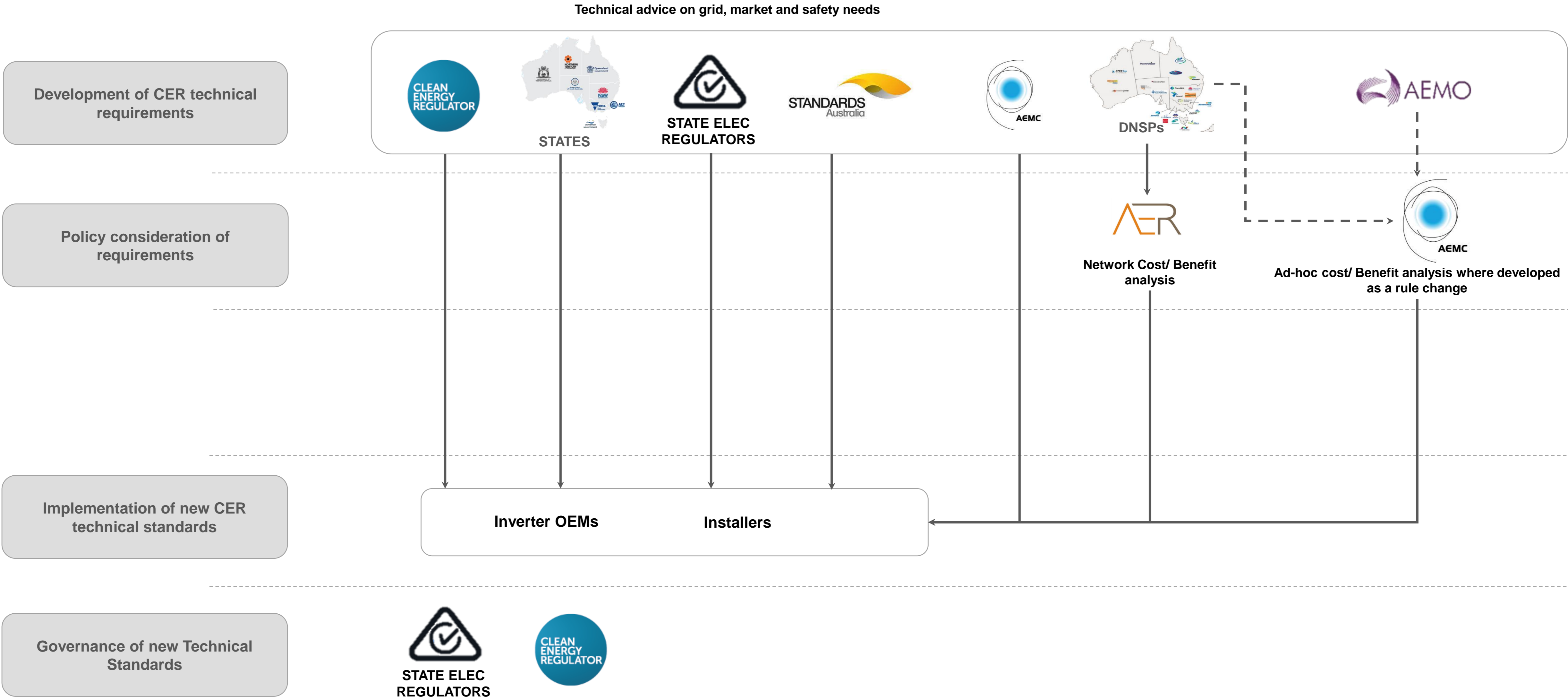
## Principles for Standards Development

- **Market compatibility and alternatives:** Technical standards for CER should allow for flexibility, enabling market-based solutions to achieve desired outcomes whenever appropriate and should not unduly limit CER market participation.
- **Consider impacts and beneficiaries:** Standards should take into account the impact and costs on different stakeholders, including the end consumer, OEM's, installers and technology providers, as well as the benefits of introducing standards.
- **Proportionality and Consumer Focus:** Technical standards for CER should apply the principle of proportionality and acknowledge that CER devices serve as consumer appliances so that standards are fair, practical, and aligned with consumer needs.
- **Differentiated standards for optimised performance:** Standards should account for differences in the capabilities, impact, interactions and contribution of different types of CER on the network and system to ensure standards are designed to optimise performance for both consumers and the network, ultimately leading to a more efficient and resilient energy system.

## Enhanced/ changed roles and responsibilities

Agency	Current Role in relation to CER technical requirements	Enhanced Role/ changed role
AEMO	Informs Standards Australia of market and grid requirements that should be provided by CER and involved in drafting of standards. Ad-hoc development of interim requirements such as the SA Voltage Disturbance Ride-Through (VDRT)	Forward looking development of market and grid needs over a 2, 5 and 10 year process which feeds into the CER Technical Standards Roadmap. Needs provided to CER Policy Making body on an [annual] basis.
AEMC	Inclusion of CER technical standards in the Rules.	Cost benefit analysis of all proposed CER technical standards and proposed approaches developed by DER policy body
CER	Requirements for CER products and installers to enable STC access	No change
AER	Economic regulator with limited technical regulation. Increasing consideration of technical issues in respect of new NSP standard requirements.	Adjudicating function for Standards Australia. Obligation for implementation for technical rules
Standards Australia	Accepts CER standard request from anyone for consideration and development	Would limit the scope more to having CER technical standards put to Standards Australia following detailed policy and design review. CER standards would come direct through the CER Technical Board/ Panel
State Electrical Regulators	Develop state electrical regulations that incorporate DER technical standards	Forward looking development of safety needs over a 2,5 and 10 year process which feeds into the CER Technical Standards Roadmap
State Governments	Develops jurisdictional technical requirements based on jurisdictional need.	[Suggest states only continue to provide this function under emergency powers with the rest of the work done through the centralised process]
NSPs	Develop their own jurisdictional technical requirements	Move to a more centralised process with as much consistency as possible. Forward looking development of their own specific network/ grid needs provided to the central policy maker over a 2,5 and 10 year process.
OEMs	Responsible for implementation/ compliance with all technical standards	Representation on CER Technical Panel/ Board
Installers	Responsible for implementation	Representation on CER Technical Panel/ Board? Enhanced compliance obligations
CEC/ listing body/ installer accreditation	Delegated authority from the CER to provide installer accreditation and manage listing of products. Regulatory requirements limited to	No change

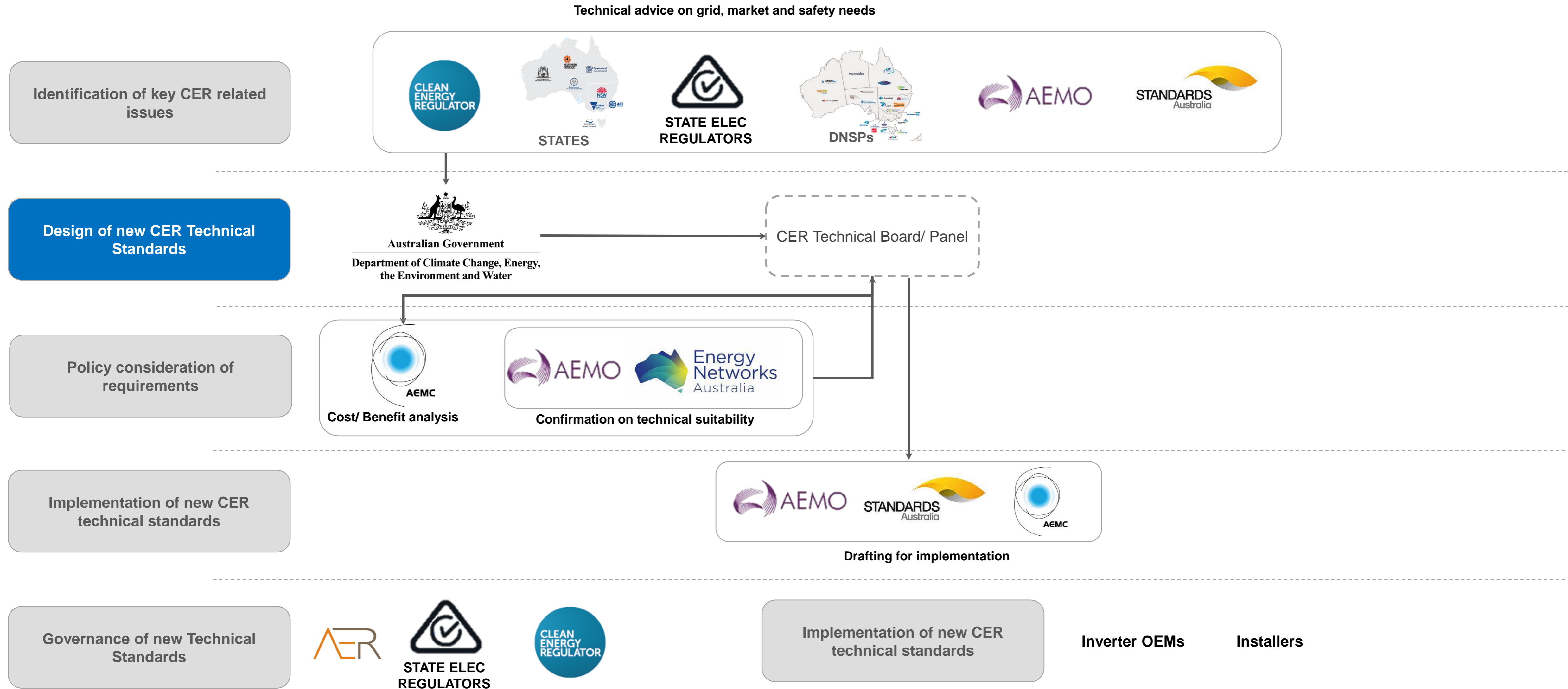
# Current approach to introduction of CER standards





# New CER Governance: Option 1 – DCCEEW ownership of CER under Electrification umbrella

 New body



# New CER Governance: Option 2 – AEMC CER Technical Panel

 New body

