

REVIEW

Australian Energy Market Commission

FINAL REPORT

Framework for open access and common
communication standards

31 March 2014

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About the AEMC

The Council of Australian Governments (COAG), through its then Ministerial Council on Energy (MCE), established the Australian Energy Market Commission (AEMC) in July 2005. In June 2011, COAG established the Standing Council on Energy and Resources (SCER) to replace the MCE. The AEMC has two main functions. We make and amend the national electricity, gas and energy retail rules, and we conduct independent reviews of the energy markets for the SCER.

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Foreword

Advancements in smart metering technology have the potential to allow new products and services to be developed. Consumers will be provided with new choices and ways of interacting with their energy suppliers and managing their consumption. The AEMC's Power of Choice review made a number of recommendations where the overall objective was to provide that the community's demand for energy services is met by the lowest cost combination of demand and supply side options. This objective would be best met when consumers use electricity at the times when the value to them is greater than the cost of supplying that electricity.

This review into open access and common communication standards for smart meters is a first step towards implementing recommendations under the Power of Choice review. Providing a framework that supports appropriate access to smart meter functionality is a key component to establishing a competitive market for services enabled by smart metering technology. It provides the ability for service providers to offer new products and services to consumers, which would empower consumers to better manage their electricity consumption. Our recommendations are aimed at supporting commercial outcomes that provide value to consumers.

We are conscious of the inter-related nature of the issues raised under this review with other ongoing projects, such as the rule change request that SCER has submitted to the AEMC on competition in metering. We have been liaising with stakeholders and relevant parties to consider impacts and coordination opportunities. Relevant issues identified as a part of this review will be determined under the competition in metering rule change process. To take into account other related issues not directly within the scope of that rule change, we will separately prepare supplementary implementation advice to be submitted to SCER after the final determination has been made for the competition in metering rule change request.

To assist the AEMC in this review, an advisory stakeholder working group was established. The members of the working group represented a broad spectrum of interested parties including consumer groups, retailers, distribution network operators, smart metering manufacturers, market institutions and jurisdictions. We met with the working group on six occasions and the members have provided the AEMC with expert views and valuable insights. I extend my thanks to the members of the working group and look forward to engaging with you in our further work.

John Pierce
Chairman, AEMC

Summary

The Standing Council of Energy and Resources (SCER) has asked us to provide advice on a framework for open access and common communication standards to support contestability in metering and services enabled by smart meters.

In preparing this advice we have considered 'open access' in terms of providing a framework for authorised parties to be able to gain access to smart meter functionality. We have assessed whether adopting communication standards would provide efficient outcomes for market participants and therefore benefits for consumers. A key aspect is also assessing the extent to which regulation would be required to support the arrangements for allowing appropriate access to smart meter functionality. Throughout our work we have acknowledged, and taken account of, that there are a number of other ongoing reforms related to this review.

Shared market protocol

We recommend a standard be adopted for the communications between authorised parties and the parties that are managing access to a smart meter's functionality (the gate keeper). We have called this standard the 'shared market protocol'.¹ The shared market protocol should be a services based protocol built by extending the current arrangements in place for the business to business (B2B) communication arrangements managed by the Australian Energy Market Operator (AEMO). All gate keepers would provide the means of communicating via the shared market protocol for services enabled by functionality defined in the functionality specification for smart meters (which is being considered under the competition in metering rule change request).² However, authorised parties should be able to agree alternate pathways of communication.

The provision of a shared market protocol would promote competition in services enabled by smart meters by increasing the ease with which parties in the market can communicate with the gate keepers of smart meters, and reduces the barrier to entry for new retailers and energy services providers. We have taken into consideration stakeholders' views that the market protocol should be a services-based protocol as it is the 'service' enabled by smart meters that is of importance to the consumer. For example a service offered to a consumer may be the ability to remotely control an appliance at their premises. Customers would be interested in this service rather than the function in the meter associated with this service (eg the ability to operate the controlled load contactor).

¹ In effect the shared market protocol would be the 'default' protocol. Further work on appropriately defining the relationship between the services to be communicated via the shared market protocol and the functionality specification for smart meters will be carried out during the development of the draft rule change request to implement the shared market protocol.

² This is the "Introducing a new framework in the National Electricity Rules that provides for increased competition in metering and related services" rule change request that SCER has submitted to the AEMC (competition in metering rule change request).

Our recommendation to adopt a shared market protocol differs from the recommendation in our draft report. Our draft recommendation was for a 'common market protocol' to be adopted. That is, one single market protocol to be used by all parties at all times. However, our final recommendation allows alternate pathways of communication. This means there could be more than one market protocol in use at any one time. We consider our final recommendation promotes innovation and, with appropriate arrangements for the development and maintenance of the market protocol, allows the market to adopt the most efficient communication protocols over time.

The recommendation to adopt a shared market protocol requires changes to the National Electricity Rules (NER). This will include defining the shared market protocol and how it is to be enforced. An appropriate framework for the development and maintenance of the protocol will also be required. As supplementary implementation advice, we will develop a draft rule change after the final determination on the competition in metering rule change request has been made.

Regulating rights to access and access charges

Under a competitive metering framework where consumers have the choice of appointing a Metering Coordinator (MC), we recommend that regulating access to smart meter functionality and access charges is not required.³ There are incentives for parties to commercially negotiate and achieve efficient outcomes. We do not consider there is sufficient evidence at this time that there would be inefficiencies under this framework that would be greater than the costs that would be imposed by regulation.

If, however, the competition in metering rule change request determines not to introduce a separate MC role, or that consumers would not have the choice to directly appoint an MC, we consider that a form of light-handed regulation to govern the access negotiations to smart meter functionality may need to be considered. We will therefore revisit our recommendations as we work through the competition in metering rule change request.

We recommend that, under a framework where consumers have a choice of appointing the MC, distribution businesses should negotiate and pay for access to smart meter functionality on a commercial basis in the same way as other participants. This approach places commercial incentives on network businesses to negotiate a level of access to the number of smart meters and types of functions that is economically efficient.

We consider that transitional arrangements will be required, including for Victoria. Considerations will include arrangements where the open access framework is introduced part way through a distribution determination period and network

³ The MC is the party proposed under the Power of Choice review recommendations that would be replace the current "Responsible Person" and appoint the relevant parties for installing and maintaining meters and metering services. Whether or not to adopt the MC role and defining the MC's relationships with other parties, including consumers, is being considered under the competition in metering rule change request.

businesses are required to commercially negotiate for access to smart meter functionality; and any arrangements to allow for network businesses to be compensated if the costs associated with existing metering infrastructure had not been fully recovered. Consideration is also required for the treatment and access associated with distribution businesses' existing direct load arrangements, which rely on access to the meter, particularly where they relate to the management of network security. We will consider transitional issues under the competition in metering rule change request.

We also recommend that a competition review be conducted three years after the commencement of any rules made under the competition in metering rule change request. This review would assess whether the market is operating as envisaged, or whether there is a requirement for some form of regulation.

Other issues

In our draft report we discussed the concept of a 'smart metering provider' (SMP), which was developed for the purpose of analysis. The SMP was essentially the party that would undertake the 'gate keeper' role of managing access to, security and congestion at a smart meter. In submissions on the draft report stakeholders did not support introducing a new party or market participant. Stakeholders considered that this gate keeper role should be assigned to an existing party under the NER (such as the metering provider).

Under the current NER provisions, the "responsible person" (usually a retailer or the distribution network service provider) is responsible for ensuring appropriate provisions are in place to manage access to, security and congestion at a smart meter.⁴ The responsible person must appoint a metering provider to undertake these duties. For smart meters, the role of managing access, security and congestion is enhanced as there would be multiple parties with differing levels of access requiring use of a smart meter's functionality. We note that the competition in metering rule change request is examining provisions related to the responsible person including whether or not a 'Metering Coordinator' role should be adopted. For this reason, we recommend that defining and assigning the duties of the gate keeper role be considered under the competition in metering rule change request. This will include considering appropriate accreditation requirements.

We have noted that SCER is undertaking work to examine the framework for regulating third parties offering energy services to residential and business consumers including the extent to which they should be regulated under the National Energy Customer Framework and/or whether third parties should be registered participants in the NEM. We recommend that these considerations include clarifying the rights and obligations of third parties to directly access a consumer's data (as opposed to the rights to access a consumer's data through a request to the retailer).⁵

⁴ Under special circumstances set out in the NER, the Australian Energy Market Operator (AEMO) could be the responsible person.

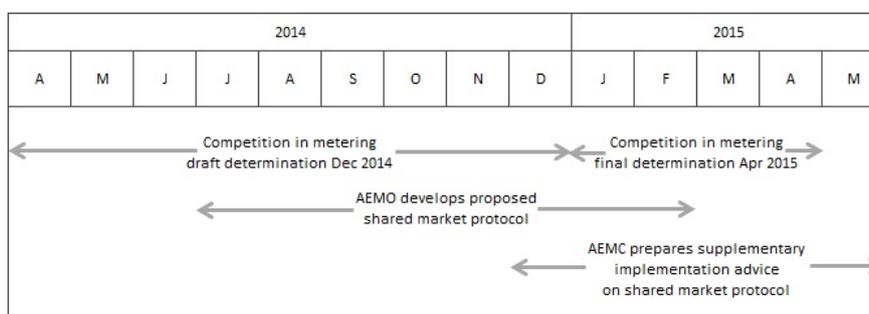
⁵ SCER has submitted a rule change request to the AEMC related to third parties' ability to access a consumer's data through a request to the consumer's retailer: Customer access to their energy and

Summary of implementation requirements

To implement our recommendations under this review, there will be three tasks or areas of further work:

1. The AEMC will prepare supplementary implementation advice following this final report to define and implement the shared market protocol, including a draft rule change request. This supplementary implementation advice will be submitted to SCER after the final determination on the competition in metering rule change request has been made. It will include proposals for the governance structure that may best support the development and maintenance of the shared market protocol. The AEMC recommends that SCER request AEMO to develop a proposed shared market protocol, in consultation with interested parties, by February 2015 that can be used as a starting point for implementing the shared market protocol. This would include AEMO assessing the IT requirements to enhance the B2B arrangements so that it would meet the requirements of a shared market protocol and could form an initial protocol. AEMO's work would be an important input to the AEMC's development of the draft rule change request and would allow more timely establishment of the protocol.
2. The AEMC will define the gate keeper role and related issues, and transitional arrangements for the regulatory framework under the competition in metering rule change request. In addition, our recommendations in this final report for the regulation of access are based on certain assumptions. As a part of the competition in metering rule change request we will confirm whether these assumptions remain valid. If not, we will revisit our recommendations on the regulation of the rights to access smart meter functionality and access charges accordingly as a part of the rule change process.
3. SCER to direct the AEMC to undertake a competition review three years after the commencement of any rules made under the competition in metering rule change request.

Indicative timeframes are shown below:



metering data under the National Electricity Rules. However, further consideration is required on whether additional provisions and clarifications are required regarding the ability of a third party to obtain a customer's instantaneous data from a gate keeper, including the extent to which consumer consent or contractual arrangements with a consumer may be regulated.

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1 Introduction

The Australian Energy Market Commission (AEMC or Commission) has been requested by the Standing Council on Energy and Resources (SCER) to provide advice on the requirements for a framework for open access and common communication standards required to support communication in demand side participation (DSP) and other end user energy services enabled by smart meters. The request for advice follows from work undertaken in the Power of Choice review.

We have interpreted open access to mean allowing authorised parties to have access to required data and functionality to support metering contestability and DSP and related services.

This report sets out our final recommendations and includes an implementation plan that identifies the actions required to implement our recommendations.

1.1 Scope of the review

This review is about establishing a framework that provides the access to smart meter functionality to authorised parties. The two broad areas under consideration are:⁶

- whether to adopt common communication standard(s) for smart meters and, if so, what would be the appropriate standard(s); and
- whether access to smart meter functionality and access charges should be regulated and, if so, what would be appropriate forms of regulation.

1.2 Background

The Power of Choice review was completed by the AEMC on 30 November 2012. Power of Choice identified market and regulatory arrangements that would allow the community's demand for energy services to be met by the lowest cost combination of demand and supply side options. This would be best achieved when consumers are using electricity at the times when the value to them is greater than the cost of supply that electricity.

In December 2012, the Council of Australian Governments (COAG) and SCER agreed to a broad energy reform package to support investment and market outcomes, which included consideration of DSP in the market. As a part of these reforms, SCER agreed to progress a number of the Commission's recommendations from the Power of Choice review. One of the recommendations related to supporting a competitive approach in

⁶ SCER's request for advice to the AEMC is published on the AEMC website www.aemc.gov.au.

metering and data services for residential and small business consumers. Undertaking this review was one of those recommendations.⁷

1.3 Advisory stakeholder working group and stakeholder consultation

We have carried out extensive consultation throughout this review. In addition to hosting bilateral meetings with a range of stakeholders, an Advisory Stakeholder Working Group was established, as required under the request for advice, and the group was consulted with continuously throughout the course of the review.

The group contributed substantially to the review, and included members from all sectors of the energy market including government, market bodies, businesses and end use consumers. The members of the working group are listed in Appendix D.

On 19 December 2013, we published a draft report inviting stakeholder views on a number of issues, including those relating to the technical standards required to support an open access framework. The draft report also proposed the adoption of common standards to make it possible for smart meters to be efficiently integrated into the electricity supply communication system. Consultation closed on 30 January 2014 and 26 submissions were received.

On 24 February 2014, we published a supplementary paper outlining the draft findings on the regulatory framework, which proposed not to regulate the rights to access the functionality of smart meters, and any access charges, as the market should be allowed to develop without regulatory intervention. It also recommended that a review of competition be conducted at an appropriate time after the market has been in operation. Consultation closed on 10 March 2014 and 15 submissions were received.

The submissions received have been used to further inform the Commission's understanding of the key issues relevant to this advice. Relevant comments from submissions are referred to throughout this final report.⁸

A public forum was held on 27 February 2014 to further aid the consultation process. Presentations were made by the AEMC and a number of stakeholders, including Ericsson, Origin, Jemena, SA Power Networks, Landis+Gyr, Simply Energy and the ATA.

1.4 Structure of the report

This report is structured as follows:

- Chapter 2 outlines the various projects related to the review;

⁷ Consideration of arrangements for competition in metering services is being considered under a separate rule change request. This is discussed further in Chapter 2.

⁸ Submissions are published on the AEMC website.

- Chapter 3 sets out the principles and assessment framework that we are using for this review;
- Chapter 4 presents the concepts which are key to the review;
- Chapter 5 outlines our detailed analysis of communication standards;
- Chapter 6 presents our detailed analysis on the regulatory framework;
- Chapter 7 sets out the implementation plan for the recommendations made in the review;
- Appendix A sets out an explanation of the technical concepts in the report;
- Appendix B contains summaries of the submissions received from stakeholders for both the draft report and the supplementary paper to the draft report;
- Appendix C contains the abbreviations and technical terms used throughout the report; and
- Appendix D lists the list of members of the Advisory Stakeholder Working Group.

2 Inter-related projects

There are a number of current and upcoming projects which relate to promoting efficient investment in smart meters and increasing choices available to consumers in managing their electricity consumption. In this review we have taken into consideration these related projects and, where relevant, have discussed relevant issues throughout this report. One of the key inter-related projects is the rule change request that SCER has submitted to the AEMC regarding expanding competition in metering and related services in the NEM (the competition in metering rule change request).

As part of the rule change request, SCER has proposed no party would have the exclusive right to provide metering services and the responsibility for coordinating metering services is separated from the financially responsible market participant (FRMP) and the local distribution network business. This would be achieved by creating a “Metering Coordinator” who would effectively replace the responsible person in Chapter 7 of the NER.

The proposed introduction of the Metering Coordinator (MC) role in particular has impacted the assessment of whether or not access to smart meter functionality and access charges should be regulated. Our analysis as discussed in Chapter 6 includes assessments of possible scenarios of parties that could perform the MC role.

In submissions on the draft report, many stakeholders noted the inter-related nature of current projects and considered that these processes need to be well coordinated.⁹ We acknowledge the issues raised and agree that ongoing coordination of these projects will be necessary to allow interdependent issues to be assessed and resolved. In addition, as a part of this review and other AEMC projects, we have been liaising with stakeholders to explore further opportunities for discussion and coordination.

As discussed further in Chapter 7, we will work with AEMO and consult with stakeholders to implement the recommendations under this review.

A number of the related projects identified are summarised in the table below.

Table 2.1 Related projects

Project	Description	Status	Relevance to this review
Competition in metering rule change request	Rule change request on expanding competition in metering and related services. Includes consideration of the MC role and the minimum functionality specification for smart meters.	SCER has submitted the rule change request to the AEMC.	The party undertaking the MC role impacts the considerations of the regulatory framework arrangements. This is discussed further in Chapter 6.

⁹ Submissions that raised this issue include those from the ENA and the ERAA. Views and issues are summarised in Appendix B.

Project	Description	Status	Relevance to this review
			We have also considered the functionality that should be supported by the shared market protocol should be those specified in the functionality specification. This is discussed further in Chapter 5.
Customer access to their energy and metering data (customer access to energy consumption information) rule change request	Rule change request on regulatory arrangements to enhance the ability of customers and their agents to be able to request energy consumption data from a customer's retailer or DNSP. Includes consideration of arrangements to enhance customers' understanding about how energy consumption data is used.	SCER has submitted the rule change request to the AEMC.	We have noted that this rule change request is considering regulatory arrangements to support the ability of customers and their agents to gain access to energy consumption data through a customer's retailer or DNSP. It will also assess proposals to enhance customers' understanding about energy consumption data.
Regulation of third parties	The extent that application of the NECF is required for services other than the sale of electricity under the National Electricity Law (NEL) and/or the National Energy Retail Law (NERL)	SCER is undertaking work in examining "the role of third party energy service providers in the National Electricity Market"	We have noted that SCER's decisions under this work would impact and clarify the rights and obligations of third parties and their relationships with consumers. This may include whether third parties need to be 'authorised' as suppliers of energy services by the AER and whether they should be licenced retailers. SCER may wish to consider whether additional clarification of the rights of third parties to have direct access to a consumer's real time data (as opposed to energy data through a retailer) is required. This is discussed further in Chapter 6.
Recommendations from the SCER National smart meter consumer protection and safety review	SCER has completed this review examining the NEL and NERL in relation to the provision of smart metering services.	A number of amendments are to be made to the NEL, NERL and the National Energy Retail	In considering whether our findings and recommendations are consistent with the consumer protection framework, we have considered the outcomes of SCER's review. This is discussed further in

Project	Description	Status	Relevance to this review
		Rules (NERR).	Chapter 7.
Governance of retail market procedures rule change request	AEMO submitted this rule change request proposing changes to the governance arrangements particularly for the B2B procedures.	The AEMC is due to publish a draft determination on this rule change request in May 2014.	We are recommending that a shared market protocol be adopted that is technically based on extending the current B2B arrangements. A rule change request will be required to consider the appropriate framework for the development and maintenance of the shared market protocol. Consideration will be required on whether the existing B2B framework is appropriate or whether amendments or additions should be made. This is discussed further in Chapter 7.

3 Principles and Assessment framework

The principles and assumptions detailed in this chapter outline the framework that we used to develop our recommendations.

3.1 Key principles

The framework for open access and communication standards will need to promote the National Electricity Objective (NEO). The following principles give effect to the NEO and have guided our assessment and analysis:

- Competition in DSP and related services, and competitive neutrality – the framework should promote and encourage the development and innovation of DSP services in the market, either with or without the use of a smart meter.
- Innovation of DSP and related services - the framework should seek to ensure that innovation in the market is not stifled.
- Consumer protection - the framework should have regard to appropriate consumer protections.
- Proportionality – the framework should provide a level of regulation that is proportional to the market’s requirements.

3.2 Assumptions

There are a number of related projects currently underway which have had an impact on the review, as outlined in Chapter 2. We have taken the development of these projects into consideration throughout the review process. As discussed in relevant sections of this report, we have made a number of assumptions in order to assist us to determine our recommendations:

- The framework for the regulation of third parties under the National Energy Customer Framework (NECF) is to be determined by SCER. In carrying out this open access review we have assumed that third parties will require access to smart meter functionality and be providing services to consumers.
- Where relevant to the analysis, impacts of the proposed adoption of the MC role under the competition in metering rule change request has been considered in our analysis.
- All participants will continue to have access to metering data and the associated functions that they have under the existing rules.
- Considerations under this review relate to accessing instantaneous and stored data and functions of smart meters, other than the current arrangements for metering and energy data obtained through AEMO's systems.

4 Key concepts

There are a number of concepts relevant to our considerations under this review. Due to the specialist nature of the matters being considered, we had engaged Phacelift to assist us. In particular Phacelift facilitated the discussions on smart meter communication network architectures and associated concepts at our advisory stakeholder working group meetings.

The key concepts are summarised in this chapter. More details are outlined in **Appendix A**.

4.1 Access and interoperability

To consider the framework for providing ongoing access to smart meter functionality, we have considered the operation of the smart meter communication arrangements with regards to both the level of 'access' and 'interoperability'.

The level of access can be defined in terms of which of a smart meter's functions can be accessed by a given individual whereas interoperability is the ability for different parts of an integrated system to operate together. In the case of smart meter infrastructure, interoperability is a measure of how difficult it is for different accredited parties to communicate with different vendors and different meters.

4.2 Point of entry and level of access

The point of entry is where an accredited party's access to a smart meter functionality is controlled or restricted. The security of the smart meter is managed at the point of entry. There may be more than one point of entry to the smart meter and the functionality it supports.

The level of access defines the smart meter functionality that an accredited party can access, which can differ for each accredited party.

4.3 Security and congestion

The functionality of smart meters will likely be accessed by multiple parties. This places increased importance on the management of access to, security and congestion (within the communication network) of the smart meter.

Security is important to ensure that parties accessing functionality and data have a right to access that functionality or data. Security is required to protect consumer's information and data, the connection point and also to prevent the security of the network being compromised.

The increased volume of communications that is expected for smart meters will also need to be managed. With the increased messages, there is a potential for delays and such delays are referred to as congestion. Congestion management is required to allow

priority access under cases of emergency and to allow other commercial arrangements to be met.

4.4 'Gate keeper' smart meter functionality

For the purposes of analysis, the draft report used the term 'smart meter provider' (SMP) to identify the party that would be managing access, security and congestion. Essentially, this party would be the 'gate keeper' to smart meter functionality and would manage:

- the level of access;
- security;
- congestion on the smart meter communication networks including appropriate prioritisations; and
- the validation of messages sent between the accredited parties and the smart meters.

Currently under the NER the "Responsible Person" is to ensure that access, security and congestion is appropriately managed at a meter. The NER defines the parties that may act as the responsible person but in most cases this is the retailer or the distributor (AEMO in special circumstances as defined). The responsible person contracts a metering provider to carry out these duties in relation to managing access, security and congestion. However, the responsible person remains ultimately accountable for these services.

Although these provisions exist under the NER, management of access, security and congestion for smart meters would require expertise beyond what is currently envisaged under the NER as there would be multiple parties requiring differing levels of access. It is also likely that there would be a higher volume of messages being communicated. For these reasons, the role of the gate keeper for smart meters require further consideration and definition. As the role of the Responsible Party is the subject of the competition in metering rule change request, including whether or not the role of the "Metering Coordinator" should be adopted, we will be further considering the definition of the gate keeper role under that rule change request.

We note that in the case where a smart meter supports the use of a Home Area Network, the gate keeper would also be responsible for managing the registration of the home area network and/or the registration of devices connected to the Home Area Network.¹⁰

¹⁰ A "Home Area Network" is a communication network that is deployed and operated within a small area. Typically this refers to a network that is contained within the home of the consumer that has installed the smart meter. The Home Area Network would then support communications with the smart meter or the connection of devices within the network.

In submissions on the draft report, most stakeholders opposed defining a new party under the NER to undertake these gate keeper functions.¹¹ Stakeholders considered that the functions to be carried out by the gate keeper should be assigned to either the metering provider or the metering data provider. In addition, stakeholders noted that costs would be imposed on the market and market participants in order to make system changes to cater for new defined parties.

4.5 Authorised party

Different parties including retailers, distributors and other service providers may desire access to smart meter functionality. For the purposes of our considerations, we have characterised parties that are allowed access to smart meter functionality as 'authorised parties'. That is, an authorised party is a party that is entitled to access a smart meter's functionality including instantaneous data. We have not considered who these parties may be or the extent of regulation, such as licencing, that may be required. However, we note that many of the parties are existing market participants such as retailers and distributors. In relation to third party service providers we note that SCER is undertaking work examining the extent to which these parties should be subject to regulation and any relevant consumer protection arrangements.

We also note the existing provisions under the NER limit the parties that are entitled to access a consumer's data.¹² The provisions continue to apply and we note are being further considered under the customer access to energy consumption information rule change request with respect to the ability of consumer's agents to request information through a consumer's retailer.

In our draft report we used the term 'accredited party'. However, 'accreditation' is often used in connection with undertaking some form of technical certification. The term authorised party is now used to avoid any ambiguity.

4.6 Meter and market protocols

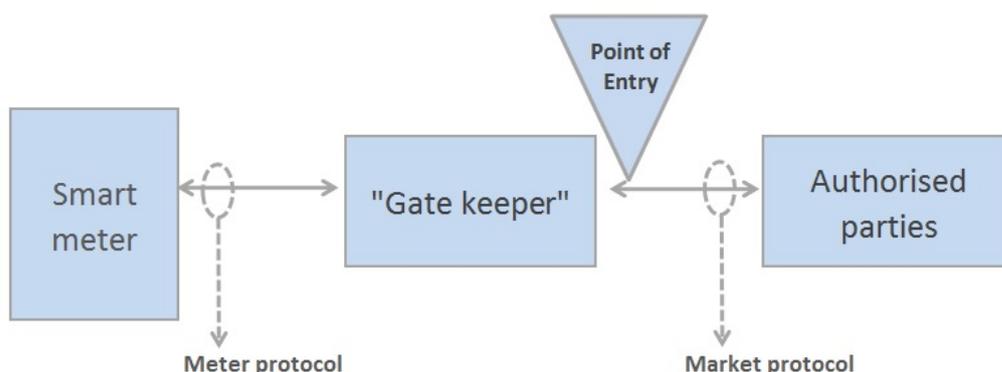
There are two types of communication standards being considered under this review. The standards or 'protocols' relate to the software and processes used at either end of the communication path between the authorised parties seeking access and the smart meter. In this case, a protocol refers to a set of rules or instructions that define how systems communicate with each other. The two protocols are:

- Meter protocol - which defines the interface standards between the application in the smart meter and the smart meter communications network; and
- Market protocol - which defines the interface standards between the authorised party's application and the gate keeper.

¹¹ This view was expressed in submissions including those from the ENA, ERAA and Metropolis. References and views are summarised in Appendix B.

¹² Clause 7.7 of the NER.

Figure 4.1 Meter protocol and market protocol



4.7 International communication standards

The request for advice for this review required us to consider whether there are any international smart meter communication standards that are sufficiently well developed and could be adopted for use in the Australian market. We requested Phacelift to prepare a paper on international standards, which we have considered throughout this review.¹³

In our draft report we discussed whether or not the standard DLMS/COSEM is sufficiently convergent and could be used in Australia. DLMS/COSEM is a standard that is supported by a wide range of international meter vendors including vendors of many meters typically used in Australia. DLMS/COSEM sets standards for the exchange of data related to metering infrastructure. This includes meter data but also other data such as information on meter settings and configuration. DLMS is the abbreviation for "Device Language Message Specification" which refers to a generalised concept for abstract modelling of communication entities. COSEM is the abbreviation for "Companion Specification for Energy Metering" which is the set of rules based on existing standards for data exchange with energy meters.

Submissions on the draft report did not generally support the use of DLMS/COSEM as the market protocol.¹⁴ These issues are considered further in Chapter 5.

¹³ The Phacelift paper is published on the AEMC website <http://www.aemc.gov.au/Media/docs/Phacelift---Review-and-Assessment-of-International-Communications-Standards-d8963aa5-e11a-45cd-a95a-3740d0e13021-0.pdf>

¹⁴ Submissions that expressed this view include those from the ERAA, Freestyle Technology, Itron. Additional information and summary of views is provided in Appendix B.

5 Communication standards

Box 5.1: Summary of chapter

Smart meter communication standards would define and provide transparency to the way in which authorised parties may communicate with the gate keeper to access smart meter functionality. This chapter considers whether or not market and meter protocols should be adopted for the NEM.

On whether to adopt market protocol, we recommend that:

- a 'shared market protocol' be adopted which would define the communication standard between the gate keeper and other parties to access smart meter functionality defined in the smart metering functionality specification;¹⁵
- the shared market protocol be a services based protocol established by extending the existing B2B arrangements;
- the gate keeper be required to maintain the ability to communicate via the shared market protocol with existing and new entrant authorised parties; and
- other market communication pathways be allowed for smart metering communications.

On whether to adopt a meter protocol, we recommend that:

- no common meter protocol is specified.

To implement these recommendations, we propose that:¹⁶

- defining and assigning the gate keeper role and associated changes be considered by the AEMC under the competition in metering rule change request;
- the AEMC, in consultation with all interested parties, to provide a supplementary implementation advice for this review, including a rule change request. The implementation advice would define the shared market protocol and set out how the shared market protocol should be governed under the NEM by defining the arrangements for the development and maintenance of the protocol; and

¹⁵ The competition in metering rule change request includes consideration of the proposal that AEMO establish, maintain and publish a smart meter minimum functionality specification, including an explanation or specification of those functions and related performance levels, in the form of a procedure or guideline.

¹⁶ Implementation issues are discussed in more detail in Chapter 7.

- the SCER request AEMO to develop a proposed shared market protocol including identifying the technical IT system requirements for the shared market protocol in consultation with all interested parties.

5.1 Market protocol

The market protocol is the protocol used for the communications between the authorised parties and the point of entry to the smart meter communications system. We have considered whether a market protocol should be defined for use in the NEM.

5.1.1 Common market protocol

In our draft report, we identified the following benefits of adopting a common market protocol for the NEM:

- increase the ease of which multiple parties communicate with gate keepers and reduce the requirement for, and cost of, developing software applications for communications;
- reduce the risk that a smart meter would be replaced due to an inability for a new gate keeper or 'responsible person' to communicate with them;
- promote competition in the provision of metering services and energy services; and
- reduce barriers to entry for DSP and related services.

The authorised parties need to be able to communicate with smart meters for every consumer with whom they have a relationship. This means developing applications to communicate with each associated gate keeper's point of entry, for which there may be many. If gate keepers use different market protocols, then this would represent a significant amount of application development, and potentially costs, for each of the authorised parties as they would need to develop many different applications. This is particularly true if, over time, the consumer associated with one gate keeper enters into arrangements with new authorised parties.

Thus a common market protocol would provide an efficient means of communicating between all the authorised parties and all the gate keepers, as all relevant parties would have existing applications to communicate with the smart meter and/or the gate keeper. That is, a common market protocol would allow authorised parties to build one application that could communicate with all other gate keepers with minimal further work. It would allow consumers to change retailers and enter into other arrangements with energy service providers, while reducing the need for authorised parties to develop new applications to communicate via a different market protocol.

Where there is a common market protocol it would reduce unnecessary or duplicate software being required to facilitate smart meter communications, and reduce the likelihood that parties would replace a meter due to an inability to communicate with

it. This would likely promote competition in the provision of DSP and related services as the consumer's ability to choose retailers or energy service providers would not be restricted by whether a new retailer or an energy service provider can communicate with the installed smart meter. This would promote the NEO through a likely lower cost of providing metering services in the longer term. A common market protocol would reduce the costs of changing retailer or other energy service providers, as well as reducing barriers to new entrants as they would only need to develop smart meter applications for one market protocol. New entrants would more easily be able to develop the required communication applications and would only need one main application to communicate with a number of different parties and providers.

Submissions from stakeholders supported the draft recommendation to adopt a common market protocol. This support was based on the efficiency and promoting competition benefits identified in the draft report.

Although stakeholders supported a common market protocol, stakeholders agreed with the analysis in our draft report that requiring new services to be implemented using a common market protocol could inhibit innovation.¹⁷ We note that a common market protocol describes one single market protocol. Based on stakeholder submissions, including comments raised at the public forum, stakeholders did not support there being a single market protocol that is mandated.

5.1.2 Allowing other channels of communications and a 'shared market protocol'

Allowing other communication channels means that there would not be a single 'common' market protocol. While having a single common market protocol is likely to promote long term interoperability of smart metering related communication, requiring all such communications to use a single market protocol may be difficult to enforce and have impacts on innovation, competition of services to consumers and barriers to entry.

Mandating a single common market protocol could inhibit innovation if new services needed to be incorporated into the common protocol before they could be implemented and offered to authorised parties. Incorporating new services into the common protocol:

- could be time and resource intensive, depending on the protocol's governance arrangements; and
- would reveal the nature of the new service to the market, thus removing the first mover advantage to those businesses that are developing the new service.

The impacts of a single common market protocol on competition and barriers to entry are more complex. While having a single protocol would promote ease of entry and

¹⁷ This view was expressed by many stakeholders including retailers, meter providers and DNSPs. Views are summarised in Appendix B.

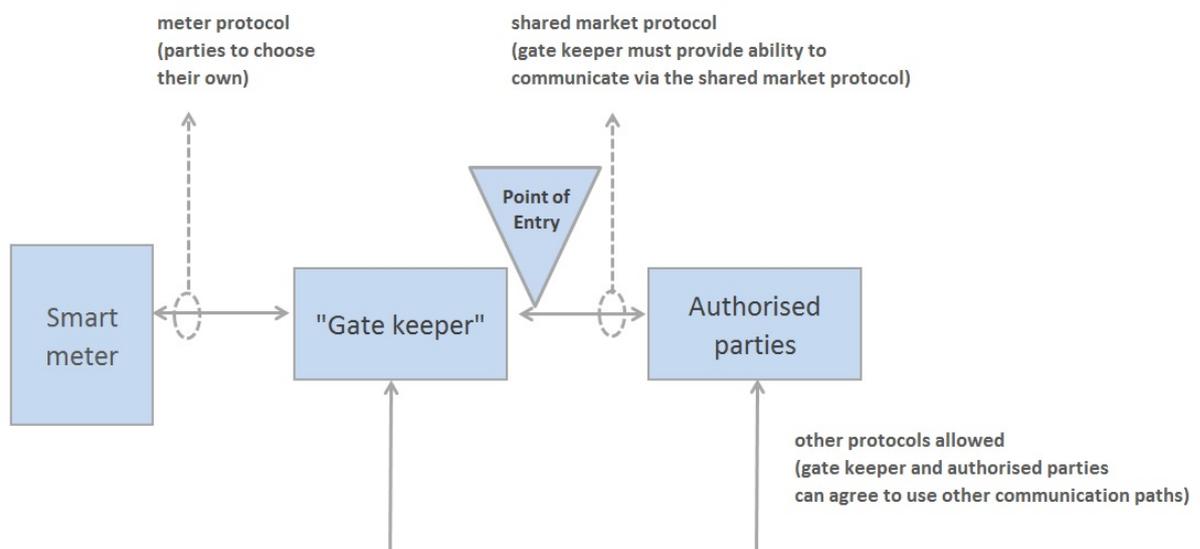
could reduce operating costs, allowing multiple communications paths using different market protocols would increase the flexibility available to both existing and new service providers. Allowing multiple communication paths could likely increase competition in the provision of services to consumers by allowing:

- metering services to be offered over systems that may under some circumstances be potentially more cost effective than a defined market protocol; and
- market participants and metering service providers to operate a potentially greater range of business models.

It is possible that allowing multiple communications paths using different market protocols could also act as a barrier to new entrants. A new retailer or provider of other energy services would need to be able to communicate with all the different metering service providers associated with its consumers. This could be costly if there is a large diversity of different communications systems and protocols. However, we consider that these risks do not outweigh the benefits of potentially allowing new innovations to be delivered quickly and therefore not inhibiting innovation. Multiple communication paths are therefore recommended.

Having an effective and defined means to access to the smart meter functionality would mitigate barriers to entry for new retailers and energy service providers. As discussed, it could also reduce the costs associated with developing communication software for existing participants. For these reasons, we recommend that a market protocol be defined. However, given that parties would also be allowed to communicate via other communication paths, we have termed the defined market protocol as the 'shared market protocol'. Figure 5.1 illustrates how an authorised party can interact with the gatekeeper use either the shared market protocol or via another market protocol. The meter protocol is discussed in more detail in section 5.4.

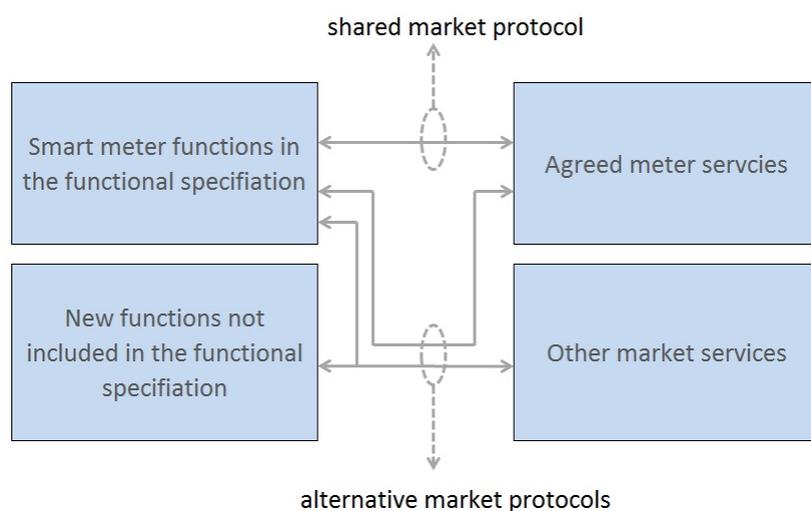
Figure 5.1 Shared market protocol



The shared market protocol should facilitate communications for a defined set of metering services. We have termed the defined set of metering services as "agreed metering services" and consider that it would appropriate to define the agreed metering services in relation to services facilitated by the functions in the functionality specification.¹⁸ Further work will be undertaken in preparing the supplementary implementation advice to define "agreed metering services" and their relationship to the functional specification.¹⁹ New retailers and energy service providers could then always have the option of using the shared market protocol to give them to access a smart meter's functionality to these agreed services and, thus, to provide a range of services to consumers.

In addition to the agreed services provided via the shared market protocol, market services could also be provided via other market protocols. These other market protocols could provide alternative means of accessing agreed metering services as well as other services, as shown in Figure 5.2. This increased flexibility would allow the benefits of alternative communications to be captured, while minimising barriers to entry for new retailers and energy service providers.

Figure 5.2 Access to agreed market services and other services



Therefore, we recommend that:

- in the absence of a single common market protocol for the communications for all smart meter services, the shared market protocol should enable communications for all "agreed metering services";
- "agreed metering services" be those defined by the functionality specification (the establishment of which is being considered under the competition in metering rule change request);

¹⁸ The competition in metering rule change request proposes that AEMO establish, maintain and publish a smart meter minimum functionality specification, including an explanation or specification of those functions and related performance levels, in the form of a procedure or guideline. A set of functionality that the National Smart Metering Program had developed and included in the competition in metering rule change request is set out in Appendix E.

¹⁹ Implementation requirements are discussed in Chapter 7.

- alternative market protocols providing different communication paths be allowed; and
- providers of the gate keeper role be required to maintain the ability to communicate using the shared market protocol for all "agreed metering services".

These arrangements would give flexibility for the provision of metering services while minimising costs for new entrants by allowing them to communicate with all gate keepers using the shared market protocol.²⁰ However, to define the process for specifying the agreed market services requires further consideration as a part of preparing the supplementary implementation advice.²¹

Requiring providers of gate keeper services to maintain the ability to communication via the shared market protocol for all agreed metering services is likely to promote long term interoperability in the provision of services from smart meters. The implementation costs for metering service providers and gate keepers would be reduced if they focus a large proportion of their resources into the shared market protocol. In addition, in the event that a new communications path and protocol that is significantly more cost effective than the shared market protocol was available, there would be an incentive on the relevant stakeholders to amend the shared market protocol arrangements to accommodate the more cost effective arrangements.²²

Based on these considerations, we recommend that there are benefits in having a market protocol and one should be adopted which would provide a defined method to access the functionality from all meters. However, our draft finding of adopting a 'common' market protocol would mean that only that one common market protocol would be used. However, our final recommendation is that other protocols should be allowed, which is further discussed in the remainder of this chapter. For this reason, our final recommendation is that the market protocol would be called the shared market protocol because it is available to all stakeholders but may not be common to all communications to access smart meter functionality. Additional market protocols can be offered by a gate keeper in addition to the shared market protocol.

5.1.3 Market protocol based on internationally accepted meter protocols - DLMS/COSEM and ANSI C12

Having recommended that a shared market protocol should be adopted, we considered the appropriate form that this protocol should take.

²⁰ Under the changes to the NER proposed in the competition in metering rule change request, AEMO would be required to maintain the smart meter functionality specification. This would specify the implementation of agreed metering functions. The list of market services to be accommodated in the B2B system would be based on this list of meter functions.

²¹ Implementation requirements are outlined in Chapter 7.

²² The framework for the management and governance of the shared market protocol would need to set out the way in which stakeholders can propose changes, and how they would be assessed and implemented.

We note that broadly, there are two types of communication protocols of relevance - a meter functions based protocol, which defines the way to communicate with meters; and a services based protocol, which defines the way to communicate business requests and service.

The request for advice requires us to consider international developments in smart meter communications standards and whether they have converged sufficiently for the adoption of an international standard for the NEM to be appropriate. If international standards are not sufficiently convergent, then we were to consider a framework for adopting communications standards if appropriate.

The AEMC engaged Phacelift to review and assess international smart meter communication standards.²³ This report assisted the AEMC and stakeholders to consider the level of development of metering communications internationally, and to assess the suitability of these standards for the NEM.

Phacelift identified the following internationally accepted meter protocols that could potentially form the basis of a NEM market protocol:²⁴

- DLMS/COSEM is an entire suite of protocols that together define a common protocol and methods for communicating with a range of meters in an unambiguous manner. The protocol defines many more features than are required to meet the Australian deployment of smart meter infrastructure. DLMS/COSEM is being used in several European smart meter deployments including Spain, Germany and the UK.
- ANSI C12 is a series of standards that were developed in the 1990s in North America as a standard protocol for interacting with electricity meters. The series of standards was enhanced to cover remote communications to the meters. ANSI C12 is used widely in North America and in the Victorian roll out of smart meters.

In our draft report, we sought stakeholders' views on the suitability of using an internationally accepted metering protocol such as DLMS/COSEM as the basis of a common market protocol for the NEM. Stakeholders generally considered that DLMS/COSEM and ANSI C12 were well developed as meter protocols (providing access to functionality) but neither were suitable as the basis of a services based market protocol (providing access to services).²⁵ Stakeholders consider that market participants were interested in the services than can be enabled by smart meters, rather than direct access to the meter's functions. Therefore, they supported a market protocol that is services based. Taking these issues into consideration we agree that services

²³ Phacelift Consulting's report on "Review and assessment of international communication standards" is available on the AEMC's website.

²⁴ Further information on DLMS/COSEM and ANSI C12 is available in Phacelift Consulting's report on "Review and assessment of international communication standards" is available on the AEMC's website.

²⁵ This view was held by a number of stakeholders including retailers, meter providers and a DNSP. Views and issues are summarised in Appendix B.

based market protocols are more appropriate as a starting point for developing market protocols for the NEM. This is because ultimately consumers are provided with, and are interested in, services enabled by smart meters. For example a service offered to a consumer may be remote disconnection at their premises while the function in the meter associated with this service would be the ability to operate the supply contactor.

In addition, stakeholders also considered that basing the common market protocol, or equally the shared market protocol, on an internationally accepted meter protocol may hinder innovation. Even if an international meter standard were selected, it would be necessary to develop a companion specification in order to ensure a high degree of interoperability. Concerns were raised by stakeholders about the cost to develop and maintain this specification.

Taking these issues into consideration, we do not recommend that a market protocol be based on either DLMS/COSEM and ANSI C12, or another internationally accepted meter protocol because a services based protocol would be easier for stakeholders to adopt.

5.1.4 Internationally accepted services based protocol

Given that a services based protocol may be preferred, we then considered whether there are any international services based protocols.

The International Electrotechnical Commission²⁶ standard IEC 61968-9 is a services based protocol that specifies the message content to support many of the business functions related to smart meter reading and control. The purpose of the IEC 61968-9 is to define a standard for the integration of metering systems and meter data management systems with the other business management systems employed by market participants.

Some stakeholders identified the IEC 61968-9 standard as a potential internationally accepted services based protocol that may be applicable for the NEM.²⁷ We examined the suitability of this protocol through the advisory stakeholder working group and understand that it is still being developed and not ready for adoption in the NEM at this time. No other internationally accepted services based protocols were identified by the working group or stakeholders.

Therefore, we do not recommend that a shared market protocol be based on IEC 61968-9, or any other internationally accepted services based protocol, as there are no international services based protocol that are sufficiently well developed.

²⁶ The International Electrotechnical Commission is a European association responsible for a large range of standards and protocols, including the suite of protocols and standards that make up DLMS/COSEM.

²⁷ This was raised in advisory stakeholder working group meetings and by Ericsson at the public forum held in February 2014.

5.2 NEM specific market protocol based on existing B2B arrangements

In the absence of identifying a suitable internationally accepted meter or service based protocol, we considered the alternative of developing a NEM specific services protocol as the shared market protocol. This could be achieved by either developing a new market protocol or enhancing a suitable existing protocol that is currently deployed in the NEM.

In our draft report, we noted that NEM participants already use the AEMO provided Business-to-Business (B2B)²⁸ gateway protocol for metering and other business communications, and that extending the scope of the current B2B systems may be an option to implement the shared market protocol. This could be achieved by enhancing the existing B2B arrangements to communicate new services that would be supported by smart meters.

In our draft report we sought stakeholder views on whether extensions to the B2B gateway would present a viable option for the development of a services based market protocol for the NEM. The majority of stakeholders agreed that this would be a viable option and supported a market protocol for the NEM based on extending the existing B2B arrangements.

We agree with stakeholders that extending the B2B have a number of advantages. These include:

- the B2B arrangements already allow retailers and distributors to perform a defined set of B2B transactions;
- many of the services that could be provided by smart meters are already included in the B2B protocol (eg final meter reads and remote connection/disconnection which are currently performed manually by the distribution businesses);
- building on the existing B2B arrangements would likely deliver an initial implementation of a market protocol more quickly than developing a new protocol; and
- it is technically feasible to enhance the capabilities and performance of the current B2B systems for the systems to be used as the shared market protocol.

There are risks of implementing the shared market protocol by enhancing the B2B arrangements in that the B2B systems may not be able to deliver the required service levels. This would include risks associated with the ability to:

²⁸ B2B is a business to business communications system that allows participants to perform a defined set of business to business transactions. The B2B procedures are developed by the Information Exchange Committee, which is an industry based committee established by AEMO under the NER.

- meet speed requirements of providing the services in an emergency (for example direct load control to manage security of the network);
- manage increased volume of communications via B2B associated with smart meter services; and
- manage increased security and congestion requirements.

However, we understand that these risks are low as the B2B arrangements could be designed to provide sufficient flexibility and capacity to act as the shared market protocol for smart meter communications. We do not consider the risks of enhancing the B2B arrangements to be materially higher than developing a new shared market protocol and associated communications systems. Implementing a suitable framework for the development and maintenance of the shared market protocol would also allow the market to adopt the most efficient solutions over time.

Based on this analysis we recommend that a market protocol be adopted and that it is developed from the existing B2B arrangements to allow metering related communications between authorised parties and gate keepers.

We note that the current B2B systems are used by retailers and distributors. Both of these groups are registered participants under the NER. These parties need to complete the registration process administered by AEMO, which includes relevant technical considerations. By extending the B2B arrangements to form the shared market protocol, other parties would need to use the shared market protocol. We note that SCER is considering the arrangements for the regulation of third parties. Depending on the outcomes of SCER's work and whether or not third parties need to be registered participants, additional consideration is required on any appropriate registration or accreditation arrangements for allowing other parties to use the shared market protocol.²⁹

5.3 Arrangements for managing and developing the shared market protocol

The shared market protocol will need to be developed and then, over time, maintained to accommodate new functionality and enhancements. Such new functionality can arise from a number of sources including:

- advanced functions being added to the smart meter functionality specification and thus needing to be incorporated into the shared market protocol;

²⁹ Here we have drawn the distinction between accreditation requirements to use the shared market protocol and accreditation requirements for accessing smart meter functionality. In Chapter 6 we discuss that accreditation of parties to access smart meter functionality is not required at the gate keeper is responsible for managing access (and therefore the conditions under which access is granted).

- new functions being developed by individual authorised parties and metering providers that have sufficient market acceptance for their recognition in the shared market protocol; and
- enhancements to the data security and congestion management functionality.

Further consideration is required on the appropriate body to manage the establishment and ongoing development of the shared market protocol. A framework would need to be defined that allows all interested parties the ability to participate in the process. The relevant messages that would use the shared market protocol would also need to be considered. Processes and procedures are also likely to be required.

However, it may not be possible to identify the relevant messages and parties until consideration has been undertaken on the definition and assignment of the gate keeper responsibilities. In addition, the role of the metering coordinator, whether or not it is adopted, and the relationship of the metering coordinator with retailers and other parties may impact the assessment of the parties that would be required to use the shared market protocol. For these reasons, we intend to wait and to develop a rule change request on the shared market protocol arrangements after the AEMC has made a draft determination on the competition in metering rule change request. This will be a supplementary implementation advice to this work. We note that some stakeholders had also commented that this open access review should not precede the competition in metering rule change request.³⁰ This proposed implementation process should go towards alleviating those concerns.

To facilitate the initial development of the shared market protocol, we recommend that SCER request AEMO to develop a proposed shared market protocol in consultation with all interested parties. The objective of this work is to consider what is necessary to extend the existing B2B arrangements to implement the shared market protocol.

Additional discussion of these implementation requirements is outlined in Chapter 7.

5.4 Common meter protocol

In our draft report we considered whether a common meter protocol between the smart meters and the gate keeper should be specified for the NEM. We noted possible advantages of having a common meter protocol such as it could reduce costs for market participants by lessening the requirement for 'protocol translators'. There would also be increased certainty on the functions that would be supported by meters as these would be transparently defined. The risk that parties would not be able to communicate with a new or churned meter would also be significantly reduced. That is, interoperability of the meter would be significantly enhanced.

³⁰ This view was expressed by stakeholders at the advisory stakeholder working group meetings and in submissions on the draft report including those from the ENA and the ERAA. Views are summarised in Appendix B.

However, at the same time, we acknowledged that allowing each vendor to use their own proprietary protocol could reduce initial investment costs and, in some cases, allow new services to be introduced more quickly.

At the time of the draft report we did not consider there was a strong argument for adopting a common meter protocol. We sought feedback from stakeholders on this matter.

Although many stakeholders did not strongly oppose the introduction of a common meter protocol at some stage of the market's development, other stakeholders did not believe a specific protocol should be mandated.³¹ Some stakeholders noted that if a common meter protocol were the most efficient outcome, this would naturally be delivered by the market over time.³² Other stakeholders noted that if a market protocol were specified there would be no need to specify the meter protocol as all parties would communicate via the market protocol.³³

Taking the comments and issues raised in submissions, we maintain the view that a common meter protocol does not need to be specified. Given that a shared market protocol is recommended, authorised parties would be able to communicate with the gate keeper via the shared market protocol, who would then use a protocol translator to communicate through its meter protocol with the smart meters.

³¹ Retailers and meter providers did not support mandating a common meter protocol. References and a summary of views is outlined in Appendix B.

³² Including views expressed by some stakeholders at the advisory stakeholder working group meetings and in the submission on the draft report from ERM Power (p. 2).

³³ Including views expressed by some stakeholders at the advisory stakeholder working group meetings and in the submission on the draft report from Lumo Energy (p. 2).

6 Regulation of access and accreditation

Box 6.1: Summary of chapter

A key aspect of establishing a framework that supports competition in energy services enabled by smart meters is incentives around access to a smart meter's functionality. This chapter considers whether regulation is required for access to smart meter functionality, including whether access charges should be regulated. It also considers whether, if new roles and functions are introduced for managing access to smart meter functionality, persons wishing to perform those roles should be accredited by AEMO under the NER.

For the purpose of analysis, a service that provides access to smart meter functionality is the combination of all services associated with managing access, including managing any associated security and congestion requirements. Throughout this report so far, this is the role undertaken by the 'gate keeper'. However, of relevance to the analysis of the regulatory framework arrangements, is the specific role of the Metering Coordinator (MC). It is assumed that the gate keeper services will be provided by the MC either directly or by parties engaged by the MC.³⁴

On whether rights of access to smart meter functionality should be regulated, we recommend that:

- under a competitive metering framework where consumers have the choice of appointing an MC, regulating access to smart meter functionality and access charges is not supported. This is because we do not consider there is sufficient evidence that any potential inefficiencies under this framework would be greater than the costs associated with regulation;
- if the competition in metering rule change request determines not to introduce a separate MC role, or that consumers would not have the choice to directly appoint an MC, as a part of that rule change process the AEMC will consider whether a form of light-handed regulation to govern negotiations for all parties seeking access should be introduced; and
- SCER direct the AEMC to undertake a review of competition for end-use services enabled by smart meters three years from the making of any rules associated with the competition in metering rule change request (if introduced). This review could be undertaken as either as a stand-alone review or part of a larger review of the competition in metering arrangements for residential and small business consumers (if introduced).

³⁴ The role of the MC was proposed in the Power of Choice review and includes responsibility for all metering services. The scope of this role and extent of accreditation that may be required will be considered in the competition in metering rule change request.

On whether network businesses should have regulated access to a defined level of 'basic' smart meter functions, we recommend that:

- under a competitive metering framework where consumers have the choice of appointing an MC, network businesses should negotiate and pay for access to smart meter functionality on a commercial basis, in the same way as other market participants. This approach places commercial incentives on network businesses to negotiate a level of access to the number of smart meters and types of functions that is economically efficient;
- where DNSP load control activities are enabled by existing meters, such as type 4 or type 5 meters, clarification of access, and any charges that may be imposed for access, should be considered as part of transitional arrangements developed through the competition in metering rule change request; and
- transitional arrangements related to Victoria, where an advanced roll out of smart meters has taken place, should be considered under the competition in metering rule change request once the proposed role of the MC (or similar) has been defined.

On whether persons with responsibilities associated with managing access to, security and congestion at smart meters will require technical accreditation by AEMO under the NER, we recommend that:³⁵

- persons providing services to manage access to smart meter functionality be subject to accreditation under the NER by AEMO; and
- specific requirements for accreditation be considered under the competition in metering rule change request, after the roles and responsibilities with respect to the proposed MC (if introduced) have been defined.

6.1 Introduction

The AEMC's Power of Choice review recommended that a competitive approach be implemented for investment in metering and data services for the residential and small business sector.³⁶ Currently, most residential and small business consumers outside of Victoria have type 5 and 6 meters, where it is the responsibility of the network business to manage and provide services on behalf of the consumer.³⁷

³⁵ Under the current NER, the 'Responsible Person' for a metering installation is to manage access, security and congestion to the meter. It is considered that the requirements for managing access, security and congestion for smart meters will include duties that are additional to the current requirements.

³⁶ AEMC 2012, Power of choice review - giving consumers options in the way they use electricity, Final Report, 30 November 2012, Sydney, p. 82.

³⁷ Meter types are defined under the NER. In Victoria, smart meters are designated as type 5 or type 6 metering installations under a derogation in the NER.

The framework proposed under Power of Choice aims to facilitate greater innovation in metering services at a lower cost through their competitive provision. This approach means that no entity has the exclusive right to be the person responsible for coordinating and providing metering and data services under the NER. Expected benefits from the competitive provision of metering include:

- innovation in services enabled by smart meters;
- a decrease in the regulatory and administrative costs associated with the current regulated approach; and
- the ability for consumers to have greater choice in energy services that may be leveraged from the provision of modern technology.

Changes to the existing metering framework, including consideration of the recommendations made in the Power of Choice review, will be considered as part of SCER's competition in metering rule change request. As this rule change is yet to be considered, for the purpose of this review we have had to assume that a competitive framework for the provision of metering services for residential and small business consumers is in place. This includes assuming the introduction of a separate MC, who could be the retailer, network business or independent third party.

A central aspect of establishing a framework that supports competition in the services enabled by smart meters is incentives around access to smart meter functions. Realising all potential benefits of deploying smart meters will require multiple parties having the ability to access a smart meter's functionality on commercial terms.

Under competitive arrangements, market forces should be allowed to operate without any regulatory intervention. However, regulation may be desirable if there is a monopoly service provider or if the market exhibits material inefficiencies. For instance, if access to smart meters is denied or priced inefficiently, then the demand for smart meter enabled services will be reduced and the benefits provided by the infrastructure less widespread.

This chapter considers whether regulation is required for access to smart meter functionality, including whether access charges should be regulated.³⁸ We have also considered whether the persons performing the new roles and functions associated with managing access to smart meter functionality should be accredited by AEMO under the NER.

³⁸ We are using the term 'access charges' to refer to the price charged to access functions within a smart meter.

Box 6.2: Victorian arrangements

Victoria initiated a roll out of smart meters in 2009. Since this time more than 2.5 million meters have been installed in homes and small businesses across the state.³⁹

Under the framework implemented by Victoria, local network service providers are exclusively responsible for metering services for small customers.⁴⁰ This has required a derogation under the NER as the retailer is usually the responsible person for remotely read interval meters under the rules.⁴¹ In the absence of the derogation, this would include the smart meters installed in Victoria.

The Victorian Government supports in principle the introduction of a national framework for competition in metering services. However, in the absence of such a framework, the Victorian Government considers that allowing retailers to become responsible for small customer metering services in Victoria would be inefficient and could result in a loss of benefits from the already installed smart meter infrastructure.⁴²

Given the advanced roll out of smart meter infrastructure, we expect the recommendations made in this review will require a set of transitional arrangements for Victoria. Issues that may need to be addressed include:

- **Competition for the MC role:** under a competitive framework the MC could be a retailer, independent third party or network business.

As discussed above, in Victoria the local network businesses have been responsible for the roll out of smart meters, including the MC equivalent role. The network businesses' costs associated with installing smart meters and associated equipment is already being recovered from consumers. If the network business is no longer the MC, there will need to be arrangements in place for the network businesses to be compensated if the costs associated with the metering infrastructure have not been fully recovered.

³⁹ Victorian Government 2013, Smart meter rollout arrangements, 29 November 2013, see: <http://www.smartmeters.vic.gov.au/News>.

⁴⁰ In this case metering services mean providing, installing and maintaining the metering installation and providing data management services.

⁴¹ A jurisdictional derogation varies the application of the NER in a participating jurisdiction. The AEMC can make a jurisdictional derogation at the request of the jurisdiction's Minister but must have regard to certain other matters as well as the normal rule making test. See section 89 of the National Electricity Law (NEL). Under clause 7.2.2 of the NER, a "Market Participant" is the responsible person for types 1 to 4 metering installations unless it elects to request that distributor to be the responsible person. For small customers, the Market Participant would most likely be the retailer.

⁴² Minister for Energy and Resources (Victoria), AMI Rule Change Request (Jurisdictional Derogation - Victoria), 18 June 2013, pp. 2-3.

In Victoria, the network business could also continue to be the MC. Given that consumers are currently paying for smart meters, this has implications for the level of charges it would be appropriate for a Victorian network business to charge other parties if it were the MC.

Further, the introduction of contestability for the MC role in Victoria will need to consider the implications of customer switching and the ownership of existing meters.

- **Network access to smart meter functionality:** As Victorian network businesses are currently the equivalent to an MC, they have direct access to the functions and data provided by smart meters. Under the framework recommended in this review, network businesses would be required to negotiate and pay for access to smart meter services on a commercial basis, in the same way as other market participants.

Efficient costs associated with accessing smart meter functions and data would be recovered by the network business in accordance with a regulatory determination made by the AER.

Transitional arrangements

Our recommendation is that transitional arrangements related to Victoria should be considered under the competition in metering rule change request once the proposed role of the MC (or similar) has been defined.

6.2 Nature of services to be provided

Before assessing whether smart meter access and access charges may require regulation, it is necessary to outline the nature of the services that will, or are likely to, be enabled by the functionality of smart meters. This is because the nature of the services will determine the type of access that is needed and by which parties. We will then be in a position to consider the respective incentives on market participants.

As noted in the Draft Report, services provided by smart meters could be separated into 'metrology services' and 'other services'.⁴³ Identifying between metrology and other services facilitates the assessment of whether regulation may be warranted by distinguishing between metering services essential to the operation of the NEM and those that might contribute to greater efficiency across the electricity supply chain (i.e. network planning and fault identification, cost-reflective pricing, direct load control).

6.2.1 Metrology functions

Metrology includes the energy measurement services that are predominately provided by accumulation or 'basic meters' to allow AEMO to settle the wholesale market and

retailers to bill consumers. Under the current framework, local network service providers are responsible for metrology services for manually read type 5 and 6 meters, which are most prevalent among households and small businesses outside of Victoria. Networks recover the costs of providing these services, which are subject to economic regulation, in accordance with a regulatory determination made by the AER.

In Victoria, a mandatory roll out of smart meters commenced in 2009. Under this framework, local network service providers are currently exclusively responsible for metering services for small customers.⁴⁴ The Victorian smart meters are based on a purpose built specification produced by the Victorian Government, which include advanced functions, such as remotely read interval measurement capability, load control and supply disconnect and reconnect, among other features.⁴⁵

6.2.2 Other functions

Type 5 and 6 meters have limited capabilities, with the only function generally being to measure electricity consumption.⁴⁶ Local network service providers with a majority of these types of meters installed therefore receive limited information at the household level to assist them in managing the network. Similarly, where accumulation meters are in place, retailers and consumers do not benefit from more granular information relating to consumption or energy services enabled by advanced metering.

Other end-use-services include all existing and potential services that could be enabled by a smart meter. These may include:

- Remote acquisition of interval metrology data (to enable cost reflective pricing);
- Real-time loss of supply detection;
- Real-time quality of supply monitoring;
- Direct load control; and
- Remote connection/disconnection.

As an enabling technology for DSP, smart meters are also likely to promote the development of a range of new energy services that are not yet envisaged.

⁴³ AEMC 2013, Framework for Open Access and Common Communication Standards Review, Draft Report, 19 December 2013, Sydney, p. 35.

⁴⁴ Minister for Energy and Resources (Victoria), AMI Rule Change Request (Jurisdictional Derogation - Victoria), 18 June 2013, pp. 1-2.

⁴⁵ AEMC 2012, Power of choice - giving consumers options in the way they use electricity, draft report, 6 September 2012, Sydney, p. 52.

⁴⁶ Type 5 meters provide interval metering data.

6.3 Whether to regulate rights of access and access charges for smart meters

Owners of infrastructure generally have the right to decide to whom they provide access and on what terms. In cases where a market is not workably competitive and the service provided by the infrastructure is an essential service that can effect competition in upstream or downstream markets, there may be a reason to examine whether access should be enforced by regulation.

In recommending whether access to the functionality provided by smart meter infrastructure should be enforced, we need to further assess the likely market structure and resultant competitive outcomes, as well as the impacts if access was denied. This would include potential impacts in the electricity retail market as well as in the market for the provision of DSP and DSP-related services. There may also be impacts on the ability of DNSPs to carry out their role as the network operator.

Consideration will also be given as to whether there could be alternative means of providing the services enabled by smart meters, as this will impact the extent (and type) of access regulation that may be required.

6.3.1 Market structure and competition

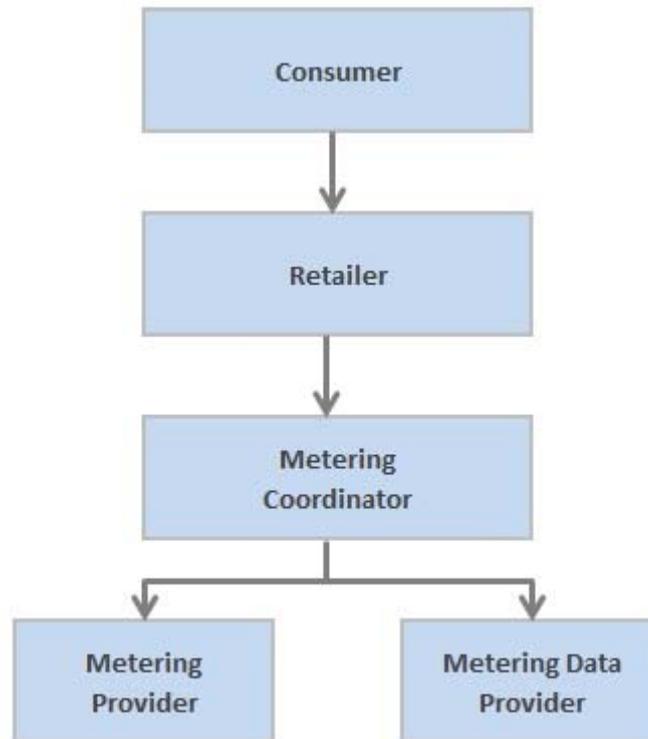
Under the arrangements proposed in the AEMC's Power of Choice Review, a retailer would primarily be responsible for managing and contracting with an MC to engage an metering provider⁴⁷ and metering data provider⁴⁸ on the consumer's behalf. If the model set out in Power of Choice is implemented, the MC would replace the existing Responsible Person role in the NER and incorporate new functions specific to smart meters.

The Power of Choice review proposed that the MC would be responsible for the day-to-day coordination of an metering provider and metering data provider. This would include coordination of the new 'gate keeper' functions related to smart meters, such as managing access to and security and congestion at the smart meter. An MC may perform the metering provider and/or metering data provider responsibilities, or may choose to contract these out. These relationships are illustrated conceptually in Figure 6.1.

⁴⁷ An metering provider is responsible for providing, installing and maintaining the meter.

⁴⁸ An metering data provider is responsible for providing metering data services between the metering installation and the metering database and to parties entitled to that data.

Figure 6.1 Proposed contestability arrangements – Retailer as MC

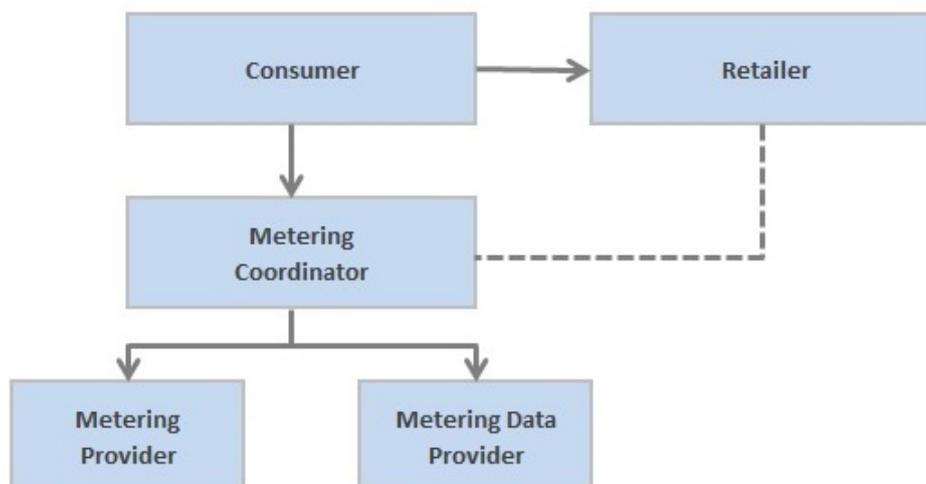


The Power of Choice review also proposed that consumers would have an option to bypass their retailer and contract directly with any accredited MC for metering services, if they chose to do so.⁴⁹ This is illustrated in Figure 2.2. Under this scenario, we have not assessed contractual or other requirements for the potential relationship between the retailer and the MC.

We note that the role of an MC and who can appoint an MC will be considered as part of the competition in metering rule change request.

⁴⁹ AEMC 2012, Power of choice review - giving consumers options in the way they use electricity, Final Report, 30 November 2012, Sydney, p. 92.

Figure 6.2 Proposed contestability arrangements – consumer appoints MC



As the MC would essentially be a 'gatekeeper' to a smart meter's functions, it will play a central role in whether the market for smart meter enabled services will be workably competitive.⁵⁰

If access terms and conditions for parties wishing to provide these services were commercially attractive and prices largely reflected efficient costs, consumers would benefit from competition, choice and innovation in energy services that smart meters enable. Conversely, if an MC, who may also be offering DSP services, has a commercial incentive to frustrate its competitor's access to the meter, the ability for firms to engage in competition by offering innovative and competitively priced services would be limited.

Given the competition in metering rule change request is to be considered separately under the rule change process, an analysis of likely market structure and competitive outcomes is necessarily based on a range of hypothetical scenarios. Accordingly, we acknowledge that it is difficult to draw definitive conclusions about the level of competition in a market that is in the early stages of development and where behaviour cannot be observed.

For this analysis we have focussed on the following scenarios, as we consider that, if the competitive metering framework in Power of Choice is introduced, it is most likely an established retailer, network business or independent third-party (metering provider/metering data provider) will take on the role of MC during the early stages of market development:

- independent third-party MC contracted by the consumer;
- retailer as MC or contracts the MC's functions for a connection point; and

⁵⁰ It is noted that this proposed arrangement also provides that the retailer would be responsible for providing a working meter at a premises.

- network business as MC contracted by the consumer.⁵¹

As the market matures, it is probable that energy service providers may also look to vertically integrate into the MC segment. Given energy service providers are currently a relatively immature part of the market, we have not focussed on this type of participant for this analysis. However, energy service providers would likely be competing across the same product segments as other market participants seeking access to smart meters and some of the issues raised below may also be applicable.

If the outcome of the competition in metering rule change request is materially different to the assumptions made in this review, there may be a requirement to reconsider this analysis.

Independent third-party MC

Under this scenario, an individual consumer contracts directly with an independent third-party MC for the services associated with managing access, security and congestion to a smart meter. This could be an existing or new metering provider/metering data provider.

A third-party MC does not have a relationship (by contract or ownership) with any market participant that would reduce its incentive to offer services for access to smart meter functionality to any other market participant. Given this, a third-party MC will seek to maximise profit by selling as much access to functionality as possible to the smart meter, subject to its arrangements with the consumer.

If a third-party MC faces competition from other providers of these access services, which are likely to include retailers, network businesses and other third-party MCs, it would aim to offer smart meter access at a reasonable price or risk losing market share to a competitor. This would occur when a competitor offers a lower price and/or more favourable terms and conditions.

In this respect, competition can be expected to impose a discipline on the pricing power of third-party MCs and provide positive incentives to engage pro-actively with retailers and consumers on service offerings.

Retailer as MC or retailer contracts MC functions on behalf of consumer

In this section we have considered the incentives on a consumer's retailer, who also acts as the MC, to provide access to smart meter functionality to third-parties that may be in competition with the retailer. As a retailer may choose to contract out these functions, we have also looked at how these incentives might change with a contract in place.

Retailer as MC

⁵¹ It is noted that should metering contestability be introduced, in Victoria the DNSPs will initially be the MC.

Under this scenario, a consumer's retailer would also be the MC who provides services to manage access to a smart meter's functionality for the consumer's smart meter. That is, the retailer would set the terms and conditions, including price, for access to the smart meter functionality by third-party energy service providers and network businesses.

As the retailer and 'gatekeeper' to the smart meter, the incentives facing the retailer would not be as straightforward as the example above. This is because a retailer may offer DSP services that could be in competition with a third-party energy service provider or network business, such as direct load control. With effective control over access to smart meter functionality, the retailer may have an incentive to frustrate access to the smart meter in order to make its products appear more competitive to the consumer.

A retailer could do this by setting the price for access at a level that reduces the competitiveness of the rival service. It may also offer overly restrictive terms where a third-party would be unable to access the smart meter during certain times of the day, such as peak demand periods where DSP services are attractive to consumers. Alternatively, the retailer may delay negotiations, increasing costs for the proponent.

From a commercial perspective, engaging in this type of strategic behaviour may be profit maximising for a retailer as they are primarily in the business of selling electricity and energy-related services, not services to manage access to smart meter functionality. Retailers therefore have a stronger incentive to maximise profits in their core business of energy retailing, rather than as a provider of services to manage access to smart meter functionality. This is because selling these services to a competitor is likely to reduce the profitability of a retailer's core business.

If an engaged consumer was made aware of this behaviour, they may choose to switch MC and/or retailer. The option for consumers to directly engage an MC, if made available through the competition in metering rule change request, would be likely to provide a competitive discipline on the retailer's behaviour. However, we have identified the following situations where this choice may be limited:

- A consumer can be locked into a market contract with its retailer that stipulates who the MC will be for the duration of that contract, making switching MC not possible;⁵²
- Prices offered for energy services by a retailer are discounted subject to the retailer being the MC and controlling access to the smart meter, reducing a consumer's incentive to switch MCs. We note that while such discounts may reflect economies of scope,⁵³ they may have the effect of hindering the

⁵² We note that the competition in metering rule change may consider whether "lock-out" clauses are permitted.

⁵³ Reflecting the ability of a retailer to offer electricity supply, DSP services and gate keeper MC services to manage access to smart meter functionality at a lower cost than for specialised firms to provide each separately.

development of competition in energy services driven by smaller third parties;⁵⁴ and

- Consumers choose not to engage in the meter segment of the supply chain, effectively meaning that in most cases the retailer is the MC.

Importantly, we note that retailers would continue to face competitive tension from other retailers. Competition in the retail market would result in retailers competing against each other to supply energy and energy-related services to consumers, driving innovation and efficient pricing. However, enhanced competition, with retailers competing with network businesses and third-party energy-service providers, may not be as strong.

In summary, there appear to be incentives for retailers to take on the role of MC, as this would provide a means to frustrate the ability of other market participants to offer competitive rival services. Nonetheless, as the new competition in metering framework is yet to be developed and implemented, we are unable to definitively say whether retailers would have the capacity to effectively engage in this type of behaviour.

Retailer contracts MC functions

Under this scenario, a consumer's retailer is the MC but contracts out the services for managing access to smart meter functionality for the consumer's smart meter. In this sense, the retailer does not control access to the smart meter functionality directly, but is likely to influence the terms and conditions and price of access to third-parties through its contract with the MC.

As discussed above, a retailer may have an incentive to frustrate access to third-party energy service providers on the basis that these companies are competing against aspects of a retailer's business. Conversely, third-party MCs have an incentive to encourage the utilisation of smart meters to maximise their profits. This tension is likely to surface in negotiations between the retailer and MC.

When a retailer enters these negotiations, it has an incentive to argue for a type of exclusivity agreement with the MC whereby the retailer receives more favourable access than its competitors. In return, the retailer may compensate the MC for its expected loss in revenue from wider use of the meter. Alternatively, the retailer may provide the MC with exclusive rights to the retailer's customers in a defined area.

Where the retailer grants an MC exclusive rights over its customers, this might be a valuable foundation contract for a business that is seeking to establish itself and reach a critical mass to minimise costs. Such a contract may also make the business a less risky proposition due to more certain cash flows, lowering its costs of finance and providing added incentive.

⁵⁴ This type of behaviour may be prevented by specifying the unbundling of costs and may be considered as part of the competition in metering rule change.

In each of these cases, the retailer would aim to make the MC no worse off than if an exclusivity agreement was not in place. However, in doing so, the retailer may succeed in hindering the development of competition in energy services by frustrating its competitor's access to a smart meter.

Network business as MC

Under this scenario, a network business is the MC who provides services for managing access to smart meter functionality for the consumer's smart meter, including setting the terms and conditions of access to functionality and price.

It is expected that a network business would primarily be interested in smart meter functions that allow it to more efficiently manage its network and which therefore may be of little value to other parties. These are likely to include remote access to: power quality data and associated event logs, meter service checking, loss of supply detection and disconnection/re-connection.

In this respect, if a network business takes on the role of MC, it can be expected to have a strong incentive to maximise profit by selling as much access to the smart meter functionality as possible to other parties, subject to customer consent. Similarly to retailers, complications with this analysis arise when networks seek to offer energy services in direct competition with retailers or third-parties.

In such a case, the distribution network may have an incentive to frustrate access to the smart meter in order to increase the relative attractiveness of its services to the consumer. It can do this in the same manner as described above, through price or restrictive terms. Alternatively, the network may delay access negotiations, increasing costs for the proponent.

Unlike a retailer, a network's core business is not selling electricity or energy services to customers, but transporting electricity on behalf of retailers. A network's primary function is to maintain a reliable, safe and secure supply by managing the network as effectively as possible. Further, the majority of a network's revenue is regulated and not contestable. On this basis, those network businesses who are also MCs would be unlikely to compete across a substantial range of service offerings with retailers or third-parties seeking access to the smart meter.

Direct load control can be an important tool for a DNSP to manage its network and in achieving its regulated functions, particularly in using services such as cycling of air-conditioners, electric hot water systems and pool pumps to manage demand. We understand DNSPs currently implement direct load control through an existing type 4 or type 5 meter, through technology outside of the meter (such as ripple control or timers) or through technology directly on the device, such as air-conditioning units.

Likewise for retailers, direct load control can be used to decrease their customers' exposure to the spot market during times of high prices. However, we note that times of peak distribution network demand and high wholesale market prices do not always

correlate and there is an opportunity for direct load control functions of a smart meter to be shared between retailers and DNSPs.

Network businesses in the MC role would face competition from other potential MCs, such as retailers and independent third-parties, to offer these services. If a consumer has bypassed their retailer to contract the local network business as the MC, they are likely to be actively engaged in the metering segment of the supply chain. This may place additional pressure on the network business to retain the consumer by offering an efficiently priced service, including competitive and timely access for retailers and third-parties.

Moreover, there may be further incentives for networks to become MCs and compete to avoid another MC being appointed. This is due to the value the network business derives from gaining access to the functions of the smart meter that allow it to operate its network more effectively. If another MC is appointed, the network business would incur costs and face the relative inconvenience of having to commercially negotiate for access to these functions.

6.3.2 Submissions on the Draft Report

This section summarises the submissions received on the Draft Report that comment on the need to regulate access to smart meter functionality and access charges.

Submissions that support regulating access and charges

Most of the submissions from network businesses support regulating access to smart meter functionality and access charges to smart meters for a defined set of 'basic services'. This issue is discussed in section 6.4.

Submissions that oppose regulating access and charges

AGL considered there is no evidence to suggest a need to regulate access pricing to smart meters and that evidence suggests that open and competitive markets will naturally develop to promote innovation and consumer choice.⁵⁵ ERM Power had similar views, noting that strong competition in metering services will ensure efficient pricing, and "we have no reason to believe that the requirement to negotiate terms would impede market entry of new participants".⁵⁶

Origin Energy was of the view that the right commercial incentives will be in place for MCs to provide access to smart meter functionality to all necessary parties and that the Commission and policy makers can be confident that efficient pricing outcomes for access to smart metering infrastructure will emerge. Further, most if not all participants will be able to bypass the smart meter for a range of services if access is not granted or not granted on reasonable terms.⁵⁷ The ERAA noted that regulation should only be

⁵⁵ AGL, Draft Report submission, 30 January 2014, p. 6.

⁵⁶ ERM Power, Draft Report submission, 30 January 2014, p. 11.

⁵⁷ Origin Energy, Draft Report submission, 30 January 2014, p. 3-12.

considered where there is notable (rather than theoretical) market failure and should only be limited to core metering services.⁵⁸

Momentum Energy considered that some oversight of the market for smart metering services will be required to ensure there is an appropriate level of competition to protect consumers. As such, Momentum proposed that the AEMC undertake a review of the market for contestable meter services within three years of contestability being introduced.⁵⁹ EnergyAustralia did not support regulation of access rights or regulated charges until such time as a market failure has been identified and there is a clear cost benefit to support regulation.⁶⁰

General Electric's submission put forward that no regulation of access or prices for access is required as markets can achieve this more efficiently without regulation. An analysis of the commercial relationships in General Electric's submission concluded that MCs do not have an incentive to restrict access. As a result, there should be no regulation of rights of access or charges unless, at a future date, an actual market failure is observed.⁶¹

Metropolis was confident that the market will keep prices for access to smart meter services reasonable and that it would be unwise to start regulating prices before the market has matured.⁶² Vector considered that incentives already exist for parties who control metering data to provide the data at a reasonable cost and that it is in metering providers' commercial interests to provide data at an efficient level.⁶³

6.3.3 Submissions on the Supplementary Paper - Regulatory Framework

The AER agreed that there is insufficient evidence to support regulatory intervention, "with the exception of transitional arrangements where distributor-led roll outs have commenced". Further, the AER supported the recommendation that a competition review be undertaken at an appropriate time following the introduction of the new metering contestability framework.⁶⁴ With respect to transitional arrangements for Victoria, Metropolis argued that these "must be light-handed with the objective of immediate restoration of competition, and no barriers introduced which would prevent Victorian consumers from exercising their right of choice".⁶⁵

Lumo Energy supported the recommendation that a review be undertaken once the market is established to consider the need for regulation. Lumo considered this review should be flexible enough to cater for future market developments and that a suitable

⁵⁸ ERAA, Draft Report submission, 30 January 2014, p. 7.

⁵⁹ Momentum, Draft Report submission, 30 January 2014, p. 4.

⁶⁰ EnergyAustralia, Draft Report submission, 30 January 2014, p. 3.

⁶¹ GE, Draft Report submission, 30 January 2014, p. 18.

⁶² Metropolis, Draft Report submission, 30 January 2014, p. 10.

⁶³ Vector, Draft Report submission, 30 January 2014, p. 8.

⁶⁴ AER, Supplementary Paper submission, 7 March 2014.

⁶⁵ Metropolis, Supplementary Paper submission, 14 March 2014.

time be allowed to ensure there is value in its completion.⁶⁶ Similarly, EnergyAustralia considered that regulation is not required for access to smart meter functionality and a future competition review should be undertaken to reconsider these issues once a new metering contestability framework is in place.⁶⁷

Simply Energy agreed that there is insufficient evidence to support regulation of access and price to smart meter functions, and that a competition review should be undertaken at an appropriate time.⁶⁸ AGL and the ERAA supported the recommendation that access to smart meter functionality should not be regulated and that a competition review be conducted to assess the effectiveness of the market when changes have had time to take effect.⁶⁹

Origin Energy supported the draft recommendation that access should not be regulated and consider that regulating at this time will create significant uncertainty for investors.⁷⁰ Vector considered that the case for regulation of access to smart meters and access charges has not been made at this point and that a competition review should be undertaken at an appropriate point in time.⁷¹

The NSW DNSPs supported a competition review of metering contestability arrangements at an appropriate point in time to determine whether the market is operating effectively.⁷² SA Power Networks (SAPN) supported the proposed competition review, but noted that a "competition review once the market has developed would be an opportunity to address inefficient pricing, but could not reverse inefficient investment decisions already made...in meters, systems or network equipment".⁷³

6.3.4 Analysis

The party⁷⁴ responsible for managing access to smart meter functionality will play a key role in determining whether the market for smart meter enabled services will be workably competitive. If access terms and conditions for third-parties are commercially attractive and prices largely reflect efficient costs, consumers will benefit from competition, choice and innovation. This is a key objective of establishing a competitive framework for metering as outlined in the Power of Choice review.

⁶⁶ Lumo, Supplementary Paper submission, 7 March 2014.

⁶⁷ EnergyAustralia, Supplementary Paper submission, 7 March 2014.

⁶⁸ Simply Energy, Supplementary Paper submission, 7 March 2014.

⁶⁹ AGL, Supplementary Paper submission, 7 March 2014; ERAA, Supplementary Paper submission, 7 March 2014.

⁷⁰ Origin Energy, Supplementary Paper submission, 7 March 2014.

⁷¹ Vector, Supplementary Paper submission, 7 March 2014.

⁷² NSW DNSPs, Supplementary Paper submission, 7 March 2014, p. 1.

⁷³ SAPN, Supplementary Paper submission, 11 March 2014, p. 4. We note that minimum specification of smart meters is being considered under the competition in metering rule change.

⁷⁴ As discussed through this chapter, we have considered scenarios where the party responsible for managing access is the "MC".

Alternatively, if the party responsible for access was also offering energy services, it may have a commercial incentive to frustrate its competitor's access. In this case, the ability for firms to engage in competition could be limited or third parties may be forced to incur costs by bypassing the meter. Under this scenario, we would be concerned that a reduction in competitive access to smart meters may restrict consumers from having greater choice in the energy services enabled by smart meters.

Most submissions on this issue reflect a general view that, once the new metering framework is in place, the market should be allowed to develop free of regulation in the first instance. However, DNSPs advocated that access and price regulation should apply to a defined set of 'basic' network functions for residential and small business consumers. Stakeholders broadly support a competition review being undertaken at an appropriate time following the introduction of the new metering contestability framework.

Section 6.3.1 identifies potential inefficiencies that may arise when the 'gatekeeper' to a smart meter's functionality is competing to supply energy services with a proponent who wishes to access the smart meter's functionality to also provide these services. In this instance, the MC may have an incentive to frustrate access to the smart meter, which could impact on the competitive choice available to consumers in the energy services market.

One option that may address these concerns is a requirement in the NER that MCs must negotiate with any accredited party that request its services, in accordance with a set of negotiation principles. The objective of such a requirement would be to ensure that a competitor to an MC in the retail market is provided with an assurance that it will receive an offer to access a smart meter's functions, subject to negotiation of terms and conditions and price. We note that the NSW DNSPs raised this option as a form of light-handed regulation for a defined set of 'basic' network services'.⁷⁵

If this option were to be included in the NER, consideration would need to be given to how such a provision could be effectively enforced. For instance, if an MC was found to have not made an offer or negotiated in accordance with the relevant principles in the NER, an action by the AER for breach of the rules may not be considered to be an effective tool to deliver access arrangements. Instead, it may be considered that the terms and conditions of access should be arbitrated through an established dispute resolution process in the NER in the event that agreement is not obtained.⁷⁶ Since any disagreement over access is likely to involve pricing, a set of high level negotiating principles in the NER would be used to guide negotiations and any subsequent dispute resolution process.⁷⁷

Given the competition in metering rule change request is still to be considered, we acknowledge the difficulty in drawing definitive conclusions about the level of competition in a market that is in the early stages of development. While potential

⁷⁵ NSW DNSPs, Supplementary Paper submission, 7 March 2014, p. 5.

⁷⁶ Productivity Commission 2013, National Access Regime, Inquiry Report no. 66, Canberra, p. 186.

⁷⁷ For example, see Chapter 6.7.1 of the NER.

inefficiencies related to the role of the MC could arise, there are also a number of competitive disciplines faced by market participants, such as competition between retailers, the ability for consumers to switch, and incentives on the MC to develop relationships with a range of participants to maximise profit. It is also not clear as to whether the costs associated with any potential inefficiencies would be greater than those associated with regulation.⁷⁸

A non-trivial assumption made as part of this analysis is that the consumer could have the option of appointing any accredited MC.⁷⁹ This assumption provides a level of competitive tension whereby other MCs or new entrants could gain market share if a consumer's MC is obstructing access to third party energy service providers or network businesses. For example, the party being obstructed could approach the consumer directly and seek agreement to organise a different MC on their behalf. This process could be similar to that involved in signing up for a service such as Foxtel pay TV, where after the consumer commits to a plan Foxtel then organises the connection and installation of the enabling equipment for the consumer.

If the competition in metering rule change request determines, for instance, that only retailers can appoint the MC, or determines not to implement the separate MC role, then the competitive discipline provided by a consumer's ability to choose would be removed. In this case, we consider that a form of light-handed regulation to govern access negotiations for all parties should be considered as part of the competition in metering rule change request. This might take the form of:

- a set of high level negotiation principles in the NER that guide the commercial negotiations for access and access charges to smart meter functionality; and
- an appropriate dispute resolution process, such as that in Chapter 6 or Chapter 8 of the NER, be applied to resolve disputes.

For the purpose of this review, we have assumed that the consumer would have the option of appointing any accredited MC. Therefore, our view, based on feedback through the advisory stakeholder working group and submissions, is that the market for services for managing access to smart meter functionality should be given the opportunity to develop free of regulation in the first instance. On this basis, we do not consider that the case for regulation of the terms and conditions of access to smart meters and access charges has been made at this point.

Noting the potential concerns around the development of the market outlined above, we recommend that SCER direct the AEMC to undertake a competition review of the

⁷⁸ The ENA submission to the Supplementary Paper (p. 3) argued the AEMC had identified issues and risks but did not address them in either qualitative or quantitative terms. While we were unable to definitively address the issues identified, there were a number of countervailing factors outlined that we considered could provide a competitive discipline to the behaviour of the MC. As such, given the assumptions made as to the outcome of the competition in metering rule change request, our view was that the case for regulation had not yet been made.

⁷⁹ As noted above, the role of the MC and who can appoint an MC will be considered through the competition in metering rule change request.

market for end-use services enabled by smart meters three years from the commencement of any new rules associated with the competition in metering rule change request. The purpose of such a review would be to consider whether the market was developing in the expected manner free from regulation and, if issues were identified, to recommend the type of the regulation that would be appropriate to address any market failure.

Three years from the commencement of any new rules associated with the competition in metering rule change request provides a suitable balance between allowing the market sufficient time to develop and identifying any issues that may require regulatory intervention. Addressing any issues that are identified relatively quickly will be important to ensure consumers develop confidence in the benefits of smart meter technology.

6.3.5 Recommendation

We recommend that:

- under a competitive metering framework where consumers have the choice of appointing an MC, regulating access to smart meter functionality and access charges is not supported, as we do not consider there is sufficient evidence that any potential inefficiencies under this framework would be greater than the costs associated with regulation;
- if the competition in metering rule change request determines not to implement the MC role or that consumers would not have the choice to appoint an MC, we consider that a form of light-handed regulation to govern access negotiations for all parties should be considered as part of the competition in metering rule change request; and
- SCER direct the AEMC to undertake a review of competition for end-use services enabled by smart meters three years from the commencement of any rules made under the competition in metering rule change request (if any). This review could be undertaken as either as a stand-alone review or part of a larger review of the competition in metering arrangements for residential and small business consumers (if introduced).

6.4 DNSP access to smart meter functionality

In submissions to the Draft Report and Supplementary Paper, and through the advisory stakeholder working group, DNSPs have put forward a view that network businesses should have access to a defined level of 'basic' smart meter services without having to negotiate an agreement with the MC. Costs incurred by the MC associated with supplying these services would be recovered through the MC's contract with the consumer or retailer.

This section considers whether the NER should guarantee provision for DNSPs to access a defined 'basic' set of services or whether networks should negotiate and pay for access in the same way as other market participants.

We note that under existing arrangements parties, including DNSPs, are entitled to receive energy and/or metering data including data required for billing and settlements.⁸⁰ These entitlements are clearly set out under Chapter 7 of the NER and would continue to apply. We also note that the customer access to energy consumption information rule change request is considering, among other things, the ability of third party service providers to obtain energy data through a customer's retailer. SCER may like to consider whether additional clarification of the rights of third parties to have direct access to a customer's real time data (as opposed to energy data through a retailer) should be provided.

6.4.1 Access to 'basic' smart meter functionality

DNSPs consider that networks should have guaranteed access to 'basic' smart meter services, with the costs of providing the service recovered by the MC through their contract with the consumer or retailer. The ENA has defined these basic services as:⁸¹

- measurement and recording data;⁸²
- remote acquisition of interval/accumulation data on a daily basis, including event logs;
- load management;
- supply contactor operation to enable remote turn on/turn off;
- quality of supply and other event recording;
- meter loss of supply detection;
- remote meter service checking; and
- restoration of supply notification.

Energex consider that the introduction of contestable service access charges for instantaneous data provided to distribution networks through a smart meter functionality (as opposed to energy or metering data a DNSP may obtain through

⁸⁰ See clause 7.7 of the NER.

⁸¹ ENA, Draft Report submission, 30 January 2014, p. 13.

⁸² We note under Chapter 7 of the NER, DNSPs and other parties are entitled to receive energy and/or metering data and in practice these data requirements can be met through extracting data from AEMO's systems at no additional cost to the parties entitled to the data. These provisions are to be retained. A distinction may be drawn with smart meters, where a party may wish to access a smart meter's functionality to obtain real-time data. This would be considered accessing the smart meter's functionality.

MSATS) is seen as a new and unwanted cost and administrative burden.⁸³ SAPN put forward that the marginal cost of providing basic functions will be minimal such that the administrative costs of commercially negotiating these services are likely to be greater than the value of these services.⁸⁴

NSW DNSPs note that there is a weak incentive for MCs to provide these functions at a reasonable price and that MCs effectively have a monopoly over network services.⁸⁵ Accordingly, the ENA considers that the proposed framework may effectively encourage exploitative pricing and the cross-subsidy of contestable metering.⁸⁶

6.4.2 Current arrangements

In Victoria, where there has been a mandatory network-led roll out of smart meters, DNSPs own the smart meters and control access by third-parties to the smart meter functions. As the DNSPs are effectively the MC and therefore control access to the meter, they have automatic access to the smart meter functions that allow them to operate the network more effectively.

In other jurisdictions where there has been a limited roll out of smart meters, DNSPs currently receive limited information at the household level to assist them in managing their networks. Where there has been an uptake of type 4 meters, these typically have only limited functions that would be attractive to DNSPs for network management, other than being remotely read interval meters.

Importantly, most distribution networks currently utilise direct load control to manage demand through the cycling of electric hot water systems, pool pumps and air-conditioning units. We understand that DNSPs have implemented direct load control through:

- technology outside of the meter, such as ripple control or timers⁸⁷;
- technology directly on the device, such as air-conditioning units; and/or
- an existing type 4 or type 5 meter, where the control device is within the meter.

The degree to which DNSPs are utilising meters to enable direct load control varies between network businesses.

⁸³ Energex, Draft Report submission, 30 January 2014, p. 8. We note, as set out above, that DNSPs would continue to have access to energy and metering data through existing arrangements under the NER. However, this may not be in real-time.

⁸⁴ SAPN, Draft Report submission, 30 January 2014, p. 11-12.

⁸⁵ NSW DNSPs, Draft Report submission, 30 January 2014, p. 12.

⁸⁶ ENA, Draft Report submission, 30 January 2014, p. 17.

⁸⁷ Ripple control allows DNSPs to remotely cycle or 'on-off' switch large numbers of appliances for short periods of time, see: Futura 2011, Investigation of existing and plausible future demand side participation in the electricity market, Final Report for the AEMC, December 2011, p. 30.

6.4.3 Submissions on the Draft Report

This section summarises the views in stakeholder submissions on the Draft Report that relate to whether a defined set of 'basic' smart meter services should be subject to access and price regulation.

Submissions that support regulating access and charges for a defined set of 'basic' services

SAPN proposed that a "standard set of network functions must be provided for every smart meter as 'basic functions,' and made available to the network at no charge (that is, the cost to provide them must be fully recovered within the metering charge)".⁸⁸ This is because:⁸⁹

- the marginal cost of providing basic functions will be minimal such that the administrative costs of commercially negotiating these services are likely to be greater than the value of these services;
- the value of some network functions at an individual meter may vary according to the capacity of the network during peak demand, whether the network is rural, metropolitan or remote, overhead or underground lines or the level of penetration of smart meters. As such, some of the meter functions may only be implemented when MCs have the certainty and immediacy of recovering the costs to implement through their metering charge, rather than relying on uncertain future revenue from charges to networks; and
- for some network functions the value of smart meter services is split across multiple parties and, as it is not possible to recover fees from all parties in proportion to the value, the consumer will have to pay more under a commercial arrangement than if the small cost had been recovered through a metering charge.

The ENA put forward that the following services should be designated as basic, advanced and new services.⁹⁰

- Basic:
 - An MC operating a smart meter must provide all basic services for that meter, with costs recovered by the MC through their contract with the consumer or retailer.
 - Another party that is accredited and authorised to access a Basic service through the common gateway does so free of charge.

⁸⁸ At this point in the Supplementary Paper we mistakenly referred to a comment in SAPN's submission that reflected the views of the advisory working group, not SAPN. For clarification, SAPN's position is quoted verbatim.

⁸⁹ SA Power Networks, Draft Report submission, 30 January 2014, p. 11-12.

⁹⁰ SA Power Networks, Draft Report submission, 30 January 2014, p. 9-10.

- Basic services include metrology and a defined set of 'basic' network services (as outlined in section 6.4.1).
- Advanced:
 - Advanced services are optional, but to the extent they are provided they must be provided in a standard way to all accredited and authorised market participants through the common gateway.
 - An MC may not offer a metering service that is substantially similar to an advanced service to any party without also offering the corresponding advanced service through the common gateway.
 - While advanced services are optional, every smart meter installation must be capable of supporting all advanced services.
 - When a meter is replaced or the retailer or customer changes MC, the new MC must continue to provide all advanced services that were previously provided for that metering installation.
 - Accredited and authorised parties wishing to access advanced services do so under a commercial arrangement with the MC, which may include a reasonable fee for access. Setting these fees may require some regulatory oversight.
- New:
 - Services that are not defined as basic or advanced.

Energex proposed a framework where networks define basic data services to be delivered as part of the MC licence and accreditation.⁹¹ Ergon Energy's basic principle is that all data on the meters should be available to each market participant with a relationship with that particular customer, in the most cost effective manner.⁹²

NSW DNSPs put forward that it is crucial that DNSPs are able to access certain essential services provided free of charge to accredited parties and recovered through annual metering charges from the MC to the customer or retailer. These essential services are meter reads (remote access for interval data), existing direct load control, events and power quality, remote meter service checking, loss of supply detection and disconnection/re-connection.

NSW DNSPs noted that there is a weak incentive for MCs to provide these functions at a reasonable price and that MCs effectively have a monopoly over smart meter services sought by DNSPs. This creates a risk that without appropriate regulation of charges,

⁹¹ Energex, Draft Report submission, 30 January 2014, p. 8.

⁹² Ergon Energy, Draft Report submission, 4 February 2014, p. 4.

DNSPs may face inflated prices for access to advanced network services. NSW DNSPs note the need for further consideration of this issue.⁹³

Submissions that oppose regulating access and charges for a defined set of 'basic services'

EnergyAustralia considered that too much emphasis is placed on the "supposed need to manage and control access in order for networks to adequately manage their assets". Moreover, there is no reason why networks cannot be part of the commercial arrangements that will exist for retailers and other parties.⁹⁴

Metropolis noted that one of the impediments to smart meter roll-outs has been the desire of distributors to control the smart meter networks to enhance their own network management processes. Metropolis considered that in Victoria this "led to a distributor mandated rollout, with the associated cost blowouts, delays, and difficult customer engagement". Further, Metropolis is of the view that there is no reason that a distributor cannot contract with a competitive metering services provider to meet its needs.⁹⁵

6.4.4 Submissions on the Supplementary Paper - Regulatory Framework

This section summarises stakeholder submissions on the Supplementary Paper that relate to whether a defined set of 'basic' smart meter services should be subject to access and price regulation.

Supplementary Paper submissions that support regulating access and charges for a defined set of 'basic' services

Energex considered that the Supplementary Paper overlooked the extensive demand side participation and load control services currently provided by networks, risks undervaluing the benefit to both networks and consumers of load management services that reduce network augmentation, and overlooks the significant long term investments in load control equipment already made by networks.

Further, while the AEMC noted that transitional arrangements may be required in Victoria, Energex was of the view that transitional arrangements should also be provided for Queensland's load control infrastructure. Energex was concerned the AEMC's approach did "not include an option to provide delivery of network control and management services from a network's own meters and devices".⁹⁶

Ergon Energy considered the AEMC's draft findings were "inconsistent with the fundamental premise that customers should receive network services at the lowest cost". This is because Ergon Energy argued that MCs are "monopoly providers of

⁹³ NSW DNSPs, Draft Report submission, 30 January 2014, p. 12.

⁹⁴ EnergyAustralia, Draft Report submission, 30 January 2014, p. 3.

⁹⁵ Metropolis, Draft Report submission, 30 January 2014, p. 5-6.

⁹⁶ Energex, Supplementary Paper submission, 7 March 2014.

services for that premise" and therefore a regulated market will ensure that customers receive the efficiencies and savings to networks from the uptake of smart meters.⁹⁷

The Victorian distribution businesses were "supportive of enabling the competitive market to determine the access to services through negotiations". However, this was "on the basis that the regulatory arrangements support DNSP choice of procuring network services or utilising their alternative own device".⁹⁸ Additionally, the Victorian businesses recommended that the NER recognise the rights of customers to have the meter remain as a network device, rather than have it "forcibly" removed; and that the NER provide rights for continued load control and enhanced services to be maintained by the DNSP on churn of the meter or MC.⁹⁹

NSW DNSPs argued that there was a strong case for light handed regulation in order to ensure that customers are able to retain the same level of benefits networks currently derive from metering infrastructure, at efficient prices. This is due to the potential for market power imbalances, uncertainty regarding DNSPs ability to negotiate on competitive terms and the need for DNSPs to retain existing network functions.¹⁰⁰

To address these concerns, the NSW DNSPs proposed including a set of negotiating principles in the NER, such as a requirement for MCs to commercially negotiate "in good faith" and "on fair a reasonable terms". The NSW DNSPs suggested that the dispute resolution process in Chapter 8 of the Rules would be an appropriate mechanism to enforce compliance.¹⁰¹

NSW DNSPs considered the AEMC has overlooked the role of metering installations in enabling network services, such as direct load control:¹⁰²

- Meter churn: where meters are churned and the previous network services enabled by the meter are not retained, the ability for networks to defer network investment by managing peak demand will be diminished.
- DNSPs as "price takers": if DNSPs have limited market power to negotiate an efficient price due to existing reliance on direct load control to manage the network, DNSPs may be faced with a higher price to retain the service, with no additional benefit for customers. Alternatively, DNSPs may choose to not retain the service and invest more to manage peak demand or power quality, also increasing costs.

The ENA was concerned that "fundamental issues raised in the *Supplementary Paper*, including the extent of competition and the need for access regulation, were being

⁹⁷ Ergon Energy, Supplementary Paper submission, 7 March 2014.

⁹⁸ United Energy, CitiPower and Powercor, Supplementary Paper submission, 7 March 2014, p. 2.

⁹⁹ United Energy, CitiPower and Powercor, Supplementary Paper submission, 7 March 2014, p. 2.

¹⁰⁰ NSW DNSPs, Supplementary Paper submission, 7 March 2014, p. 1.

¹⁰¹ NSW DNSPs, Supplementary Paper submission, 7 March 2014, p. 5.

¹⁰² NSW DNSPs, Supplementary Paper submission, 7 March 2014, p. 2-4.

prejudged by the AEMC before the contestability framework is developed".¹⁰³ Further, the ENA questioned how the AEMC can conclude that access regulation was not required in a contestability framework that was not yet in place.¹⁰⁴ However, the ENA was of the view that access regulation would be required at the outset of the introduction of the contestability framework and that it would be appropriate to undertake a competition review at an appropriate point in time.¹⁰⁵

While the AEMC identified risks that may lead to inefficient market outcomes, the ENA considered that the AEMC did not address them in either qualitative or quantitative terms.¹⁰⁶ The ENA also put forward that network businesses must retain the option to secure delivery of network services from their own meters and devices to maximise competitive alternatives.¹⁰⁷

SAPN considered the commercial and regulatory framework for access to smart meters must ensure two things for customers to realise the full benefit of smart meter investment:

1. Certainty of access: SAPN is of the view that networks must have certainty of access to smart meter functions in order to invest in back office systems to make use of them. SAPN consider this will be difficult in an environment "where networks must rely on ad-hoc arrangements with a range of service providers that can alter over time" and without some certainty of price stability.¹⁰⁸
2. Access fees: as a retailer or customer would appoint an MC, SAPN note that "there is no competition between MCs in the provision of network services". Therefore, SAPN is advocating a model whereby a "standard set of network functions must be provided for every smart meter as 'basic functions', and made available to the network business at no charge" (costs recovered by MC within the metering charge).¹⁰⁹

SAPN consider that under this approach "MCs would have certainty of cost recovery for the provision of these services, networks would have certainty of service availability as the market develops, and competition between MCs would ensure efficient pricing without the need for regulation".¹¹⁰

103 ENA, Supplementary Paper submission, 11 March 2014, p. 1.

104 ENA, Supplementary Paper submission, 11 March 2014, p. 3.

105 ENA, Supplementary Paper submission, 11 March 2014, p. 4.

106 ENA, Supplementary Paper submission, 11 March 2014, p. 3.

107 ENA, Supplementary Paper submission, 11 March 2014, p. 4.

108 SAPN, Supplementary Paper submission, 11 March 2014, p. 2.

109 SAPN, Supplementary Paper submission, 11 March 2014, p. 3.

110 SAPN, Supplementary Paper submission, 11 March 2014, p. 3.

Supplementary Paper submissions against regulating access and charges for a defined set of 'basic services'

EnergyAustralia and Simply Energy considered that network businesses should negotiate and pay for access to smart meter functions on a commercial basis, similar to other market participants.¹¹¹ Further, Simply Energy noted that MCs will have a strong incentive to provide services that are attractive to network businesses in order to obtain a revenue stream that enables them to offer more competitive pricing to retailers. Simply Energy also considered that dealing with multiple MCs will not impose significant transaction costs on network businesses and that retailers already do this across the marketplace.¹¹²

AGL supported the AEMC's recommendation that network businesses should negotiate and pay for access to smart meter functionality on a commercial basis. AGL considered that where a network business requires access to a service in another party's smart meter, beyond metrology services, that they should be subject to an appropriate fee for access.¹¹³ Similarly, the ERAA was of the view that network businesses should negotiate and pay for access to smart meter functionality on a commercial basis.¹¹⁴

Origin Energy was of the view that the payment for services provided by smart meters should be negotiated by all users and market participants seeking access, including network businesses. Origin noted that this approach will result in efficient pricing of access and utilisation of services provide by smart metering infrastructure in a market-led roll out.¹¹⁵

6.4.5 Analysis

In a contestable market for metering services outside of basic metrology functions, DNSPs can be seen as another market participant seeking to access smart meter functionality to provide a service to consumers or add value to their business.

Networks have an incentive to gain access to the functionality of an efficient number of smart meters to assist them in managing their network more effectively. For instance, DNSPs currently receive an operational expenditure allowance from the AER to allow them to recover the efficient costs associated with performing functions such as meter reads, fault identification and restoration of supply. If, during a regulatory control period, a DNSP gains access to services enabled by smart meters to perform these functions more efficiently, the network business is able to retain the efficiency gain that will eventually be passed through to consumers.

¹¹¹ EnergyAustralia, Supplementary Paper submission, 7 March 2014.

¹¹² Simply Energy, Supplementary Paper submission, 7 March 2014.

¹¹³ AGL, Supplementary Paper submission, 7 March 2014.

¹¹⁴ ERAA, Supplementary Paper submission, 7 March 2014.

¹¹⁵ Origin Energy, Supplementary Paper submission, 7 March 2014.

As identified by SAPN, the value of a network acquiring access to services enabled by smart meters will depend on the characteristics of the network, such as capacity during peak demand, whether the network is rural, metropolitan or remote and the provision of overhead or underground lines.¹¹⁶ In part of a network that is constrained regularly during peak periods, a network business may see greater commercial value in negotiating access to a larger number of smart meters than may otherwise be the case. In this regard, DNSPs face appropriate incentives and would be best placed to manage these commercial decisions and associated risks.

Network businesses have argued that regulating access to a 'basic' set of network functions would reduce the costs of having to negotiate with multiple MCs across a network, while providing certainty of access and price to invest in systems that support the network functions of smart meters. We note that under a competitive approach, with or without regulation, there is likely to be a gradual take up of smart meters and it may take time for a critical mass to be installed. Further, we do not consider that negotiating with multiple potential MCs will be unreasonably burdensome and that establishing a variety of commercial relationships is common to most markets.

We also note that it would be problematic to recommend regulating access and price to a defined set of smart meter functions when the minimum functional specification for smart meters, which is being considered under the competition in metering rule change request, is yet to be established. Moreover, under the proposed arrangements there is a possibility that the minimum functional specification will be different across jurisdictions, which could result in smart meters not containing a consistent set of network functions.

The AEMC recognises that load control is utilised extensively by network businesses to manage demand, although the extent to which this is enabled by a meter or other infrastructure varies. With respect to DNSPs' concerns around access to load control functions under the new framework, SCER has requested that existing load control functionality at the connection point remain operational when a metering installation is changed. This will be considered and implemented as part of the competition in metering rule change request.

An additional concern expressed by DNSPs was around negotiating for access to load control technology if the DNSP is no longer the in MC role. As discussed above, load control can be enabled through technology next to the meter, within the meter and/or on the device, such as an air-conditioner. Where load control technology exists next to the meter or on the device, we understand that there is no requirement to access the meter to provide this service, and therefore no requirement to enter into an agreement with an MC under the new metering framework.

Furthermore, and as raised by the Victorian DNSPs,¹¹⁷ this framework is not intended to prevent DNSPs from utilising their own network device. Therefore, network

¹¹⁶ SA Power Networks, Draft Report submission, 30 January 2014, p. 9-10.

¹¹⁷ United Energy, CitiPower and Powercor, Supplementary Paper submission, 7 March 2014, p. 2.

businesses will have a choice as to whether they procure the network service through a smart meter or utilise their own device. This is one of the competitive disciplines faced by MCs when negotiating with DNSPs.

Where load control is undertaken through an existing meter, there may be a requirement for DNSPs to enter into an agreement with an MC to access this function in order to continue to effectively manage the network. We recognise that as DNSPs may have limited alternative options in the short term, the MC may seek to price access to the load control function of a smart meter at an inefficient level. Depending on the prevalence of these meters, this may lead to increased costs for consumers. Accordingly, clarification of access to this functionality, and any charges that may be imposed for access, should be considered as part of transitional arrangements developed through the competition in metering rule change request.

As discussed in Box 6.2, Victoria initiated a mandated roll out of smart meters for residential customers and small businesses in 2009, with more than 2.5 million meters installed to date. Under the framework implemented by Victoria, local network service providers are exclusively responsible for metering services for small customers. This has implications for the competition in metering rule change request and this review, where it is proposed that metering services could be provided for by retailers, network businesses or other third party providers.

Given the advanced roll out of smart meter infrastructure, we consider that transitional arrangements related to Victoria should be considered under the competition in metering rule change request once the role of the MC (or similar) has been defined. Potential issues to be addressed include:

- where the open access framework is introduced part way through a regulatory control period and network businesses are required to commercially negotiate for access to smart meter functionality; and
- any arrangements to allow for network businesses to be compensated if the costs associated with the metering infrastructure have not been fully recovered.

The AEMC notes DNSPs' concerns that MCs may be seen as monopoly providers of network services and that there could be a weak incentive for MCs to provide these functions at a reasonable price. However, we also consider that it is important to acknowledge the following competitive disciplines that may also exist on the MC:

1. An MC looking to sell access to the network services functions of a smart meter would effectively have one buyer - the local DNSP.¹¹⁸ If MCs were looking to profit maximise, DNSPs would likely be part of their foundational customer base, given the range of services a network may seek to access and the certainty provided to the MC that access would be on a regular basis.

MCs that set access prices too high risk losing a revenue stream that may assist to underpin and de-risk their business model. Further, DNSPs seeking to more

¹¹⁸ A single buyer in a market is called a monopsony.

effectively manage their networks would have options that involve bypassing smart meters or simply operating their networks on the basis of the limited information currently available through type 5 and 6 meters. Once a smart meter has been bypassed by installing alternative technology, the MC would likely have lost the DNSP's business permanently. This option can be expected to act as a form of counter-veiling market power.

2. Smart meter functions that relate to network management are of limited use to other market participants. Therefore it is unlikely that retailers, third-party energy service providers or other MCs that participate in the market would have a strong incentive to frustrate the access of DNSPs for strategic reasons.

As discussed above, direct load control may be one area where DNSPs and other parties compete to offer the consumer this service. However, the value of accessing this function for each party may be different throughout the day where local network peaks do not coincide with high prices in the NEM. Under a competitive framework, we would expect retailers and DNSPs to negotiate a mutually beneficial outcome based on each other's requirements.

DNSPs are large, well established businesses with asset values and revenue in the order of billions of dollars. We consider that the resources available to network businesses will ensure they are well equipped in their negotiations with MCs to achieve the best possible outcome for their businesses. As noted above, DNSPs would continue to have access to energy and metering data through existing arrangements under the NER. The recommendations in this review only relate to new, advanced metering functions that will be enabled by smart meters.

One of the benefits of moving to a new competitive metering framework is a decrease in the regulatory and administrative costs associated with the current regulated approach. Regulation, even light-handed regulation where matters are continually referred to dispute resolution, can impose material costs. At this stage in the development of the new competitive metering framework, we are not convinced that the case has been made for networks to be treated differently from other market participants also seeking to access smart meter functions.

We consider that, under a competitive metering framework where consumers have the choice of appointing an MC, network businesses should negotiate and pay for access to services enabled by smart meters on a commercial basis, in the same way as other market participants. This approach will place commercial incentives on DNSPs to negotiate an efficient level of access to the number of smart meters and functions of those smart meters.

Costs incurred by DNSPs for accessing smart meter services will be recovered from all customers through distribution use of system charges. Although not all customers will have smart meters in the medium term, the use of information from smart meters will assist DNSPs with managing their networks and therefore benefit all consumers.

6.4.6 Recommendation

We recommend that:

- under a competitive metering framework where consumers have the choice of appointing an MC, network businesses should negotiate and pay for access to services enabled by smart meters on a commercial basis, in the same way as other market participants;¹¹⁹
- where DNSP load control activities are enabled by existing meters, such as type 4 or type 5 meters, clarification of access, and any charges that may be imposed for access, should be considered as part of transitional arrangements developed through the competition in metering rule change request; and
- transitional arrangements should be considered under the competition in metering rule change request where the open access framework is introduced part way through a regulatory control period and network businesses are required to commercially negotiate for access to smart meter functionality.

6.5 Regulatory options

A number of other regulatory options are available for SCER's consideration if, upon reviewing the future arrangements in the market for smart meter services, it was determined that the market was not workably competitive and access to smart meters was being restricted to the detriment of consumers. We note that the competition in metering rule change request will consider potential requirements around ring fencing and competitive procurement in relation to retailers and DNSPs taking on the role of the MC.

Two broad regulatory approaches are summarised below:

1. Negotiate/arbitrate (light-handed regulation); and
2. Reference services.

The type of regulation that may be appropriate would depend on the findings of a review into the level of competition and impacts on adjoining markets.

6.5.1 Negotiate/arbitrate (light-handed regulation)

Negotiate/arbitrate, or light-hand regulation, "involves regulatory methods that emphasise commercial negotiation and information transparency, with regulatory intervention through the right to have disputes arbitrated by the regulator".¹²⁰

¹¹⁹ Noting that entitlement to energy and metering data under the existing arrangements would still apply. Negotiations would relate to new services enabled by smart meters.

¹²⁰ National Competition Council 2013, A guide to the functions and powers of the National Competition Council under the National Gas Law, Melbourne, p. 67.

Light-handed regulation may be a proportionate approach where some form of competition is present and there is potential for contestability to emerge. Further, it may also be appropriate when the number of access seekers is relatively small and these parties can exercise some leverage in the course of commercial negotiations.¹²¹

A regulatory approach for MCs based on light-handed regulation might involve:

- MCs publishing terms and conditions of access to different types of smart meters, including offer prices on their website;
- reporting annually to the AER on access negotiations;
- prohibition on engaging in price discrimination; and
- approach to dispute resolution set out in the NER, such as that currently contained in Chapter 6 of the NER.

Light-handed regulatory approaches increases transparency around the terms and conditions and prices for accessing predetermined smart meter services, reducing the ability of an MC to set inefficient prices or withhold access. A negotiate/arbitrate process would provide a defined process for parties to engage in negotiation if agreement around terms and conditions and price of access was unable to be reached.

By avoiding the material costs associated with full regulation, light-handed regulation can provide more timely and lower cost outcomes, particularly when negotiations are completed relatively quickly.

6.5.2 Reference service

Reference service regulation would require an MC to periodically submit an access arrangement to the AER and obtain its approval for the proposed terms and conditions of access. While this form of regulation imposes significant administrative and regulatory costs, it is likely to be appropriate if a market is not workably competitive and services cannot be provided efficiently by another means.

Noting the difficulty and costs involved in prescribing access terms and charges for all potential smart meter services, an arrangement that is approved by the AER could contain the terms and conditions of access and reference tariffs for services likely to be sought by a significant part of the market. These might include:

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- Remote interval readings for time-of-use pricing;
- Direct-load control services; and

¹²¹ National Competition Council 2013, A guide to the functions and powers of the National Competition Council under the National Gas Law, Melbourne, p. 67.

- Remote connection/disconnection.

Reference service is costly to administer, firms incur compliance costs that are passed onto consumers and there may be indirect costs through inefficient regulatory decisions and market distortions that hamper innovation. Implementing this type of approach would be in response to a substantial market failure in the metering market and associated retail market.

6.6 Accreditation of new MC functions

Under the current regulatory framework, the NER requires AEMO to accredit metering providers and metering data providers.¹²² AEMO's accreditation process is to check that parties are appropriately qualified in order to provide some assurance to AEMO and other registered participants that the metering providers and metering data providers are able to fulfil their obligations under the Rules.¹²³

This section considers whether the persons providing new MC 'gate keeper' functions associated with the deployment of smart meters, such as managing access, security and congestion, will require accreditation by AEMO under the NER. Under the model proposed in the Power of Choice review, the MC would control access to smart meters and have incentives to ensure persons accessing services are technically compliant with the new requirements.

We understand that SCER is considering the requirements for regulating third party energy service providers. Whether third party service providers should be registered market participants will depend on the outcomes of SCER's decisions for the broader regulatory framework.

6.6.1 Submissions on the Draft Report

Most submissions that discussed accreditation focussed on the accreditation of third-party energy service providers. As noted above, SCER is considering the requirements for regulating third party service providers under the broader regulatory framework and this issue is not within scope of this review.

With respect to the accreditation of new MC functions related to smart meters, General Electric consider that accreditation should involve the minimal possible additional regulatory burden over and above the current arrangements for metering providers and metering data providers.¹²⁴

¹²² Rule 7.4.2 and 7.4.2A. See also schedule 7.4 and 7.6 for detailed accreditation requirements.

¹²³ AEMO's accreditation process for metering providers and metering data providers can be found here: <http://www.aemo.com.au/Electricity/Retail-and-Metering/Metering-Services>

¹²⁴ General Electric, Draft Report submission, 30 January 2014, p. 20.

6.6.2 Submissions on the Supplementary Paper - Regulatory Framework

Lumo supported the recommendation that parties who have responsibilities associated with managing access to smart meter functionality are accredited by AEMO.¹²⁵ EnergyAustralia considered that persons with responsibilities for the provision of services to manage access to smart meter functionality and smart meter technologies will require accreditation under the NER.¹²⁶ The ERAA supported our recommendation that persons responsible for managing access to smart meter functionality should be accredited by AEMO under the NER.¹²⁷

Simply Energy put forward that parties who control access to smart meter functions should be accredited and ring-fenced from other businesses, given their pivotal role in controlling who can provide services that rely on smart meter functionality.¹²⁸ AGL and Origin supported the recommendation that persons responsible for managing access to smart meter functionality should be accredited by AEMO.¹²⁹

The AER considered it appropriate that responsibilities associated with access to smart meter functionality, such as managing access, security and congestion be subject to AEMO accreditation.¹³⁰ Vector did not have any issues with this approach in principle, however, cautioned against the accreditation process being too onerous and costly for market participants and ultimately consumers.¹³¹

The Victorian distribution businesses recommended that accreditation be reassessed in the metering competition rule change process once the MC role has been established and defined. This is because the role of the MC, which is yet to be finalised through the rule change process, will impact accreditation decisions.¹³² The NSW DNSPs supported the accreditation of parties responsible for managing access to smart meter functions.¹³³

6.6.3 Analysis

Accreditation is the qualification process through which AEMO and Registered Participants gain assurance that metering providers and metering data providers have the ability through adequate systems and procedures to comply with their obligations.

¹²⁵ Lumo, Supplementary Paper submission, 7 March 2014.

¹²⁶ EnergyAustralia, Supplementary Paper submission, 7 March 2014.

¹²⁷ ERAA, Supplementary Paper submission, 7 March 2014.

¹²⁸ Simply Energy, Supplementary Paper submission, 7 March 2014.

¹²⁹ AGL, Supplementary Paper submission, 7 March 2014; Origin Energy, Supplementary Paper submission, 7 March 2014.

¹³⁰ AER, Supplementary Paper submission, 7 March 2014.

¹³¹ Vector, Supplementary Paper submission, 7 March 2014.

¹³² United Energy, CitiPower and Powercor, Supplementary Paper submission, 7 March 2014.

¹³³ NSW DNSPs, Supplementary Paper submission, 7 March 2014, p. 1.

Given the role of metering providers and metering data providers in providing data to allow market settlement to occur, an inability for them to meet their obligations could have detrimental impacts on the other market participants, consumers and the NEM in general. AEMO's accreditation process provides assurance that the required information will be provided on an accurate, reliable and timely basis.

MC functions, whether they are to be carried out by metering providers/metering data providers or a new category of market participant, will include managing access, security and congestion at a consumer's smart meter. One approach to considering whether accreditation is required is to examine the implications of a failure in effectively carrying out these tasks:

- **Access:** an inability to access a smart meter by an authorised entity could undermine the services enabled by smart meters, create financial difficulties for the authorised entity who is unable to provide the service and/or reduce the confidence of consumers in the technology.
- **Security:** unauthorised access to a smart meter is likely to result in a breach of the consumer's privacy through access to data within the meter. It may also result in damage to household appliances, the unauthorised remote activation of appliances and disruption to supply. Breaches of security are likely to undermine the confidence of consumers in the technology and, if access occurred on a wide-spread basis, may disrupt the network and pose a threat to safety.
- **Congestion:** congestion arises when multiple parties are seeking access to a smart meter at the same time. If the service provider managing access is unable to manage congestion in accordance with a pre-determined hierarchy, signals critical to the safe and efficient operation of the network may not be received. This could lead to an avoidable supply disruption or the inability to use a service such as direct load control during times of peak demand.

Both of these examples are likely to reduce consumers' confidence in smart meter technology and increase the difficulty of DNSPs to manage their networks or other authorised parties to carry out their obligations.

If a service provider failed in its responsibilities to effectively manage access, security and congestion of a smart meter, there is a possibility of market disruption in the settlement process, a breach of consumer privacy, unauthorised access and control of electric household appliances and avoidable disruption to supply. Additionally, consumer confidence in smart meters is likely to be undermined, reducing the uptake of this infrastructure and the benefits that smart meters can provide.

Given this analysis, we consider that the new 'gatekeeper' functions associated with the introduction of smart meters will be of sufficient importance to the operation of the NEM that accreditation will be required whether this role is undertaken by the MC or another party. It may be that the MC does not require technical accreditation, but they would need to ensure that persons providing these services are appropriately accredited.

The competition in metering rule change request will consider the definition of roles and responsibilities with respect to the role of the proposed MC, and the specific requirements for accreditation.

6.6.4 Recommendation

We recommend that:

- persons providing services to manage access to smart meter functionality (the gatekeeper) be subject to accreditation under the NER by AEMO; and
- specific requirements for accreditation be considered under the competition in metering rule change request, after the roles and responsibilities with respect to the proposed MC have been defined.

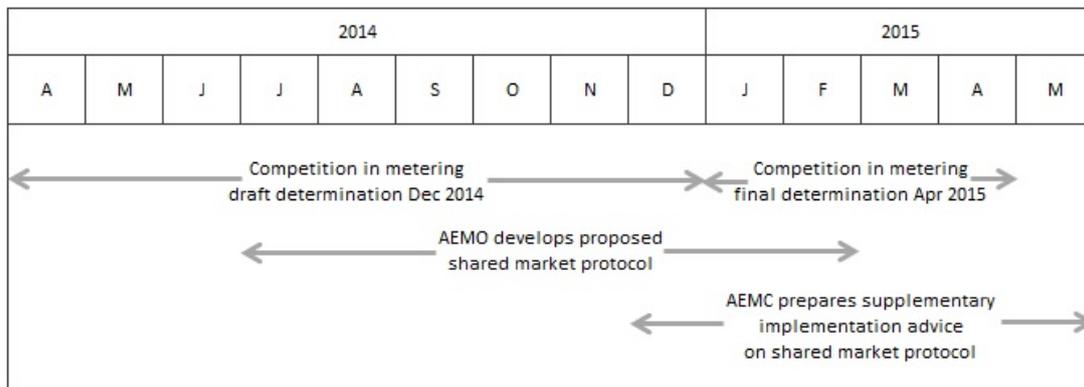
7 Implementation

The recommendations and issues identified in this report can be implemented through three separate actions (with timeframes shown in the diagram below):

- developing implementation requirements for the shared market protocol where the AEMC will provide supplementary implementation advice about implementing the shared market protocol after the final determination for the competition in metering rule change request has been made; AEMO will develop a proposed shared market protocol, including defining the IT system requirements;
- the AEMC will define the gate keeper role and determine the transitional arrangements under the competition in metering rule change request that has already been submitted to the AEMC. As a part of this rule change the AEMC will also review whether the assumptions made in our considerations of the regulatory framework under this review remain valid; and
- SCER will direct the AEMC to undertake a review of competition to be conducted three years after commencement of any rules made under the competition in metering rule change request.

We also note SCER's ongoing work in relation to the regulation of third parties.

Figure 7.1 Implementation task timeline



7.1 Implementing the shared market protocol - supplementary implementation advice to be provided

The recommendations for the establishment and adoption of a shared market protocol would need to be implemented through a change to the NER. We will undertake further work on the implementation requirements to develop a draft rule change request for SCER's consideration as a part of a supplementary implementation advice to be provided to SCER following the making of the final determination for the competition in metering rule change request. We recommend that SCER request

AEMO to lead the development of a proposed shared market protocol to consider the technical IT system requirements, which may then inform our supplementary implementation advice and shorten the overall time for the implementation of the shared market protocol.

Reason for and timing of supplementary implementation advice

In preparing the supplementary implementation advice the AEMC will take into consideration the final determination for the competition in metering rule change request. This would mean that the definition and assignment of the gate keeper role and the party ultimately for managing and providing access would be determined. The draft rule change for the shared market protocol would then be able to consider how the enforcement of the protocol should be defined and the relevant parties that will be utilising the protocol. Clarification of the relevant parties will also be an important consideration in assessing any appropriate cost recovery arrangements that should be put in place for any costs to develop and maintain the shared market protocol.

Content of the supplementary implementation advice

The content of the supplementary implementation advice will be a draft rule change request on implementing the shared market protocol including any relevant supporting information. The supplementary implementation advice will focus on requirements to implement the shared market protocol.

AEMO led development of technical shared market protocol implementation requirements

We recommend that SCER request AEMO to lead a project to consider the technical development requirements for the shared market protocol. The objective would be to develop a proposed shared market protocol taking into consideration the technical capabilities and requirements to expand the existing B2B arrangements to implement the shared market protocol. This may include identifying IT changes that would be required of AEMO and parties that would be using the shared market protocol. This project could provide understanding on the potential issues that may arise in developing and maintaining the protocol and the ways in which these issues may be addressed. We anticipate the outcomes of this project would assist with defining and establishing the shared market protocol and assist with developing the governance requirements.

We recommend that AEMO initiate this work by June 2014 and be required to consult widely, including with those parties that have participated in the open access review processes. We also recommend that AEMO complete this work by February 2015 so that its findings can be incorporated into the AEMC's supplementary implementation advice. This timing ahead of the AEMC's finalisation of the supplementary implementation advice would mean that the draft rule change request we prepare would begin from a stronger base. It would also shorten the overall timeframe required to put the shared protocol in place. We would liaise with AEMO throughout this process on timing and coordination.

7.2 Consideration under the competition in metering rule change request

Our recommendations have identified a number of issues that are within the scope of the competition in metering rule change request, in particular the issues relating to the role of the 'gate keeper' and clarifying transitional requirements under the regulatory framework. In addition, our consideration of the access regulation arrangements made a number of assumptions and considered various scenarios. As a part of the competition in metering rule change request, we will check if our assumptions remain valid. If not, we will consider whether any of the regulation options considered under this review are appropriate and should be introduced.

We will consider the matters summarised in the table below in the competition in metering rule change request.

Table 7.1 Matters to be addressed in the competition in metering rule change request

Recommendation / Area for further development	Dependencies or relevant issues
Define and assign the gate keeper role.	<p>The gate keeper manages access, congestion and security at the point of entry to smart meter functions. This is an enhancement of the existing access, security and congestion responsibilities under the NER because there will be multiple parties requiring access to smart meter functionality and differing levels of access.</p> <p>Clarification is also required that the gate keeper also manages security (e.g managing passwords) in relation to access through a Home Area Network or other market protocols and points of entry other than through the shared market protocol.</p>
Define and clarify the accreditation requirements for the person carrying out the gate keeper role.	Currently metering providers and metering data providers are accredited by AEMO in accordance with requirements under the NER. The gate keeper role should also be accredited by AEMO. Consideration of the existing accreditation arrangements and the extent to which they should be extended to include the gate keeper functions is required.
Clarify service level requirements.	Under the NER, metering providers and metering data providers are subject to meeting certain service levels as defined under the service level procedures. Consideration of these requirements is required to determine the extent to which additions or amendments should be incorporated to take into account functionality provided by smart meters. This may include the ability to prioritise services such as under

Recommendation / Area for further development	Dependencies or relevant issues
	emergency situations.
Define and clarify restriction of services.	In clarifying the provisions of the functionality specification, consideration is required on whether any functions should have restricted access (e.g. network functions such as supply capacity control). The gate keeper will then need to ensure it can apply the appropriate restrictions.
Transitional arrangements for the regulatory framework.	<p>Consideration to be given as to whether transitional arrangements may be required for open access will be considered as a part of the competition in metering rule change request in addition to any transitions requirements that will arise out of the existing rule change requirements.</p> <p>Issues identified to date for further analysis include arrangements for cost recovery provisions under a distribution determination where the open access framework is introduced part way through a distribution determination period and network businesses will be required to commercially negotiate for access to smart meter functionality. For existing load control functions that are to be maintained by network businesses, consideration may also need to be given to clarify the access, and any charges that may be imposed for access, to the functionality under a competitive framework.</p>
Review access regulation assumptions considered in this final report.	Review assumptions and scenarios for access regulation considered in this final report and whether they remain valid. If not, revisit the recommendations and consider whether any of the options for regulation discussed in this final report should be implemented.

7.3 Competition review

We recommend that a competition review be conducted three years after the commencement of any rules made under the competition in metering rule change request. To implement this recommendation, we request that SCER direct the AEMC to undertake such a review at that time.

A Technical concepts

This appendix provides additional information on the technical concepts that are relevant to this review. This appendix covers:

- a general introduction to smart meter infrastructure;
- an explanation of the criteria for assessing smart meter communication networks including the concepts of 'access' and 'interoperability';
- an explanation of the elements in the smart meter communication networks relevant to this review; and
- broad descriptions of international communication standards DLMS/COSEM and IEC 61968.

A.1 Introduction

The main attributes of modern smart meter infrastructure are that it provides intelligence in the smart meter at a consumer's premises; that the smart meters can be accessed remotely via two-way communications networks; and requires a smart meter application in the accredited party's computer system.¹³⁴ That is:

- the individual smart meters can perform functions that are significantly more advanced than a traditional accumulation meter; and
- the smart meter communications network allows parties that are accredited to access the smart meter functions (accredited parties), the ability to send instructions to the smart meter and retrieve data from the smart meter remotely from the consumer's premises.

Therefore, it is important that the framework for providing smart meter communications can effectively enable the use of the smart meter functionality in order to support competition in end user energy services.

To realise all the potential benefits of deploying smart meter infrastructure will involve providing multiple parties access to the smart meter's functionality including: the customer, the retailer, the distribution business and third party DSP and energy service providers, in addition to the metering data providers that currently have access to the consumption data. It is also important that the smart meter communications network provides this support on an ongoing basis beyond the initial smart meter deployment.

The smart meter infrastructure deployed in the NEM, including in any given distribution network, may be deployed by several different smart meter service

¹³⁴ An accredited party is any entity that is entitled to access the smart meter's data and functions. This would include the consumer's retailer, the associated network business, the MDP, MP and third party energy services companies

providers offering different technology solutions.¹³⁵ This could have the potential to reduce the ability for some accredited parties to communicate with some meters if no standards are applied.

In the context of multiple smart meter service providers and multiple accredited parties, some of which may change during the life of metering assets, careful consideration needs to be made as to how to standardise smart meter communications. That is whether to require specific standards and protocols to be used in the smart meter communications network to satisfy the long term interests of consumers.

A.2 Criteria for assessment of smart meter communications networks

To assess what framework would effectively provide ongoing access to the smart meter functionality, it is necessary to establish criteria to analyse the associated issues and stakeholder perspectives. This is particularly so in the case of smart meter communications as there is such a diverse range of stakeholders with interests in different aspects of the provision and use of smart meter infrastructure.

The two criteria chosen to analyse the operation of the smart meter communications are the access arrangements and interoperability.

A.2.1 Introduction to access

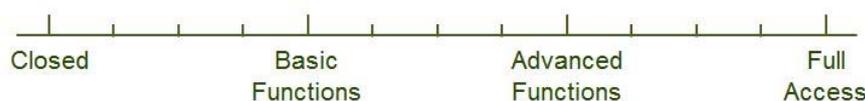
The level of access can be defined in terms of which of the smart meter functions can be accessed by a given individual accredited party or group of accredited parties. Access can range from “no access”, where an accredited party has no access to the meter functionality, to “full access” where all the functionality of the meter is available. No access would deliver no benefits, while full access¹³⁶ could potentially be a risk to system security and privacy if access to the meter’s functions is not restricted in some way. The appropriate level of access would fall between these two extremes.

Therefore, the level of access to the smart meter functions can be characterised as access to basic functions only, access to basic and advanced functions, or full access to the all the functionality of a smart meter. This can be represented on the following access spectrum.

¹³⁵ The framework for the competitive provision of metering being established through the rule change request “Introducing a new framework in the National Electricity Rules that provides for increased competition in metering and related services”, which was submitted to the AEMC by the SCER officials in October 2013. This rule change request also proposes that AEMO establish, maintain and publish a smart meter functionality specification. Each jurisdiction would have the ability to require new and replacement meters in its jurisdiction to include some or all of this functionality as a minimum. The AEMC will separately process this rule change request.

¹³⁶ In early ASWG meetings “full access” was also referred to as “open access”.

Figure A.1 Access spectrum



For the purposes of this advice, the smart meter functions have been placed in the following classifications:

- basic functions¹³⁷ - this includes existing metrology functions, as currently defined in the rules for type 1 to 4 metering installations,¹³⁸ plus metering support functions for maintaining the smart metering system;
- advanced functions - the other functions that are fully defined in the smart meter functionality specification, which is a document that details and defines the functions of smart meters,¹³⁹ and
- new functions - are functions that are not specified in the smart meter functionality specification but may be developed by one or more stakeholders.

Note that under the rule change request for the competitive provision of metering,¹⁴⁰ it is proposed that each jurisdiction would be able to specify which of the basic and advanced functions would make up the minimum smart meter functionality for new and replacement meters in that jurisdiction. That is, some of the advanced functions may be fully specified in the smart meter functional specification but not implemented in each smart meter.

A.2.2 Introduction to interoperability

A smart meter communications network can also be characterised by the level of interoperability. Interoperability is the ability for different parts of an integrated system to operate together. In the case of smart meter infrastructure, interoperability is a measure of how difficult it is for different accredited parties to communicate with a range of smart meters from different vendors. That is, whether the accredited parties would need to install separate applications in their computer systems for each of the different models of consumer meter.

137 In the first two Advisory Stakeholder meetings this was referred to a metrology functions.

138 Type 1-4 metering installation contain interval meters that can be remotely read, as defined in the NER.

139 Under the rule change for the competitive provision of metering AEMO would maintain the smart meter functionality specification and it would include all smart meter functions where there is a specified manner for their implementation.

140 Under the rule change request, no entity would have the exclusive right to provide metering services. Rather, meters would be installed when additional meter functionality is required to support the services being offered to a consumer.

Interoperability differs to access in that interoperability refers to the simplicity by which the communication path (between an accredited party and a meter) is established, while access refers to whether the accredited party is allowed to use that path to operate the smart meter's functions. Interchangeable refers to communication paths that are easy to use, whereas Not Interoperable refers to no communication path. The discussion on Interoperability is to be undertaken with the introduction of an intermediate party who can interface between the accredited parties and each smart meter.

The communications path and, therefore, the level of interoperability can be characterised by the selection of protocols,¹⁴¹ the nature of any intermediary, and the architecture of the smart meter communications network. The level of interoperability can be represented on the following spectrum.

Figure A.2 Interoperability spectrum



Like access, interoperability can be represented on a spectrum. The spectrum used in this analysis ranges from:

- not interoperable - where each Metering Provider (MP) chooses different protocols and then requires accredited parties to develop unique software solutions to suit those protocols;
- protocol translation - where individual meters contain their own proprietary protocol that is translated into a selected market protocol by an intermediary. Each intermediary negotiates a protocol for use by each accredited party. This will result in multiple software applications interacting with a customer's smart meter;¹⁴²
- common protocol - where individual meters contain a common protocol (a common meter protocol) and all intermediaries¹⁴³ offer all accredited parties a common protocol (common market protocol); and
- interchangeable - where one meter could be swapped for another without any protocol impacts for all accredited parties seeking access to the meter.

¹⁴¹ In this context, the term 'protocol' means technology rules (as distinct from administration rules) that are established by vendor software at specified interfaces along the communication path.

¹⁴² This is essentially the arrangements for the New Zealand deployment of meters where predominantly only one accredited party communicates with the meter.

¹⁴³ In architectures where there is no intermediary, the common protocol would be used by each accredited party.

The actual level of interoperability will vary along the spectrum depending on the architecture and the selected protocols.

A.2.3 Access and interoperability combined

The access and interoperability spectrums can be combined to provide a 2-dimensional view of the access and interoperability criteria. This 2-dimensional view can be used to provide an indicative depiction of the levels of access and interoperability for a given smart meter communications network architecture.

A.3 Key smart meter communication network concepts

Before applying the access and interoperability 2-dimensional view it is also necessary to consider some key features of computer systems that are applicable to communications with smart meter infrastructure.

A.3.1 Role of the 'gate keeper'

The deployment of smart meters with multi-party access places increased importance on the management of access, security and congestion (within the communications network), which is not as applicable for meters that only offer the metrology function. The duties associated with this increased emphasis are not currently assigned to any party under the NER.

Therefore, for the purposes of our analysis, the additional responsibility of managing the point of access to a smart meter has been assigned to a 'gate keeper' who was referred to as the smart meter provider (SMP) in our draft report. This gate keeper is a virtual entity for the purpose of establishing access and interoperability principles. The gate keepers would provide and manage the point-of-entry used by accredited parties to operate the meter's functionality. In particular, the gate keeper would be responsible for managing matters such as:

- the level of access;
- data security arrangements;
- congestion on the smart meter communications network; and
- the validation of messages sent between the accredited parties and the smart meters.

The gate keeper would predominantly incur operating costs to manage the point of entry and the use of the communications network between its interface and the smart meter.

The responsibilities of the gate keeper contrasts with that of the MP, who is responsible for configuring its meters for metrology settings and to manage congestion for metrology data. This is predominantly a capital intensive business to cover the costs of

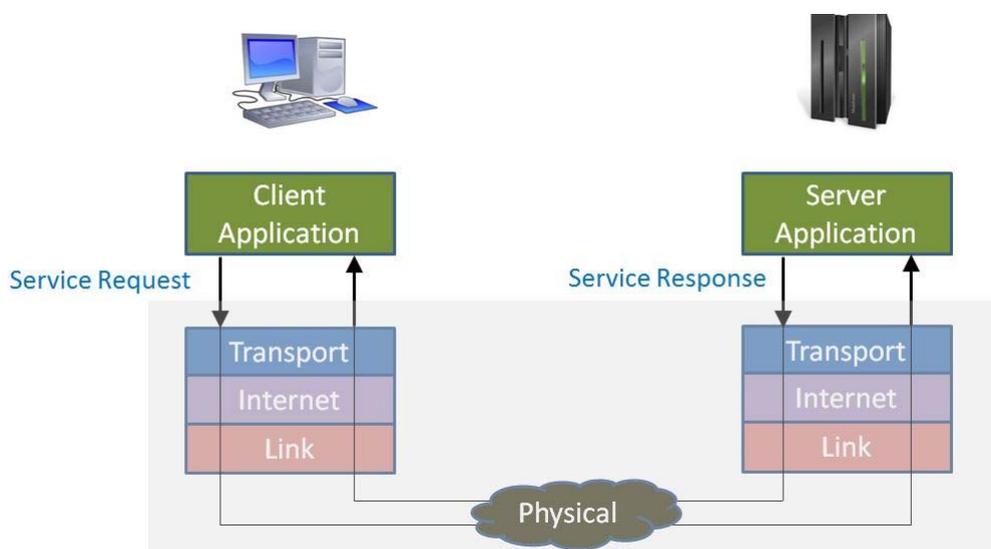
the installed meters, communications modems and, if necessary, private communications networks.

The responsibilities (and possible role) of the gate keeper is considered further in Chapter 5.

A.3.2 Internet layers model for computer communications

The design of modern smart meters communication networks are based on the internet layers model. Under this model the complexity of the actual communications at the lower levels is hidden from the information exchange between the applications. A five layer representation of the internet layers model is shown in the following figure.¹⁴⁴

Figure A.3 Internet layers model for computer communications

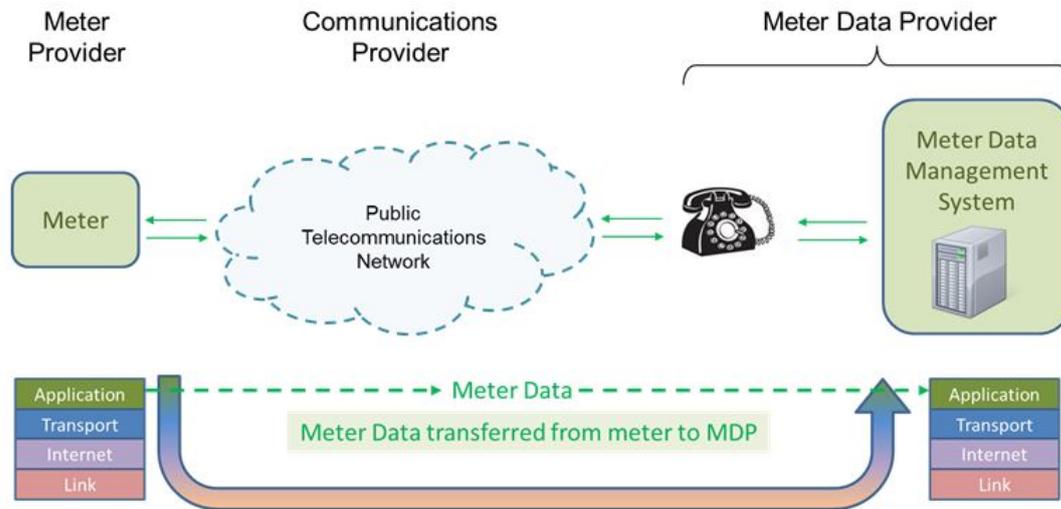


Under the internet layers model, an application in one computer communicates with an application¹⁴⁵ in another computer. In the case of smart meter infrastructure, an application in an accredited party's computer system communicates with either an application in the smart meter at the consumer's premises, or with a gate keeper's application. The following figure provides the example of the communications path to read a remote type 1 to 4 metering installation.

¹⁴⁴ The five layer internet modal is a simplified version of the seven layer open system interconnection (OSI) internet communications model. An introduction to the OSI model is available at <http://www.infotransec.com/sites/infotransec.com/files/OSIModel.pdf>.

¹⁴⁵ Computer applications are pieces of software that operate within a computer to implement a given function

Figure A.4 Example of internet layers model - reading type 1-4 metering installation



A.3.3 Application layer communications protocols

The development and operation of the application level software requires very little knowledge of the operation of the lower layers. This allows smart meter applications to be developed independently of the communications media, such as mesh radio, 3G, 4G/LTE or the public internet. To make this work, the format for the communications between the internet layers is defined by the chosen protocol at each interface in the communications path.

An example of an internationally accepted protocol for communications for smart meter applications is DLMS/COSEM. DLMS/COSEM is an open non-proprietary meter protocol fully described by a number of published IEC standards. It has been successfully used globally to support smart meter deployments. While most of these deployments have been in Europe it has also been deployed in Australia and is gaining strong support in several Asian energy markets. It is noted that DLMS/COSEM is included in the smart grids roadmap prepared by Standards Australia in 2012.¹⁴⁶

The Victorian smart meter deployment selected communications solutions developed in the USA. These systems tend to employ the common American meter protocol described in the ANSI C12 series of metering standards.

In the absence of a common meter protocol meter vendors in Australia have offered a range of proprietary meter protocols. These proprietary protocols can be used for remote communications, for example types 1 to 4 metering installations. When using a range of proprietary protocols the Metering Data Provider must employ suitable

¹⁴⁶ The Standards Australia roadmap for smart grids is available at <http://www.standards.org.au/Documents/120904%20Smart%20Grids%20Standards%20Road%20Map%20Report.pdf>

protocol translators to convert the proprietary data into a common format (as described above in the interoperability spectrum).

In addition to DLMS/COSEM and ANSI C12 protocols, several proprietary smart meter communications protocols have been developed by specific manufacturers.

There are no standard market protocols available to an intermediary. There are no internationally recognised protocols. Attempts have been made to use international common information models to describe market protocols, these models are typically based on the meter protocol. Identifying an open non-proprietary protocol for use as the market protocol is more difficult. The Common Information Model described in IEC-61970 has been extended via IEC 61968 to include Meter Reading and Control. It is noted that these standards provide a high level description ('schema') of a market protocol, with work required to develop the actual protocol. Completing the details in the schema would be easier if the market protocol is based on the meter protocol. Other choices would be based on vendor offers that could be used in an 'open' manner.

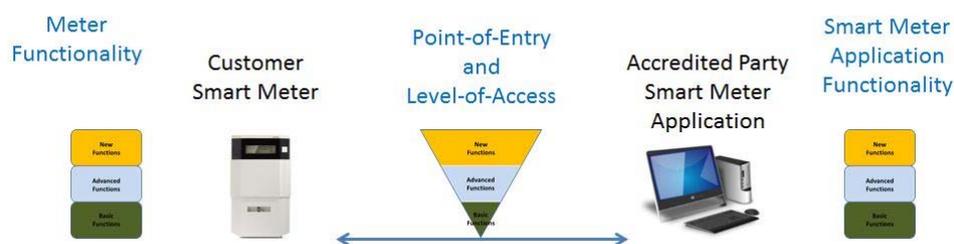
The protocol or protocols used for the deployment of smart meters in the NEM will have a significant impact on the level of interoperability that can be achieved.

A.3.4 Point-of-entry and level of access

The point of entry is where an accredited party's access to the smart meter infrastructure (and whether the ability to use a specific smart meter function) may be restricted. The location of the point of entry in the smart meter infrastructure has implications for the management of access and the level of interoperability.

The point of entry can be used to place restrictions on which parties can operate the smart meter functionality, and the extent of that functionality available to that party. It can also be used to control which data sets a given accredited party can access. This defines that party's level of access. The following figure illustrates these concepts. The level of access is shown in terms of basic, advanced and new functionality at the smart meter and at the accredited party. The point of entry and the level of access is shown as the triangle.

Figure A.5 Point of entry between a smart meter and the accredited party



The security of the smart meter infrastructure is managed at the point of entry. If the point of entry is at the meter then security must be managed with a system of

passwords. If the point of entry is remote from the meter then security will be managed by the gate keeper.

The level of access defines which smart meter functions that an accredited party can access. This will depend on their relationship with the consumer and their role in the market. The level of access can be defined in terms of the ability to access just the basic functions, basic plus advanced functions or full access including new functions.

In addition to restricting access to the smart meter's functionality at the point of entry, accredited parties may also incur charges for using the meter's functions from the point of entry. The potential need to regulate charges for accessing smart meter infrastructure is discussed in Chapter 5.

The current Rules support two points of entry to access the metering data in a type 1 to 4 metering installation. These are:

- direct access to the meter where the point of entry is at the meter; and
- market entry point where the point of entry is remote from the meter.

These are depicted in the following figures.

Figure A.6 Point of entry at the meter

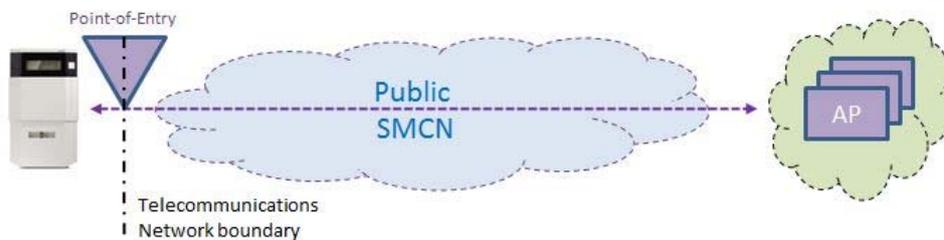
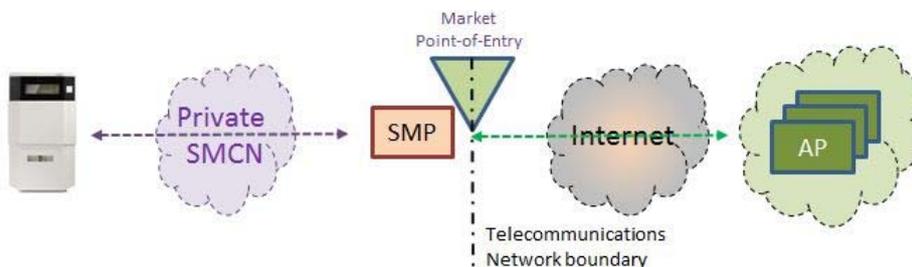


Figure A.7 Market point of entry



SMCN is the smart meter communications network, SMP is the gate keeper and AP is the accredited party.

The implications of different locations for the point of entry for a smart meter communications network are discussed in Chapter 5.

A.3.5 Gate keeper's smart meter application

The gate keeper uses a smart meter application to interact with the smart meters they manage. However, their application differs to those used by accredited parties since they are also required to manage access, data security and communications congestion in addition to providing message validation.

When the point of entry is at the meter the gate keeper is essentially providing password management. When an accredited party establishes a relationship with a customer the gate keeper configures the meter and assign a new password to the accredited party. Should the customer chose a new accredited party, the gate keeper will delete the old password from the meter and assign a new password to the new accredited party.

When using a market point of entry, the gate keeper directly manages all accredited parties access to the smart meter infrastructure. As introduced in the interoperability spectrum it is also possible for the gate keeper to offer a protocol translator. In this case the gate keeper smart meter application receives messages from accredited parties using a market protocol and translates them into a meter protocol before forwarding to the meter.

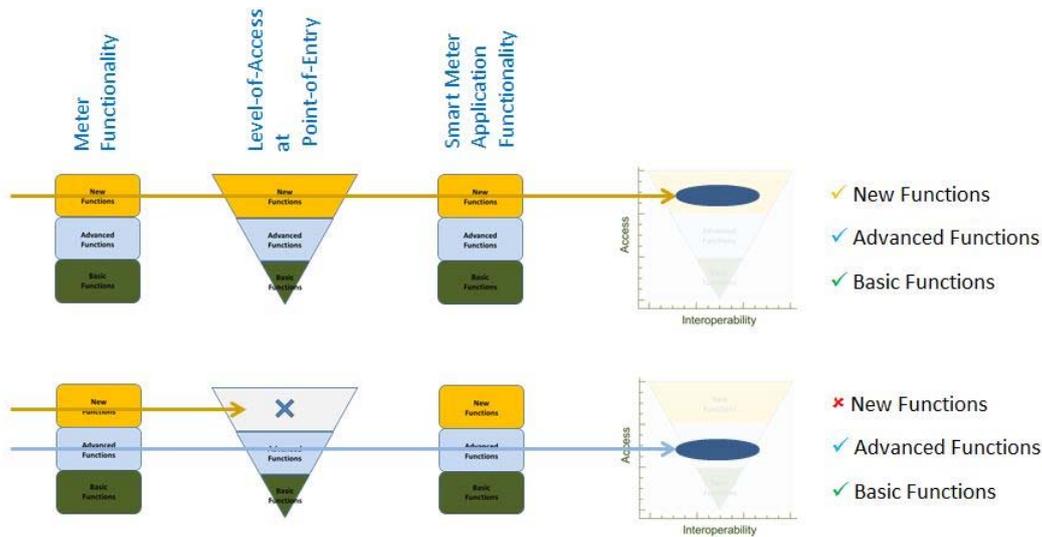
A.3.6 End to end connectivity

End to end connectivity refers to the ability of an accredited party to access a function within the smart meter at a consumer's premises.

For an accredited party to access and use a specific function it is necessary for the applications in the smart meter and the applications in the accredited parties own systems to include the function. In addition, it is necessary for the smart meter protocol and the Accredited Parties 'head end system' protocol to be matched, either directly or via the gate keeper's Protocol Translator.

In the case of the point of entry being at the meter, the communications network would simply pass the communication message directly to the meter, provided the function was included in the meter protocol. However, in the case of the point of entry being remote from the meter the gate keeper also needs to support the function and allow the accredited party appropriate access to the function.

Figure A.8 End to end connectivity



A market point of entry introduces a further complication due to the smart meter application used by the gate keeper. In addition to the protocol(s) needing to describe the functionality, the gate keeper smart meter application may also need to include specific functionality. This is particularly relevant when the gate keeper application is translating market protocols into a meter protocol. If the protocol translator does not support the functionality then accredited parties will be unable to access the functionality in the meter.

A.3.7 Level of security

It is important that there is a low risk of unauthorised access to the smart meter's functionality, including:

- limiting access to accredited parties that have a relationship with the associated consumer; and
- restricting the access of these accredited parties to only those functions they have a legitimate reason to access.

Failure to adequately limit unauthorised access to the smart meter's functions could:

- allow access to consumer's confidential data, including consumption data and any tariff information stored in the smart meter;
- allow uncontrolled connection or disconnection of a consumer, or at least its appliances under direct load control; and
- compromise the secure and reliable operation of the electricity system.

Thus the level of security can be defined in terms of the systems in place to restrict unauthorised access to the smart meter's functionality.

A.3.8 Network congestion management and prioritising of communications

A modern smart meter communication network is significantly more sophisticated than the communications for existing type 1 to 4 metering installations. This is due to the requirement for multiple accredited parties to access the smart meter's functionality and the increased volume of communications required for the additional smart meter functionality.

This increased volume of communications means that there is the potential for delays in the execution of some functions at time of high usage of the smart meter communications network. Such delays are referred to as congestion and mean that the execution of urgent functions may compromise the reliability and security of the distribution network.

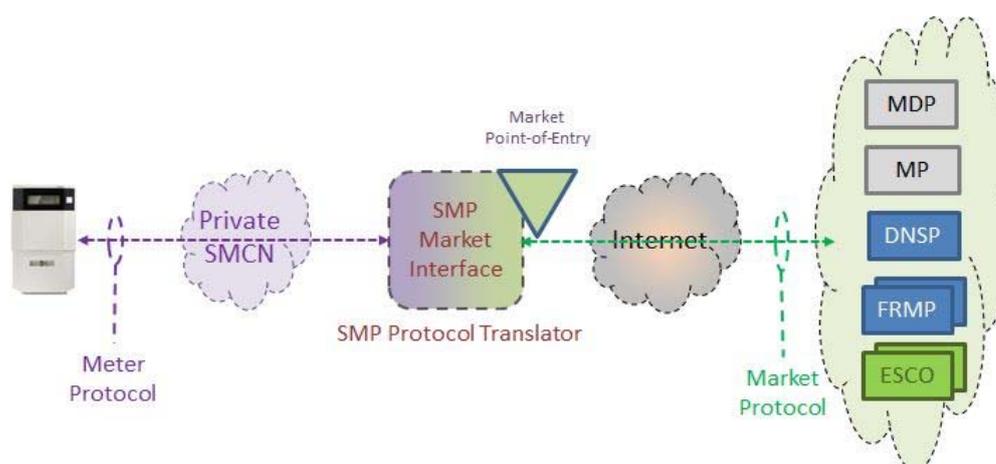
Therefore, the smart meter communications network needs a congestion management system to allow some accredited parties to have priority access to the smart meter's functionality during times of system emergency.

A.3.9 Meter and market protocols

The level of interoperability of the smart meter infrastructure depends greatly on the protocols used and can also depend on the location of the point of entry.

The meter protocol defines the interface standards between the applications in a smart meter and the applications in the gate keeper. Similarly, the market protocol defines the interface standards between an accredited party's applications and the gate keeper's application. This is demonstrated in the following diagram.

Figure A.9 Location of the meter and market protocols



SMCN is the smart meter communications network and SMP is the gate keeper.

A.4 International standards

Our considerations have included evaluation of international standards including DLMS/COSEM and IEC 61968. This section describes the characteristics of each of these standards.

A.4.1 DLMS/COSEM

DLMS/COSEM is a standard that is supported by a wide range of international meter vendors including vendors of many meters typically used in Australia. DLMS/COSEM sets standards for the exchange of data related to metering infrastructure. This includes meter data but also other data such as information on meter settings and configuration. DLMS is the abbreviation for "Device Language Message Specification" which refers to a generalised concept for abstract modelling of communication entities. COSEM is the abbreviation for "Companion Specification for Energy Metering" which is the set of rules based on existing standards for data exchange with energy meters.

DLMS/COSEM refers to the suite of the International Electrotechnical Commission standards IEC 62056. The DLMS specifications are defined as protocols for electricity metering data exchange. However, they are not limited to electricity metering and may also be used for other utilities.

The protocols construct a high level model of a meter and provides standard methods of interacting with that model. It provides the components upon which different functionality can be specified.

A.4.2 IEC 61968

IEC 61968 is a series of standards that describe information exchange between electrical distribution systems. Specifically IEC 61968-9 describes meter reading and control and covers the integration of smart meters with other IEC compatible software applications used by utilities. That is, it specifies the information content of a set of message types that can be used to support business functions related to meter reading and control. Typical uses of the message types include meter reading, meter control, meter events, customer data synchronization and customer switching. Although it was developed mainly for use in electricity distribution networks, it may be used for other metering applications.¹⁴⁷

Although IEC 61968-9 has been published, many of the other standards under IEC 61968 are under development. We understand there is yet to be widespread use of IEC 61968-9.

¹⁴⁷ www.iec.ch

B Summary of submissions

This appendix sets out a summary of the issues raised in submissions on the draft report and the supplementary paper outlining the draft regulatory framework. Note where stakeholders views were broadly similar they have been grouped together.

26 submissions were received on the draft report and 15 were received on the supplementary paper. Copies of all the submissions received can be viewed on our website.

Table B.1 Summary of submissions on the draft report

Issue	Stakeholder	AEMC response
Common market protocol		
Supportive of adopting a common market protocol.	AGL (p.1), Energex (p.1), Energy Australia (p.2), ENA (p.19), ERAA (p.1), ERM Power (p.3), Grid Net (p.2), Landis+Gyr (p.1), Lumo Energy (p.1), Marcus Tyle (p.5), Momentum Energy (p.2), NSW DNSPs (p.8), Origin Energy (p.1), Professor Joe Dong University of Sydney (p.1), SA Power Networks (p.1), Simply Energy (p.2), Red Energy (p.2)	Noted.
Supportive of the adoption of a common market protocol based on an internationally accepted meter protocol.	Ergon Energy (p.5), Freestyle Technology (p.1), Grid Net (p.2)	Noted.
Unsupportive of adopting a common market protocol.	Metropolis (p.6), Vector (p.5)	Noted.
Supportive of adopting DLMS/COSEM as the common market protocol.	Professor Joe Dong, University of Sydney (p.2)	Noted.
Unsupportive of adopting DLMS/COSEM as the common market	AGL (p.2), ERAA (p.2), ERM Power (p.5), Freestyle Technology (p.1), Grid Net (p.2), Itron	Noted.

Issue	Stakeholder	AEMC response
protocol.	(p.6), Landis+Gyr (p.1), Origin Energy (p.2), SA Power Networks (p.3), Simply Energy (p.5), Secure Energy (p.2)	
Expect that the market gateway will be an evolution of the current B2B services and, when/where it makes sense, new functions may incorporate elements of a meter protocol such as DLMS.	ENA (p.19)	Noted.
The market should be permitted to determine the form of the common market protocol	AGL(p.1), ENA (p.16), GE Energy (p.3), Lumo Energy (p.1)	Noted.
Supportive of enhancing AEMO's existing B2B system to become the common market protocol	AGL (p.2), Energex (p.1), Energy Australia (p.2), ERAA (p.2), GE Energy (p.3), Itron (p.8), Lumo Energy (p.1), NSW DNSPs (p.10), Origin Energy (p.2), Simply Energy (p.5), Secure Energy (p.2), Red Energy (p.2)	Noted.
AEMO's B2B system is for basic functionality only.	Grid Net (p.3), Freestyle Technology (p.1)	We considers that the B2B arrangements could be augmented to deal with advanced and new functionality.
It would be most efficient to use an existing precedent for the common market protocol	ERM Power (p.4)	Noted.
An alternative and more cost effective approach than upgrading the B2B hub to support real-time meter service requests is to develop a market protocol for point to point transactions.	ERM Power (p.6)	Our recommendations allow the use of alternate protocols and an appropriate governance framework would allow the most efficient solutions to be developed and adopted over time.

Issue	Stakeholder	AEMC response
The development/implementation of a companion specification is unnecessary should the market develop a service based protocol specific to the NEM.	ERAA (p.3)	Noted.
Market protocols should be service-based not function-based.	ERM Power (p.5)	Noted.
A common market protocol which is truly a common protocol is one that is internationally compatible, not country-specific.	Grid Net (p.2)	Noted.
The common market protocol should be determined by industry, specifically by the Information Exchange Committee, supported by AEMO.	Momentum Energy (p.3)	Noted.
Recommends the development of principles or guidelines for open access, instead of mandating technical standards for the metering market.	Vector (p.4)	Noted.
Mandating technical communications standards is not necessary to deliver the Australian Government's policy objectives, nor does it directly suit the drivers behind the AEMC Power of Choice Review.	EDMI (p.3)	Providing shared market protocol could promote competition and the ease with which participants communicate with different parties. Our recommendations also allow other communication protocols to be used.
Entity responsible for maintaining the common market protocol		
Support for AEMO, or AEMO and industry (with industry in a similar form to the current Information Exchange Committee) to maintain the common market protocol	AGL (p.3), Energex (p.1), Energy Australia (p.2), ENA (p.20), ERAA (p. 4-5), Itron (p.9), GE Energy (p.14), Landis+Gyr (p.2), Metropolis (p.9), Momentum Energy (p.3), Origin Energy (p.2), SA Power Networks (p.4), Simply Energy (p.6), Secure Energy (p.2)	Noted.

Issue	Stakeholder	AEMC response
If AEMO were to be the body responsible for maintaining the protocol, then consultation should be undertaken from across the industry.	Metropolis (p.9)	Noted.
An open industry and market body would be the most appropriate entity to maintain the protocol.	Grid Net (p.3)	Noted.
Common meter protocol		
Supportive of adopting a common meter protocol.	Ergon Energy (p.5), Grid Net (p.4), Itron (p.10), Marcus Tyle (p.6) NSW DNSPs (p.8)	As discussed in our draft report, adopting a common meter protocol can provide benefits including promoting long-term interoperability. However, we note that parties would communicate via the market protocol. The market should be able to adopt the most efficient solution over time.
Supportive of the future adoption of a common meter protocol based on internationally accepted standards.	SA Power Networks (p.4) Energex (p. 5), Marcus Tyle (p.1)	Noted.
Unsupportive of adopting a common meter protocol.	AGL (p.4), Energy Australia (p.3), ERAA (p.2), ERM Power (p.8), Freestyle Technology (p.2), GE Energy (p.3), Landis+Gyr (p.2), Metropolis (p.6), Momentum Energy (p.4), Origin Energy (p.2), Simply Energy (p.6), Red Energy (p.3), Vector (p.5)	Noted.
The protocol utilised between the meter and the smart meter provider does not need to be specified where accredited parties gain access to the services they require, and the market for these services is competitive and competition is sufficient that it does not drive meter	Lumo Energy (p.2)	As discussed above, we do not recommend mandating a common meter protocol; however, we note the market has

Issue	Stakeholder	AEMC response
churn.		the ability to adopt the most efficient solution over time.
Supportive of adopting a standard such as DLMS/COSEM for the common meter protocol.	Ergon Energy (p.5), Grid Net (p.4), Itron (p.10), Marcus Tyle (p.1)	Noted.
Supportive of adopting a standard such as DLMS/COSEM for the common meter protocol in conjunction with an extended B2B gateway to support smart meter transactions.	NSW DNSPs (p.8)	Noted.
Unsupportive of adopting DLMS/COSEM as the common meter protocol.	AGL (p.4), Freestyle Technology (p.2), GE Energy (p.10)	Noted.
Supportive of the adoption of a common meter protocol but only if there are appropriate transitional arrangements in place to address legacy infrastructure issues.	ENA (p.17)	As noted above, we are not recommending that a common meter protocol be mandated.
Does not oppose the concept of a common meter protocol, but does not believe it would be appropriate for it to be mandated. Rather, if a common meter protocol is the most efficient outcome, than it will naturally be delivered by the market at an appropriate time.	ERM Power (p.2)	As above.
Mandating a meter protocol as the foundation for a market protocol will have the effect of forcing participants to use that protocol at the meter level as well.	GE Energy (p.7)	As above.
Treatment of smart meter functionality above the agreed minimum		
In order to encourage and not stifle innovation, there should be sufficient flexibility for accredited parties to extend or enhance smart meter functionality above the agreed minimum without the need for it to be specified in the protocol prior to implementation.	AGL (p.3), Energex (p.1), ENA (p.20), ERAA (p.5), Freestyle Technology (p.2), Grid Net (p.4), GE Energy (p.3), Itron (p.10), Lumo Energy (p.2), NSW DNSPs (p.12), Origin Energy (p.8), SA Power Networks (p.5), Secure	Noted.

Issue	Stakeholder	AEMC response
	Energy (p.3)	
The IEC, or its successor, should have the responsibility for overseeing a framework for determining a common market protocol for new services.	Momentum Energy (p.3)	We note that the appropriate arrangements for the development and maintenance of the shared market protocol requires further consideration. Further discussion is outlined in Chapter 7.
Point of entry		
Unsupportive of direct access to the meter or direct access to the meter by multiple parties.	Energex (p.6), Ergon Energy (p.6), ENA (p.21), Marcus Tyle (p.8), SA Power Networks (p.6)	Noted.
A mandated point of access is undesirable because there is no single most efficient point of access common to smart metering or DSP services.	GE Energy (p.7)	Our recommendations will allow multiple points of entry the smart meter and/or its functionality. The shared market protocol would be available for all installations.
Role of the SMP		
It is unnecessary to create the SMP as the role of the SMP could be performed by the MP or the MDP.	AGL (p.5), Energex (p.2), Energy Australia (p.2), ENA (p.16), ERAA (p.7), ERM Power (p.3), GE Energy (p.3), Metropolis (p.8), Momentum Energy (p.2), NSW DNSPs (p.13), Origin Energy (p.3), SA Power	Noted.
SMP responsibilities could be equally provided by a separate entity, or by an entity that provides a combination of SMP, MDP, MP, SMCN, FRMP, or ESCO services.	Grid Net (p.5)	Noted.

Issue	Stakeholder	AEMC response
Supportive of the creation of the SMP role.	AER (p.2), Marcus Tyle (p.1), Secure Energy (p.6)	Noted.
Regulation of access		
Supportive of a competitive approach with regards to regulating levels of access.	AGL (p.5), Energy Australia (p.1), ERAA (p.2), GE Energy (p.3), Lumo Energy (p.1-2), Metropolis (p.10), Origin Energy (p.3), Vector (p.8)	Noted.
Supportive of a framework which allows commercial entities (i.e. accredited parties negotiating with the SMP) to negotiate the most appropriate levels of access required for the services that they are trying to obtain.	ERAA (p.7), ERM Power (p.10)	Noted.
The open access framework should be allowed to develop prior to contemplating regulating access rights at particular entry points.	Energy Australia (p.3)	Noted.
Where a participant requires access to an existing function in another party's meter, and that function is beyond the existing metrology functions, they should be required to pay a fee for that access.	ERM Power (p.11)	We consider that regulation for charges and access to smart meter functionality is unnecessary at this time.
The architecture should include the capability to assign rights of access based on individual meter functions for each individual meter.	Freestyle Technology (p.3)	The recommended arrangements do not preclude this capability.
Supportive of DNSPs possibly having services and functions communicated directly from the meter, such as alarms and power quality data without using the gateway.	Ergon Energy (p.6)	Our recommendations allow alternate point of entry to a smart meter or its functionality.
Charges for access to functionality		

Issue	Stakeholder	AEMC response
Charges should not be regulated.	GE Energy (p.3), Metropolis (p.10), Vector (p.8)	We consider that regulation for charges and access to smart meter functionality is unnecessary at this time.
Networks should have free access to data.	Energex (p.9)	As above.
Networks should be part of the commercial arrangements that will exist for retailers and other parties.	Energy Australia (p.3)	As above.
Under a contestable market for the provision of services enabled by smart meters, efficient pricing outcomes would be likely to emerge.	Grid Net (p.6), Metropolis (p.10)	Noted.
Propose that a standard set of network functions be provided for every smart meter as 'basic functions' and made available to the network business at no charge.	Energex (p.10), NSW DNSPs (p.19), SA Power Networks (p.11)	As above.
Access charges could be considered for some advanced network functions where there is a material marginal cost for the MC to provide those functions.	SA Power Networks (p.11-12)	As above.
Smart meter standing data		
The extension of access to independent demand side participation (DSP) suppliers needs to be considered carefully and is another example why these entities should be regulated in a similar manner to retailers.	Energy Australia (p.4)	Noted.
Proposes that existing and prospective retailers for a site should be able to discover whether the meter supports each of the optional functions as per the minimum requirements of a national new and replacement meter policy, as well as the devices connected to the meter.	ERM Power (p.12)	This issue has been raised and we consider further consideration is required on how such discoverability would be implemented. Additional

Issue	Stakeholder	AEMC response
		discussion is provided in Chapter 7 on the next steps.
Considers that the 'NMI Discovery' procedure should be extended to enable parties to obtain 'NMI Standing Data' for smart meters.	Simply Energy (p.4)	As noted above, additional discussion is provided in Chapter 7 on the next steps.
Accreditation of third parties		
Any party (including third party service providers), who has access to smart meter functionality is participating in the market for the provision of an essential service and should be a Registered Participant with AEMO.	Simply Energy (p.4)	We note that SCER is undertaking work in this area on the appropriate arrangements for regulating third parties.
Third party service providers must be subject to some form of accreditation, registration or licensing arrangements.	AGL (p.8), ENA (p.26), ERAA (p.8), Grid Net (p.6), Lumo Energy (p.3), Momentum Energy (p.4), Red Energy (p.3), SA Power Networks (p.12)	We note that SCER is undertaking further work in this area. In relation to the requirements for accessing smart meter functionality, we recommend that the gate keeper role is appropriately accredited. Additional discussion is outlined in Chapter 6.
The current network accreditation process for service providers in the type 1-4 market should be adopted.	Energex (p.11)	Accreditation of the gate keeper role will be further considered under the competition in metering rule change request.
SMP requirements represent a mandatory update to the existing meter service provider accreditation, so that existing meter service providers would have to complete this update by a specified date.	ERM Power (p.3)	Noted.

Issue	Stakeholder	AEMC response
Consumer protections		
The existing legislation provides sufficient regulation and customer protection mechanisms to support the new smart meter services on existing Retailers and registered Market Participants.	AGL (p.7), Lumo Energy (p.3), Red Energy (p.3)	Noted.
Supportive of the introduction of appropriately targeted customer protection arrangements to apply to any party who has a direct relationship with the customer.	ERM Power (p.11)	As noted, SCER is undertaking further work on the regulation of third parties.
Secure communications between the meter and the network, within the network, and at the market point of access must be ensured such that only certified/approved parties can access the specific information that they have been allocated access to.	Freestyle Technology (p.3)	As above.
One of the risks to consumers is cyber security. With the amount of data involved, introduction of smart meter infrastructure, the risks of cyber related security issue will for sure continue to increase.	Professor Joe Dong, University of Sydney (p.3)	As above.
Consumers could be exposed to new and significant safety and quality of supply risks if remote access to meter functions such as supply disconnect/reconnect or emergency load shedding is not properly controlled.	SA Power Networks (p.12)	As above.
There should be some oversight to ensure that there is an appropriate level of competition to protect consumers.	Momentum Energy (p.4)	We recommend that a competition review be carried out at an appropriate time following the introduction of metering contestability for residential and small business consumers.
If there is limited regulation, there is a risk that consumers will pay increased costs to maintain their metering services.	NSW DNSPs (p.20)	We consider that there are likely to be appropriate incentives in

Issue	Stakeholder	AEMC response
		place for metering service providers to offer competitive pricing arrangements.
Transitional arrangements		
Recommends that a clear end date for the existing Victorian arrangements be provided by the AEMC.	AGL (p.8)	Transitional arrangements require further consideration and will be completed under the competition in metering rule change request.
Recommends that Victorian SMPs should continue to use their proprietary meter protocols, and perform protocol translation from the common market protocol. It is therefore unlikely to impose any additional costs on Victorian SMPs compared to those operating in other jurisdictions.	ERM Power (p.11)	Our recommendations would allow Victorian parties to continue to use their proprietary meter protocols and perform protocol translation from the market protocol.
Is of the view that the Victorian Distributors could adopt the common “services” based market protocol based on common services provided across the NEM, with only minor differences in some of the more advanced features.	Origin Energy (p.3)	Noted.
Considers that the “rail-gauge” issues between Victoria and contestable metering services outside VIC would be much larger if a Common Meter Protocol, or a Common Market Protocol based on a Meter Protocol such as DLMS/COSEM was selected.	Origin Energy (p.3)	Noted.
Grandfathering arrangements should be put in place for existing smart meter deployments, providing a transition path towards the common protocols, with new installations being compliant with the nominated standard where possible.	NSW DNSPs (p.8)	Transitional arrangements require further consideration and will be completed under the competition in metering rule

Issue	Stakeholder	AEMC response
		change request.
Implementation		
Recommend that the AEMC maintains a register of implementation issues.	Lumo Energy (p.3)	Noted.
There is a need for a coordinated approach on metering issues and projects.	AER (p.1), AGL (p.1), ENA (p.4), Momentum Energy (p.2) NSW DNSPs (p.3), SA Power Networks (p.1)	We have been liaising with relevant parties to adopt a coordinated approach for these related projects. Additional discussion is outlined in Chapter 2 and we recognise the need to undertake additional work following the completion of the competition in metering rule change request as discussed in Chapter 7.
There is a lack of clear separation of the activities of retailers and distribution network businesses. The requirement for separation of unregulated activities from the regulated roles of distributors is recognised in the NERL and we emphasise that any blurring of roles increases the risk of distortion of the competitive aspects of the market.	AGL (p.8)	Implementation issues will be further considered as discussed in Chapter 7.

Table B.2 Summary of submissions on the supplementary paper - regulatory framework

Issue	Stakeholder	AEMC response
Regulation of access and charges		
There is insufficient evidence to support regulation of smart meter functionality access and charges.	Simply Energy (p.1)	Agree.
Supportive of no regulation for services related to accessing or charging for smart meter functionality.	Energy Australia (p.1), Vector (p.1), AGL (p.1), ERAA (p.2), Origin Energy (p.1)	Noted.
Unsupportive of the draft finding that access to and charging for basic smart meter functionality should be unregulated.	NSW DNSPs (p.1), Ergon Energy (p.1), ENA (p.3)	Noted.
Smart meter functionality should be subject to light handed-regulation, and new and advanced smart meter functionality should be unregulated.	NSW DNSPs (p.1)	We consider the case for regulating access and charges to smart meter functionality has not been made at this time.
Payment for services provided by smart meters should be negotiated by all users and market participants seeking such access.	Origin Energy (p.1)	Agree.
Network businesses should negotiate and pay access for smart meter functionality on a commercial basis similar to other market participants.	Energy Australia (p.1), Simply Energy (p.1), AGL (p.2), ERAA (p.2)	Noted.
If the AEMC adopts the Supplementary Paper recommendation that access regulation is not required, it will be essential that the regulatory framework unequivocally supports alternative service delivery. This includes ensuring that Network Service Providers are able to install and retain the necessary network devices.	ENA (p.3)	The framework is not intended to prevent DNSPs from utilising their own network device. Therefore, network businesses will have a choice as to whether they procure the network service through a smart meter or utilise their own device.

Issue	Stakeholder	AEMC response
Suggest that for non-basic network services, ie. those that would result in a material increase in the metering charge if included as standard, the network could pay the MC a fee for access as the AEMC proposes, however there is concern that MCs would have insufficient incentives under the proposed market model to price these efficiently.	SA Power Networks (p.3)	We consider there will likely be appropriate incentives in place without regulation for MCs and DNSPs to negotiate mutually beneficial outcomes.
By regulating minimum standards, access and pricing for a subset of services within that competitive environment, the AEMC could provide surety of benefit realisation at low cost and without detracting from competition in meter provision.	SA Power Networks (p.5)	As above.
<p>Considers the following are pre-requisites for a working framework for access under an arrangement where the MC is appointed by the financially responsible market participant or consumer:</p> <ul style="list-style-type: none"> • well-defined common standards for access to services; • a reasonable minimum set of basic services, including basic network services; and • provisions for non-reversion of standard services at a premises when the MC changes. 	SA Power Networks (p.2)	Noted.
Accreditation		
Supportive of persons with responsibilities associated with the provision of services to manage access to smart meter functionality and smart meter technologies to require accreditation under the National Electricity Rules or by AEMO.	Energy Australia (p.2), Simply Energy (p.1), Vector (p.3), NSW DNSPs (p.1), AGL (p.1), Lumo Energy (p.1), AER (p.2), ERAA (p.3), Origin Energy (p.1)	Noted. The issue of accreditation is discussed in Chapter 6.
MC accreditation requirements should not be too onerous or costly for market participants and ultimately consumers.	Vector (p.3)	Accreditation requirements should be adequately robust to ensure appropriate protections

Issue	Stakeholder	AEMC response
		for consumers and other market participants who interact with them.
The issue of MC accreditation should be reassessed in the metering competition rule change process.	United Energy and Gas (p.2)	We have proposed to address these issues under the competition in metering rule change request as discussed in Chapter 7.
Suggest that access and accreditation requirements be considered as part of the competition in metering rule change request.	NSW DNSPs (p. 1)	We have proposed to address these issues under the competition in metering rule change request as discussed in Chapter 7.
Competition review of metering contestability arrangements		
Supportive of competition review should be undertaken to reconsider these access issues once a metering and data framework is in place and the market has matured.	Energy Australia (p.2), Simply Energy (p.1), Vector (p.3), NSW DNSPs (p.1), AGL (p.1), Lumo Energy (p.1), AER (p.2), ERAA (p.3), Origin Energy (p.1)	Noted.
Supportive of the recommendation for a review, on the basis that the initiation and scope of the review is flexible to cater for any future considerations that must be made. Additionally, the review should be carried out within an appropriate time frame, allowing suitable time and resources to ensure there is value in its completion.	Lumo Energy (p.1)	Noted.
Supportive of the review, but notes that a competition review once the market has developed would be an opportunity to address inefficient pricing, but could not reverse inefficient investments failed to be made, in meters, systems or network equipment.	SA Power Networks (p.4)	Under a competitive framework we expect investment decisions to be made on a commercial basis. If the new metering framework is inhibiting network businesses

Issue	Stakeholder	AEMC response
		from investing in systems to support the integration of smart meters, then these issues can be addressed as part of the competition review going forward.
The timing of the competition review should remain under consideration during the process of transition and implementation of the contestability framework.	ENA (p.3)	Noted.
Transitional arrangements		
Supportive of a set of transitional arrangements with respect to Victoria as this segment of the market does not have metering contestability due to the existence of a derogation in the NER.	Energy Australia (p.2)	Noted. The implementation plan in Chapter 7 outlines the process for considering transitional arrangements.
Endorses the recognition by the AEMC that consideration of appropriate integrated and transitional arrangements for any contestability framework for metering will be needed for Victoria.	ENA (p.8)	As above.
Supportive of a minimalist approach to transitional arrangements.	Lumo Energy (p.2)	Noted.
Concerned with regards to jurisdictional specific policies and derogations that can potentially limit any commercial investment in smart metering. Recommend that the outcomes of the review ensure that a nationally consistent and consolidated framework is developed and adopted.	AGL (p.2)	Noted.
Transitional arrangements for Queensland's load control infrastructure should be provided.	Energex (p.1)	Noted. This has been acknowledged in Chapter 6.4.5 with respect to all legacy load control systems within meters and will be considered as part of

Issue	Stakeholder	AEMC response
		the competition in metering rule change request.
The Victorian DNSPs, and the DNSPs more generally that are utilising data and services from current 'metering' devices, for the benefit of all consumers in providing improved network services, should have a choice to be able to retain the old meter as a network device and continue these services in their current form.	United Energy and Gas (p.2)	In cases where DNSPs remain as the "responsible person" either as a transitional measure or under other arrangements, they would be able to implement appropriate translation devices to adopt the shared market protocol. In relation to existing services provided by DNSPs such as direct load control, we acknowledge that further consideration of these arrangements are required and are to be considered under the competition in metering rule change request.
With regards to the Victorian transitional arrangements, any measures must be light-handed with the objective of immediate restoration of competition, and no barriers introduced which would prevent Victorian consumers from exercising their right of choice.	Metropolis (p.1)	Noted.
Propose that the (extended) Victorian derogation simply be lifted immediately, and that the AER regulated metering service charges be made unregulated.	Metropolis (p.2)	The Victorian derogation in relation to meters installed under the Advanced Metering Infrastructure program will remain in place until the rules are amended to provide a national framework for competition in metering and related services for residential and small business

Issue	Stakeholder	AEMC response
		customers. If these requirements are not met by 31 December 2016, the derogation will expire.
Propose that in Victoria that the Meter Provider and Meter Data Provider activities of the distribution businesses be fully ring-fenced from their distribution activities. In particular where a distribution business makes use of its metering network for distribution purposes, then this be separately and appropriately accounted for by that business.	Metropolis (p.2)	Noted. Potential ring fencing requirements related to the MC (if introduced) will be considered as part of the competition in metering rule change request.
Creation of the SMP role		
New and existing functions can be managed under the existing roles of Meter Provider and Meter Data Provider, both of which have specific obligations under the NER and are accredited by the Australian Energy Market Operator.	AGL (p.1), Marcus Tyle (p.2)	Noted.
Technical standards		
Mandating technical standards is not in the long term interests of consumers.	Vector (p.3)	A shared market protocol can promote competition and reduce barriers to entry. For these reasons it could provide long term benefits to consumers. Our recommendation would also allow the shared market protocol to develop over time and allow the most efficient options to be adopted.
Open access does not require, and should not assume, any particular technology or the point in the communications and data processes where this is enabled. The market will naturally choose efficient	ERAA (p.1)	Noted.

Issue	Stakeholder	AEMC response
outcomes.		
Interaction with other metering related projects		
The review should be progressed in accordance with the rule change relating to metering contestability.	Energex (p.2)	We have considered the scope of the competition in metering rule change request throughout the review in so far as possible. However, this request for advice was initiated prior to the competition in metering rule change request and to be provided by March 2014.
The Framework for Open Access and Common Communication Standards review should follow the proposed competition in metering rule change request, not precede it.	Ergon Energy (p. 2), ENA (p.3)	As above.
Concerned that this review relating to technical issues and standards is progressing in advance of consideration of the package of reforms resulting from the Power of Choice review, including the draft rule change to introduce metering contestability.	ENA (p.1)	As above.
The AEMC should ensure that all reviews relating to the Power of Choice implementations, including the open access and common communication standards review, appreciate the benefits to customers of the legacy systems that have been installed by networks and ensure that these are not inadvertently placed at risk.	ENA (p.4)	Noted. Chapter 6.4.5 now makes specific mention of legacy load control services.
Care must be taken to ensure individual jurisdictional derogations do not undermine the recommendations of the final report.	Energy Australia (p.2)	Noted.
Other issues		

Issue	Stakeholder	AEMC response
<p>The AEMC refers to the smart meter services as metrology and DSP services. A third category of services should be explicitly recognised comprising functionality that the devices can provide which benefits all consumers through better management of network operations.</p>	<p>United Energy and Gas (p.2)</p>	<p>Chapter 6.2 categorises meter functions as "metrology" and "other functions". This is to distinguish between metering services essential to the operation of the NEM and those that might contribute to greater efficiency across the electricity supply chain, including network functions.</p>
<p>Recommend that the NER more explicitly recognise DNSP customers' beneficial rights to have their meter remain as a network device, rather than have it forcibly removed; and that the regulatory framework affords rights for continued load control and enhanced services to be maintained by the DNSP on churn of the market meter or churn of the gatekeeper role.</p>	<p>United Energy and Gas (p.2)</p>	<p>SCER has requested that existing load control functionality at the connection point remain operational when a metering installation is changed. This will be considered and implemented as part of the competition in metering rule change request.</p>
<p>The supplementary paper risks under-valuing the benefit to both networks and customers of load management services which currently operate to reduce network augmentation, such as the extensive off-peak hot water services and air-conditioning cycling services in Queensland.</p>	<p>Energex (p.1)</p>	<p>The framework is not intended to prevent DNSPs from utilising their own network device. Therefore, network businesses will have a choice as to whether they procure the network service through a smart meter or utilise their own device.</p>
<p>The supplementary paper overlooks the significant long-term investments in demand side participation and load control equipment already made by networks which should be preserved.</p>	<p>Energex (p.1) ENA (p.1)</p>	<p>As above.</p>

Issue	Stakeholder	AEMC response
The AEMC's draft regulatory approach does not include an option to provide delivery of network control and management services from a networks own meters and devices.	Energex (p. 1)	As above.

C Abbreviations and glossary

Access being able to 'access' a smart meter means having the ability to use one or more of the smart meter's functions. Access can range from "no access", where an accredited party has no access to the meter functionality, to "full access" where all the functionality of the meter is available.

Advanced functions smart meters typically have a number of 'functions', which are features that would enable different services to be provided. The functions of smart meters can be categorised as 'advanced functions' or 'basic functions'. Advanced functions are functions, other than basic functions, that are fully defined in the smart meter functionality specification.

AP (accredited party) is a party that can be allowed access to one or more of a smart meter's functions if it is authorised or accredited to do so.

Application software that operate within a computer to implement a given smart meter function.

AMI (Advanced Metering Infrastructure) is made up of systems required to support advanced metering. Includes smart metering and other services such as controlled load circuit and managed load services.

AEMC Australian Energy Market Commission

AEMO Australian Energy Market Operator

AER Australian Energy Regulator

AP accredited party

Basic functions include existing metrology functions, as currently defined in the rules for type 1 to 4 metering installations, plus metering support functions for maintaining the smart metering system.

B2B Business-to-Business

Common meter protocol See 'Protocol'.

Common market protocol See 'Protocol'.

COAG Council of Australian Governments

DLC (direct load control) is a service that remotely turns power to a load or appliance on or off. Such a service could also be used to control the amount of power that a load can consume.

DLMS/COSEM (Device Language Message Specification Companion Specification for Energy Metering) is a suite of protocols that together defines protocols and methods for communicating with a range of meters in an unambiguous manner.

DNSP Distribution Network Service Provider

DSP (demand side participation) occurs when consumers make decisions regarding the quantity and timing of their electricity consumption in line with the value they place on using electricity services.

End to end connectivity is having the ability to access a function within a smart meter because all the required software applications along the communication network are compatible and able to communicate with each other.

ESCO Energy Services Company

HAN (Home Area Network) is a premises-based communications network. In the context of advanced metering services it relates to a HAN which is able to support smart meters and enable energy services through smart meters.

Head-end system is the hardware and software that receives the stream of meter information brought back to the smart meter provider through the smart meter communications network.

In-home display is a display that is located inside a consumer's premises and supplies information to that consumer about their electricity consumption and energy services.

IEC Information Exchange Committee

IEC International Electrotechnical Commission

Interoperability is the ability of two or more networks, systems, devices, applications, or components to share and readily use information securely and effectively with little or no inconvenience to the user.

Interval meter is a meter which provides half hourly readings of electricity consumed and surplus electricity produced which is fed back into the grid.

Level of access refers to the number or types of smart meter functions that can be accessed by a given accredited party or group of accredited parties.

Level of security refers to the degree of security applied to restrict unauthorised access to the smart meter's functionality.

Market Participant is a person who is registered by AEMO as a Market Generator, Market Customer, Market Small Generation Aggregator or Market Network Service Provider under the provisions of the NER.

Market protocol See 'Protocol'.

MC (Metering Coordinator) is the role which will replace the existing 'responsible person' under the rule change request for the competitive provision of metering services, submitted by SCER. Currently under the NER, the responsible person is the person responsible for the provision, installation and maintenance of a metering installation, and the handling of metering data from each metering installation for which it is responsible.

MDP (Metering Data Provider) needs to meet the requirements listed in schedule 7.6 of the NER and is accredited and registered by AEMO, and is the only person authorised to:

- collect metering data from a metering installation;
- validate, substitute and estimate metering data;
- archive the data; and
- deliver that metering data to Registered Participants and AEMO for the purpose of NEM settlements, retail billing and DNSP billing.

Meter protocol See 'Protocol'.

MP (Metering Provider) is responsible for installing metering equipment, as described in schedule 7.4 of the NER and has been accredited by and registered by AEMO as a Metering Provider.

MSATS (Market Settlement and Transfer Solutions) is an IT system developed and maintained by AEMO for the recording of financial responsibility for energy flows at a connection point, the transfer of that responsibility between Market Participants and the recording of energy flows at a connection point.

NEO National Electricity Objective

NEL National Electricity Law

NERL National Electricity Retail Law

NERR National Energy Retail Rules

NIST National Institute of Standards and Technology

NMI Standing Data is the information related to a connection point at which supply of electricity for consumption occurs. It includes, but is not limited to: applicable network tariff, consumption threshold bands, loss factors, physical location and other data related to the physical properties of the metering installation. NMI standing data does not contain consumption data from consumers' metering installations.

NMI Discovery is the process where a retailer queries MSATS to find the NMI for a consumer's connection point (where it is not known or cannot be provided by the

consumer). Once a NMI is identified, the prospective retailer is able to obtain the standing data.

New functions are functions that are not listed in the smart meter functionality specification but may be developed by one or more stakeholders.

OSI Open systems interconnection

Point of Entry is the point along the communication path where the ability to access a smart meter's functionality is managed or restricted.

PoC (Power of Choice) was a review completed by the AEMC in November 2012, which identified market and regulatory arrangements that would enable the participation of both supply and demand side options in achieving an economically efficient demand/supply balance in the electricity market.

Private SMCN Private Smart Meter Communications Network

Protocol is the software used at either end of the communication path between the authorised parties and the smart meter. Other related terms are:

- **Common market protocol** is a common communications standard to be used between the accredited parties and the 'point of entry' to the smart metering infrastructure.
- **Common meter protocol** is a common set of interface standards between the application in the smart meter and the smart meter communications network (SMCN).
- **Market protocol** is the software used for the communications between the accredited parties and the point of entry controlled by the SMP.
- **Meter protocol** defines the interface standards between the application in the smart meter and the SMCN.
- **Protocol translator** the smart meter application receives messages from accredited parties using a market protocol and translates them into a meter protocol before forwarding to the meter.

Protocol translator See 'Protocol'.

Public SMCN Public Smart Meter Communications Network

SAPN SA Power Networks

SCC (Supply Capacity Control) is the use, other than the emergency use, of the smart meter to temporarily interrupt electricity supply to a customer.

SCER Standing Council on Energy and Resources

Smart Meter a meter which at a minimum measures electricity consumption on an interval basis and provides additional functions that can be used to provide services to the consumer and accredited parties. In addition, smart meters are integrated into the smart meter communications network that is managed by the SMP.

Smart meter functionality refers to the functions within the smart meter.

SMP (Smart Meter Provider) is a term which is not currently used in the NEM. It has been created for the purpose of analysis under this review. The SMP manages the point of access to ensure (among other things) that only those who are authorised are able to gain access and that messages are able to get through to the smart meter within a reasonable time frame.

Two-way communication refers to the capability of a meter to communicate between the metering system and the relevant system providers.

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E Smart Metering Infrastructure Minimum Functionality Specification

This appendix is for information only. It lists the minimum functionality specification for smart meters as developed by the National Smart Metering Program, and reviewed by SCER in December 2011. However, we note that the competition in metering rule change request proposes that AEMO establish, maintain and publish a smart meter minimum functionality specification, including an explanation or specification of those functions and related performance levels, in the form of a procedure or guideline. Assessment of the proposed arrangements will therefore be undertaken in that rule change process.

1. Measurement and recording
2. Remote acquisition
3. Local acquisition
4. Visible display and indicators on meter
5. Meter clock synchronisation
6. load management through a controlled load contactor or relay
7. Supply contactor operation
8. Supply capacity control
9. Home Area Network using open standard
10. Quality of supply and other event recording
11. Meter loss of supply detection
12. Remote meter service checking
13. Meter settings reconfiguration
14. Software upgrades
15. Plug and play device commissioning
16. Communications and data security
17. Tamper detection
18. Interoperability for meters/devices at application layer
19. Hardware component interoperability

20. Meter communications: issuing messages and commands
21. Customer supply (safety) monitoring