GRID SIGHT

10 February 2021

Ms Alisa Toomey
Australian Energy Market Commission
GPO Box 2603
SYDNEY NSW 2000

Subject: EMO0040 Review of the regulatory framework for metering services

Dear Ms Toomey,

Gridsight Pty Ltd (Gridsight) appreciates the opportunity to provide a response to the Australian Energy Market Commission's (AEMC) review of the regulatory framework for metering services consultation paper[1]. We welcome reform that acknowledges the current changes impacting the electricity system and are in support of the AEMC's recognition that this review should be broader than was originally anticipated in 2015.

Gridsight provides a software platform for utilities to identify network constraints, enhance low voltage network visibility and model solutions to common power quality issues that are inhibiting the growth of Distributed Energy Resources (DER), such as voltage rise and unbalance. Gridsight uses a data-driven approach, and by leveraging data from a variety of sources including smart meters, we are able to generate actionable insights at all levels of the distribution network to increase efficiency and provide greater value to end customers. This is becoming increasingly important as the electricity market continues to transition toward a distributed energy system.

The content of our response aligns with our area of expertise and is focused on the following topics:

1. **Drivers and potential barriers to smart meter uptake**

2. **Current and potential services for smart meters**

3. **Barriers to realising current and future smart meter services**

Although we have experience in other aspects of this consultation, we have elected to focus on these specific areas to provide a targeted and comprehensive response. Where appropriate we have included external references to support our position. The key points of our response are summarised in Figure 1.

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[1] *Review of The Regulatory Framework for Metering Services – AEMC, December 2020*

The current regulatory framework is set up to primarily drive smart meter data investment from customer and retailer perspectives.

This is no longer appropriate as the end customer benefits that data provides in facilitating the transition to a decentralised electricity system need to be taken into account.

The current regulatory framework does not provide network service providers with sufficient data access to maximise end customer benefits.

There is no clear avenue for innovative analytical organisations such as Gridsight to obtain this data and provide expert data-driven services to the industry value chain for network service providers, retailers and other organisations.

We do not believe that the penetration of smart meters should be used as the primary indicator of success of the framework.

Success should be measured by comparing end customer benefits with costs incurred over defined timeframes.

Figure 1 – Key Points

Overall, we believe the AEMC's description of the current state of metering and stakeholder benefits is accurate. We also believe that this review has occurred at an opportune time to alter the framework and recognise emerging value drivers that can support the continuation of an efficient, safe, reliable electricity system for all consumers.

We would welcome the opportunity to discuss any aspects of our response or the review more broadly with the AEMC. Should you have any questions related to this submission please feel free to contact Brendan Banfield – Chief Executive Officer Gridsight on 0407 079 765 or at brendan@gridsight.ai.

Yours sincerely,

Brendan Banfield
Chief Executive Officer – Gridsight

METERING SERVICES CONSULTATION PAPER SUBMISSION (EMO0040) - GRIDSIGHT

1. Drivers and potential barriers to smart meter uptake

We agree with the AEMC that there is significant merit in incorporating the lessons learnt from the Victorian rollout and broader global rollouts in this review, however, we would caution that the penetration of smart meters should not be the only metric of success used in this assessment. We note that although Australia (excluding Victoria) has only achieved approximately 20% of penetration compared to near complete penetration in countries (such as New Zealand and Finland[2]), this has not necessarily resulted in a poor consumer outcome. The AEMC's review would benefit from assessing global installation rates through the lens of costs and benefits to consumers, with the key question being if the rollouts have both met their original requirements and provided a net benefit.

As noted within the AEMC's consultation paper, it is clear that the market-led approach driven by retail and consumer benefits has not resulted in a high penetration of smart meters. We do not find it surprising that the AEMC has identified solar installations as the main driver of consumer requests, as they provided direct and current consumer benefit. We believe that **consumers are not driving uptake** for the following reasons:

- **Complexity** – The conceptualisation of consumption patterns and comparison to real-world costs is a complex topic that does not capture widespread consumer engagement. This has been demonstrated in the historical examination of tariffs[3] across the National Electricity Market (NEM).
- **Lack of value** – Rooftop solar is the only smart meter-related innovation developed to-date that is widely known and can deliver significant value directly to consumers. As a consequence, rooftop solar is the only smart meter-related innovation that has been adopted en masse by Australian consumers, as identified by this Review.
- **Additional investment** – To realise the benefits of active consumption management as identified in the original reforms, consumers are required to outlay additional investment in the installation of equipment such as home energy management devices. This provides an additional barrier to consumers benefiting solely from smart meters. Although this has been recognised within the United Kingdom[4], the costs of mandatory installation may outweigh the benefits of such devices.

In addition to this, we also believe that the market approach for **retailers is not driving uptake** for the following reasons:

- **Minimal efficiency gains** – The return on investment for retailers from remote reading and isolation capabilities is not offset by the complexities of jurisdictional legislation and capital subsidies to DNSPs, as identified by the AEMC.

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[2] *Electricity Retailers Association of New Zealand – "Smart meters – everything you needed to know and more"*
[3] *ABC News - "Energy 'confusion-opoly' blamed for consumers paying too much for electricity"*
[4] *Smart Meter GB - The Installation Process*

- **Innovation complexity** – While there is the potential for retailers to develop innovative solutions to commercial problems using ancillary data - such as how to minimise solar losses via controlled load shifting or create real-time control applications to enable consumers to take advantage of dynamic pricing tariffs - the data and control aspects are too technically challenging to be built in-house.
- **Maturity of ancillary data markets** – Markets for additional sources of revenue from smart meter data have not matured for several reasons discussed later in this submission. This further reduces the potential return on smart meter investment.

In assessing the overall consumer value proposition of smart meters, it is important to separate the consumer experience from consumer benefits. Like many aspects of the application of the National Electricity Objective (NEO) and National Electricity Retail Objective (NERO), it is often the case where the framework must balance short-term consumer preferences with long-term consumer interests.

It is clear that the greatest short and long-term benefits from smart meters exist in the role the data plays in facilitating better network services and the transition toward a decentralised electricity system. While consumers already have access to a fraction of the potential benefit today (e.g. solar PV), these network capabilities must be further developed before consumers can realise the full benefits of smart meters through improved access to markets, retail services and new products.

These benefits are not incremental efficiencies of existing services, rather, they constitute a holistic shift in facilitating the consumer-led, bi-directional use of existing electricity assets and decarbonisation of the system. **We believe the AEMC should review the framework with a focus on how metering services can be utilised to efficiently and effectively facilitate network services in supporting this shift. This focus should primarily be related to distribution network service providers (DNSPs) and their ability to manage DER Integration, decarbonisation, urban intensification, and the shift to a post-2025 electricity market[5].**

2. Current and potential services for smart meters

The Gridsight platform derives insights using data provided from smart meters, SCADA systems, internet-of-things (IoT) devices and DER. We believe we are well positioned to provide comment on both the current and potential services for smart meters.

As outlined above, the primary use cases for ancillary (non-market) data from meters are related to DNSPs. The current services available from the analysis of smart meter data vary across a spectrum of penetration and the nature of the data. We categorise the nature of data as either static, where the data is provided retrospectively for longer periods of time (usually greater than a day), or active, where data is provided at hour or minute intervals.

Speaking from experience, the majority of current services are performed using static data and only require partial data to complete (approximately 20% penetration) and include examples such as:

- **State Estimation** – data from smart meters can facilitate state estimation algorithms to refine the modelling of behaviour in distribution networks. We currently use smart meter data and predictive analytics to assist DNSPs to manage voltage within the network. Without this data, DNSPs utilise more traditional network modelling techniques that rely

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[5] *Energy Security Board – Post 2025 Electricity Market Design*

heavily on cable and conductor data which is often poor quality or unknown. Moreover, without sufficient understanding of customer consumption patterns, it is not possible to adequately calculate the effect additional DER will have on power quality throughout the network.

- **Asset Health** – the main asset health use case referenced by stakeholders is neutral integrity monitoring. The spectrum of potential benefits are far beyond this and include the identification of instances where network assets are being subject to duty over their thermal operating limits. This also includes the capability of identifying portions of the network at risk of overvoltage. This information can be used by DNSPs to avoid unnecessary tripping of solar PV inverters in the low voltage network which will subsequently lead to fewer customer complaints, greater overall value, and improved customer satisfaction.
- **Network Data Validation** – Our platform is able to identify instances where network data (such as phase connection and solar PV sizing) may be incorrect and suggest corrections to impute missing data. These benefits are extremely cost effective when assessed against manual or assumed data validation exercises. This has large implications in understanding the effect increased DER will have on the LV network and provides a low-cost solution for DNSPs to improve the accuracy of data in existing systems.

- **Network Planning** - Our platform can use existing smart meter data in conjunction with DER models to understand the potential challenges and benefits associated with these technologies in relation to power quality and network reliability. This includes quantifying the benefits of feeder-scale energy storage, virtual power plants, increased solar PV penetrations and increased adoption of EV chargers.

All of these services result in overall benefits to consumers through efficiency gains or improved quality of service with minimal capital outlay. In addition to these services, we believe that several potential future services such as reliability and real-time safety applications will be unlocked through additional access to active data. We also believe that smart meters could provide an efficient mechanism for the implementation of dynamic operating envelopes[6] and potentially act as the single point of control for demand management or load control services.

Importantly, all of these services - both current and future - only require partial saturation to complete.[7] **A complete rollout is not required to deliver significant consumer benefits today. Instead, what we, DNSPs and other third parties need to deliver these benefits faster and more effectively is a standardised way to access ancillary data at a fair price.** This is detailed further in the following section.

3. Barriers to realising current and future smart meter services

We believe that there are a number of current and future challenges to fully realising the value offered by smart meters. This review offers a timely opportunity for the AEMC to remove these challenges and structure the framework to recognise the new value drivers and associated services outlined above.

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[6] *ARENA – Distributed Energy Integration Program*
[7] *ARENA – Solar Enablement Initiative Project*

From our experience operating in a capacity that is reliant on smart meter data, we have experienced the following challenges firsthand:

- **Lack of coordination between parties** – in our experience, for a DNSP to obtain access to ancillary data there are time consuming negotiations between each Retailer, Metering Coordinator and Meter Data Provider. These impair access and create additional costs preventing the realisation of benefits. This structure also makes it unnecessarily difficult for innovative organisations such as Gridsight to provide analytical expertise to market participants. We believe that the establishment of a centralised data hub with standardised data sharing agreements would be an effective solution to this challenge.
- **Lack of data market** – in our experience, DNSPs and their agents are currently the only customers for ancillary smart meter data. This results in an uncompetitive market for the data, whereby the data providers are at liberty to charge consumers whatever they want. This flawed market means that consumers ultimately end up paying for data provision charges and any associated profits through their network charges. This risk could be eliminated by a more structured approach to the sharing of this data.
- **Unstructured rollout** – although there may be efficiency gains associated with targeted geographical meter installations, we believe that consideration should also be given to the benefits afforded by dispersed smart meter growth to enhance overall network visibility. This would benefit from a more structured approach where there could be the potential for multiple parties (including DNSPs) to initiate a smart meter upgrade for a specific use case such as addressing voltage regulation at the network extremities.
- **Minimal data standards** – we have experienced a number of instances where smart meter data structures and transmission methods are different depending on the metering information structure in place for a provider. This results in additional complexity in integrating and analysing this data at a cost that is ultimately borne by consumers.

In addition to these challenges, we acknowledge that future benefits such as the application of dynamic operating envelopes will require hardware upgrades and data security improvements. As outlined above, **we believe the AEMC should make evaluations based on the realisation of benefits as opposed to target levels of penetration when assessing the success of the smart meter rollout. This will ensure that consumers ultimately benefit from any of the costs incurred in the transition to a smarter grid.**