28 October 2021

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

Dear Anna

Re: Review of the regulatory framework for metering services directions paper- EMO0040

CitiPower, Powercor and United Energy welcome the opportunity to respond to the Australian Energy Market Commission's (AEMC) directions paper on the review of the regulatory framework for metering services.

As owners and operators of the largest advanced metering infrastructure (AMI) in Australia, we have an extensive and unique perspective on smart meter services and how their benefits can be maximised.

As our experience shows, smart meters have delivered significant customer benefits, that are currently not captured in National Electricity Market (NEM) jurisdictions other than Victoria. The benefits we have uncovered have been vital in delivering our customers a safer, more reliable and affordable distribution service, including:

- delivering safer outcomes at homes, by remotely detecting stray currents and faulty neutrals
- reducing outages by enabling pre-emptive action to identify and rectify faults
- faster restoration times and automatic dispatch of crew before customers are even aware of the outage
- keeping the lights on when generation supply falls short through participation in the Australian Energy Market Operator's (AEMO) Reliability and Emergency Reserve Trader (RERT)
- giving customers opportunities to participate in low voltage (LV) demand management
- providing the lowest network charges in Australia through more efficient management and maintenance of the network thanks to smart meter analytics.

It is evident the metering arrangements in the National Electricity Market (NEM) jurisdictions other than Victoria are not fulfilling the expectations set out when contestability was introduced. There is an enormous missed opportunity to use smart meter data to modernise network operations, improve LV network visibility and generate more accurate forecasts to support planning. This is particularly concerning given most smart meters outside Victoria have been installed to support rooftop solar, however it remains technically invisible to distributors without access to smart meter data.

Our submission addresses the following key 'pain points' from the current arrangements for distributors, informed by our extensive experience in using and managing the smart meter infrastructure:

- while the AEMC has estimated that some benefits can be delivered through the lower penetration of smart meters, high penetration and visibility of the LV network is always superior to having partial visibility. Full visibility at feeder or a distribution transformer level allows for superior accuracy, forecasting and planning, which will be crucial for all distributors as we transition to the distribution

system operator (DSO) role as part of the Energy Security Board's (ESB) post-2025 NEM design. The AEMC should be designing a framework that enables the fastest roll-out of smart meters across all customers; this may include revisiting the role distributors play in the roll-out, given the positive experience in Victoria

- minimum specifications can deliver most of the anticipated benefits of the smart meters, however the National Electricity Rules (Rules) need to be amended to ensure voltage, current and power quality data is required to be provided through the *remote on-demand meter read service* or the *remote scheduled meter read service*, rather than the *meter installation enquiry service* which is used ad-hoc. Consideration should also be given to introducing end-to-end metering infrastructure performance standards in AEMO's Metrology Procedures, similar to those that apply in Victoria

- direct access to power quality data is the most efficient and beneficial option for network management. However, if direct data access is not an option under the NEM metering arrangements, we support a data access framework that allows distributors to access power quality data at efficient cost, without significant negotiation and transaction cost barriers. We do not support the centralised data hub model which would lead to redundant data sharing at substantive industry costs

- given the sound operation of the smart meter infrastructure in Victoria, customers in Victoria would be worse off if national arrangements were introduced. Any move to standardise arrangements across jurisdictions would lead to unwinding of benefits that have been compounding for Victorian customers over a decade

- to better align incentives and costs of the smart meter roll-out, there is merit in multiple parties participating in the roll-out. This would allow each party, including retailers, metering coordinators and distributors, to assess the least cost option when considering the benefits of installing smart meters in certain locations, and maximise on the efficiencies of a self-initiated targeted roll-out. Conversely, requiring multiple parties to share the costs of the roll-out is likely to lead to negotiation and transaction costs that would result in further delays.

Further detail on these key messages is provided in the body of the submission.

Should you have any queries about this submission please do not hesitate to contact Sonja Lekovic on (03) 0418 166 169 or slekovic@powercor.com.au.

Yours sincerely,

Renate Vogt
General Manager Regulation
CitiPower, Powercor and United Energy

1.1 Unlocking customer benefits from smart meters

As owners and operators of the smart meter infrastructure across three networks, we deliver significant benefits to our customers through intelligent network management and innovative new services. How customers benefit from our smart meter infrastructure is covered in detail in our submission to the consultation paper in February 2021.

The benefits our customers receive are only possible because of the high penetration of smart meters, with more than 99% of small customers having one, and through distributors having direct access to near real-time power quality data mandated under the Victorian advanced metering infrastructure (AMI) specifications.

Our responses to the directions paper in the sections below are informed by our extensive experience in smart meter management and use.

1.1.1 Customer benefits can only be optimised with the full visibility of the LV network

We understand the AEMC is seeking views on what customer benefits can be unlocked with lower meter penetration, given the challenge in incentivising higher customer uptake.

In our experience, customers benefit from a high penetration of smart meters, as visibility of the LV network is always superior to having partial visibility (i.e. 20% meter penetration). There is no use case where a lower visibility can deliver the same benefits as higher visibility, albeit there are use cases where lower visibility can unlock some of the benefit (as shown in table 2.1 in the direction paper). For example, the AEMC and stakeholders have found that a smart meter penetration of 20-50% can 'improve accuracy of solar hosting capacity'. This is true as more visibility will be helpful; however, having a full set of data for all customer on a feeder, or a distribution transformer, allows for far superior accuracy, forecasting and planning, resulting in better long-term outcomes for consumers.

Additionally, the average penetration of meters across the network is an impractical metric given LV networks are managed on a locational basis. As has been the case in the roll-out of smart meters in jurisdictions other than Victoria, the penetration appears to be clustered in urban areas with very few installations in rural areas that are more expensive to serve. Therefore, having a 20-50% penetration of smart meters across the network may not deliver any benefits to rural customers if none of the meters are installed there.

Finally, as we transition to the post-2025 NEM design, and distributors take on the role of the distribution system operator (DSO), any penetration below 90% will be insufficient for the type of dynamic network management that is envisaged in the future. As DER penetration grows, and behind the meter systems become more sophisticated, smart meter data will be crucial in facilitating efficient dynamic solutions and eventually dynamic pricing. Real time meter data is required to monitor each circuit in the LV network to produce dynamic 'operating envelopes' for DER. Operating envelopes are upper and lower network limits that can accommodate DER on the network without causing over voltages. Without real time meter data, we would need to constrain the participation of DER using conservative estimates of our operating envelopes. This would limit the opportunity for third parties to develop behind the meter DER services.

Therefore, the AEMC should be designing a framework that enables the fastest roll-out of smart meters across all customers and one that ensures that network data from all the meters installed is shared with

distributors, not just a subset. In doing so, the AEMC should revisit the role distributors play in the roll-out, given the positive experience in Victoria where almost all customers had a smart meter in less than five years.

1.1.2 Minimum functionality and performance specifications need to be made mandatory in the Rules

The AEMC proposes to maintain the minimum specifications of the smart meters, as it is believed the minimum specifications are sufficient to deliver the anticipated customer benefits. This is based on the fact the specifications require the smart meters to be *capable* of delivering certain data and services.

However, the Rules do not specify that voltage, current and power quality data must be provided under the *remote on-demand meter read service* or the *remote scheduled meter read service*, rather is part of the *meter installation enquiry service* specification, which is designed for ad-hoc uses only.

We consider the Victorian specifications deliver superior benefits for our customers, for example through capabilities such as direct load control for managing customer loads or 'last gasp' notifications, which are not available in minimum specifications. Additionally, under the Victorian arrangements there are explicit end-to-end metering performance standards in the Victorian AMI functionalities and specifications, which ensure that the meters are performing as expected and within the functionality but also that all the systems it communicates with are delivering the information and services within standard.

The current minimum specifications can deliver some of the benefits that are currently unlocked in other jurisdictions, but only if all meters are required to provide the voltage, current and power quality data through the *remote on-demand meter read service* or the *remote scheduled meter read service,* rather than the *meter installation enquiry service* which is used ad-hoc. Without these specifications in the Rules, further delays to sharing of key power quality data are likely.

Further, consideration should be given to developing end-to-end performance standards for the metering arrangements in the NEM, as part of AEMO's Metrology Procedures, similar to those that apply to the Victorian metering infrastructure. The performance standards ensure the meter infrastructure is delivering on its intended functionalities and specifications and delivering the highest standard of service for all customers.

1.1.3 Unlocking the safety benefits from smart meters

The most recognised safety benefit of smart meters is the ability to detect a stray current in a neutral service line and prevent potentially serious injury. The AEMC is consulting on two options for enabling this benefit to be realised in jurisdictions other than Victoria:

- option 1—an additional module in the smart meter that would detect a fault and automatically send a notification to the distributor alerting them of the issue
- option 2—using data analytics to identify the issue, provided a data access framework provides the data necessary for the analysis.

The significant limitation of option 1 is the risk of false alarms and the resulting costs on all parties from responding to inaccurate emergency calls. For example, the meter may register an impedance as a failing neutral but the issues is really with a network asset further along the distribution chain, or in an area with a lot of solar rooftop penetration (something that is going to be an increasing issue in the future), there may

be small impedances with changes in the weather (i.e. switching from sunny to cloud coverage) that may signal an issue to the meter but can easily be explained through weather monitoring and analysis of other meters in the area.

We therefore consider option 2 is more efficient and beneficial for customers, as it allows distributors to analyse the potential reasons why a meter may send out certain signals, rather than rely on alerts from the meter that can be for any number of reasons. Our analysis can take many factors into account and to determine the right action, rather than reacting to alarms or notifications out of context which would be highly inefficient and costly for all consumers.

However, for option 2 to deliver the best outcomes, a high penetration of smart meters is key, with an appropriate data access framework that allows near real-time data from the meters.

1.2 Data access framework

Lack of access to power quality data from the smart meters by distributors has resulted in an unnecessary and costly delays to unlocking their full value. This is particularly the case given most customers with smart meters in jurisdictions other than Victoria have solar rooftop, the information about which would be highly useful for efficient network management.

In Victoria distributors have direct access to the real-time meter data which enables intelligent and automated network management capabilities. Direct access also delivers benefits that cannot be implemented without real-time, or near real-time data, such as:

- neutral fault testing with ability to react automatically
- reliability and emergency reserve trader (RERT) services for avoiding load shedding
- operating a dynamic voltage management system (DVMS) for enabling solar exports across the whole network. DVMS relies on real time smart meter data from all smart meters to ensure power quality is maintained in real time.

Direct access is the most efficient and beneficial option for network management purposes. However, if direct data access is not an option under the NEM metering arrangements, we support a data access framework that allows distributors to access the most useful power quality data at efficient cost, without significant negotiation and transaction cost barriers. The development of the data access framework must not come at such a cost to consumers that eliminates the network cost benefits the framework is trying to achieve.

As such, we do not support the proposed option of a centralised data hub for sharing of all power quality data from each meter. This would be the highest cost option out of the four proposed, and an unnecessary overregulation and transactional burden to all parties involved. We estimate the cost of IT system upgrades to share daily power quality data with a centralised data holder to be in excess of $3 million for our networks. When these costs are extrapolated across the industry, and include the likely costs of building the large data hub, this option becomes unviable.

As indicated by the AEMC and other stakeholders, the most appropriate approach may include elements of the other three options considered, or another alternative. From our viewpoint, the data access framework should allow ease of access for the necessary data to achieve the anticipated benefits from better network

management, but also provide opportunities for more flexible market arrangements between distributors and metering coordinators if desired.

1.3 Customers in Victoria would be worse off with national arrangements

Having access to real time meter data, and the ability to respond in real time, has revolutionised the way we understand, manage and operate the LV network. This cannot be easily replicated in a model where distributors do not have direct access to the data, or if data is not available in real-time or near real-time.

Should national arrangements ever be introduced in Victoria, Victorian consumers would be worse off in terms of distribution services and price. Table 1 summarises what benefits would be at risk if the national arrangements were introduced in Victoria. This is assuming a data access framework is introduced, but where data was not able to be communicate to distributors from all meters in real-time or near-real time.

Table 1 Initiatives enabled through smart meters, and at risk if national arrangements are introduced in Victoria

Initiatives that deliver customer benefits	Loss of customer benefits if national arrangements are introduced
Dynamic voltage management, RERT participation	100% loss
Asset fault detection, and automated response	100% loss
Neutral fault detection	75% loss
LV visibility leading to efficiency in operations	75% loss
Vulnerable customer prioritisation, outage notification and LV network planning	30% loss

Source: CitiPower, Powercor, United Energy

While Victorian arrangements are outside of the scope of this review, it is important to continue to highlight how Victorian customers benefit from the current arrangements, and the cost to Victorians from the unwinding of these benefits should alignment between jurisdictions be considered in the future.

1.4 Sharing of cost and responsibilities of the roll-out

In addressing the perceived misalignment of incentives for a smart meter roll-out in the current contestable market, the AEMC is proposing the following options:

- option 1—introducing new revenue streams for meter service providers, such as revenue from data sharing
- option 2—distributors sharing the cost of the roll-out as a party that may eventually benefit from the meters
- option 3—multiple parties being responsible for the roll-out, including potentially distributors.

We consider option 3 is the most efficient and practical solution that is likely to result in a significant increase in the penetration of smart meters. Option 3 would allow each party, including retailers, metering coordinators and distributors, to assess the least cost option when considering the benefits of installing smart meters in certain locations, and maximise on the efficiencies of a targeted roll-out. For example, distributors could incur efficiencies from the connection and meter installation services at the same time. It would also mean that rural customers, that are typically more costly to serve, may benefit from these efficiencies and get smart meters sooner. Distributors and their customers also stand to be the greatest

beneficiaries of smart meter infrastructure hence have the strongest incentive to roll out smart meters to all customers.

Options 1 and 2 are less likely to be successful as they would likely result in negotiation complexities and transaction costs that would not be required under option 3.