

7 October 2021

Anna Collyer
Chair
Australian Energy Market Commission
PO Box A2449
Sydney South NSW 1235

Dear Anna,

Re: Governance of distributed energy resources technical standards – ERC0319

CitiPower, Powercor and United Energy welcome the Australian Energy Market Commission (AEMC) review into the governance of distributed energy resources (DER) technical standards (standards). As businesses, we have experienced an explosion in the growth of solar photovoltaic (PV) systems across our networks that we don't expect to abate any time soon. Unfortunately, this growth has been accompanied by poor compliance practices that are costing both solar and non-solar customers alike. As such, we consider the review timely and critical for transitioning the energy sector to a renewable-driven future.

In summary our submission supports:

- DER technical standards being part of the National Electricity Rules (NER)
- a clear governance framework led by the AEMC for the creation and interpretation of DER technical standards
- a clear framework for enforcement of DER technical standards.

Our submission sets out below our support for the development of a governance system that ensures any form of DER needs to comply with certain national mandatory technical standards to ensure network reliability, energy security, customer choice and market development.

Why have DER technical standards within the National Electricity Rules?

There is an urgent need for a fast, flexible and transparent standards setting process that is applied consistently across the National Electricity Market (NEM). The Energy Security Board's (ESB) review noted some of the weaknesses in the current Standards Australia process, including that it is slow, not driven by customers and is not required to undertake any cost benefit analysis before implementing changes in standards.

We strongly support changes to the regulatory framework for standards that would require consideration of both costs and benefits, customer impacts and business impacts prior to the standards being given the force of legislation.

It is sensible to create a nationally consistent set of technical requirements that benefit customers, manufacturers and installers. Inclusion in the NER, or a subordinate instrument under the NER, will provide confidence for further investment in the sector and ensure clarity to all participants operating across the supply chain and customers.

Consideration should be given to 'future proofing' the NER by increasing the scope of the rule change beyond just inverter-based energy systems under Australian Standard (AS) 4777.2. That standard covers solar PV and batteries, however the technical standards could also extend to other new connection types.

The AEMC could potentially consider a broader standard review given the expected growth in these market segments will likely create network planning and operation challenges in the future.

Consideration could also be given to technical standards that support customers' participation in the NEM through DER. We have previously noted the need for consistent national technical standards to support:¹

- consumers' DER assets to be portable between providers
- consumer accessibility to technical information required to support data sharing with service providers like aggregators
- defined use cases for consumers' DER devices to ensure customers are not missing out on opportunities to assist in system operation
- the technical standards and settings of third party devices being reliably and consistently set in line with the interoperability standards under the IEEE2030.5 protocol
- standards allowing customer devices to communicate with DSO systems via an application programming interface (API) are required in order to allow these devices to participate in the wholesale market and provide network capacity services in near real time
- uniform performance standards for interoperability, such as speed of response.

Governance led by the AEMC

Governance and interpretation of standards is an important responsibility. Under the current arrangements, it is unclear who has authority for interpreting how standards should be applied. That lack of clarity has not benefited any market participant or, more importantly, customers.

There needs to be a way for disagreements in interpretation to be resolved in a way that has legal force and sets an ongoing precedent. Sometimes standards are ambiguous and there can be several valid interpretations. Disputes have often referred to the Clean Energy Council (CEC), but it does not have the authority to make interpretations and is not mandated to support all forms of DER.

The AEMC should consider new standards based on outcomes for customers, including connection and data protocols. The AEMC should be required to collaborate with the Australian Energy Regulator (AER) and the Australian Energy Market Operator (AEMO) in making these decisions but also include a wider committee (a DER Standards Governance Committee) to support its role as a decision maker. The DER Standards Governance Committee must include distributor representation given the pivotal role being assigned to distributors in terms of connection agreements and that in Victoria, distributors are uniquely placed to be able to monitor compliance by virtue of their smart meter infrastructure and data analytics capability.

The DER Standards Governance Committee should have responsibility for issuing interpretations of standards where there is ambiguity or differences of opinion. Ideally, the interpretation would be binding on electrical inspectors and other regulators. There should also be a process that allows industry or regulators to request clarification regarding interpretation of standards from the DER Standards Governance Committee.

There should be a clear framework for enforcement

The most serious problem facing customers, and the broader industry, is not standards themselves, but the lack of an effective regulatory framework to enforce the standards.

Appended to this letter is a case study based on data collected from 48,600 residential solar PV systems installed since January 2020 on our networks and which found the majority are non-compliant with the mandated power quality response mode settings for smart inverters. Further, using our smart meter data analysis, some solar PV systems were found to be exporting more than the limit agreed as part of their connection agreements. Non-

¹ CitiPower, Powercor and United Energy, Submission to the Energy Security Board, Post 2025 Market Design – A paper for consultation, June 2021

compliance impacts not only the performance of the customer's solar PV system, but reduces the benefits received by solar customers and limits future customer connections.

The Clean Energy Regulator (CER) released a report on 16 September 2021 entitled *Integrity Review of the Rooftop Solar PV Sector*. The review was targeted at addressing customers issues, defective installations, misuse of installer accreditation details and safety and quality concerns in the sector. The recommendations in the review included:

- giving the CER responsibility for setting eligibility requirements for an installer accreditation scheme and the listing of eligible solar components
- implementing new and streamlined reporting requirements for installers, solar retailers and manufacturers
- giving the CER more effective powers to monitor and enforce compliance, including the ability to suspend installers, disqualify retailers and de-list components
- developing consumer information to help customers navigate the rooftop solar PV system sector and avoid dishonest operators, empowering customers with the information they need to make informed choices about their rooftop solar PV system.

It is noted these recommendations have all been subsequently accepted by the Australian Government.

We support a model whereby the CEC maintains its industry body role in administering installer accreditation and component listing whilst the CER takes on the enforcement role.

Combined, the CER and CEC have more capacity and expertise to oversee enforcement of technical standards and ensure compliance among retailers and installers than the AER or distributors. It is important to recognise though that distributors, especially those in Victoria, are best placed to identify non-compliance through smart meter infrastructure and their data analytic capabilities. This needs to be recognised, and formally embedded, to ensure enforcement is effective. To this end, we would support a memorandum of understanding being in place between the CER and ourselves.

Finally, the AEMC needs to clarify the enforcement mechanisms for lack of compliance with DER technical standards on other parties. This includes manufacturers, distributors and even customers. On this point, we note that customers will be clearly subject to obligations through their model standing offer (MSO) or deemed distribution contract, but there may be reputational or other restraints on distributors from enforcing compliance.

Conclusion

The development and enforcement of technical standards will have a significant influence on the effective development of networks as Distribution System Operators within the NEM.

The consultation paper relates the need for action based on the National Electricity Objective for rule change requests to be based on the efficient investment in and operation of electricity services with respect to the price, quality and security of supply of electricity. However, as illustrated in our response, the requirements for standards is now more nuanced with the developments in DER which also require networks to consistently support the tradability of network capacity and flexible delivery of consumer choice.

We support the development of a governance system that ensures technical standards are consistently enforced in the interests of all NEM participants.

The starting point needs to be the principle that any NEM participant with any form of DER needs to comply with certain national mandatory technical standards to ensure network reliability, energy security, customer choice and market development.

Should you have any queries about this submission please do not hesitate to contact Brent Cleeve, Head of Regulatory Policy and Compliance, on 03 9683 4465 or bcleeve@powercor.com.au.

Yours sincerely,

A handwritten signature in blue ink that reads "Renate Vogt". The signature is written in a cursive style with a large initial 'R'.

Renate Vogt
General Manager Regulation
CitiPower, Powercor and United Energy

CASE STUDY: SMART INVERTER NON-COMPLIANCE

Since December 2019, we have mandated the use of smart inverters with specific power quality response mode settings for new solar PV systems. The aims were to ensure customers experience less system trips resulting from voltage fluctuations, achieve better solar generation and export performance, and improve the solar PV hosting capacity on our network to allow other customers to connect and export solar.

Customers eligible for rebates under the terms of the Notice to Market for the Victorian Government's Solar Homes Program are required to have the smart inverter power quality response modes:

- 'Volt-Watt' settings which reduce real power export once specified voltage limits are reached to minimize voltage rise from solar exports
- 'Volt-Var' settings which provide dynamic reactive power output and reduce the impact of voltage rise from solar exports.

Installers are required to confirm that power quality response mode settings have been applied at the application stage using our model standing offer (MSO) documentation.

Again, using smart meter data analytics, we have been able to identify solar PV systems not behaving as would be expected based on the mandated power quality response mode settings and as contracted under the MSO. This includes solar PV systems that are exporting more than was agreed under export preapprovals and/or are not supported by an inverter with the correct settings.

For CitiPower and Powercor, 43,500 new solar installations were reported between January 2020 and June 2021. Data analysis shows:

- of these new installations, 80% (34,779) have been assessed as being non-compliant with smart inverter settings
- a total of 991 installers were responsible for these installations with varying levels of compliance with inverter settings:
 - 263 (26%) were responsible for a small number of installations at just 834, but none of their installations during the period were compliant
 - of greater concern are the 441 installers responsible for 28,463 solar installations (65% of the total undertaken) which are assessed as being between 70% and 90% non-compliant.

By August 2020, these results were significantly impacting solar export pre-approval rates for new solar customers. The introduction of a new tool in September 2020 to support pre-approval assessments and which automatically factored in voltage issues, led to export approval rates dropping rapidly from around 80% to just over 60% in November 2020.

In United Energy, there were 5,090 installations during the same period. Analysis of these installations similarly found:

- 69% (3,529) of all installations were non-compliant with the required smart inverter settings
- 152 installers responsible for 47% of all installations were on average 80% non-compliant.

United Energy currently does not require pre-approval and allows a higher export limit of 10kW. The significant non-compliance rates and growth in installations has led to us developing a preapproval tool and introduction of 5kW export limit (subject to AER approval).

Smart meter data cannot be a substitute for audit

Our smart meter data cannot be taken as definitive evidence of non-compliance. It is a strong indicator of a non-compliance issue based on observed performance however without inspecting and auditing an installation,

it cannot be conclusive. We remain reliant on the integrity of installers to faithfully complete the documentation required to be submitted with the alteration request on behalf of their customers.

Volume of non-compliance is widespread

The rate of non-compliance, and numbers of installers involved, suggest there is a widespread issue with non-compliance across the industry. This is despite significant education programs, information sessions, and training initiatives to build the capability of the sector. With the number of new solar PV systems forecast to accelerate, there is an urgent need to reduce the high volume of non-compliance.

Networks have regulatory obligations that non-compliance endangers

We are obligated to actively manage and monitor voltages across our networks to ensure we maintain power quality for all customers. The NER and Victorian Electricity Distribution Code require us to use best endeavours to minimise the frequency of voltage variations. The voltage impacts arising from high volumes of non-compliant solar inverters are genuine risks to meeting these obligations.

Customers need protections

Our data suggests almost 40,000 customers across our networks who, since January 2020, have installed solar PV systems and may not be receiving the full benefits of these investments. Typically, they may be experiencing more frequent trips which mean their systems are not always generating power for their home or to export. Our customers are largely unaware of the inverter settings required or applied. They are reliant on the advice and expertise of solar installers. A qualified solar installer or registered electrical contractor would need to be engaged to perform any corrections needed to settings which means we are somewhat dependent on acting within warranty periods to minimise the risk of additional cost to customers.

It is noted the rule change proponent considers the MSO and deemed distribution contract should be amended to protect customers. Whilst we support such a move, our initial view is this does not protect customers with respect to installers or manufacturers. Neither of these market participants are bound to these agreements nor bound to the NER themselves. This is why we believe the CER and CEC need to play an active role in protecting the interests of customers.

Actions we have taken

Since February 2021, we have executed a range of actions across our networks with the aim of achieving greater inverter compliance. These are shown in the table below.

Table 1 Actions we have taken across our networks

Action taken	Description
Empowered customers	
Application process	- updated solar pre-approval processes to ensure customers' email information is a mandatory field - customers now have full transparency of information being provided to their installer on their behalf
Information	- 'Solar Export Approval Pack' is now sent to customers directly at the pre-approval stage providing advice on issues to discuss with installers including inverter settings
Advice to customers with installations < 12 months old	- as part of a trial, we sent letters to 47 residential customers and their installers to alert them to possible smart inverter non-compliance and performance issues - The response rate was good with 80% of the customers responding after two points of contact and to date, 57% have arranged matters to be rectified by their installers
Automatic reassessments	- we've reviewed sites that are exporting greater than their approved limits and found approximately 3,000 that, if they were reassessed now using our new tools, would be approved for higher limits - these customers will be notified that we will automatically update their export limits to reflect the new network capacity
Engaged inverter manufacturers	
Remote adjustments	- liaised with the top five inverter manufacturers to remotely adjust settings on internet enabled smart inverters that were found to be set incorrectly at installation. To date, this has resulted in settings being remotely corrected on almost 1,300 installations with up to another 15,000 targeted
New standards	- advocated for Australia A settings to be set as the default for all new smart inverters from December 2021 when the new Australian Standard is introduced
Solar installer information	
Education	- Distributed a factsheet reminding them of the need to ensure smart inverters are correctly set through: <ul style="list-style-type: none"> o direct email to installers active on our networks o NECA information evenings and events o Clean Energy Council Tech Talk and Installer Nights o CitiPower, Powercor and United Energy websites.
Clean Energy Council collaboration	
Process re-engineering	- investigating the development of an API between our systems and the CEC MyJobs app in order to simplify administrative processes for installers and provide access to more accurate commissioning reports and information as part of our connection processes
Education	- considering opportunities to participate in CPD accredited training programs offered through the CEC to promote smart inverter compliance
Collaboration	- technical representatives participate in the Smart Inverter Working Group to discuss plans for the introduction of the new Australia A enabled inverters from 18 December - this includes what training is required for installers given there are still settings to be checked with these new inverters

When the new AS4777.2.20 standards are introduced in December 2021, smart inverter installations will be made simpler by the fact inverters will be pre-set to Australia A power quality settings. We are already updating our MSO for solar connections to enforce these new standards (subject to AER approval).

We are also working with the CEC and Solar Victoria to ensure:

- solar retailers and installers are effectively educated on installation requirements for the new smart inverters, particularly as we are aware that some models will still require Australia A to be selected by the installer (that is, not simply set as a default)
- we consider opportunities to simplify and streamline the documentation required from solar installers at each stage of the process from pre-approval to grant payment in order to improve compliance.