



Faculty of Science
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Smart-*er* Metering Policy

Getting the framework right for a
consumer-focused smart meter rollout

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Abstract

The responsibility for supplying customers with electricity meters changed from distribution network operators to retailers on the 1st December 2017. Under this change retailers are required to install so-called “smart meters”. We find that the claimed benefits of smart meters can only be made accessible to all households if there are changes to the regulatory framework and with an effective and ongoing consumer education campaign. Our recommendations for policy-makers include:

- Guarantee simple access to smart meter data and services for all consumers
- Actively encourage and demonstrate how consumers can use smart meter data related services to lower their electricity costs
- Address consumer protection issues created by new smart meters

Executive summary

Introduction

Making decisions about a large-scale rollout of new meters is always difficult. To achieve a national rollout of smart meters the Australian Energy Market Commission (AEMC) has extensively modified the rules governing the supply of electricity meters. From 1st December 2017 responsibility for supplying customers with electricity meters shifted from distribution network operators to retailers. Under this change retailers are required to install so-called “smart meters”. While smart meters are claimed to deliver consumer benefits, the following analysis finds that AEMC and other government bodies could, and should, do significantly more to ensure that these benefits are realised for consumers.

The main benefit most consumers want from their smart meter is to lower their electricity bill. A number of steps are involved in achieving this which are not currently addressed in the AEMC roll out.

Firstly, consumers and their authorised representatives must be able to access required smart meter data and smart meter data related services in a simple, user-friendly manner that provides actionable *information* for consumers. This would involve consumers giving their explicit and informed consent to the installation of smart meters and third party data access, in accordance with privacy protections. It also requires the development of smart meter data related services enabling consumers to compare tariffs and lower their electricity costs.

Secondly, it is not enough that these smart meter data related services exist; consumers must be actively encouraged to access and utilise these services for their own benefit. This involves a wide-ranging, effective and ongoing consumer campaign to actively encourage consumers to use the services to lower their bills and improve their electricity service.

Thirdly, electricity is an essential service. The AEMC should ensure that smart meter benefits are available to all consumers. The rollout should include adequate consumer protections to address underlying barriers to accessing smart meters and smart meter enabled services.

This report recommends changes to the regulatory framework and a consumer education campaign to:

- Guarantee simple access to smart meter data for all consumers
- Actively encourage and demonstrate how consumers can use smart meter enabled services to lower their electricity costs
- Address consumer protection issues created by new smart meters

The AEMC roll out and claimed consumer benefits

The AEMC has modified rules governing the supply of electricity meters to Australian households. The changes apply to all States and Territories participating in the National Electricity Market, excluding Victoria. Victoria is currently excluded due to an earlier decision to mandate the rollout of smart meters in 2008.

The majority of smart meters installed under the AEMC's new rules will support remote communications¹. In addition to allowing the retailer to remotely collect detailed consumption data the meters also allow retailers to remotely turn the power on and off at consumer premises.

The claimed consumer benefits of smart meters include giving consumers access to information about their energy consumption and costs, for example using online portals and phone apps. There is also the potential to provide consumers access to innovative products and services, for example companies offering to minimise consumer electricity costs by always selecting the cheapest tariff.

At the time of writing Australian retailers have already installed almost 400,000 smart meters to their customers in New South Wales, Queensland and South Australia. The immediate question is what additional services have these customers been able to access? At this point in time, there are very few retailers offering smart meter enabled services to their customers. This shows that the installation of a smart meter does not automatically result in consumer benefits. This has also been seen in the case of Victoria where all households have smart meters but there is limited availability and uptake of enhanced services (VAGO 2015). The result highlights that the Council of Australian Governments (COAG) Energy Council and officials need to do significantly more to ensure that promised smart meter benefits are actually delivered.

This report reveals a lack of demonstrated consumer benefits. The smart meter technology specified by the AEMC risks failing to deliver benefits to a broad range of customers. The analysis shows the minimum six services are predominantly focussed on delivering retailer benefits including reducing retailers' operational costs. At this stage, there is no guarantee of consumer benefits, e.g. easy access to billing data. Distributor access to meter services offering consumer and societal benefits has also not been guaranteed.

The report raises concerns that retailer incentives conflict with primary consumer benefit. One of the largest assumed benefits of a smart meter is the ability to compare tariffs leading to lower cost options. However, retailers – as primary custodians of consumption data – are unlikely to actively support access to consumption data where it would likely lead to consumers switching retailers.

The AEMC regulatory framework can be improved to ensure that consumers benefit from the smart meter roll out. A clear regulatory framework is required to minimise confusion and address foreseeable consumer concerns. The framework should guarantee access to smart meter services for both consumers and their authorised representatives (third parties) in a way that upholds privacy protections and reinforces *consumer* access and control of data.

Electricity is a fundamental enabling service underpinning the wellbeing and quality of life across Australian society. Analysis of the benefits shows smart meters have the potential to deliver long term benefits to Australian consumers; however this paper finds further regulation of the market is required. This paper recommends a number of changes to the current framework to drive these customer benefits.

This policy briefing paper is designed for policymakers involved in the AEMC-led roll out and for interested consumer advocacy groups and consumers seeking to understand the potential benefits and risks of the metering rollout. The paper is written in recognition that the 1st December 2017 is a soft start date, and that there is still scope to identify risks and improve the roll-out over the next six months.

¹ It is acknowledged consumers can request the smart meter be installed without communications

Different approaches to smart meter roll outs

The realisation of customer benefits flow directly from the delivery model chosen. Broadly there are two approaches to the deployment of smart meters. Under a mandated rollout all consumers receive a smart meter. This was the approach taken by the Victorian Government in 2008. Under the Victorian rollout every Victorian home was fitted with a smart meter. The rollout was highly unpopular starting with the levy placed on all consumer electricity bills to recover smart meter costs. The Victorian Auditor General's review of the rollout found significant governance issues and a failure to deliver promised consumer benefits (VAGO 2015).

The alternative is to undertake a market-led (voluntary) rollout of smart meters. The voluntary rollout recognises not all consumers will benefit from a smart meter. The market, usually via the consumer's retailer, chooses which consumers are offered a smart meter. This immediately leads to questions of social equity. Not all consumers will be offered a smart meter, with those not receiving a meter unable to access claimed benefits.

The AEMC's contestable rollout of smart meters falls somewhere between these two approaches (see Table ES1). Retailers can immediately choose which customers will be offered a smart meter, with the consumer free to accept or decline the offer, i.e. a market-led rollout. However, if the customer's existing meter is due for replacement then from 1st December 2017 all new and replacement meters must be smart, with the retailer and consumer not given any choice, i.e. a mandated rollout.

There is another potential difference between the rollout scenarios. Mandated rollouts tend to specify a minimum list of services all meters must support, for example all Victorian meters were required to support almost 20 services. A minimum list of services ensures all consumers can access suitable smart meter services. The perceived problem with a prescribed minimum set of services is consumers pay for all of the services even if they never use some of the services.

Market-led approaches allow the retailer to choose the meter services. Theoretically, consumers choose which metering services they value and are therefore prepared to pay for. The advantage is consumers only pay for the meter services they require. The perceived problem is that consumers will be disinclined or unable to make informed choices.

While the AEMC claims that they are using a market-led approach, they have mandated a minimum set of services. As a result, Australian retailers are not allowing customers to choose which services their meter will support. The result is consumers pay for services they do not require and are unable to choose additional services which they actually want.

Table ES1: Three Types of Smart Meter Rollouts – Advantages and Disadvantages

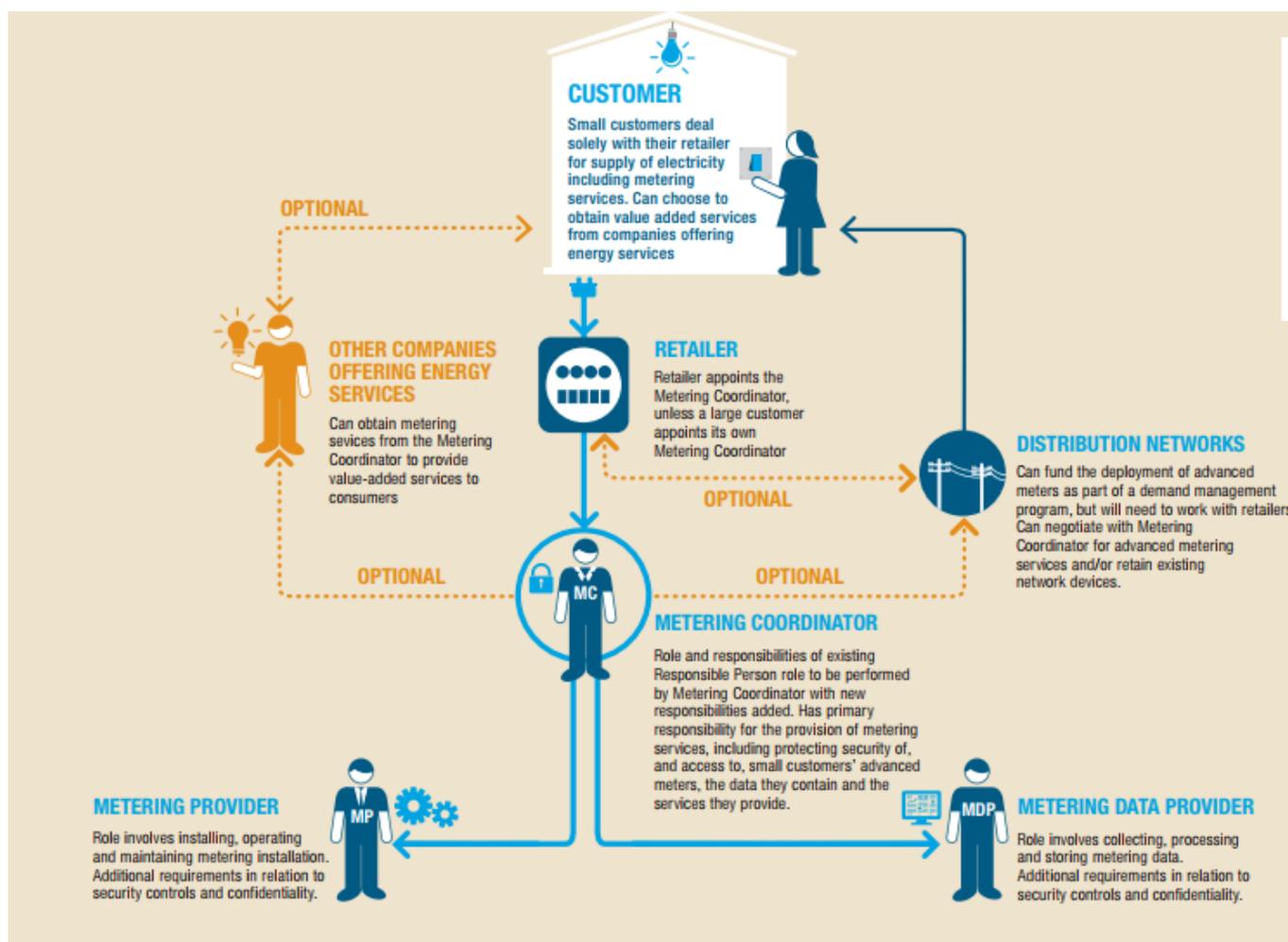
	Advantage	Disadvantage
Mandated Distributor Rollout e.g. Victoria	<ul style="list-style-type: none"> • All consumers receive a smart meter • Meter benefits available to all consumers • No meter replacement when the consumer chooses a different retailer • Economies of scale result in lower costs • Meters include servicers able to support distributor benefits • Avoids cost of manual meter reading • Fast rollout delivers societal benefits faster 	<ul style="list-style-type: none"> • Often difficult for consumers to object to the installation of a smart meter • Retailers do not like the cross subsidy they must pay to distributors to recover costs • Fast rollout results in high initial cost • High cost of consumer education since distributors are not the customer’s first point of contact
Market Led Voluntary Retailer Rollout e.g. New Zealand	<ul style="list-style-type: none"> • Consumers choose if they want a meter • Consumer can choose from a range of different meters offering different services • Cost of consumer education programs lower because working with engaged consumers 	<ul style="list-style-type: none"> • Highly uneven distribution of smart meters and associated benefits • Disengaged (possibly vulnerable) consumers do not receive smart meter benefits • Costs to manually read dumb meters still incurred (and as a result per meter reading cost increases) • No certainty of delivering distributor benefits
Hybrid Market Led/Mandated Retailer Rollout as selected by the AEMC	<ul style="list-style-type: none"> • Initially retailers choose which consumers receive a smart meter – meters are rolled out to customers who see the benefit of a meter (assuming explicit and informed consent) • All consumers eventually have access to benefits with smart meters progressively roll out on a new and replacement basis 	<ul style="list-style-type: none"> • Ambiguity about the need to replace the smart meter when a customer changes retailer • No certainty of delivering distributor benefits • Lag in consumers receiving smart meters could exacerbate existing consumer disadvantage

Figure ES1 is the AEMC illustration of the relationships governing competitive metering services under the AEMC roll out. We draw attention to the following key features:

- The retailer is the primary point of contact for customers seeking metering services
- Consumers can choose value added services from third party service providers if they are given access to the data

- The retailer appoints a metering coordinator who is primarily responsible for meter installation (meter provider) and the collection, processing and storing of data (metering data provider)
- The metering coordinator, metering provider and metering data provider are subject accreditation and registration requirements by the AEMC
- Distribution networks will need to enter into a commercial arrangement with retailers and/or metering coordinators to access metering services
- The meter is owned by the metering provider
- The metering data is accessible to the metering data provider, retailers and distribution businesses via a secure network gateway. The “on-market” data cannot be accessed by third parties beyond these
- Ownership status of the metering data is currently unclear

Figure ES1 Key Roles and Responsibilities in the AEMC rollout



Source: AEMC Competition in Metering Services (2015)

Two broad concerns emerge when considering how well the proposed arrangements are capable of delivering the advantages of a smart meter rollout that consumers were promised through the Power of Choice Review and subsequent AEMC initiatives:

- *Lack of demonstrated consumer benefits:* The smart meter technology specified by the AEMC risks failing to deliver benefits to a broad range of customers. The analysis shows the minimum six services are predominantly focussed on delivering retailer benefits including reducing retailers' operational costs. At this stage, there is no guarantee of consumer benefits, e.g. easy access to billing data. Distributor access to meter services offering consumer and societal benefits has not been guaranteed.
- *Retailer incentives conflict with primary consumer benefit:* One of the largest assumed benefits of a smart meter is the ability to compare tariffs leading to lower cost options. However, retailers – as primary custodians of consumption data – are unlikely to actively support access to consumption data where it would likely lead to consumers switching retailers.

The remainder of the Executive Summary summarises key findings from the analysis provided in the Main Report. These are arranged under five core objectives that do, or should, underpin the AEMC smart meter rollout and are accompanied with a series of recommendations to address the identified concerns.

Providing consumers with appropriate and useful information

Key findings

- *Complex customer access to information:* There is low awareness amongst consumers that they can request a copy of their consumption data used to calculate their electricity bill. The process for requesting consumption data is cumbersome, discouraging consumers from making the request. Once obtained, the consumption data are not presented in a simple consumer-friendly format. Finally, no tools are provided to assist consumers to help understand and interpret their data.
- *Confusing third Party Access to information:* Third parties can offer consumers value-added services, for example regularly comparing electricity tariffs to confirm the consumer is on the cheapest tariff (e.g. *Flipper*). Currently there is no simple way for consumers to authorise third party access to their billing data, by way of comparison the Texas Public Utilities allows consumers to grant third party access via electronic consent. Retailers are also allowed to provide consumption data in their preferred format, e.g. Victoria's *SwitchOn* tariff comparison site currently handles 12 different formats. This lack of standardisation creates problems for third parties since they must support multiple different data formats possibly hindering innovation. In contrast, the North American Green Button initiative gives consumers simple access to their meter data in a standard format and consumers can grant third parties access to their meter data. We note that there are proposals tabled to facilitate access to meter data along the lines of the Green Button initiative by Energy Consumers Association and others (ECA 2017).
- *Uncertainty about Distributor Access to Meter Services:* Distribution Businesses are responsible for supplying electricity to households (essentially the role of a retailer is to charge consumers for the electricity they use). Significant societal and consumer benefits are usually associated with smart meter rollouts leading to more efficient management of the distribution network, for example faster power restoration after blackouts using smart meter outage notifications. The AEMC regulations currently provide no certainty that distribution businesses can access the data they require, or that it will be provided cost-effectively even if they can access the data. The AEMC has assumed distributors will pay the retailer-appointed smart meter provider to install meters supporting additional services. Since the AEMC requires distributors to manage the distribution network, the worst-case scenario is households end up with two meters, one belonging to their retailer and one belonging to their distributor. This situation occurred in the New Zealand market-led rollout. These barriers present obstacles to networks delivering broader social benefits including system security and reliability, and the transition to a more customer-oriented, decentralised low-carbon grid.
- *Limited Tariff Comparison Tools:* There is no user-friendly independent platform that enables customers to compare tariffs and services. The Australian Government's existing *Energy Made Easy* tariff comparison website does not allow consumers to use their smart meter data to

accurately compare available tariffs; in contrast, the Victorian Government's *SwitchOn* tariff comparison website does. A further failing of the *Energy Made Easy* website is that it does not support solar customers and needs to be updated to allow consumers to compare additional services that may be offered by retailers in the future.

- *Lack of Enabling Technologies on Offer:* Smart meters themselves are of little value to consumers. It is the data that they yield that can be valuable. Technologies that enable customers to utilise the information from their smart meters to better manage electricity use and visualise the costs are not usually part of basic retailer offerings. These technologies include in-home displays, portals and apps for energy management. This can mean that retailers derive greater efficiencies from access to the consumption data with a lack of corresponding direct benefits for consumers.
- *Poor Engagement and Communication:* Despite the enormity of the changes the AEMC has done nothing to educate consumers about its smart meter rollout. The industry has capitalised on this lack of education and falsely told consumers they must accept a new smart meter. For example, consumers are unaware they are free to choose a meter with or without remote communications. Messaging about the consumer value of smart meters is also absent.

Key recommendations

- COAG Energy Council and officials develop a consistent and simple communications package around smart meters for all households, notifying them of the changes and their entitlements and rights. This should be part of a larger campaign to raise consumer awareness about the benefits of smart meters, including access to energy use data.
- The campaign should develop targeted communications for vulnerable consumer groups who face barriers to retail market engagement and the uptake of smart meters. These include the elderly, regional/rural households, consumers with intellectual disabilities, and those with English language difficulties.
- COAG Energy Council and officials develop a process for the simple user-friendly provision of smart meter data to consumers; and for consumers to be able to grant third parties access to the data in a way that protects consumer privacy rights.
- COAG Energy Council mandate a single standard meter data format for all customer provided data.
- The Australian Government's *Energy Made Easy* tariff comparison website be reviewed and upgraded. This should provide greater user-friendly information to all consumers, along the lines of the Victorian *Switch On* website. This would include the ability to compare time-of-use and fixed tariffs; providing annual costs information and add support for solar credits. The site should also be made mobile device-friendly.
- COAG Energy Council and officials investigate options for a platform providing third party and industry participants, such as Distribution Businesses, access to data that supports the efficient provision of new energy services. Any platform of this kind should allow for informed consumer consent and meet privacy regulations.
- COAG Energy Council and officials develop a website listing available smart meter services that consumers may wish to consider. The site should clearly explain the potential benefits, costs and detail any risks.

Getting all consumers connected – the uneven patchwork of smart meters

Key findings

- *Uneven Deployment:* In the AEMC roll out, retailers choose which customers will be offered a smart meter. Consumers wanting a smart meter can contact their retailer, but ultimately the retailer

chooses if they will actually receive a smart meter. A likely consequence is an uneven distribution of smart meters, especially for consumers who are deemed uneconomic by retailers.

- *Lengthy Deployment:* A key question is how long before all consumers will have access to smart meters. Under the AEMC rollout all meters being replaced due to failure or age must be upgraded to a smart meter. Standard meters have demonstrated usable lifetimes of over 50 years. This suggests the AEMC smart meter rollout should be completed in around 50 years. The combination of uneven and lengthy deployment will result in a highly uneven patchwork of meters across States and Territories, and uneven customer capabilities to access benefits such as new tariffs and services.
- *Disadvantage due to poor Cellular Coverage:* The decision to go with a retailer-led rollout means the AEMC smart meters rely on commercial cellular networks, unlike the Victorian distributor-led rollout. Households in areas with poor cellular coverage (3G/4G network coverage) will not be able to derive any benefits from smart meters. These households are more likely to be in rural and regional areas.
- *Other Barriers to Uptake:* There are significant barriers to other household types having smart meters installed in a cost-effective manner. Under the AEMC rollout consumers will be asked to bear the cost of any additional work to install the smart meter, for example where there is asbestos in the metering panel or household wiring is considered sub-standard.
- *Lack of Scale:* A single retailer does not own all the customers on a street. Compared to a distributor-led rollout, the retailer-led rollout is slower and has higher per meter installation costs. One concern is how these higher costs are being passed on to consumers. The other issue is the length of time before all consumers are given access to a smart meter with some estimates suggesting the rollout could take over 30 years.

Key recommendations

- COAG Energy Council and officials investigate, identify and publish the number of households likely to face physical barriers to having a smart installed under existing, affordable technology options.
- Assuming clear customer benefits are established, the COAG Energy Council and officials investigate alternative pathways to accelerate the deployment of smart meters in a way that generates maximum individual consumer and social benefits.

Protecting vulnerable consumers connected in the emerging smart meter market

Key findings

- *Insufficient Consumer Protections:* Electricity is an essential service - a fundamental enabling service that underpins wellbeing and quality of life across society. The uneven distribution of smart meters and benefits will create new opportunities for some consumers whilst leaving others behind. We are concerned that the existing retail market has not developed adequate strategies to satisfactorily identify and connect with vulnerable consumers, and that complementary measures designed to provide a safety net in circumstances of vulnerability has not kept pace with changes in the market.
- *Vulnerable Customers at particular risk:* The retailer-led roll out creates a new market in metering services (previously delivered by regulated distribution businesses). We are concerned about vulnerable consumers in this emerging market. Vulnerability can make it harder for consumers to engage with the market. Involvement with a new market can also increase vulnerability for example customers who lack financial and digital literacy can make poor choices and become worse off when they try to engage with the retail market.
- *Risk of More Remote Disconnections:* Not only is there a lack of consumer benefits, but there is a high risk of consumer detriment due to remote de-energisation, a form of disconnection. All AEMC

smart meters will provide retailers with the capability to deny consumer access to electricity. This raises concerns about the adequacy of customer protections, and checks and balances on retailers in advance of de-energisation. Disconnections give rise to concerns about equity and access to an essential service. Various state safety regulators also continue to debate requirements for remote re-energisation, i.e. remote reconnection. This could potentially increase the cost of reconnection, a cost eventually borne by consumers.

- *Potential Threats to Privacy:* Our research shows that the basic privacy framework for third party access to data is sound from a consumer protection perspective. However, there are emerging challenges for off-market data based on the new configuration of stakeholders involved in the contestable metering landscape. It is at these new frontiers that threats to consumer privacy potentially lie. There is inadequate analysis and consideration by regulators about future-proofing the regulatory and market model against privacy breaches. This is the subject of separate research that we are currently conducting.

Key recommendations

- National Energy Customer Framework (NECF) and Australian Consumer Law are regularly reviewed and modified to support customers in the purchase of new energy products and services.
- NECF and government policies, including concessions, be regularly reviewed to ensure adequate consumer protection in light of smart meter-enabled new products and services.
- COAG Energy Council actively review the contestable model and where appropriate develop regulatory frameworks to optimise consumer outcomes. The social impact of remote disconnections warrants an intensive focus in the above recommended review.
- The NECF should be amended to include a Wrongful Disconnection Payment that market participants, found not to have followed the required processes, are obliged to pay the affected customer.
- The Australian Energy Regulator (AER) should encourage retailers to develop outreach programs especially where a customer has been disconnected multiple times. The COAG Energy Council and officials should recognise that consumer concerns about data access and privacy are widespread and demonstrate to consumers via an education campaign that third parties can only access their data with their explicit and informed consent, and that their data is managed in a way that is consistent with the privacy protections in each State and Territory.

Industry incentives and cost recovery

Key findings

- *Lack of Choice on Metering Service Provision:* Consumers do not have the freedom to choose who installs their new smart meter. The AEMC's *Power of Choice* reforms originally envisioned consumers selecting from a range of meters offering the services they required. Instead consumers are currently forced to accept the meter provided by their retailer.
- *Retailer Incentives may not create Consumer Benefits:* While there are financial incentives for retailers to install smart meters, these financial incentives do not necessarily translate into consumer benefits. Daily readings allow retailers to better manage supply and demand and could also be used to support better consumer communication and education. However, to date only one retailer is offering daily access for the very high fee of \$15 a month.
- *Little Retail Innovation:* Innovation in retail offerings, such as time-of-use pricing or discounts for peak demand management, is limited. This means there is little incentive for consumers to go out and purchase smart meters to better monitor and manage their energy use.
- *Cost Recovery Risks:* The AEMC has left the market to resolve what happens when a customer with a retailer-provided smart meter switches to another retailer. In the worst case the customer could end

up with a new retailer smart meter. The best-case scenario avoids the high cost of this unnecessary meter replacement by ensuring any retailer can access smart data at a reasonable cost.

- *Consumers Foot the Bill:* Ultimately consumers pay for any smart meter rollout. Given consumers pay for the smart meter rollout, mandated rollouts ensure guarantees are in place to provide consumer benefits. While consumers will pay for the AEMC smart meter rollout, no such consumer guarantees have been put in place. Also of concern is that household meter pricing used to be regulated; however, under the AEMC smart meter rollout the price is now completely unregulated. This raises concerns about the impact of the reforms on consumer electricity prices.

Key recommendations

- Retailers be required to provide transparency around the additional costs of smart meters. Each retailer ought to provide to consumers a breakdown of their bill that includes smart meter charges and associated services. Where smart meter charges are bundled, consumers should be able to ask a retailer to reveal the charge.
- AER and the Australian Competition and Consumer Commission (ACCC) undertake monitoring and reporting on smart meter charges as a component of household energy bills in each State and Territory.

Monitoring new markets

Key findings

- *Lack of Monitoring and Evaluation Framework:* There is no published framework for monitoring and evaluation of the market-led model within the AEMC.
- *Lack of Transparency:* There is a lack of easily accessible aggregated data about the number of households that have received smart meters, their location and household characteristics. This makes it difficult for independent third parties to monitor the progress of the contestable metering approach.
- *Consumer Risk in an Emerging Market:* The market for smart meters is in its infancy and there could be significant early competition and then consolidation in the market, resulting in the attrition of metering providers (e.g. the recent purchase of *Active Stream* by Ausgrid's metering business). This could create problems for customers seeking to exercise warranties or maintenance. There are also concerns about the protection of consumer data in the event that a Metering Provider exits the market. There does not appear to be a Metering Provider of Last Resort in the market framework that would provide data services to consumers and settle the market if a company fails. The AEMC Retail Competition Review currently provides no analysis of the state of the metering provision market and the implications for consumers.

Key recommendations

- COAG Energy Council and officials establish a clear framework for monitoring and evaluation of the market-led roll out of smart meters in consultation with key stakeholders, and design regular review of the program.
- COAG Energy Council and officials address the issues of customer protection and ongoing service provision in the instance of Metering Providers exiting the market.
- The Australian Energy Market Operator (AEMO) publish transparent spatial data on the uptake of smart meters across the country. This would involve compiling aggregated data about the geographic spread of smart meters by postcode, and by high-level household characteristics.
- AEMC Retail Competition Review include assessment of competition in the metering services market.

Main report

Introduction

To achieve a national rollout of smart meters the Australian Energy Market Commission (AEMC) has extensively modified the rules governing the supply of electricity meters. From 1st December 2017 the responsibility for supplying customers with electricity meters changed from distribution network operators to retailers. Under this change retailers are required to install so-called “smart meters”. The aims of the rule are as follows:

The final rule will facilitate a market-led approach to the deployment of advanced meters where consumers drive the uptake of technology through their choice of products and services. This competitive framework for metering services is designed to promote innovation and lead to investment in advanced meters that deliver the services valued by consumers at a price they are willing to pay.

A major potential benefit of smart meter installation is the related services that enable all consumers to lower their electricity bill. While smart meters are claimed to deliver consumer benefits the following analysis finds the AEMC and other government bodies could, and should, do significantly more to ensure that these benefits are realised for consumers.

The implementation of these rules and the delivery of customer benefits requires multiple coordinated changes to our energy infrastructure and energy markets: infrastructure; data access; market protocols etc.

These new arrangements reconfigure relationships between consumers, retailers, distribution network businesses and third party energy service companies in the provision of meters, access to data, and new energy products and services. There are implications for the individual, commercial and social benefits that can be derived from meter installation and resulting data. The pattern and pace of metering deployment will have consequences for the types of customers who gain access to innovative service offerings and those who do not. Electricity is an essential service and the contestable metering roll out needs to be analysed in relation to the existing framework for customer protections.

This report analyses the framework of the AEMC market-led roll out and asks the following three questions:

- What are the consumer benefits likely to flow from the rollout?
- What are the barriers to maximising consumer benefits?
- What are the protective mechanisms for customers that need to be in place to enable the market to evolve in an orderly and disciplined manner?

Our analysis shows that metering contestability is a complex process for all actors involved and requires much more robust stewardship in policy development and implementation in order to maximise consumer benefits. If a market-led approach proceeds in an undisciplined fashion it is likely to produce unintended consequences and highly uneven outcomes for consumers. In the current landscape of energy politics this risk needs to be carefully managed. We make the following three key findings.

Firstly, consumers and their authorised representatives must be able to access required smart meter data and related services in a simple, user-friendly manner that provides actionable *information* for consumers. This would involve consumers giving their explicit and informed consent to the installation of smart meters and third party data access, in accordance with privacy protections. It also requires the development of independent online tools that enable consumers to compare tariffs and services based on the data enabled by smart meters.

Secondly, it is not enough that these tools simply exist; consumers must be actively encouraged to access and utilise these tools and services for their own benefit. This involves a wide-ranging, effective and

ongoing consumer campaign to actively encourage consumers to use these tools to lower their bills and improve their electricity service.

Thirdly, electricity is an essential service and the AEMC needs to ensure that the benefits from smart meters flow to all consumers, rather than select groups in society. There are residual households who, even with the above tools and awareness campaign, may not be able to access the services and benefits enabled by smart meters. There needs to be adequate consumer protections built into the roll out to overcome underlying barriers to accessing these services.

This report recommends changes to the regulatory framework and a consumer education campaign to:

- Guarantee simple access to smart meter data for all consumers
- Actively encourage and demonstrate how consumers can lower their electricity costs
- Address consumer protection issues created by new smart meters

This report emerges out of a University of Melbourne research project on Customer Engagement in a Competitive Metering Landscape. It has been funded by the Carlton Connect Initiative. It is based on documentary research, outcomes from an industry stakeholder workshop in Sydney in December 2017 and a consultant's report by Dr Martin Gill analysing the customer benefits of NSW Contestable Metering.

What is a smart meter?

Most “smart meters” measure electricity use and record it at regular intervals. The utility can then remotely read the electricity usage data. Smart meters can also deliver a suite of added services to consumers such as control home devices to reduce costs during peak pricing periods.

There is no such thing as a standard “smart meter”. The functionality of smart meters is typically defined in a functional specification which outlines what services the meter supports. Any smart meter rollout must also consider the communications used to support remote operation of the meters. The two are related with the chosen communications adequate to support the meter functionality.

Some remotely read meters are “smarter” than others, specifically they can perform more services than others. For example, smart meter functionality typically includes the ability to remotely de-energise and remotely re-energise consumer premises. Remote re-energisation raises several significant safety issues which can be addressed by including additional functionality in the smart meter. While the Victorian smart meter minimum specification includes this safety functionality, the AEMC smart meters minimum services do not, jeopardising the ability for retailers to remotely re-energise premises once they have been remotely de-energised.

The AEMC has distinguished three different benefits by smart meter functionality (AEMC 2012). Each component also requires different communication capabilities. These are as follows:

- **Bill Management Functions.** The meter measures and records energy use and the meter provides the ability to de-energise consumers for non-payment. This requires minimal communications capability predominantly used for remotely reading the meter once a day.
- **Energy Management functions** allowing messages to be sent to the consumer premises and communicate with consumer installed appliances. This requires a communications solution able to support timely two way communications, so the utility can remotely and quickly operate load control circuits in the meter.
- **Smart Grid Functions** which enable market participants to interact with the smart meter. This places the highest demand on the chosen communications solution since it must be capable of both receiving and sending information in a timely manner. For example loss of supply detection supported by Victorian smart meters alerts the distributor of potential network problems the instant the meter detects an outage.

This gives the reader a sense of the range of benefits that a “smart meter” can perform and the significance of communications capability to enabling benefits. This is one model for classifying potential benefits. In the next section we look at the 2015 AEMC Final Rule Change and analyse the *actual* functionalities and services, and communications that have been mandated, and those that are additional and rely on market forces to be enabled.

Table 1: AEMC Meter Functionality

Functionality	<i>Communications required</i>	<i>Value to consumers</i>	<i>Inclusion in AEMC roll out</i>
Bill Management (measurement and recording)	Minimal point-to-point communications (low cost) capability between the meter and the AEMO metering database. Predominantly used for remotely reading the meter once a day.	Enables more frequent billing and/or bill smoothing to avoid bill shock	Enabled
Energy Management System	Daily download of any voltage events and occasional messages sent to update load switch times stored in the meter (both can be done at same time as Bill Management read). Short messages sent to meter to turn loads on/off	Network Quality of Supply monitoring including Voltage Management Load control with lower tariffs (e.g. Off peak hot water heaters) Demand management to increase the value of smart appliances/solar/battery storage	Not enabled by minimum services specifications
Smart Grid Business Functions	On demand two way communications. Enables market participants to communicate with the meter to both receive information and send messages/instructions to the metering installation	Enables social and individual benefits (ie. supply capacity control, loss of supply detection, energisation/de-energisation). Enables real time control of the battery storage system(s) to enable Virtual Power Plant service.	Not enabled by minimum services specifications

Source: Modified from AEMC 2012

Smart meter specifications

For more than two decades Australian retailers have been installing meters capable of measuring electricity use in 30 minute intervals and using remote reading to report the values daily. Initially these meters were available only to large commercial and industrial customers but over time they have been offered to customers at the smaller end of the market. Now the contestable smart meter rollout requires retailers to offer so-called smart meters to residential customers.

There is a broad range of services a smart meter can support. The minimum set of services required by the AEMC 'smart meters' (as we will continue to refer to them) includes remote collection of detailed consumption data and the ability for retailers to remotely turn the power on and off at consumer premises. A significant point of difference is that the AEMC smart meters support a minimal set of services taken from the larger set of potential benefits.

There are many types of metering installations classified under the National Electricity Rules (NER) (Table 2). The older style meters that are still dominant across Australia today are Type 5 and 6. The smart meters referred to above are Type 4 meters because they are remotely read and collect detailed consumption data.

Table 2: Metering Installation Types and Terminology in Australia

Metering type	Reading method	Granularity of meter data	Load size threshold
Type 1, 2 and 3	Remotely read daily	Currently 15/30 minutes but 5 minutes coming	Above 750MWh / year (eg large factories or power stations)
Type 4	Remotely read as required (usually once a day)	Every 30 minutes but 5 minutes from 1 Dec 2018	Up to 750MWh (eg medium size factories)
Type 5	Manually read every 3 months	Every 30 minutes	Up to 160 MWh (eg residential and small businesses)
Type 6	Manually read every 3 months	Accumulation (one value obtained each read)	Up to 160 MWh (eg residential and small businesses)

Under the rule change the AEMC smart meters must support a minimum of six services, see Box 1. The AEMC considered that these services were most likely to deliver benefits to most small customers at a relatively low cost (AEMC Rule Change Determination vii).

Box 1. The AEMC has mandated six minimum services that all meters must support

Remote De-energisation

This provides an ability to remotely turn off electricity supply to the premises. It enables retailers to quickly and easily cease supply for non-paying customers and in vacant premises.

Remote Re-energisation

When a consumer moves into premises where the power has been switched off remotely this service allows the restoration of power. Ideally the retailer should be able to switch on the power while the customer is 'on the phone to the retailer'. The speed and apparent simplicity of the service is considered to offer consumer advantages. The reality is somewhat more complex.

On Demand Remote Meter Read

On Demand Remote Reads occur on a final read of the meter when a customer is moving out. After requesting a meter read the final bill can be calculated and the customer allowed to pay the bill 'while on the phone'. This benefit is not available to customers who call their retailer to notify them of the final date sometime in the future. Instead it is only available to consumers who call after they have moved out. This is most likely to be renters.

Scheduled Remote Meter Read

The remote meter read supports more frequent meter reads, for example the Victorian Advanced Meter deployment requires the meters to be read daily. Actual electricity bills (not estimates) can be sent to the customer more frequently reducing the quarterly bill shock. More frequent reading also allows retailers to offer additional services and options to consumers.

Remote Meter Installation Enquiry

In addition to energy measurements most smart meters can also measure other quantities including voltage and current. These additional measurements can be used to remotely diagnose problems at consumer premises with considerable consumer benefits. Take the case of a customer phoning the call centre to report they are without power. The meter installation enquiry can determine if the lack of power is due to remote de-energisation (retailer's responsibility), a blown fuse/circuit breaker (consumer's responsibility) or a lack of voltage to the premises (distributor's responsibility).

Once the retailer has identified the problem is not due to de-energisation it is assumed they will refer the customer to the local distributor call centre. This introduces a significant problem. Despite this service potentially offering consumer benefits, it relies on the local distribution business being able to access the meter. This access is not guaranteed.

Meter Reconfiguration

Meter reconfiguration allows meter settings to be changed remotely to support new tariffs and connections (e.g. solar).

The above components highlight the AEMC's focus was almost entirely on customer Bill Management. Specifically, neither energy management nor smart grid functionalities have been included in the AEMC smart meter specifications.

Energy management and Smart Grid functionalities are typically included to ensure that distribution network service providers (DNSP) can more efficiently manage the distribution network leading directly to consumer benefits (for example outage notification). Network businesses must therefore install additional metering equipment needed to make the necessary measurements required to manage the distribution network. The cost of this additional metering equipment is then passed onto consumers through higher network charges.

Comparing the AEMC smart meter to the initial recommendations made to the Council of Australian Governments (COAG) under the National Smart Meter Infrastructure Minimum Smart Meter Functionality Specification shows the lack of consideration of consumer functionality, for example there are no requirements for the meter to display information useful to consumers. While the AEMC assumes if

consumers (or other parties) want additional features they will be prepared to pay more for a meter which supports them, the AEMC rules fail to provide a mechanism for consumers to choose additional meter services.

Extensive financial modelling of the societal benefits delivered by smart meter rollouts have always included energy management and smart grid functionality (see Table 1). The conclusion is with AEMC smart meters not supporting these functions, and no mechanism for consumers or other parties to request the functionality, societal benefits often associated with smart meter rollouts will not be delivered by the AEMC roll out.

Different models for smart meter rollouts

The realisation of customer benefits flow directly from the delivery model chosen. Broadly there are two divergent approaches to the deployment of smart meters, with hybrid versions that fall in between (Table 3). Under a mandated rollout all consumers receive a smart meter. This was the approach taken by the Victorian Government in 2008. Under the Victorian rollout every Victorian home was fitted with a smart meter. The rollout was highly unpopular starting with the levy placed on all consumer electricity bills to recover smart meter costs. The Victorian Auditor General’s review of the rollout found significant governance issues and a failure to deliver promised consumer benefits (VAGO 2015).

The alternative is to undertake a market-led (voluntary) rollout of smart meters. The voluntary rollout recognises not all consumers will benefit from a smart meter. The market, usually via the consumer’s retailer, chooses which consumers are offered a smart meter. This immediately leads to questions of social equity. Not all consumers will be offered a smart meter with those not receiving a meter unable to access claimed benefits.

The AEMC’s contestable rollout of smart meters falls somewhere between these two approaches. Retailers can immediately choose which customers will be offered a smart meter, with the consumer free to accept or decline the offer, i.e. a market-led rollout. However, if the customer’s existing meter is due for replacement then from 1st December 2017 all new and replacement meters must be smart, with the retailer and consumer not given any choice, i.e. a mandated rollout.

Table 3. Three Types of Smart Meter Rollouts – Advantages and Disadvantages

	Advantage	Disadvantage
Mandated Distributor Rollout e.g. Victoria	<ul style="list-style-type: none"> • All consumers receive a smart meter • Meter benefits available to all consumers • No meter replacement when the consumer chooses a different retailer • Economies of scale result in lower costs • Meters include servicers able to support distributor benefits • Avoids cost of manual meter reading • Fast rollout delivers societal benefits faster 	<ul style="list-style-type: none"> • Often difficult for consumers to object to the installation of a smart meter • Retailers do not like the cross subsidy they must pay to distributors to recover costs • Fast rollout results in high initial cost • High cost of consumer education since distributors are not the customer’s first point of contact

Market Led Voluntary Retailer Rollout e.g. New Zealand	<ul style="list-style-type: none"> • Consumers choose if they want a meter • Consumer can choose from a range of different meters offering different services • Cost of consumer education programs lower because working with engaged consumers 	<ul style="list-style-type: none"> • Highly uneven distribution of smart meters and associated benefits • Disengaged (possibly vulnerable) consumers do not receive smart meter benefits • Costs to manually read dumb meters still incurred (and as a result per meter reading cost increases) • No certainty of delivering distributor benefits
Hybrid Market Led/Mandated Retailer Rollout as selected by the AEMC	<ul style="list-style-type: none"> • Initially retailers choose which consumers receive a smart meter – meters are rolled out to customers who see the benefit of a meter (assuming explicit and informed consent) • All consumers eventually have access to benefits with smart meters progressively roll out on a new and replacement basis 	<ul style="list-style-type: none"> • Ambiguity about the need to replace the smart meter when a customer changes retailer • No certainty of delivering distributor benefits • Lag in consumers receiving smart meters could exacerbate existing consumer disadvantage

There is another potential difference between the rollout scenarios. Mandated rollouts tend to specify a minimum list of services all meters must support, for example all Victorian meters were required to support almost 20 services. A minimum list of services ensures all consumers can access suitable smart meter services. The perceived problem with a prescribed minimum set of services is consumers pay for all of the services even if they never use some of the services. It also creates problems when consumers move in/out of properties since the existing meter may support more services than they want or may not support the services they require.

Market-led approaches allow the retailer to choose the meter services. Theoretically consumers choose which metering services they value and are therefore prepared to pay for. The advantage is consumers only pay for the meter services they require. The perceived problem is that consumers will be disinclined or unable to make informed choices.

In theory under a market led rollout consumers can choose both the metering functionality, and who provides the services. Metering provision is open to competition from a range of approved metering service providers. Consumers drive the uptake of technology through their choice of products and services. This in turn leads to investment in advanced meters that delivers the services valued by consumers at a price they are willing to pay (AEMC 2014 50).

While the AEMC claims that they are using a market-led approach they have mandated a minimum set of services. As a result Australian retailers are not allowing customers to choose which services their meter will support. The result is consumers pay for services they do not require and are unable to choose additional services which they actually want.

Disappointingly the AEMC decided not to allow consumers to choose who provides the services. The only option is to accept a meter provided by their retailer. Retailers are not currently offering consumers any choice of meter functionality.

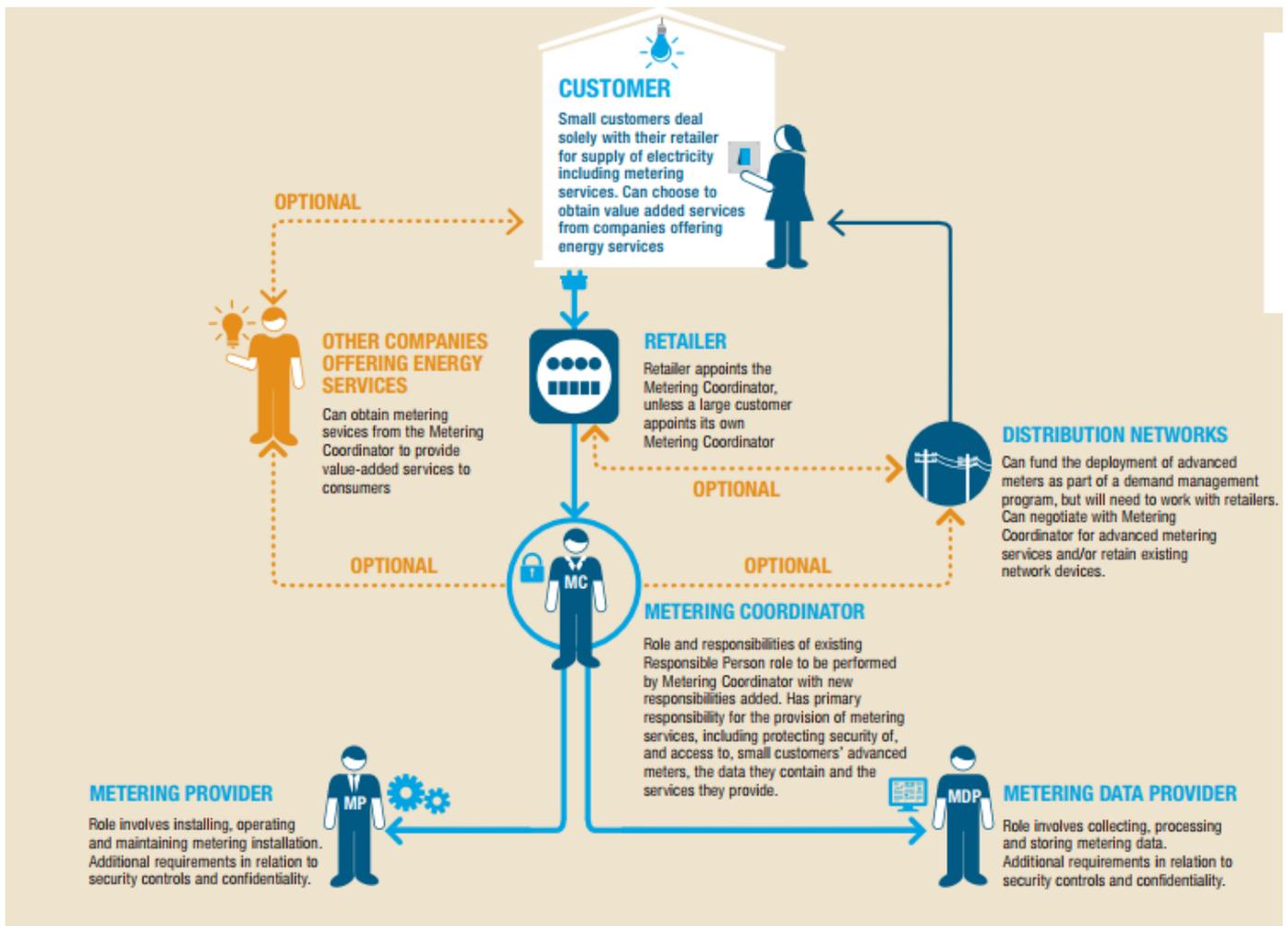
Key roles and responsibilities in the AEMC hybrid market led/mandated retailer rollout

Most mandated smart meter rollouts have been handled by the local distribution business, e.g. Victoria. The advantage of this approach for a contestable retail market, as currently exists in all States and Territories, is consumers are free to choose their preferred retailer confident the meter will not change. The customer's retailer is charged a regulated fee to provide the meter and access to the meter and meter data. These fees are predictable and the same for all retailers.

Under the AEMC's market led smart meter rollout the customer's retailer selects a metering coordinator (MC). The retailer negotiates fees with their preferred metering coordinator to provide the meter and access the meter data. In stark contrast to the mandated rollout significant questions are raised when a consumer chooses a different retailer. Ideally the new retailer will negotiate with the original metering coordinator, but if they are unable to agree on fees (reminder the fees are unregulated) then the meter will have to be replaced. This further undermines the cost-benefits proposition of the rollout.

Figure 1 is the AEMC illustration of the relationships governing competitive metering services under the AEMC roll out.

Figure 1: Key Roles and Responsibilities in the AEMC rollout



Source: AEMC 2015

We draw attention to the following key features:

- The metering coordinator owns the meter

- The retailer is the primary point of contact for customers seeking metering services
- Consumers can choose value added services from third party service providers *if* the meter supports them and they are given access to the data (neither of which are supported in the rule changes)
- The retailer appoints a metering coordinator who is primarily responsible for meter installation (meter provider) and the collection, processing and storing of data (metering data provider)
- The metering coordinator, metering provider and metering data provider are subject to accreditation and registration requirements by the AEMC
- Distribution networks will need to enter into a commercial arrangement with retailers and/or metering coordinators to access the metering services delivering network benefits

While the AEMC claims that they are using a market-led approach they have mandated a minimum set of services. Moreover, consumers cannot select their own metering coordinator to purchase a meter with the services they value. Australian retailers are not allowing customers to choose which services their meter will support. The result is consumers pay for services they do not require and that could disadvantage them (for example the ability for retailers to de-energise their premises) and are unable to choose additional services which they actually want.

Consumer benefits and the AEMC hybrid market led/mandated retailer rollout

There has been a growing recognition that the electricity market needs to become more consumer-oriented. This means creating opportunities for consumers to make informed choices about the way they use electricity based on the benefits they derive from services. The AEMC Power of Choice review made significant recommendations to the State and Federal governments to give consumers options in the way they use electricity, of which smart metering services was key. For customers, it is not the meter per se that is attractive – it’s the services that metering enables, eg real time interface, battery storage etc. Metering can enable greater customer participation in the energy market and control over their energy bills by enabling new products and services that consumers want, such as tariff choices that can lower bills.

Potential consumer benefits include:

- **reduced energy consumption**—smart meters can provide consumers with the information needed to make direct and informed decisions about their energy use
- **lower tariffs**—as customers shift their electricity load from peak to off-peak times, electricity costs could decrease because of time-of-use tariffs
- **network efficiencies**—network efficiencies, such as improved outage response and avoided network augmentation, can be passed on to consumers

We will later discuss the existing and emerging opportunities for such benefits under the AEMC contestable roll out. A key factor that influences customer benefits are the service specifications of the meter.

Assessment of consumer benefits of the minimum services

This report is not intended to be a cost benefit analysis of smart metering. We note a series of Cost Benefit Analyses that have already been undertaken in the AEMC and other rollouts (Deloitte 2011, Oakley-Greenwood 2010 and earlier work by Futura and EMCa). Moreover, because the AEMC-led roll out is in its infancy it is not possible to evaluate outcomes yet. Nevertheless, it is possible to examine the six primary services that are listed by the COAG Energy Council as the minimum services all new meters must provide

and ask “What consumer benefits do these minimum services provide?” The answer to this question provides an insight into the barriers consumers face in deriving either individual or social benefits from the roll out. In the following section we examine changes to the regulatory and market framework that could enable greater benefits. The following analysis was undertaken by Dr Martin Gill.

The AEMC has prescribed six minimum services that must be included in all meters. We analysed each of these services in terms of direct customer benefits, based on a range of customer characteristics. Our analysis suggests only the Scheduled Meter Read has the *potential* to support household benefits broadly.

The following table summarises an assessment of the consumer benefits of the six minimum smart meter services:

	House no solar	House with solar	Apartment	Rental	Hardship	Rural Remote
Remote De-energisation	x	x	x	x	xxx	N/A
Remote Re-energisation	-	-	?	✓	✓✓	N/A
On Demand Meter Read	-	-	-	✓	-	N/A
Scheduled Meter Read	✓	✓	✓	✓	✓✓	N/A
Meter installation enquiry	?	?	?	?	?	N/A
Meter Reconfiguration	-	✓	-	-	-	N/A

Key

✓	Benefits consumers (more ticks the greater the benefit)
-	No advantage or disadvantage
x	Disadvantages consumers (more crosses the greater the disadvantage)
?	Depends on too many factors to make a judgement
N/A	Not Available

The above assessment shows that there are limited benefits across all consumers from the minimum services. The analysis shows the minimum six services provide predominantly retailer benefits and will assist in reducing their operational costs. There is no guarantee of consumer benefits and none of the services support distributor benefits which could indirectly translate into consumer benefits and/or societal benefits

The group that stands to receive the greatest benefits are renters, but this depends on their particular circumstances. For rental households *Remote re-energisation* may provide a benefit with faster power restore on move-in. However, it is only available if the retailer has used *Remote de-energisation* when the previous tenant moved out. It is also noted safety regulators continue to raise concerns about the use of *Remote de-energisation*.

Households with solar and customers experiencing hardship may also derive benefits from two out of six services. *Remote re-energisation* though is only one side of the coin for hardship customers. Whilst these customers may benefit from faster power restoration, this benefit is delivered because a *Remote de-*

energisation service allows retailers to de-energise more households. *Remote de-energisation* is a negative for households experiencing energy hardship because they will likely be de-energised more often.

The analysis finds only *Scheduled Meter Read* has the potential to provide ongoing benefits to all households in the shape of more accurate and frequent billing. Access to these benefits is not currently guaranteed. There are still significant barriers to customers or third parties accessing the metering data and that data being translated into options for value added services, such as cheaper tariffs.

The benefits of each of the smart meter services are described below.

Remote De-energisation

This provides an ability to remotely turn off electricity supply to the premises. It enables retailers to quickly and easily cease supply for non-paying customers and in vacant premises.

A retailer can use this service to de-energise the premises on the date the former occupant has nominated. De-energising the premises theoretically reduces the amount of electricity used at the premises when customer has nominated to pay for the electricity (for example lights left on and continuing to heat the hot water system). Retailers suggest this will reduce the amount of unbilled electricity. The real advantage for retailers of the remote de-energisation service comes when the new occupant arrives at the premises. They are forced to register with a retailer in order to restore power to the premises.

It is difficult to determine any direct consumer benefits for this service. With less unbilled electricity and savings from avoiding the cost of manual premise disconnection the AEMC assumes retailers will pass these savings onto consumer through lower prices.

There are significant negative impacts on consumers for this service. Market rules require retailers to work with consumers struggling to pay their electricity bill. Unfortunately evidence from Victoria suggests the availability of remote de-energisation has resulted in more consumers being de-energised for non-payment (St Vincent de Paul Society & Alvis Consulting 2016).

The service also raises security and safety concerns. Once de-energised anyone coming to the premises cannot turn on a light to find their way. Mains-powered fire alarms will switch to battery power, reducing the number of operational fire alarms. Lengthy de-energisation is also likely to reduce the service life of some hot water heaters, specifically those using powered anti-corrosion anodes. Pools and spas must be filtered daily to avoid quickly turning into highly unattractive mosquito breeding ponds. This becomes impossible once the house has been de-energised. Another casualty will be automated sprinkler systems used to keep gardens watered, which are also likely to stop working. It will increase costs to the new consumer to restore any pool/spa and replace plants which have died. This suggests for a percentage of customers for whom remote de-energisation can have a significant downside.

Identified Issues for consumers:

- Easy to disconnect consumers
- Safety issues raised by having no power even at vacant premises
- May result in additional costs for future occupants if premises are de-energised

	House no solar	House with solar	Apartment	Rental	Hardship	Rural Remote
Remote De-energisation	x	x	x	x	xxx	N/A

Remote Re-energisation

When a consumer moves into premises where the power has been switched off remotely, this service allows the restoration of power. Ideally the retailer should be able to switch on the power while the customer is ‘on the phone to the retailer’. The speed and apparent simplicity of the service is considered to offer consumer advantages. The reality is somewhat more complex.

The consumer advantages of remote re-energisation only occur where retailers regularly use remote de-energisation. It is assumed those living in rental apartments and potentially households experiencing hardship will gain the most from the re-energisation service. Owner/occupiers who move premises infrequently do not receive any significant benefit from this service.

Remote re-energisation raises significant safety issues. The concern is usually expressed as “flammable material being placed on a kitchen hot-plate which has been left on”: once power is restored the hot plate sets fire to the flammable material causing damage to the premises.

There is general agreement that retailers must develop a phone script before utilising remote re-energisation. This script outlines the requirements for customers before premises are remotely re-energised. Importantly the script transfers responsibility for the re-energisation to the customer. This script is likely to first check the customer is at the premises to supervise re-energisation and to require the customer to confirm they have undertaken a thorough inspection of the premises looking for electrical safety issues.

The Victorian advanced meter specification describes meter functionality intended to support the safe use of remote re-energisation. This functionality requires the meter to measure electricity flow after remote re-energisation. If the meter detects current above a programmable threshold (e.g. a hot plate has been left on) then the meter will immediately de-energise the premises. Some State safety regulators remain unconvinced the functionality adequately addresses all situations.

Finally, remote de-energisation cannot be used to make the premises electrically safe. Specifically, if electrical work is required at the premises then work safety standards require a physical disconnection and tag to prevent power being reapplied. This cannot be achieved using remote de-energisation.

Identified Issues for consumers:

- Responsibility for re-energisation passed to the consumer
- Possible safety issues while undertaking the inspection and/or switching mains breakers
- No certainty meter functionality to assist safe reconnection will be available

	House no solar	House with solar	Apartment	Rental	Hardship	Rural Remote
Remote Re-energisation	-	-	?	✓	✓✓	N/A

On Demand Remote Meter Read

On Demand Remote Reads occur on a final read of the meter when a customer is moving out. After requesting a meter read the final bill can be calculated and the customer allowed to pay the bill ‘while on the phone’.

This benefit is not available to customers who call their retailer to notify them of the final date sometime in the future. Instead it is only available to consumers who call after they have moved out. This is most likely to be renters.

Another possible scenario is when a customer asks their retailer for their billing data (as allowed in the National Energy Retailer Rules (NERR)). This assumes the retailer performs an on demand meter read and

immediately provides data to the customer. This will not occur. Customers will be given access to their **billing** data obtained via earlier scheduled reads and not meter data obtained from an on demand read. This is because market rules require meter data to be carefully checked and validated before it is considered to be billing data. Where discrepancies are found with the meter data, e.g. missing data, other market rules specify how the missing data is to be substituted to arrive at the billing data. It is also noted there is no common format for meter data, but there is a common format for billing data making this more useful to consumers.

Identified Issues for consumers:

- Advantages overstated (most requests will use billing data from scheduled reads)

	House no solar	House with solar	Apartment	Rental	Hardship	Rural Remote
On Demand Meter Read	-	-	-	✓	-	N/A

Scheduled Remote Meter Read

The remote meter read supports more frequent meter reads, for example the Victorian distributor-led roll out requires the meters to be read daily. Actual electricity bills (not estimates) can be sent to customer more frequently, reducing the quarterly bill shock. More frequent reading also allows retailers to offer additional services and options to consumers.

Scheduled Meter Read can assist consumers to manage their electricity costs. This includes more frequent billing potentially simplifying management of the household budget when compared to the current practice of only billing quarterly. Receiving more regular bills has two benefits. Firstly, the bill is smaller, reducing stress on the household budget and, secondly, households are alerted to issues affecting the total price (e.g. electricity price rises, faulty appliances, failed solar systems, etc).

The Scheduled Meter Read service could also allow retailers to offer households the option to set an energy budget. The retailer then notifies the household when their electricity costs have exceeded their pre-set budget.

Despite this, there is no certainty that customers can be given easy regular access to their data. Australia has not adopted the USA's *Green Button* initiative. This gives consumers simple access to their meter data in a standard format. More usefully, in some USA jurisdictions the *Green Button* initiative allows consumers to grant third parties access to their meter data. These third parties can then offer value-added services, for example regularly comparing electricity tariffs to confirm the consumer is on the cheapest tariff. In the AEMC smart meter rollout there is little incentive for retailers to help consumers find cheaper tariffs. We note that there are proposals tabled to facilitate access to meter data along the lines of the *Green Button* initiative (ECA 2017).

Identified Issues for consumers:

- No certainty consumers will be given easy regular access to their data
- Will provide benefits where the customers' needs and the retailers' incentives for more frequent reads aligns

	House no solar	House with solar	Apartment	Rental	Hardship	Rural Remote
Scheduled Meter Read	✓	✓	✓	✓	✓✓	N/A

Remote Meter Installation Enquiry

In addition to energy measurements, most smart meters can also measure other quantities including voltage and current. These additional measurements can be used to remotely diagnose problems at consumer premises with considerable consumer benefits. Take the case of a customer phoning the call centre to report they are without power. The meter installation enquiry can determine if the lack of power is due to remote de-energisation (retailer's responsibility), a blown fuse/circuit breaker (consumer's responsibility) or a lack of voltage to the premises (distributor's responsibility).

Once the retailer has identified the problem is not due to de-energisation it is assumed they will refer the customer to the local distributor call centre. This introduces a significant problem. Despite this service potentially offering consumer benefits, it relies on the local distribution business being able to access the meter. This access is not guaranteed.

The issue of distributor access to the retailer-installed smart meters was identified as an issue in early discussions on the AEMC approach. The sticking point was retailers and Metering Coordinators felt distributors should pay to receive the information from the meter.

Assuming the distribution business can access the remote meter installation enquiry, they will check the line voltage. If voltage is present at the meter (and the premises have not been de-energised by the retailer) then the most likely cause of the outage is a tripped circuit breaker or blown fuse. The distributor can therefore direct the consumer to check their fuse board. There are two consumer benefits: firstly, the consumer has their power restored more quickly and secondly, they avoid distributor charges for a site visit which finds the outage is caused by fault on the consumer side of the meter (a blown fuse or tripped circuit breaker). Both of these consumer benefits are jeopardised by the decision forcing local distributors to pay to access the meter installation enquiry service.

Even assuming the distribution business can obtain access to the meter installation enquiry the consumer benefits delivered by a contestable rollout of meters are overstated. This is because the contestable rollout of meters does not allow the distributor to remotely determine if there is a local blackout at a single premises. The outage detection benefit is typically available when the smart meters are installed by the local distributor. In a distributor-led rollout the distributor knows where all meters are installed. When a single outage is reported they attempt to communicate with meters installed on neighbouring properties. If communications with these neighbouring meters also fails then it is highly likely there is a local blackout. If communications with neighbouring meters are successful then it is likely the meter has failed.

There is another potential issue. If the distributor repair crew turns up to the customer premises and finds the outage is caused by a meter failure the distributor does not own the meter so they have to contact the retailer to inform them the fault lies in their equipment. A worse-case scenario sees the customer remain without power until the retailer's repair crew comes to replace the meter. Whilst an unlikely scenario this is a possibility which should be addressed.

Note while the Remote Installation Enquiry can report the voltage at customer premises it is not suitable for managing the voltage on local distribution networks which is another claimed societal or network benefit from smart meters. There are suggestions the installation of distributed energy resources including solar and battery storage systems are causing voltage issues on the local distribution network. There are implications for consumers where the voltage regularly exceeds the legislated maximum. Not

only do high voltages increase the likelihood of appliance failure, some studies show the high voltage increases electricity consumption.

Even if distributors could access the Remote Meter Installation Enquiry this provides them with one instantaneous voltage measurement. To meaningfully monitor network voltages they would need to repeat the Enquiry hundreds of times per day. This is clearly impractical and highlights the proposed service does not support management of network voltages.

It is concluded this service has the potential to offer consumer benefits. Unfortunately the benefits are usually delivered by distributors processing information obtained from the meter and the contestable smart meter rollout does not ensure distributors can access this information.

Identified Issues for consumers:

- Potential benefits only if distributors can access the service (which is not guaranteed)
- Insignificant benefits if distributors are not given access to the data
- Need to clarify what happens when an outage is caused by a meter failure

	House no solar	House with solar	Apartment	Rental	Hardship	Rural Remote
Meter installation enquiry	?	?	?	?	?	N/A

Remote Meter Reconfiguration

This refers to the ability to remotely enable access to new tariffs and new arrangements, such as solar connections and energy demand tariffs.

There is a small benefit provided by Meter Reconfiguration for households with solar, but broader benefits are overstated. Customer bills are calculated in the retailer’s back office not by the meter. When a customer changes tariff arrangements no reconfiguration of the meter is required.

Scheduled remote read meters are configured to record and report only the amount of electricity used at the premises. Remote reconfiguration enables the meter to record and report both imported and exported electricity flows. This enables a solar household to be net metered, rather than simply gross metered. Nevertheless, this benefit applies only when households first install their solar system with faster access to solar feed-in credits. This is a minor one-off benefit. Remote reconfiguration does not apply if the household wishes to install a gross metered solar system, gross metered battery storage system or separate load (e.g. off peak hot water heater). In these cases connections to the meter must be manually changed. This cannot be undertaken remotely. In practice in most cases the new connections will require the installation of a new meter.

Identified Issues for consumers:

- Benefits are overstated
- Numerous occasions where site visits are still required

	House no solar	House with solar	Apartment	Rental	Hardship	Rural Remote
Meter Reconfiguration	-	✓	-	-	-	N/A

Potential customer benefits arising from a national rollout of smart meters have underpinned aspirations for enhanced Demand Side Participation (DSP) by household electricity consumers. However, this analysis indicates that many of these potential benefits are not accruing to customers and may not be delivered if the smart meter rollout proceeds as currently planned. None of the three broad types of consumer benefits – reduced energy consumption, lower tariffs and improved network efficiencies – are able to be fully realised with the smart meter ‘six minimum service specification’ or with the proposed arrangements for ownership and access to electricity consumption data. Some consumer groups – renters, in particular – are likely to benefit more than others, but no consumer group is expected to receive all of the promised benefits. The *Scheduled Meter Read* functionality has the greatest potential to deliver customer benefits, but only if usable information is made available to customers to inform their electricity consumption choices. Instead, existing arrangements for the smart meter rollout seem likely to exacerbate hardship for some customers and deliver increased opportunities and benefits to retailers. The implications of the AEMC rollout for non-consumer actors (retailers, meter coordinators and distribution network service providers) are taken up in the next section.

Consumer incentives and risks

Customer Engagement

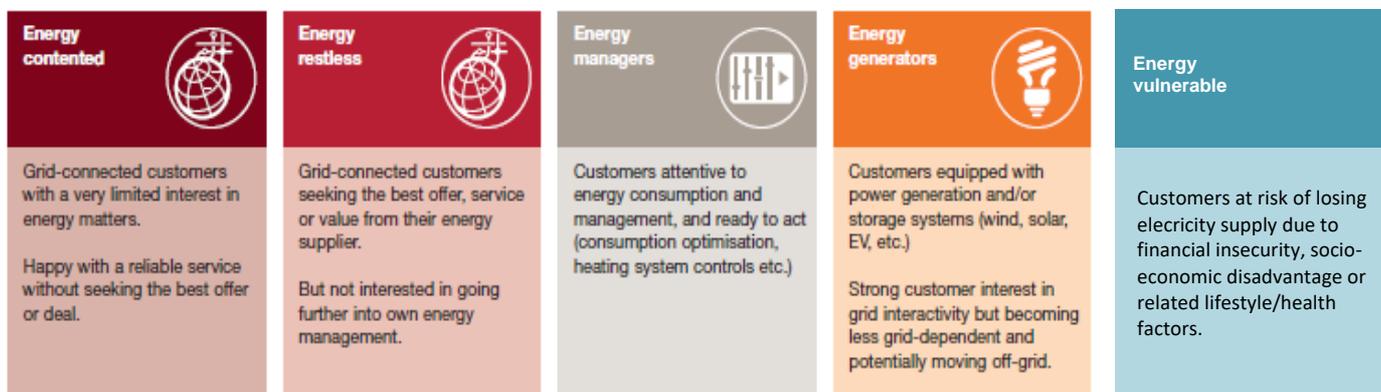
Smart meters are not a pre-requisite to active participation in the retail market but they enhance and increase the points of connection. To enable greater participation there needs to be enhanced forms customer engagement. Consumers must be aware of what the metering options mean to them and the opportunities available. Effective communication and education strategies will be needed to build consumer confidence so that consumers utilise the potential of new products and services offered by the market. Consumers need *information*, such as adequate sites to enable comparison and switching between producers; they need *tools* such as advanced metering, battery storage, microgeneration, smart devices, and connected home products and services; and they need *a reason to be engaged* - the price they pay for energy ought to reflect the cost of supplying them, as individuals (John Pierce Speech 19 Sept 2014). Enhanced consumer engagement will require action by governments, retailers, networks, consumers and community organisations and should occur as an integral part of metering services reforms.

Importantly, there is significant variation in customer engagement on electricity. There are highly active energy consumers. For example a proactive consumer or ‘prosumer’ who generates their own power, is interested in interacting with the grid to sell power, and may wish to be increasingly less grid dependent if not defect off-grid altogether. For many others, energy has traditionally been and continues to be, a low engagement commodity purchase. Victorian switching rates are some of the highest in the world, but still only 25% of households switch on a regular basis (AEMC 2016, p. 24). Until recently there has been little focus on energy services and, despite significant retail competition, the provision of electricity has been a fairly homogenous service. Passive customers simply want a continuous and reliable electricity supply and do not want to think actively about the price, terms and conditions of supply. These customers are very valuable to retailers because they have low rates of defection, do not seek out the lowest tariff, and are often cross-subsidising other customers by paying well above the competitive market rate. There are behavioural dimensions, lifestyle and built environment factors that strongly influence the extent to which customers can and will engage on energy.

Retail customer markets can be segmented in very complex ways. Price Waterhouse Coopers (PWC Figure 2) also highlights two other customer types: the energy-restless who seek out the best market offer but are not interested in undertaking their own energy management or generation; and the energy manager who is highly attentive to their own consumption profile and is keen to optimise appliance use and consumption timing.

We would also add to this list the energy vulnerable, those customers who are at risk of losing electricity supply due to financial insecurity and/or socio-economic disadvantage or related lifestyle/health factors.

Figure 2: A Typology of Consumers in the Retail Market



Source: Modified from PwC 2016

Vulnerability and engagement

There are a significant group of citizens who are considered disengaged and vulnerable as electricity consumers. Some relevant factors are: poor energy literacy; insecure and poor quality housing; low awareness of or unwillingness to draw on government support services; spatial location e.g. rural/regional (Deloitte 2012; St Vincent de Paul Society & Alvis Consulting 2016; Hoye et al. 2016). Vulnerability is a complex issue and there is no straightforward relationship between vulnerability and the nature or quality of participation. There is variability among and within different vulnerable groups in terms of sensitivity to electricity costs. Any customer can become vulnerable at any time based on changing circumstances. Recent AEMC research notes the presence of a “hidden” segment of vulnerable consumers – vulnerable middle income – due to their lower awareness of government support services, unlike the vulnerable low income segment (Hoye et al. 2016).

Vulnerable customers are at risk of losing electricity supply due to financial insecurity and/or socio-economic disadvantage or related lifestyle/health factors. Disconnection from the network has been found to increase with the roll out of smart meters as they allow for quicker and easier disconnections done remotely (St Vincent de Paul Society & Alvis Consulting 2016). A report published by St Vincent de Paul (St Vincent de Paul Society & Alvis Consulting 2016) found that disconnection rates are higher amongst low to median income families experiencing housing stress and greater transport costs. The highest disconnection numbers are found in lower socioeconomic areas, while in NSW, rural and regional areas exhibited high disconnection numbers (St Vincent de Paul Society & Alvis Consulting 2016, p. 3). We would note that there is currently more focus on policy options to allow vulnerable customers to better participate in the market (focused on willingness or ability) compared with policy options to support ongoing energy connection for those customers who are unlikely to ever be able to actively participate.

Many of these problems are best mitigated by appropriate and targeted adjustments to complementary measures and supports such as hardship provisions in the National Energy Customer Framework, concessions, and information provision. Smart meters provide the data that enables more differentiated pricing and products and services. In the same way, complementary measures and regulation need to keep pace with these market developments.

Analysis of the AEMC hybrid market led/mandated retailer rollout

The AEMC could have chosen from a number of different models for the provision of customer smart meters. These are broadly market led or mandated. Then in Australia's segmented market the AEMC had to choose if consumers, retailers or distributors would be made responsible for the rollout. The AEMC decided retailers would be responsible for the provision of all consumer smart meter, but the hybrid model offers three different ways for consumers to end up with a smart meter.

- The AEMC mandated rollout requires retailers to install a smart meter at any customer premises where a new meter is required. This includes the case where the existing meter has reached end of life. In these cases consumers and retailers are given no choice.
- The AEMC retailer led rollout allows retailers to offer smart meters to their customers. Retailers choose which customers are offered smart meters and consumers are allowed to refuse the offered meter
- The AEMC customer led rollout allows consumers to ask retailers for a smart meter. The retailer is under no obligation to provide a smart meter to the consumer.

The cost and benefits of different deployment models was extensively studied as part of the National Smart Metering Program. These studies showed costs were minimised and societal benefits maximised when the smart meters were provided by a distributor led mandated rollout. The following section discusses why the AEMC rollout increases costs and lowers societal benefits.

The Split Benefit Problem

Australia's segmented electricity market creates a problem for smart meters. Smart meter services deliver societal benefits across all market participants including generators, transmission system operators, local distribution businesses, electricity retailers, consumers and even governments. The problem is the financial benefits available to a single market participant do not recover the cost for them to provide and maintain the smart meters.

The AEMC decision to hand responsibility to retailers attempts to address this problem by only mandating a minimum of smart meter services. The minimum list of services has an undesirable outcome. The minimum list of services primarily supports retailer benefits. The AEMC notes this will reduce the costs of the smart meter rollout, however it also places multiple societal benefits in doubt. Specifically numerous additional smart meter services of benefit to consumers, distribution businesses, Governments, etc will not be supported.

The first example is the delivery of network benefits including often quoted smart meter benefits of outage notification and voltage management. Both outage notification and voltage management support efficient management of the local distribution network. Access to these services is not guaranteed in the minimum list of services detailed in the AEMC smart meter roll out. The conclusion is local network operators will need to install additional metering equipment to make the required measurements. In addition to not delivering the identified benefit the additional costs of this equipment, which could have been easily avoided, will *be passed on to consumers* through the AEMC own cost recovery guidelines.

Another example of a societal benefit is the Government's commitment to meet carbon emission targets. While this is traditionally an identified smart meter benefit it is unlikely to be delivered by the AEMC smart meter rollout. As discussed the AEMC smart meter rollout fails to guarantee consumer access to meter data services or a common data format. These two failures become significant barriers to any efficient implementation of a service to advise consumers on how to reduce their electricity consumption (and therefore lower Greenhouse gas emissions). Further lowering consumption also lowers retailer income, explaining why the majority of retailers are unlikely to support the necessary services.

It is important to distinguish between the realisation of individual consumer benefits and collective social benefits. Individual benefits, such as lower tariffs, are dependent on consumers' own decisions to change consumption patterns and/or take up new retail offers, such as flexible pricing. This still relies on the

actions of a number of industry and government players to create the enabling conditions for consumers to make individually beneficial decisions and provide supporting infrastructure eg the existence of flexible pricing options. Individual benefits can be traced back to the specific consumer and manifest in easily measurable outcomes such as ability to switch retailer more quickly and more certainly. Importantly, there needs to be a clear mechanism by which benefits to other parties, such as retailers and networks, are translated into consumer benefits. Simply assuming that a retailer benefit will be translated into lower costs for consumers is insufficient. There must be evidence that these savings are being passed on to individual consumers over time.

Social or collective benefits cannot be so easily individualised and are hard to quantify. These may include promoting system security and reliability, and facilitating a transition towards a more decentralised low-carbon grid. These benefits tend to require a critical mass of meters to be installed before they can be realised (e.g. improved management of the network). Scale efficiencies that enable coverage across geographic area are important elements in the realisation of these benefits.

In many cases financial benefits will be divided across a range of parties, see b. For example, individual customers may benefit from better tariff structures; retailers will achieve savings on their cost to serve customers; and DNSPs can achieve savings for all network users through load management and network operations (ENA 2014). The split benefits across a number of parties can be a barrier to installation because the additional cost of installing a meter *cannot be offset by the benefits flowing to any one party*. A related problem is that there can be a direct conflict between different parties. For example, customers derive significant benefits from improved switching opportunities, but retailers are incentivised to retain customers. In a retailer-led roll out, retailers will not actively promote switching opportunities, and this will fall to third parties and/or government.

Figure 3: Split benefits of smart meters

This shows a range of consumer benefits that can potentially be created through the roll out of smart meters. Benefits that may conflict with incumbent retailer benefits are highlighted in red. Collective or social benefits that cannot be captured by an individual alone are highlighted yellow.

Consumer	Networks	Retailers	Third Parties (ESCOs)
More information to help find best tariff	Avoided network augmentation due to peak demand response to TOU tariffs	Reduced cost to serve customers	New demand side products and service offerings
Improved customer switching	Reduction in unserved energy and asset failure due to faster detection of outages and restoration times	Avoided generation resulting from critical peak pricing incentives	New opportunities based on customers switching
More third party offers to reduce bills	Avoided cost of manual & special meter reads, manual disconnections and reconnections (and avoided revenue loss)	New demand side products and service offerings	
More in home information to enable energy conservation	Better emergency management	New opportunities for customer acquisition	
More options to generate electricity and sell back into the grid			
More options to optimise energy use with solar PV, batteries etc			

Retailer incentives

Smart meters allow retailers to operate more efficiently lowering their cost to supply electricity. Remotely-read meters provide retailers with a wealth of consumption data that helps them to manage risk. In the near future retailers will have access to consumer energy data with a granularity of 5 minutes. The 5 minute data provides almost 300 recordings per day for each customer. This granular data allows retailers to accurately predict consumer electricity use and to tailor offers to particular customers. Without the information retailers used a “deemed profile” which is only an estimate and cannot accurately reflect actual customer electricity use. Accurate energy use information allows retailers to make decisions about how much electricity to buy and when, reducing risk in the volatile spot market, in the negotiation of power purchase agreements and in contract markets. The fine-grained information also allows retailers set tariffs that reflect their underlying costs, and enables them to produce more innovative cost-reflective tariffs, such as time of use tariffs. Tariffs can be revised with greater regularity to reflect observed changes in consumption patterns.

The operational efficiencies that retailers can gain from remote reads are claimed to be significant. For example the Bill Management functionality allowing them to remotely de-energise vacant sites, particularly those with a high turnover, such as student rental apartment blocks. The retailer remains the Financially Responsible Market Participant (FRMP) regardless of the private market contract arrangements made between customers eg sub-lease agreements. Customers in financial distress can also be a target group for advanced meters because they allow retailers to bill more frequently and smooth out bills. This can limit customer dissatisfaction arising from bill shock, reduce communications around non-payment and ultimately avoid defaults and disconnections.

The other major incentive is customer acquisition. Metering is part of a package that is offered by retailers to customers who are technology-savvy or are simply seeking greater control over their usage and accuracy. Advanced meters are offered in conjunction with sale of solar panels and batteries, as well as information services such as in home displays and portals. Retailers with demand tariffs, where the price paid for energy is determined mainly by the highest demand for energy that a consumer uses during the billing period, rely on the nuanced consumption data that comes from smart meters for billing purposes. Data from meters plays a critical role amongst second tier retailers, such as Mojo and Powershop, that are building a distributed energy peer-to-peer trading business model.

AEMC rules do not ensure that these savings from operational efficiencies are passed onto consumers. Instead the AEMC assumes retail competition will result in these savings being passed to consumers through lower electricity costs.

Scale Efficiencies

Establishing a retailer meter reading business is expensive. There are a large number of major software systems which must be integrated together: to read the meter; to check the meter readings; to store all the meter data; and to report the meter data to the National Market which is reviewed by AEMO. Based on our research, we estimate that a small retailer can expect the cost of setting up these software systems and obtaining AEMO approval will exceed \$5million (much more for larger retailers) and these initial costs are largely fixed. It is in the interests of major retailers to aggressively offer smart meters to their customers. By rapidly increasing the number of meters the set up costs can be recovered from a much larger number of meters lowering the per meter cost. We understand that some retailers are sending letters to customers saying that they are required to install smart meters and that if they do not want one they must explicitly opt out. In this situation, if the customer does nothing they are likely to end up with a smart meter.

There are limits to scale efficiencies with the current retailer-led roll out. Retailers are currently installing on a customer by customer basis, not street by street or area by area as they might like. We envisage that even from 1 December 2017 when all new and replacement meters had to comply with the AEMC metering specifications, full coverage of a network area will take decades. Many of the meters in existence are electro-mechanical which will easily last for 30 to 40 years and these have been rolled out until recently.

Retailers would like to build scale to get the unit costs down. Retailers are directly targeting customers from whom they can derive operational efficiencies, as discussed above. At the same time, the contestable model gives consumers the choice to upgrade their metering services or not. There is a tension between the retailers' desire to build scale particularly within a geographic area to lower unit costs, and the exercise of consumer choice which is more likely to lead to an uneven rollout across space.

We are concerned that the drive for scale efficiencies by retailers or metering coordinators may override the rights of consumers to exercise choice over metering provision. For this reason we suggest a principle of Free and Informed Consent be established in the AEMC regulatory framework with specific characteristics identified to this expression. An opt out approach, where a non-response is equated with consent, does not meet the standard of Free and Informed Consent. There will be work needed to refine this concept and implement. Key considerations include the level of information provided for consent to

be informed; how free consent is established in a contractual form; the oversight of communications between retailers and consumer to enforce this principle.

Metering coordinator incentives and risks

Under the final rule changes the AEMC removed consumers' ability to select their metering coordinator. Consumers were instead limited to selecting their retailer, who would appoint the metering coordinator. Because the retailer selects the metering coordinator it effectively gives the retailer the right to control who can access the meter. Indeed, there could be incentives for retailers to take on the role of the MC, as this would enable them to frustrate their competitor's access to the functions of smart meters offered to rival services (AEMC 2014). Retailers have an incentive to argue for a type of exclusivity agreement with the Metering Coordinator whereby the retailer receives more favourable access than its competitors and this may hinder the development of competition in energy services by frustrating access to a smart meter. The metering services market is evolving. Two of the largest retailers, Origin and AGL, acquired metering service providers but have recently sold these. The NSW DNSP, Ausgrid, has since bought one of these companies.

The major challenge for the AEMC smart meter rollout is ensuring metering coordinators can recover the initial cost of the meter and its installation. The risk is the customer chooses a different retailer. The retailer appoints a metering coordinator and negotiates a monthly fee. The monthly fee charged by the metering coordinator allows them to recover the cost of the meter and its installation along with on-going fees to read the meter. These fees are designed to recover the cost over the lifetime of the meter. In a distributor led rollout the smart meter will remain on the customer premises for 15 years. Under the AEMC smart meter rollout there is no certainty around how long a meter will remain on customer premises. The risk of premature meter replacement, before the metering coordinator can recover the cost of the meter and installation, will inevitably increase the cost to provide the smart meter.

Problems may arise when a customer chooses another retailer. The cost to provide the meter is not regulated. The new retailer must agree to pay the fees levied by the current metering coordinator. If the new retailer does not agree to their fees then they are left with no alternative other than to ask their preferred metering coordinator to replace the meter. The cost of this unnecessary meter exchange is ultimately passed to the consumer. Also the original retailer is likely out of pocket for fees paid to the Metering Coordinator. These costs will be recovered from the retailer's customer base.

A smart meter offering additional services is likely to be more expensive than a meter only supporting the six minimum services. This leads to the conclusion that the monthly fee charged by a metering coordinator to install a more capable meter will be higher. If a retailer offers a consumer a more capable meter and then at a later date the consumer changes retailer, the metering coordinator will want to charge the new retailer the higher fee for the more capable meter. This provides the new retailer with a financial incentive to remove the more capable meter and install a cheaper meter which only offers the six minimum services. Unfortunately for consumers it also means metering coordinators will be reluctant to offer more capable meters because they increase the risk of premature meter replacement before they can recover the initial cost of the meter.

Note if the AEMC had followed through on their original commitment to allow consumers to appoint the metering coordinator then this would have reduced the risk of premature meter replacement on retailer churn. Less risk, lower prices.

DNISP incentives and risks

Distribution Network Service Providers (DNSPs) are responsible for supplying electricity to households (essentially the role of a retailer is to charge consumers for the electricity they use). Significant societal and consumer benefits are usually associated with smart meter rollouts leading to more efficient management of the distribution network, for example faster power restoration after blackouts using smart meter outage notifications. The AEMC regulations currently provide no certainty that distribution businesses can access the data they require, or that they will be provided cost-effectively even if they can access the data. The retailer-led model does not include a mechanism for capturing the potential network benefits available from advanced metering. None of the minimum mandated services support distributor benefits. The contestable smart meter rollout does not ensure distributors can access the data to benefit consumers. Indeed there is no guarantee that a local distributor can remotely diagnose faults. Distribution networks will need to enter into a commercial arrangement with retailers and/or metering coordinators to access metering services or data. In order to cover one geographic network area this could involve a number of agreements. Since the AEMC requires distributors to manage the distribution network, the worst-case scenario is households end up with two meters, one belonging to their retailer and one belonging to their distributor. This situation occurred in the New Zealand market-led rollout. In the original AEMC Power of Choice review it was envisaged that the network businesses could offer a discount on the tariff component that covers the operations and maintenance cost and investment return on network assets (Standard Distribution Use of System or DUOS), or a one off payment to those consumers who also install meters with additional functionality which delivers network operational benefits. However, because retailers are not offering meters capable of supporting network benefits, consumers do not qualify for the payment(s) *and* network businesses must incur additional costs (which are passed onto consumers) to install additional metering equipment needed to make the measurements. The implications of this will be made apparent in the analysis of the six minimum mandated meter specifications. More generally, these barriers present obstacles to networks delivering broader social benefits including system security and reliability, and the transition to a more customer-oriented, decentralised low-carbon grid.

Actions needed to drive greater consumer benefits from the AEMC retailer-led roll out

Access To Data For Consumers

The contestable rollout of meters does not ensure customers can access their interval data on a regular basis. The National Energy Retailer Rules (NERR) applies in all States except Victoria and provides households free access to their billing data. This free access is limited to four requests per year. Consumers making more than four requests per year can be charged. Free access does not apply to third parties wishing to offer consumers value added services including tariff comparison and/or consumption analytics.

Whilst it is not within the scope of this paper, we note that there are some significant unresolved issues around the ownership and use of metering data that need to be considered and resolved by COAG Energy Council. For example who owns a consumer's meter data? The fact the NERR allows retailers to charge consumers for access to their meter data suggests regulators consider retailers own the customer meter data. This immediately raises a second question "Should retailers be allowed to sell a consumer's meter data?". While it may be possible to avoid consumer privacy issues by only selling anonymous consumer data the question of why the consumer is ineligible to receive payment for their data needs to be discussed.

The cost of the Victorian tariff comparison service SwitchOn was increased significantly because retailers refused to agree to provide consumption data in a common format. The lack of a common format forced the developers of SwitchOn to support a dozen different data formats. This is a potential barrier to the development of future smart meter data services should be removed. The Energy Council needs to mandate a single standard meter data format for all customer provided data. We would argue a single data format is already in regular use across the market, but the Victorian SwitchOn example highlights why regulation is required to ensure this format is available to consumers. This will avoid additional costs for third party providers to develop tools able to handle multiple data formats.

The rollout of smart meters should also be accompanied by an assurance customers can access their data far more regularly than four times per year. For example it is suggested daily access should be supported. This will not incur additional costs because consumer smart meters are already read daily.

In the USA the Green Button initiative allows consumers to register to obtain regular free access to their meter data. Under the initiative meter data is provided in a standard format enabling third parties to develop tools to analyse the data (see Box 2).

In order to protect consumers' privacy it would be necessary for consumers to exercise free and informed consent to the sharing of their metering data. There are a number of complex legal issues to be considered around data ownership and sharing. We would argue that in the process of resolving these issues an overarching principle of free and informed consent should be developed to guide data ownership and data access.

Box 2 The Green Button Initiative

There are models overseas for making consumer's energy data easily accessible and useful

The Green Button initiative is a web-based platform that provides utility customers with easy and secure access to their energy usage information in a consumer-friendly and computer-friendly format. It is a US and Canadian industry-led effort that responds to a 2012 White House call-to-action for utilities. Today, more than 60 million households and businesses can use Green Button to access their own energy usage data from their electric utility, and a growing set of companies are offering products, services, and applications that use Green Button data.

Consumer benefits include:

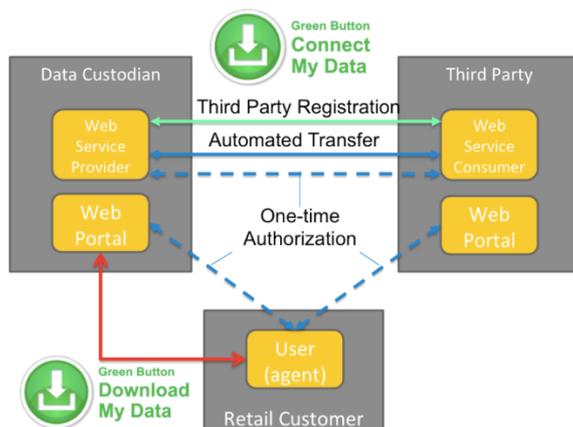
- Making it easy to find the cheapest and most suitable tariff
- Gaining control over energy by learning how to adjust energy usage or invest in technologies to save money and reduce environmental footprint

Green Button allows a consumer to:

- Download their energy usage data to a file that can be opened by software and applications of their choosing ("Download My Data" service)
- Authorize a third party, eg an energy services company, to gather their data directly from their Data Custodian (equivalent of our Metering Coordinator) ("Connect My Data" service)

Privacy

- Green Button guarantees the consumer's privacy. The Green Button standard requires there is no Personal Identifiable Information (PII) contained within the data, only measured interval usage information.



For more information see <http://www.greenbuttondata.org/> and <http://www.greenbuttonalliance.org/about>

Third Party Access To Data

Third party access to customer data remains constrained under the AEMC roll out. We note that the original goal under the *Power of Choice* was to allow consumers to pick and choose energy services from multiple suppliers. For example a consumer could buy electricity from one retailer, sell excess solar

generation to another retailer while having a third party service provider continuously monitor their electricity use to ensure they pay the lowest electricity cost.

To enable this vision the original Power of Choice suggested engaged consumers would be able to choose the metering coordinator who installed their smart meter. They were also free to grant access to third parties offering value added services, for example offering to continuously minimise electricity costs.

When the AEMC released their final rule changes they removed consumer ability to select their metering coordinator. Consumers were instead limited to selecting their retailer, who would appoint the metering coordinator. This effectively gives the retailer the right to control who can access the meter. Retailers are unlikely to assist third parties who are attempting to minimise consumer electricity costs.

We therefore argue that granting free and informed consent to consumers for third parties to access their metering data is key to enabling the originally intended benefits of *Power of Choice* to be realised.

DNSP Access To Data

The framework should provide policy certainty for all market participants not just the retailer who installed the smart meter. The AEMC has not guaranteed local distributor access to vital information that assist with network management eg voltage and frequency. This has been a critical gap identified in our analysis. It was also the largest issue identified by DNSPs in Victoria in relation to metering contestability.

These barriers present obstacles to networks delivering broader social benefits including system security and reliability, and the transition to a more customer-oriented, decentralised low-carbon grid.

Providing Useful Information To Consumers

The AEMC roll out also fails to ensure tools are made available to enable consumers to use their smart meter data to compare available tariffs. Until access to additional services for tariff comparison is provided the benefit of consumer access to smart meter data is overstated.

There is no user-friendly independent platform that enables customers to compare tariffs and services. The Australian Government's existing Energy Made Easy tariff comparison website (<https://www.energymadeeasy.gov.au/>) does not allow consumers to use their smart meter data to accurately compare available tariffs in a timely fashion, based on a common format, that is neither administratively difficult or costly to access. By contrast, the Victorian Government's SwitchOn tariff comparison website does (<https://compare.switchon.vic.gov.au/>). A further failing of the Energy Made Easy website is that it does not support solar customers and needs to be updated to allow consumers to compare additional services that may be offered by retailers in the future. We note Energy Made Easy is currently subject to a rebuild and that these issues are being discussed.

Retailers have no incentives to promote use of tariff comparison tools with a likely outcome of comparing retailer tariffs being a decision to switch retailer. Given that information is a basic precondition for enabling customer benefits from an essential service, we consider that this cannot be left to the market eg commercial tariff comparison sites. The independent government funded *Energy Made Easy* website needs to be upgraded to provide consumers to derive real benefits from the metering investment.

- COAG Energy Council and officials develop a process for the simple user-friendly provision of smart meter data to consumers; and for consumers to be able to grant third parties access to the data in a way that protects consumer privacy rights.
- The *Energy Made Easy* tariff comparison website be reviewed and upgraded. This should provide greater user-friendly information to all consumers, along the lines of the Victorian *Switch On* website. This would include the ability to compare time-of-use and fixed tariffs; providing annual costs information and add support for solar credits. The site should also be made mobile device-friendly.

- COAG Energy Council and officials investigate options for a platform providing third party access to data and supporting the efficient provision of new energy services. Any platform of this kind should allow for informed consumer consent and meet privacy regulations.
- COAG Energy Council and officials develop a website listing available smart meter services that consumers may wish to consider. The site should clearly explain the potential benefits, costs and detail any risks.

Improving Customer Engagement

Despite the enormity of the changes the AEMC has done little to educate consumers about its smart meter rollout. Some parts of the industry have capitalised on this lack of education and falsely told consumers they must accept a new smart meter. Consumers are unaware they are free to choose a meter with or without remote communications. Messaging about the consumer value of smart meters is also absent.

In earlier AEMC reports it was recognised that the way in which consumers engage and participate in the electricity market is a key factor in realising the benefits and full potential of efficient Demand Side Participation (DSP), and advanced meters are key to enabling this (AEMC 2012). Effective communication and education strategies builds consumer confidence to utilise the potential of DSP products and services. The AEMC recognised that this would require action by governments, retailers, networks, consumers and community organisations and should occur before the introduction of these reforms. Consumers must be aware of what the reforms and DSP options mean to them and the opportunities available.

We echo these original comments from the AEMC and strongly urge the development of a comprehensive community education and engagement campaign.

- COAG Energy Council and officials develop a consistent and simple communications package around smart meters for all households, notifying them of the changes and their entitlements and rights. This should be part of a larger campaign to raise consumer awareness about the benefits of smart meters, including access to energy use data.
- The campaign should develop targeted communications for vulnerable consumer groups who face barriers to retail market engagement and the uptake of smart meters. These include the elderly, regional/rural households, consumers with intellectual disabilities, and those with English language difficulties.

Addressing Installation Barriers

In the AEMC roll out, retailers choose which customers will be offered a smart meter. Consumers wanting a smart meter can contact their retailer, but ultimately the retailer chooses if they will actually receive a smart meter. A likely consequence is an uneven distribution of smart meters, especially for consumers who are deemed uneconomic by retailers.

A single retailer does not own all the customers on a street. Compared to a distributor-led rollout, the retailer-led rollout is slower and has higher per meter installation costs. One concern is how these higher costs are being passed on to consumers. The other issue is the length of time before all consumers are given access to a smart meter with some estimates suggesting the rollout could take over 30 years.

A key question is how long before all consumers will have access to smart meters. Under the AEMC rollout all meters being replaced due to failure or age must be upgraded to a smart meter. Standard meters have demonstrated usable lifetimes of over 50 years. This suggests the AEMC smart meter rollout should be completed in around 50 years. The combination of uneven and lengthy deployment will result in a highly uneven patchwork of meters across States and Territories, and uneven customer capabilities to access benefits such as new tariffs and services.

The decision to go with a retailer-led rollout means the AEMC smart meters rely on commercial cellular networks, unlike the Victorian distributor-led rollout. Households in areas with poor cellular coverage (3G/4G network coverage) will not be able to derive any benefits from smart meters. These households are more likely to be in rural and regional areas.

There are significant barriers to other household types having smart meters installed in a cost-effective manner. Under the AEMC rollout consumers will be asked to bear the cost of any additional work to install the smart meter, for example where there is asbestos in the metering panel or household wiring is considered sub-standard.

- COAG Energy Council and officials investigate, identify and publish the number of households likely to face physical barriers to having a smart installed under existing, affordable technology options.
- COAG Energy Council and officials develop a funded program to undertake rectification work for low-income households who experience barriers to the installation of metering such as asbestos or poor household wiring.
- Assuming clear customer benefits are established, the COAG Energy Council and officials investigate alternative pathways to accelerate the deployment of smart meters in a way that generates maximum individual consumer and social benefits.

Protecting Vulnerable Customers

Electricity is an essential service - a fundamental enabling service that underpins wellbeing and quality of life across society. The uneven distribution of smart meters and benefits will create new opportunities for some consumers whilst leaving others behind. We are concerned that the existing retail market has not developed adequate strategies to satisfactorily identify and connect with vulnerable consumers, and that complementary measures designed to provide a safety net in circumstances of vulnerability has not kept pace with changes in the market.

The retailer-led roll out creates a new market in metering services (previously delivered by regulated distribution businesses). We are concerned about vulnerable consumers in this emerging market. Vulnerability can make it harder for consumers to engage with the market. Involvement with a new market can also increase vulnerability for example customers who lack financial and digital literacy can make poor choices and become worse off when they try to engage with the retail market.

There is a high risk of consumer detriment due to remote de-energisation, a form of disconnection. All AEMC smart meters will provide retailers with the capability to deny consumer access to electricity. This raises concerns about the adequacy of customer protections, and checks and balances on retailers in advance of de-energisation. Disconnections give rise to concerns about equity and access to an essential service. Various state safety regulators also continue to debate requirements for remote re-energisation, i.e. remote reconnection. This could potentially increase the cost of reconnection, a cost eventually borne by consumers.

- National Energy Consumer Framework (NECF) and Australian Consumer Law are regularly reviewed and modified to support customers in the purchase of new energy products and services.
- NECF and government policies, including concessions, be regularly reviewed to ensure adequate consumer protection in light of smart meter-enabled new products and services.
- COAG Energy Council actively review the contestable model and where appropriate develop regulatory frameworks to optimise consumer outcomes. The social impact of remote disconnections warrants an intensive focus in the above recommended review.
- The NECF should be amended to include a Wrongful Disconnection Payment that market participants, found not to have followed the required processes, are obliged to pay the affected customer.
- The Australian Energy Regulator (AER) should encourage retailers to develop outreach programs especially where a customer has been disconnected multiple times.

Privacy Concerns

Concerns about privacy in relation to consumption data are widespread in the community.

We consider that the basic privacy framework for third party access to data is sound from a consumer protection perspective. However, there are emerging challenges for off-market data based on the new configuration of stakeholders involved in the contestable metering landscape. There are two categories of data: market and off-market. Market data is available to the distribution business and the retailer and is handled via the secure AEMO B2B gateway. This is a locked down network gateway that is very safe. DNSPs have been protecting this kind of data for decades now. Current privacy legislation covers the consumer well in terms of protecting the on-selling of such market data.

“Off market” data refers to data that is not disaggregated at the household scale. Third parties can negotiate with Metering Providers for off market data. For example, voltage measurements in a street would constitute “off-market” data. Individual household measurements based on energy use would constitute “market” data. What constitutes market data is unclear and the AEMC has not clarified this. There is also a concern that as a greater number of metering data providers enter the market, the accreditation and regulation of these market participants could become more difficult. In the early phase of the market there may be significant early competition and then consolidation in the market, resulting in the attrition of metering providers. We have concerns about the protection of consumer data in the event that a Metering Provider exits the market. There does not appear to be a Metering Provider of Last Resort in the market framework that would provide data services to consumers and settle the market if a company fails. The AEMC Retail Competition Review currently provides no analysis of the state of the metering provision market and the implications for consumers.

Industry Incentives And Cost Recovery

Consumers do not have the freedom to choose who installs their new smart meter. The AEMC’s *Power of Choice* reforms originally envisioned consumers selecting from a range of meters offering the services they required. Instead consumers are currently forced to accept the meter provided by their retailer.

While there are financial incentives for retailers to install smart meters, these financial incentives do not necessarily translate into consumer benefits. Daily readings allow retailers to better manage supply and demand and could also be used to support better consumer communication and education. However to date only one retailer is offering daily access for the very high fee of \$15 a month.

Innovation in retail offerings, such as time-of-use pricing or discounts for peak demand management, is limited. This means there is little incentive for consumers to go out and purchase smart meters to better monitor and manage their energy use.

The AEMC has left the market to resolve what happens when a customer with a retailer-provided smart meter switches to another retailer. In the worst case the customer could end up with a new retailer smart meter. The best-case scenario avoids the high cost of this unnecessary meter replacement by ensuring any retailer can access smart data at a reasonable cost.

Ultimately consumers pay for any smart meter rollout. Given consumers pay for the smart meter rollout, mandated rollouts ensure guarantees are in place to provide consumer benefits. While consumers will pay for the AEMC smart meter rollout, no such consumer guarantees have been put in place. Also of concern is that household meter pricing used to be regulated; however, under the AEMC smart meter rollout the price is now completely unregulated. This raises concerns about the impact of the reforms on consumer electricity prices.

- Retailers be required to provide transparency around the additional costs of smart meters. Each retailer ought to provide to consumers a breakdown of their bill that includes smart meter charges and associated services. Where smart meter charges are bundled, consumers should be able to ask a retailer to reveal the charge.
- AER and ACCC undertake monitoring and reporting on smart meter charges as a component of household energy bills in each State and Territory.

Monitoring And Evaluation Of An Emerging Market

There is no published framework for monitoring and evaluation of the market-led model within the AEMC.

There is a lack of easily accessible aggregated data about the number of households that have received smart meters, their location and household characteristics. This makes it difficult for independent third parties to monitor the progress of the contestable metering approach.

The market for smart meters is in its infancy and there could be significant early competition and then consolidation in the market, resulting in the attrition of metering providers (e.g. the recent purchase of *Active Stream* by Ausgrid's metering business). This could create problems for customers seeking to exercise warranties or maintenance. There are also concerns about the protection of consumer data in the event that a Metering Coordinator exits the market.

- COAG Energy Council and officials establish a clear framework for monitoring and evaluation of the market-led roll out of smart meters in consultation with key stakeholders, and design regular review of the program.
- COAG Energy Council and officials address the issues of customer protection and ongoing service provision in the instance of Metering Providers exiting the market.
- AEMO publish transparent spatial data on the uptake of smart meters across the country. This would involve compiling aggregated data about the geographic spread of smart meters by postcode, and by high-level household characteristics.
- AEMC Retail Competition Review include assessment of competition in the metering services market.

Conclusions and next steps

This report has analysed the AEMC retailer-led roll out of smart meters and found a lack of demonstrated consumer benefits. Our recommendations for policy-makers include:

- Guarantee simple access to smart meter data for all consumers
- Actively encourage and demonstrate how consumers can lower their electricity costs
- Address consumer protection issues created by new smart meters

Consumers and their authorised representatives must be able to access required smart meter data and related services in a simple, user-friendly manner that provides actionable *information* for consumers. This would involve consumers giving their explicit and informed consent to the installation of smart meters and third party data access, in accordance with privacy protections.

Key to this is the provision of independent online tools that enable consumers to compare tariffs and services based on the data enabled by smart meters. These tools must not only exist but an ongoing communications campaign is required to actively encourage consumers to access and utilise these tools and services for their own benefit.

The AEMC needs to ensure that the benefits from smart meters flow to all consumers, rather than select groups in society. There are residual households who, even with the above tools and awareness campaign, may not be able to access the services and benefits enabled by smart meters. There needs to be adequate consumer protections built into the roll out to overcome underlying barriers to accessing these services.

The next six months provide a crucial window for the Energy Council and AEMC to improve the outcomes and service delivery surrounding smart meters. We look forward to opening up a productive policy dialogue around consumer benefits and metering.

We recognise the limits of this research project given time and space constraints. Through other fora we are investigating in more detail the following: issues surrounding ownership, access and privacy of

metering data; and complementary measures required for adequate customer protection under the rollout.

Glossary

ACCC	Australian Competition and Consumer Commission
AEMC	Australian Electricity Market Commission
AEMO	Australian Electricity Market Operator
AER	Australian Energy Regulator
COAG	Council of Australian Governments
DNSP	Distribution Network Service Provider
DSP	Demand Side Participation
DUOS	Distribution Use of System Charge
FRMP	Financially Responsible Market Participant
MC	Metering Coordinator
NECF	National Energy Consumer Framework
NER	National Electricity Rules
NERR	National Electricity Retail Rules

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