Department of Resources, Energy and Tourism

Scoping study for a consumer energy data access system (CEdata)

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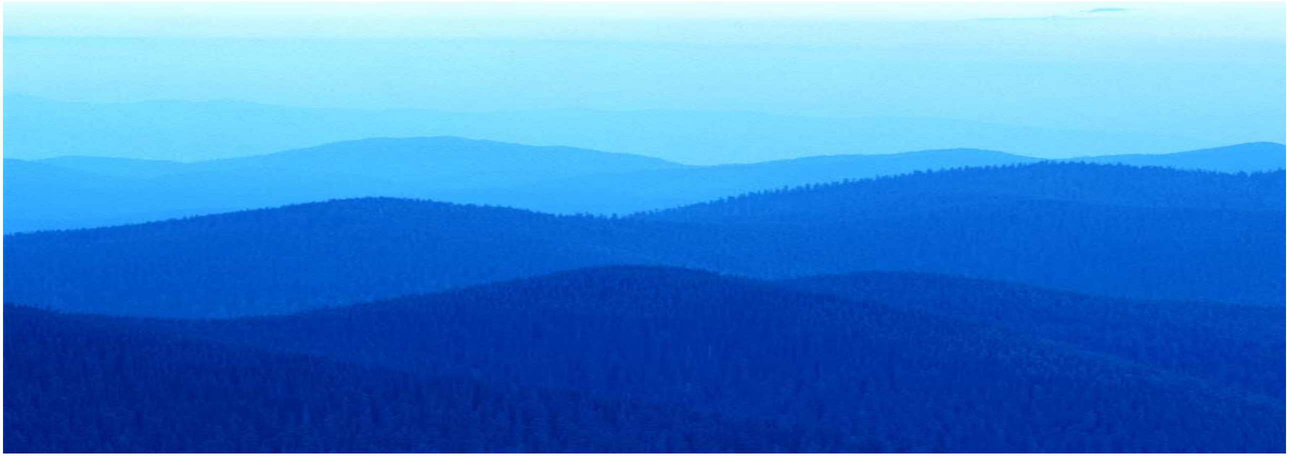

sapere research group

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Sapere Research Group is one of the largest expert consulting firms in Australasia and a leader in provision of independent economic, forensic accounting and public policy services. Sapere provides independent expert testimony, strategic advisory services, data analytics and other advice to Australasia's private sector corporate clients, major law firms, government agencies, and regulatory bodies.

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Contents

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Appendices

Tables

Figures

Executive summary

Report context

Sapere Research Group (Sapere) was engaged by the Department of Resources, Energy and Tourism (the Department) to undertake a project to assess and recommend the scope of an energy information hub. The project arose from the Australian Government's announcement in its 2011 Clean Energy Future Policy that it would

> *'undertake a scoping study for the establishment of an energy information hub to improve energy information disclosure that would provide consumers with easier access to their energy information currently held by retailers and distributors.*

This announcement builds on earlier related decisions. In 2007, the Council of Australian Governments (COAG) endorsed the roll out of smart meters in order, among other things, 'to enable consumers to manage better their energy use and greenhouse gas emissions'. In 2010 the Prime Minister's Task Group on Energy Efficiency highlighted the importance of the emerging Energy Service Companies (ESCO) sector. The Task Group noted ESCOs possess the skills and resources which consumers may not, allowing ESCOs to overcome barriers to improved energy efficiency in households, governments, commercial buildings and industry.

Information is a pre-requisite for efficient markets. The presence of imperfect information in retail electricity markets can result in poor outcomes for individual consumers, and the imposition of economic costs on society as whole. This most notably relates to the problem of funding the cost of infrastructure to meet demand peaks, which is a major driver of recent electricity price rises.

In accordance with the project terms of reference, the first part of this study assesses the current rules and processes for consumers to access their consumption information held by the energy industry. The question is whether rules and processes impede consumer access to data and competition in energy supply and services markets.

The second part of the study is an evaluation of the costs, benefits and recommended scope of an energy information hub for consumers to access their energy data. In the course of consultation for this project, stakeholders indicated concern that a new energy information hub could duplicate existing energy data systems. An energy information hub already exists in the National Electricity Market (NEM). Consequently, the focus of the project moved to identifying and evaluating an enhanced set of regulations and processes for consumer access to energy data access already held in the industry, including for competition purposes. The term "CEdata" is used throughout this report as a convenient reference to a consumer energy data access system and associated regulations.

Assessment of current consumption data access

In assessing the status quo, it is necessary to consider significant positive developments in consumer access to energy data that are currently under way. There are strong indications that the majority of mass market consumers with remotely read smart meters will have timely, online access to their own data from retailers and metering data providers within the next year. More than two consumer information web-portals are already live and more are in development.

While positive, these developments are not considered sufficient. Without change to existing arrangements, achievement of specified 2007 COAG policy objectives for electricity markets may be jeopardised. In the absence of change, consumers will not be enabled to manage their energy use and greenhouse gas emissions, and Australia's energy prices will not be efficient, while at the same time maintaining supply reliability. Further, existing problems with energy data access are unlikely to be self correcting.

Key shortcomings include:

- Timeliness of information. Electricity consumers have incomplete information on the cost of using electricity at the point of deciding when and how much electricity to use.
- Information inequalities. There are significant information inequalities between electricity suppliers, and also between suppliers and customers. Barriers to energy data access are stifling the development of a vibrant ESCO sector. These inequalities have adverse effects for retail competition and contribute to higher long term electricity prices than otherwise.
- Prices for individual consumers do not generally match the cost of providing the service to that consumer. Information systems do not empower consumers and suppliers to converge retail prices toward supply costs, including via the effective use of price comparator and energy data analysis services. At present prices and costs significantly diverge for around 60 per cent of customers. This divergence contributes to consumption, supply and investment decisions leading to electricity prices that may be higher than customers are collectively willing to pay.

Under existing rules, a Local Retailer (LR) has access to energy consumption data for all customers within the retail supply area for which it is the LR. This includes time of use consumption data. It appears that other retailers can access metering and energy data only after customer transfers. Moreover, unless they are registered market participants, ESCOs do not have data access rights, even after they have entered into contracts with customers.

The Australian Energy Regulator (AER) found in Compliance Bulletin 8 (June 2012) that customer data access via Meter Data Provider (MDP) portals or home area networks (HAN) are likely to contravene the National Electricity Rules "where the consumer's retailer is not party to the request". It also identified concerns regarding access by third parties to confidential customer data. The AER compliance bulletin focused on access to standing customer data but does not rule out the possibility third parties could have access to customer-specific metering (consumption) data.

The AER does not propose to take enforcement action in relation to potential breaches in these areas from 29 June 2012 until 31 December 2013. This is to provide sufficient time for industry and policy makers to clarify the requirements of the National Electricity Rules and other energy legislation, or alternatively, for market participants to change their practices.

Proposed objectives for a CEdata

Proposed objectives for a CEdata seek to overcome or address key limitations and shortcomings with existing arrangements. A CEdata would have three key objectives:

- Timeliness of information: - in line with COAG and other policy statements associated with the introduction of smart metering, consumers would have timely access to energy consumption data to enable them to manage energy consumption and expenditure decisions.

- Information equality: - incumbent and alternative energy suppliers, including competing retailers and ESCOs (including DSP suppliers) would have equal access to consumption information, subject to customer authorisation. This would further empower consumers and enhance retail competition, and is in line with the recommendations of the Prime Minister's Task Group on Energy Efficiency relating to encouragement of ESCOs.
- More competitive retail prices: - existing information related impediments to converging retail prices would converge toward efficient supply costs, to the extent this is efficient. This convergence would lead to more efficient consumption and infrastructure investment decisions, and lower long term prices than otherwise.

The key elements required to implement the proposed CEdata objectives include the following.

1. Data access rights for customers: Development of clear rules and processes regarding the terms and conditions under which customers may access energy data on a timely and convenient basis. This includes specification of customer data access rights, including rights to authorise third parties (retailers and ESCOs) to access energy data on their behalf. The definition of data access rights should include definition of data privacy rights, consistent with a presumption in favour of consumer data access.

2. Data access obligations for data custodians: Development of a statement of corresponding obligations for data custodians to provide customers, and authorised, third parties (retailers and ESCOs) with their energy data, including close to real time, continuing, access to energy data held in local meters where this is technically feasible. This will include definition of privacy obligations.

3. Interoperability: Energy consumption data formats and structures, for the purpose of transfer to customers and authorised ESCOs, should be interoperable and standardised. This facilitates the use of energy data for the purpose of price comparison, notably via the AER comparator service. This includes data privacy and encryption standards to the extent necessary to meet data privacy rights as defined.

4. Regulation of CEdata: Participants in CEdata should be regulated to ensure conformity with customer authorisation and data privacy requirements. This is likely to involve the development of clear rules governing the behaviour of retail and ESCO CEdata participants, and associated penalties for non-compliance.

The definition of data access rights for consumers, alongside obligations for data custodians, will go some way toward addressing the substantive information inequalities between suppliers. In addition, there could be value in reviewing existing LR privileged access to energy data, especially for NMIs that have moved to interval metering.

Costs and benefits

A full cost benefit study is outside the scope of the present project. Nevertheless, the potential benefits of a CEdata could be substantial and exceed costs. This reflects the fact that even modest increases in the efficiency of retail electricity markets could offer large benefits. As total expenditure in the NEM is in the order of $23 billion per annum, an economic efficiency gain of just 0.5 per cent would result in a benefit of $115 million per annum.

While there is a high level of uncertainty over costs, based on the available evidence of the cost of existing energy data access services, it appears unlikely the annual costs of a CEdata would exceed $24 million, and may be substantially less. A CEdata does not require creating or funding substantial new standalone energy information infrastructure.

Further consideration would need to be given to both costs and benefits of a CEdata, including the associated risks. This should take into account timing issues and the level of investment required, alongside the payback period and the appropriate discount rate.

Next steps

The development of a CEdata is a significant undertaking, concerning a range of interested parties. Relevant considerations include:

- Significant groups have indicated they do not support change to existing arrangements for the provision of energy data to consumers.
- The interaction between a CEdata and broader market reform, including possible overlaps and synergies with the Australian Energy Market Commission (AEMC) Power of Choice Review, and any relevant jurisdictional initiatives intended to facilitate energy data access by consumers.
- Regulatory reform issues, including the need to address problems with energy, metering and National Meter Identifier standing data identified in June 2012 AER Compliance Bulletin 8.

Under a fast track implementation scenario, it appears feasible to develop and put in place the rules necessary to support a CEdata by the end of 2013 (the AER's time frame for addressing problems with energy, metering and NMI standing data). This scenario implies making substantial policy and regulatory decisions by no later than the first quarter of 2013.

1. Introduction

1.1 Purpose of the study

The Australian Government announced in its 2011 Clean Energy Future Policy that it would

> *'undertake a scoping study for the establishment of an energy information hub to improve energy information disclosure that would provide consumers with easier access to their energy information currently held by retailers and distributors. Greater transparency for households and consumers will enable them to better understand and manage their energy use.*'[1]

The Department engaged Sapere to undertake a scoping study for the potential development of an energy information hub aimed at enabling consumers, or those authorised by consumers, access to energy information held by retailers and distributors.

The terms of reference divide the scoping study into two parts:

- Part A is an assessment of the issues arising from the current process for accessing consumption information held within the energy industry and whether this process impedes access to data and competition in the energy supply and services market.
- Part B is an evaluation of the costs, benefits and recommended scope of a potential energy information hub, relative to the assessment of the status quo under Part A.

For reasons explained later in this report, the project has been refocused from being a scoping study for a potential energy information hub. In the course of consultation, some stakeholders indicated concern that reference to a possible new energy information hub was tantamount to duplicating existing energy data systems. Unlike in some jurisdictions, in the NEM energy consumption information hubs exist already for the purposes of settling wholesale markets under full retail contestability.

In accordance with the terms of reference, the potential issue of interest relates to consumer access to the existing NEM energy information hubs (and its transfer to authorised parties). Consequently, the focus of the study is whether there is a need for enhancements or reform of the existing system for consumer energy data access (including for competition purposes), and if so, what form or forms this might take. Accordingly, the term "CEdata" (an abbreviation for a generic consumer energy data system) is used throughout this report in place of "energy information hub".

1.2 Scoping study methodology

Sapere undertook an initial round of bilateral discussions and held two forums (in conjunction with the Department) with a range of interested parties including energy market regulators and participants, industry, technology and consumer organisations. Further

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1 See http://www.ret.gov.au/Department/Documents/clean-energy-future/ELECTRICITY-PRICES-FACTSHEET.pdf

consultation was held with a limited number of stakeholders following circulation of a consultation paper addressing the reframed problem and response options. Parties involved in the consultation are listed at Appendix 2 .

In addition to stakeholder consultation, Sapere undertook its own research and analysis of the various issues involved, including analysis of similar initiatives undertaken in other countries, namely the United States of America and the United Kingdom.

This report draws on the information and evidence gathered from both the stakeholder consultations, discussion with the Department, and Sapere's own research and analysis.

1.3 Overview of this report

The structure of the remainder of this report is as follows:

- section 2 provides a background and context for assessing whether there is a public policy problem in terms energy information access and competition;
- section 3 provides an assessment of the current Australian framework for energy data access by consumers and their agents, including the diverse views on the policy problem and the need for change;
- section 4 considers the options for a CEdata system, its key objectives, options and key issues;
- section 5 evaluates the benefits and costs of CEdata; and
- section 6 outlines the way forward for making decisions regarding the timing, form and responsibility for delivery of a new system.

2. Energy information – the basics

2.1 Introduction

This section provides an overview of the context and trends for the emergence of energy information as an important tool for consumers, and hence the importance of efficient, automatic access to that information by consumers and their agents. This context includes

- the structure of the NEM in which CEdata would operate;
- imperfect information and information asymmetries in energy markets, and the significance of consumer's consumption profiles;
- the move to interval metering and the impact of changes to consumption profiles; and
- the existing rules, standards and processes for the transfer of energy data between market participants and to the end consumer.

In this context there are emerging energy services markets to assist energy consumers manage their efficient consumption of energy and energy costs. These are adjunct to the market for supply of remote generated power. These energy services provide expertise and knowledge that households and business rarely possess. However the Australian energy services sector remains small, particularly in comparison to international developments. Finally this section describes some of the international developments in the delivery of energy consumption data to end consumers and its use for home (or business) energy management.

2.2 National Electricity Market overview

For the purposes of this project, the relevant jurisdictions are defined as being those in the NEM. It is possible that Western Australia may have an interest in the development of CEdata. Mass market interval metering is being deployed in Western Australia on a limited basis.

The NEM consists of thirteen supply areas illustrated in Figure 1. A single franchised distribution company operates in each supply area. In each supply area there is a single local retailer (LR) also known as a 'Tier 1' or 'host retailer'. In each supply area with Full Retail Contestability (FRC) other retailers, including retailers that are Tier 1 retailers elsewhere, are referred to as Tier 2 retailers. The retailer chosen by the consumer, referred to as the consumer's retailer in this report, is formally known as the financially responsible Market Participant (FRMP) in the National Energy Rules.

Figure 1: Supply areas in the National Electricity Market

Source: AER State of the Energy Market Report 2010

1. Note that EnergyAustralia, Integral Energy and Country Energy are now Ausgrid, Endeavour Energy and Essential Energy, following the privatisation of the NSW electricity retailers.

Table 1 lists the distribution company, local retailer and number of other retailers in each supply area shown in Figure 1.

Table 1: NEM by supply areas

State	Distributor	Local retailer	Market retailers
Queensland	Energex	Origin Energy	27 licensed 11 active
	Ergon Energy	Ergon Energy (retail)	
NSW	Ausgrid	Energy Australia (TRUenergy)	27 licensed 12 active
	Endeavour	Integral Energy (Origin Energy)	
	Essential	Country Energy (Origin Energy)	
Victoria	Citipower	Origin Energy	22 licensed 13 active
	Powercor	Origin Energy	
	SP AusNet	TRUenergy	
	Jemena	AGL Energy	
	United Energy	AGL Energy	
South Australia	ETSA Utilities	AGL Energy	21 licensed 12 active
Tasmania	Aurora Energy	Aurora Energy	
Australian Capital Territory	ActewAGL Distribution	ActewAGL	18 licensed 2 active

Source: AER State of the Energy Market 2011

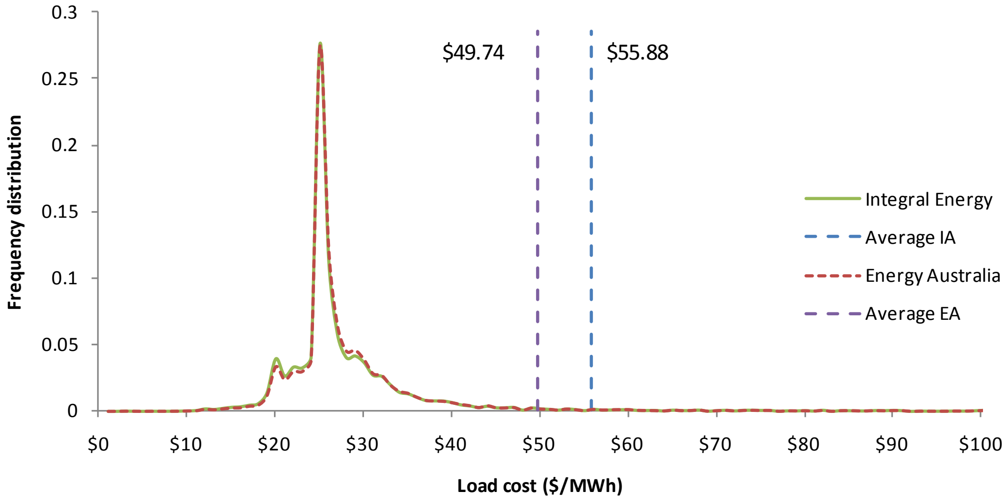
2.3 Information and electricity markets

2.3.1 Information and efficiency

Information is a pre-requisite for efficient markets. Electricity markets in Australia currently operate under highly imperfect information – as is the case in most parts of the world. For present purposes, information issues can be classified into three types, as follows.

Figure 2: Comparison of deemed profiles

This plot illustrates two demand profiles relative to historical wholesale pool prices. It exemplifies the difference in average cost attributable to differences in consumption profiles, where half hourly wholesale prices are identical.



Source: Sapere analysis of profile (combined controlled and uncontrolled load) and wholesale price data for the year ending 30 June 2011, available from AEMO.

The key driver of the cost differential between the profiles is the shape of the "tail" – the right hand side of the distribution up to the $12,500/MWh market cap[3] (not shown in the plot). While the values of the modes (the most likely or "expected" outcome) are very close at less than $30.00/MWh, the mean values diverge by around $6.14/MWh.

The reason for the divergence is the distribution of wholesale prices, highlighted in Table 2 below. It shows that peak wholesale prices across the NEM occur for only 0.34 per cent of trading intervals (or 30 hours a year on a NEM wide basis) but represent more than 30 per cent of the value of wholesale electricity traded annually (weighted, NEM-wide, deemed profiles only[4]).

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[3] This cap has been increased since 1 July 2012.

[4] That is, non-interval metered electricity used by households and small businesses. The relative value of peak demand NEM-wide, including large commercial and industrials, would be lower.

2.3.3 Impact of peak prices

Table 2: Impact of peak price (>$300/MWh) periods (2007-2011)

Supply area/deemed profile	Peak prices percent wholesale trade	Per cent of total volume	Per cent of trading intervals	Hours per annum
Energex	32.1%	0.62%	0.37%	32
Ergon Energy	27.8%	0.5%	0.37%	32
Ausgrid	32.5%	1%	0.47%	41
Endeavour	36.0%	0.99%	0.47%	41
Essential	30.6%	0.8%	0.47%	41
ACT	27.8%	0.76%	0.47%	41
Citipower	23.2%	0.42%	0.27%	24
Powercor	23.8%	0.40%	0.27%	24
SP AusNet	24.3%	0.42%	0.27%	24
Jemena	25.5%	0.45%	0.27%	24
United Energy	26.1%	0.47%	0.27%	24
ETSA Utilities	46.0%	0.73%	0.39%	33
Aurora Energy	2.6%	0.13%	0.22%	19
Weighted totals	30.8%	0.63%	0.34%	30

Source: AEMO wholesale market and deemed profile settlement data

Because of the high sensitivity of wholesale costs to less than one per cent of trading intervals, it is not possible to estimate wholesale costs based on a limited set of day types.

While reference to day types is often used in analyses of wholesale supply costs, it does not fully take into account the effect of peak wholesale prices.[5]

Peak price events are not distributed consistently over a year and the distribution varies considerably between years. Consumption data for at least an entire year are therefore necessary in order to assess the cost of supplying any given consumption profile. In the absence of these data, it is unlikely to be possible to assess the impact of moving from deemed to actual consumption profiles, enabled by interval metering.

2.4 The move to interval metering

2.4.1 COAG endorsement

In 2007, COAG agreed to a series of competition reforms to enhance productivity and the efficient functioning of markets.[6] Among other things, these competition reforms included endorsement of a staged approach for the roll out of smart meters, where benefits outweigh costs. Competition reforms, including smart metering, sought to 'improve energy supply reliability, enable consumers to manage better their energy use and greenhouse gas emissions, and help maintain Australia's relatively low energy prices.'[7]

Smart metering is being deployed in Victoria under a State Government mandate where virtually all of the 3 million connection points in that state will have smart meters installed and in operation by the end of 2013. In NSW, manually read interval metering is being deployed by Ausgrid on a new and replacement basis with an installed base of more than 550,000 manually read interval meters. In Queensland, 360,000 manually read interval meters have been installed.

Around 1.4 million residential and small business customers in the NEM (14 per cent of the total residential and small business customer base) are currently being settled in the wholesale market using their actual consumption profiles, based on half hourly interval data.[8] By the end of 2013, market settlement by actual consumption profiles is expected to increase by more than 100 per cent (to around 3.5 million customers).[9,10]

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[5] See for example: *"Investigation of the efficient operation of price signals in the NEM"*, prepared by PWC for the AEMC, dated December 2011 and *"Advanced Metering Infrastructure Customer Impacts Study"*, Deloitte, October 2011.

[6] See http://www.coag.gov.au/coag_meeting_outcomes/2007-04-13/index.cfm

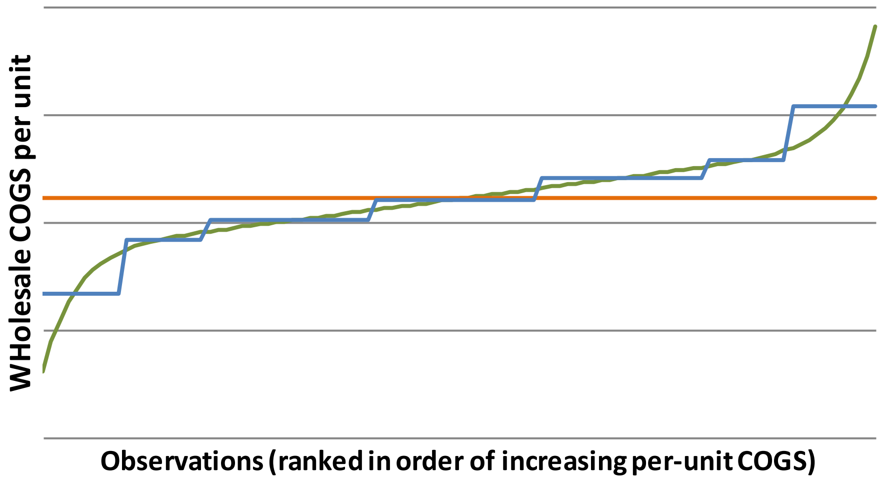
[7] Ibid.

[8] Source: data provided by the AEMO to Sapere relative to Type 5 and Type 6 metrology standing data as at 31 March 2012.

[9] Source: Sapere calculations based on extrapolation of current interval metering deployments.

[10] Note the allocation of wholesale costs in retail markets will continue to be reconciled using a "differencing" methodology whereby the financial liability for local or host retailers is the difference, or residual, between total energy consumption in a given network region and the collective energy consumption attributed to customers of tier 2 retailers.

Figure 4: Matching consumption profiles with stepped flat tariffs



The available Australian and international evidence suggests that consumers (collectively) are both willing and able to modify their consumption profiles in response to timely and accessible consumption and pricing information. As reported in 2009 to the Ministerial Council for Energy[13], two independent pricing trials in Sydney indicated significant reductions in peak demand where consumers were informed in advance of critical peak pricing events. The trials also indicated that significant demand was avoided, not merely time shifted.

Depending on retail market outcomes, it is probable that variances in aggregate demand profiles between retailers could emerge. Some retailers may have more favourable (lower cost and risk) profiles, while others may have less favourable (higher cost and risk) profiles. Accordingly, the change to interval market settlement could have significant implications for retailer margins and retail market competition.

2.4.3 Consumer surplus

To the extent higher prices for higher cost consumers (and *vice-versa*) lead over time to changes in profiles and reduced supply costs, there would be a clear economic dividend. This takes the form of improved allocative efficiency and increased consumer surplus.

In aggregate retail prices would be lower than otherwise. The central driver behind recent retail price increases substantially in excess of inflation may not have taken place.[14]

To the extent there is any reduction in overall consumption, not merely time shifting of consumption, it is also possible there is an environmental dividend in the form of greenhouse emissions reductions. To the extent customers are willing to pay the full cost of electricity during periods where the electricity supply costs are high, then current uncertainty

[13] See *Smart meter consumer impact analysis, a report for MCE*, April 2009

[14] See for example *"The Energy Market Death Spiral, Rethinking Customer Hardship",* Paul Simshauser and Tim Nelson, June 2012.

over consumer willingness to fund peak electricity capacity will be reduced. This reduction in uncertainty translates into lower costs of funding peak electricity capacity. Hence, there could be a benefit, even if demand profiles do not change.

2.5 Regulatory framework for energy data access

2.5.1 Rules and other instruments

Relevant rules and instruments governing access to energy consumption data include:

- The National Electricity Law;
- The Electricity Rules, notably chapter seven of the NER and clause 86 of the National Energy Retail Rules (NERR) (Appendix 3);
- Jurisdictional electricity industry codes, some of which may continue to apply post NECF, including the:
  - Victoria Electricity Transfer Code
  - SA Energy Customer Transfer and Consent Code
  - Queensland Electricity Industry Code
- AEMO CATS Procedure Principles and Obligations, MDM Procedure and other relevant documents; and
- Relevant AER Guidelines, Compliance Bulletins or similar.

2.5.2 Customer data access

There is no statement in Chapter 7 or elsewhere in the Electricity Rules regarding ownership of energy data. It is not clear where data ownership lies.

Clause 7.7(a) of the NER sets out the parties entitled to access energy data, metering data, NMI Standing Data, settlements ready data or data from the metering register for a metering installation. The principal parties (defined entities) identified are the various industry parties that generate or use energy data.

Customer access to energy data is covered in sub-clause terms of the consumer's retailer (or FRMP).[15] Sub-clause 7.7(a)(7), which states that:

> *...a financially responsible Market Participant's customer [is entitled to access or receive data], upon request by that customer to the financially responsible Market Participant for information relating to that customer's metering installation;*

Similarly, clause 7.8.2(c) includes provision for a consumer's retailer to allocate a 'read only' pass word to a customer who has sought access to its energy data or metering data [held in

[15] This reflects the fact chapter 7 of the NER were primarily intended to govern wholesale metering, while jurisdictional instruments would regulate the provision of billing data to consumers.

the metering installation] in accordance with rule 7.7(a)(7). In addition, under clause 7.8.2(f), AEMO must hold a copy of the pass word for the sole purpose of revealing them to a Metering Provider in the event that the password cannot be obtained by other means.

The NER therefore suggest that customers have a right to access energy data, including metering data in local meters, on request to their retailer, but not from the other defined parties holding the data. As noted by the AER in its Compliance Bulletin 8, this raises questions regarding the provision of energy data to mass market customers by parties other than the relevant retailer including the binding of HANs/IHDs.

The obligation to supply historical billing data by retailers is covered under regulation 28 of the NERR.[16] Under regulation 86 of the NERR, distributors have an obligation under Deemed and Negotiated connection contracts to supply information about a customer's energy consumption or distributor charges to the customer or retailer. Neither regulation 28, nor regulation 86 specify the timing or form of the supply of data.

Immediate delivery of data to consumers is generally not stipulated under existing regulations. For example, under the Victorian Retail Code, the requirement is for data to be delivered within 14 days. The data are usually provided via email or post by the consumer's retailer on an ad hoc basis, in response to customer requests to call centres.

Where customers requesting data have internet access, data is typically provided in electronic format. In this case, it appears there is little, if any, delay between requesting and receiving data. Where customers requesting data do not have internet access, there may be a delay while records are printed and sent via post. The data is provided at no charge to the customer.

2.5.3 Retailer and ESCO data access

One of the parties entitled to access data under clause 7.7(a)(1) is any registered participant "with a financial interest in the metering installation or the energy measured by that metering installation." In practice this refers to the financial interest of both the consumer's retailer and to the LR.

The financial interest of the LR in energy data relating to customers supplied by other retailers arises from the "differencing" method for market settlement. Under this method, LRs are financially liable for the difference between the value of energy imported at the "boundary" of a given retail supply area, and the value of energy attributed in aggregate to NMIs where the LR is not the consumer's retailer.

It is understood from consultation that the differencing method would continue to apply even where deemed profiles no longer apply in a given retail supply area. Consequently, it seems likely LRs will continue to have access to energy data after a transition to market settlement using actual consumption data.

There is provision under existing arrangements for a consumer's prospective retailer to access standing data regarding a NMI. This is necessary for a retailer to provide the

[16] Note the NERR currently only apply to jurisdictions that have acceded to the NECF.

customer with a quotation or proposal while seeking to be the retailer for the customer's supply point, and also for entering a change of retailer request into MSATS in order to become the retailer for the customer's supply point.

It is important to note that data access for prospective retailers relates only to standing data and not to energy data. Under AEMO's CATS Procedures, the LR must provide access to historical metering (energy) data to the newly current consumer's retailer for initial transfer of the NMI. This obligation arises only after the customer transfer has been effected in CATS or as allowed by jurisdictional requirements.

This suggests there may be an information asymmetry between the LR and other retailers. The LR appears to be able to access historical consumption data for all customers within the supply area where it is the LR. The CATS Procedure suggests other retailers have rights to access historical consumption data for a given customer only after they become the consumer's retailer on conclusion of the customer transfer process.

Clause 7.8.2 of the NER relates to controls over data security. Among other things, it states that:

> *The Metering Provider must only allocate 'read-only' passwords to Market Participants, Local Network Service Providers and AEMO. For the avoidance of doubt, a financially responsible Market Participant may allocate that 'read-only' password to a customer who has sought access to its energy data or metering data in accordance with rule 7.7(a)(7).'*

Clause 28 of the NERR relates to historical billing information. Among other things, it states that:

> (1*) A retailer must promptly provide a small customer with historical billing data for that customer for the previous 2 years on request.*
>
> *(2) Historical billing data provided to the small customer for the previous 2 years must be provided without charge, but data requested for an earlier period or more than once in any 12 month period may be provided subject to a reasonable charge.*

Clause 86 of the NERR relates to the provision of information relevant to charges by distributors. It states that:

> *A distributor must, on request by a customer or a customer's retailer, provide information about the customer's energy consumption or the distributor's charges, but information requested more than once in any 12 month period may be provided subject to a reasonable charge.*

Other than the aspects of the NERR summarised above, the NECF package does not appear to seek to modify the existing rules regarding data transfer under the NER and existing AEMO metrology procedures. Substantial work was undertaken around the rules governing the transfer of interval consumption data as part of National Smart Metering Programme. So far, this work has not led to new rules or standards for data transfer to customers, pending broader decisions by policy makers. Many of these matters are now being addressed in the context of the AEMC's Power of Choice review.

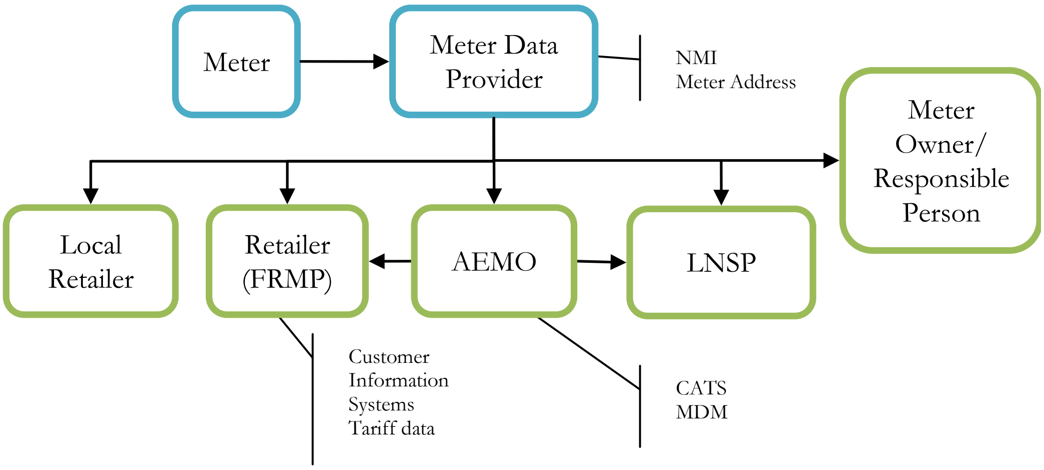
Under the current regulatory framework, there does not appear to be any provisions to enable other parties, such as ESCOs, to access energy consumption data held in AEMO energy consumption database – for example by energy efficiency, local generation or other service providers. Some third parties that are not registered market participants appear to have gained access to MSATS under contract with retailers.

2.6 Energy data

2.6.1 Data flows

The flow of consumption data for each NMI is summarised in Figure 5.

Figure 5: Flow of electricity consumption data for market settlement



Data are uploaded (whether manually or remotely) from local meters to the relevant Metering Data Provider (MDP). With the notable exception of accumulation data for LR retail customers, the data are then forwarded to AEMO, and financially interested parties including: the consumer's retailer (FRMP); LR; and Local Network Service Provider (LNSP).[17]

A Consumer Administration and Transfer Solution (CATS) data hub holds standing data. This includes information for each connection point (NMI), including: the meter identifier; the meter type, its physical location (the Australia Post Identifier and/or street address), the relevant MDP, LNSP, area LR, the current retailer (FRMP), loss factors to be applied, and other information.

AEMO operates a central energy consumption (metering) database for the purpose of settling wholesale markets under retail contestability – the Metering Data Management System (MDM). MDM data transactions use the industry standard NEM12 data file and associated protocols. Data access and transactions can be made via the MDM part of the MSATS web portal.

[17] For clarity, the roles of MDP and LNSP have been separated. Under a jurisdictional derogation from Electricity Rules due to expire at the end of 2013, the roles of MDP and LNSP are currently undertaken by the same party in Victoria.

For accumulation data, the AEMO data hub holds energy data for Tier 2 retail customers, but not retail customers remaining with the LR. AEMO standing data does not include information regarding the identity of the customer associated with a NMI at any given point in time. This information is held instead in the Customer Information Systems (CIS) of the consumer's retailer.

Accordingly, a key aspect of the AEMO CATS process is to enable the discovery of NMI standing data, in order to facilitate the transfer of customers between retailers. The NMI discovery process enables would be retailers to access standing CATS data based only on the street address of the (would-be) customer.

The NMI discovery process is available to registered market participants under clause 7.7(a). It appears that registered market participants have provided access to the NMI discovery process by parties other than those identified in clause 7.7(a).[18]

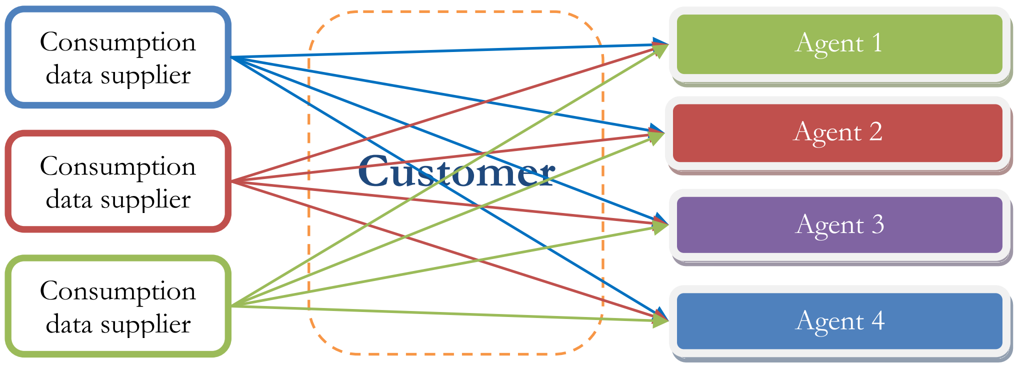
Participants are required to store energy data in accordance with NER clauses 7.11.3 and 7.9.1 and associated tax regulation. At least 13 months and typically two years of data will be stored in an online database. Older data will be archived for at least seven years.

2.6.2 Data standards and structure

A key feature of digital information is the importance of data formats and structures. Transfer of energy consumption data is an example of a complex network, illustrated in Figure 6.

Figure 6: Many to many data transfers

An example of a complex network, multiple suppliers of consumption data provide data to consumers, which they provide to various authorised agents.



This is compounded by the emerging scale of electricity consumption data in the NEM. An annual consumption profile contains 17,520 values.[19] Each value is associated with National NMI, Read Type, Register, Unit of Measure (e.g. kWh), interval, start time and end time.

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[18] See for example page 9 of AER Compliance Bulletin 8: *Confidentiality requirements for energy, metering and NMI standing data*, dated 29 June 2011.

[19] That is 48 half-hourly observations for each day of the year (48*365, excluding leap years).

This can be included in a 'header' – an extra line at the beginning of the file – or included as data associated with each measurement producing a file containing 122,640 data fields that themselves can be organised in a variety of structures.

There are significant costs in converting data formats and structures between platforms. This traditionally leads to the emergence of standardised formats and structures for data, especially where data need to be transferred between a number of participants on a low cost and automated basis.

In the NEM, data structures and transfer processes have been standardised for the purposes of market settlement in the NEM12 and aseXML standards. In terms of the structure of publicly available NEM data, while price data for each NEM region are recorded vertically, this is not the case for consumption data.[20]

In the USA the OpenADE is the name of a collection of requirements for a Standardized Machine-to-Machine (M2M) interface that permits utilities to share, at the consumer's request and under the consumer's direction, a broad set of that consumer's utility data with specific third parties.

The North American Energy Standards Board (NAESB) has created the Energy Services Provider Interface (ESPI) standard for customer authorised energy data access by third party service providers. The standard provides model business practices, use cases, models and an XML schema that describe the mechanisms to enable automated transfer of energy usage information.

2.7 Related energy sector developments

2.7.1 Energy sector development

The introduction of competition and structural reform of the Australian energy sector initially created energy delivery markets, concerned with the delivery of energy generated at remote sites to consumers and businesses. Further markets are emerging as the energy sector develops (Figure 7):

- an **energy information** market offering services to assist energy consumers to select products and better manage their daily energy consumption, including via demand side response (DSR); [21]
- an **energy efficiency** (EE) market offering products and services to reduce or otherwise improve the efficiency of energy use; and

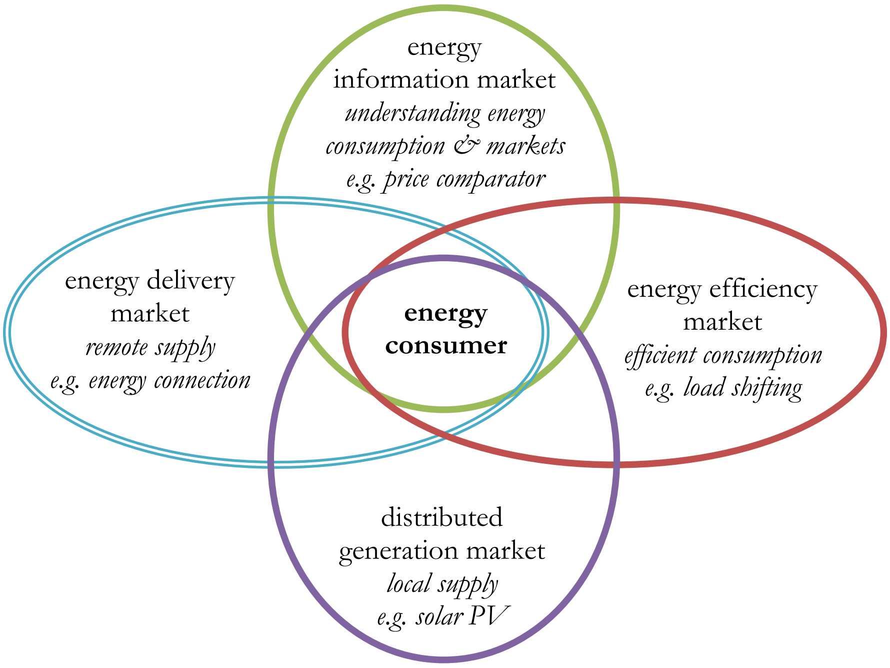
[20] Compare the data structure here: http://www.aemo.com.au/en/Electricity/NEM-Data/Price-and-Demand-Data-Sets/Aggregated-Price-and-Demand-2011-to-2015, with the structure used here: http://www.aemo.com.au/en/Electricity/Retail-and-Metering/Load-Profiles

[21] In line with AEMC usage in its Directions Paper: *'Power of choice – giving consumers options in the way they use electricity'* dated 23 March 2012., DG, DSR and EE are collectively referred to as Demand Side Participation (DSP).

- a **distributed (or embedded) generation** (DG) market delivering products such as solar photovoltaic systems for local generation of energy. In future, this may also include local storage, for example via electric vehicles or other storage technologies.

Figure 7: Interconnecting energy markets

Four interconnected markets serve the energy consumer, delivering distinct energy products indicated in italics.



Companies, government agencies and not-for-profit organisations operate in different combinations across these markets, as illustrated by Figure 8 below. Of existing NEM participants:

- Retailers typically have business divisions serving multiple markets, primarily driven by establishing a competitive advantage to attract customers to their core service, supply of remotely generated energy.
- Distributors historically have operated in energy delivery, energy information markets (via manual metering) as well as energy efficiency markets – notably demand management and load shifting via ripple control for network stability purposes.

The report of the Prime Minister's Task Group on Energy Efficiency highlighted the importance of these Energy Service Companies (ESCOs) that deliver energy efficiency improvement and related services. [22] Within this emerging sector:

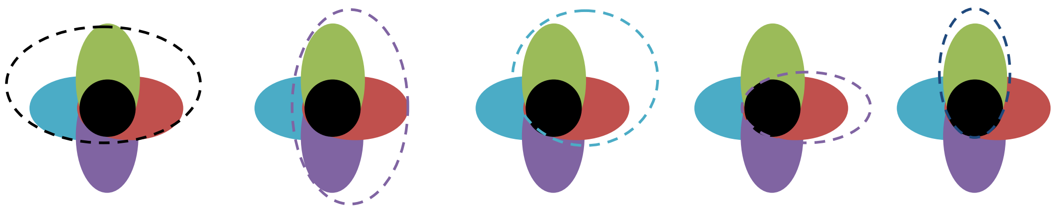
- Some businesses/organisations/government agencies focus on energy literacy in order to promote energy efficiency.

[22] Task Group on Energy Efficiency,2010, *Report of the Prime Minister's Task Group on Energy Efficiency*, Department of Climate Change and Energy Efficiency, page 176. See also the report "Low Carbon Growth Plan for Australia by Climate Works, dated March 2010.

- Switching/comparator businesses/organisations trade exclusively in the energy information market.
- Some device businesses produce energy efficiency technology.
- Some businesses combine energy information and efficiency technology to reduce end consumer's expenditure.
- Some organisations/government agencies analyse energy information and efficiency technologies to assess the business cases for investment in energy delivery infrastructure.

Figure 8: Business participation in interconnecting energy markets

This figure illustrates just a few of the different combinations of markets in Figure 7 that may be encompassed by a particular organisation's business models.



The Prime Minister's Task Group on Energy Efficiency Report noted that:

> *Energy-using businesses and households rarely possess the expertise or knowhow necessary to optimise their energy efficiency. By providing complete energy efficiency services, ESCOs can address the barriers that impede efficiency improvements in households, governments, commercial buildings and industry.*[23]

The Prime Minister's Task Group on Energy Efficiency Report also noted that, 'if the ESCO sector remains small, Australia is unlikely to substantially improve its low level of energy efficiency achievement.'[24] Key barriers to the development of ESCO's identified include transaction costs and information gaps.

2.7.2 Examples of Australian energy data services

Specific examples of available home energy management services and trials include, but are not limited to:

- Telstra Project Smart Home trial;
- Smart Energy Group SEGmeter measurement products and cloud service;
- CSIRO Universal Energy Services Platform for utilities;
- Switch Automation measurement products and cloud service;
- Wattwatchers/Our Green Home measurement products and cloud service;

[23] Op. Cit, page 176.

[24] Ibid., page 178.

- DENSO Home Energy Management System; and
- Intelligy smarter environments measurement products and cloud service.

In the absence of access to interval energy consumption data, these services depend on alternative technologies for obtaining data.

Dedicated In-Home Displays (IHDs) have been the traditional 'dashboard' for customers accessing meter data. IHDs access data held in an interval meter data via a wireless protocol. Currently market forces are trending towards cheaper ($150-300), internet enabled IHDs to connect data to internet based analytical services.

A significant development is the availability of 'clamp meters'. From a consumer (or ESCO) perspective, clamp or 'over the top' meters effectively by-pass the utility meter in relation to the provision of customer consumption data. A clamp meter for home energy monitoring combines the energy monitor mounted around the mains cable in the switchboard with a transmitter to an in-home display and/or computer adaptor and software/online account. Currently models are available in Australia ranging in price from $130-295.[25]

2.8 Overseas energy data developments

This sub-section provides a brief and selected summary of some global developments, as a basis for assessing current Australian arrangements. It does not attempt a comprehensive survey as this is beyond the present scope.

2.8.1 Government and regulator led developments

Similarly to the Australian government, overseas policy makers are pursuing initiatives to make consumption data generated by smart (and interval) meters more readily available to consumers. Three notable government-led consumer energy data access initiatives are the US Green Button, Smart Meter Texas, and the UK midata.

Green Button (USA)

A central element of this pillar of the White House *Policy Framework for the 21st Century Grid* is that consumers should have timely access to their consumption data. This encompasses:[26]

- internet accessibility;
- usage and price information available with minimal delay;
- standardized, machine-readable formats allowing users to use their preferred systems; and
- the ability to authorize data access for the third-party applications of their choice.

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[25] See for example the not-for-profit advisory Moreland Energy Foundation review of three examples (Wattson Energy Meter, Current Cost ENVI-R, Clipsal Cent-a-Meter) at http://www.mefl.com.au/sustainability-advice/appliances/item/646-energy-meter-review.html

[26] National Science and Technology Council. *A Policy Framework for the 21st Century Grid: Enabling Our Secure Energy Future*. Washington DC: Executive Office of the President, 13 June 2011

Green Button is an initiative of the US Federal Government modelled on 'Blue Button', a collaborative initiative of US Department of Veterans Affairs with industry and non-profit collaboration for internet access and exchange of veterans' health records.

Green Button is based on the OpenADE and ESPI standards developed since mid-2009 in a public-private partnership supported by the US Commerce Department's National Institute of Standards and Technology. The data is provided as a text file in a format that can then be shared with third party developers who can provide valuable context, analysis, and other functions based on that usage data. The US Department of Energy envisions Green Button data can be utilised in:

- consumer facing web portals that can analyze energy usage and provide actionable tips;
- customization of heating and cooling activities for savings and comfort;
- community and student energy-efficiency competitions;
- improved decision-support tools to facilitate energy-efficiency retrofits;
- measurement of the performance of energy-efficiency investments;
- provision of estimated energy costs for a premise for tenants and/or new home purchasers; and
- optimization of the size and cost-effectiveness of rooftop solar panels.

In January 2012 the three Californian utilities became the first to implement Green Button on their websites. This fulfilled a requirement of the California Public Utilities Commission for the utilities to enable timely consumer energy data access by the end of 2011.

By March 2012 a further nine utilities covering a total of 44 million residents had committed to implementing Green Button. In addition, six utility information service providers and ten consumer application companies committed to supporting deployment of the standard.

Smart Meter Texas

In contrast to Green Button, Smart Meter Texas features a central data hub and consumer access portal for energy consumption data. Smart Meter Texas is also significant in that it is associated with the introduction of smart metering in Texas.

Smart metering is being deployed by the regulated utilities, which are permitted to impose a surcharge to recover the associated costs, subject to meeting a range of conditions. A key condition is the provision of timely access to meter data by customers and their retailers.

Meeting this condition at least cost to consumers required development of an interoperable energy information database and access system able to route information from over 7 million smart meters between 100 retailers and the four utilities. The result is Smart Meter Texas.

The system was designed and built by the four utilities as joint owners, with guidance from retail business and the Public Utility Commission of Texas. The system uses the customer identification system used to settle the Texas wholesale market. The system was implemented in January 2010.

The system also manages automatic registration of Home Area Network (HAN) devices (linking individual HAN to meters and retailer/utility). Smart Meter Texas continues to be developed, including compliance with ESPI/Green Button.

Smart Meter Texas provides basic data services to consumers via a single data access portal. The portal provides consumers with basic graphical presentation of 15 minute interval data and export to a comma separated variable (csv) format.

midata (UK)

As a component of its Consumer Empowerment Strategy launched in April 2011, the UK Government is seeking to develop a system whereby consumers can access, control and use data held about them by businesses in financial services, motoring, food, retail, utilities and telecoms. The UK Government has stated that access to data and a market of useful analytic applications will enable consumers to more easily choose the best service.

The midata policy initiative was launched in November 2011. The Department of Business Innovation and Skills is working with business, consumer and privacy groups, and computer application developers to develop this vision into information accessibility standards. This workgroup is examining interoperability, privacy, security and legal issues towards development of voluntary standards.

In May 2012 ScottishPower became the first company to launch a service under the midata banner. This is currently limited to accumulation data. ScottishPower's existing home energy management system is based on an internet enabled IHD and energy sensor mounted close to an existing accumulation meter. Ofgem's timetable for initiating a mandated smart meter rollout commences in mid-2012.

2.8.2 Market-led developments

Energy supply, energy efficiency, demand response and energy information services businesses have worked in parallel with or in advance of government and regulator-led data access initiatives. These are exemplified by the diverse products (and standards) for home energy management systems based on in-home displays and home area networks. Where these are internet enabled, or connected to a smart meter, energy data and analytic tools may be available via a web portal provided by a consumer's utility or a third party.

While a nascent market, by 2009 dozens of home energy management products were available in the USA, with expectation of deployment of millions of in home displays driven by the US Federal Government and utility smart grid programs.

While major ICT companies such as Oracle, Microsoft and Google have been involved in standardisation projects such as OpenADE, three of these companies subsequently withdrew their products from the home energy information/management market in 2011 and 2012: Google PowerMeter, Cisco home energy box and Microsoft Hohm.

There appear to be a number of factors behind the withdrawals. A key problem identified by some observers is the "utility barrier" whereby only a limited number of utilities were prepared to provide access to customer data (held by utilities). That is, development of these businesses were ultimately hindered by access to consumption information.

Despite these notable withdrawals - there remain dozens of active businesses in the USA, UK and Europe with more specialised business models. Over fifty mobile computing applications have been launched in three months in response to the U.S. Department of Energy "Apps for Energy" competition since March 2012.

Meter and home data uses

Examples of current market services based on smart meter data include:

- **Track spend against a baseline**: established from old bills or detailing all appliances in their home and refined over time by adding more appliance information, consumption can be tracked and trends identified against planned consumption.
- **Spend analysis and bill forecasting**: integrating tariffs & account fees, households can observe current actual spend rather than estimated or delayed spend. Combined with historical individual load profiles or extrapolating consumption trends 'next quarter bill' can be forecast for current and modified behaviour.
- **Notifications**: timely, actionable alerts & recommendations on demand responses to power outages or peak events.
- **"What if?" planning**: understanding the benefits of energy efficiency or load shifting behaviours to consumption and quarterly or annual spend.

Combined with 'behind the meter' data (i.e. circuit & appliance monitoring), services include:

- **Granular insight from behind the meter monitoring** provide detailed insight into consumption patterns, including reconciliation with meter readings with a bottom-up build of energy usage.
- **Automated appliance management**: set-and-forget scheduler controls that create sustainable savings without the need for manual intervention.
- **Automated load-shifting**: consumer's policies to opt-in to energy provider's dynamic load control to automatically respond to power outages or peak events.
- **Remote monitoring & control**: secure, remote access to a home's energy management portal from any mobile device or PC.
- **Appliance lifetime management**: identifying when appliances should be upgraded to save consumers money.

3. Energy data access - assessment

This section assesses the current processes and rules for access to consumption information held within the energy industry and whether these impede access to data and competition in the energy supply and services markets. The framework for this assessment centres on the objective of enabling customers to manage better their energy use and greenhouse gas emissions, and to help maintain Australia's relatively low energy prices. In addition to the information in the previous chapter, the assessment takes into account current and ongoing data access developments.

3.1 Current data access developments

3.1.1 Industry initiatives

Substantial efforts are currently underway by individual retailers to automate the timely supply of energy data to existing consumers on a self-service basis via retailer and MDP web-portals. This includes the following.

- Origin Energy's "Origin Smart" consumer access portal developed in partnership with American provider Tendril (live in June 2012, see Appendix 4);
- Jemena/United Energy's consumer access portal (live in June 2012, see Appendix 4);
- SPAusNet home energy management trial partnered with GreenWave Reality; and
- Ausgrid's *Smart grid, Smart city* trial including consumer access portal.[27]

In addition, some Victorian DNSPs are facilitating access by end users to smart meters and associated energy/metering data. This includes linking HANs or IHDs directly to smart meters on a wireless basis.

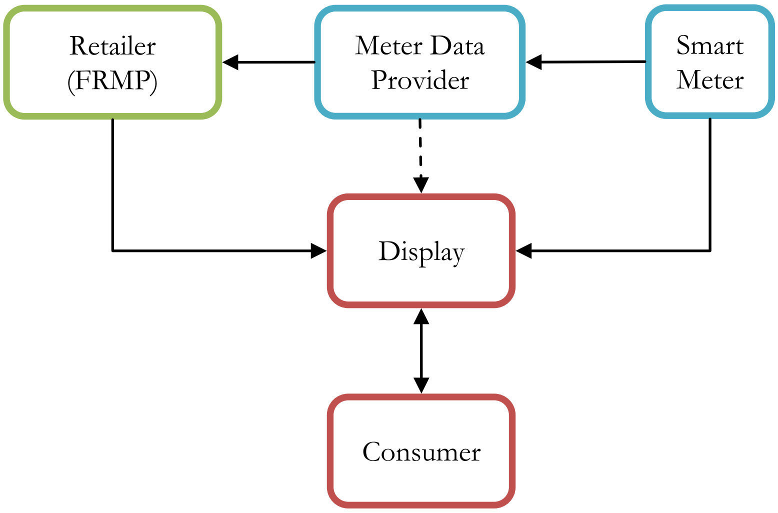
The timing of these initiatives is largely in response to the mass market deployment of smart metering in Victoria. It also reflects a reduction in policy uncertainty regarding smart metering, following decisions by the Victorian government in late 2011.

Within the next year, it seems likely the majority of customers with remotely read interval metering should be able to access their own historical consumption data via web portals. This is illustrated in Figure 9 below (in Victoria and NSW *Smart City, Smart Grid* trials).

[27] This portal is unusual in that it initiates a direct session with the meter over the internet to access current (real time) raw meter data.

Figure 9: Energy consumption data flow to the consumer

Currently, the consumer may have up to three channels for the flow of their consumption data to a "display". A display may include a dedicated IHD or other displays, including computers, smart phones and tablets.



In addition to basic energy consumption data, web portals may provide analytical tools such as graphs, bill forecasts and comparators to enable customers to understand and hence better manage their energy purchasing and utilisation. A key advantage of web-portals, compared with other data delivery options, is that provision of historical data is close to immediate while costs are minimised for both retailers and their customers. A further potential advantage is that consumers can access data for different calendar periods (and hence data volumes) at their convenience.

From discussions with retailers, it seems likely automated data provision services will be at no incremental cost to existing customers. The cost will be recovered as part of normal retailer mark-ups on energy sales. [28] The incremental cost of data portals appears modest compared with internal retailer costs.

Consumption data portals will operate under some constraints. In Victoria, verified historical data ("settlements data") will be available up to a week in arrears. Non-verified, real time data ("energy data" and "metering data") will not be supplied via web-portals. This constraint arises where data bandwidth constraints do not permit customers to access readings from smart meters via remote portals in near to real time. Customers may be able to access real-time consumption data from local meters via HANs, including via a web portal where the HAN is linked to the internet.

Where local meters have interval metering but no remote (or local) communication capability, data available from retailer portals will be limited by the date of the most recent

[28] The live web portals from Origin Energy, Jemena and UED are provided at no cost to users.

manual meter read. Where manual meter reads are quarterly, this means data could be up to 12 weeks in arrears and on average it will be around 6 weeks in arrears.[29]

It seems likely the majority of customers with interval metering will have the ability to obtain available historical consumption data via self-service web portals, within the next year. It is possible that some individual retailers may not offer this service, instead relying on manual processing. Where retailers offer the service, it is possible that some customer segments will be unlikely to download historical consumption data.

3.1.2 AER Compliance Bulletin 8

On 29 June 2012, the AER issued Compliance Bulletin 8 regarding confidentiality requirements for energy, metering and NMI standing data. The bulletin addresses two compliance issues pertaining to disclosure of confidential information by participants NEM.

The first issue concerns retailers providing agents undertaking customer acquisition activities on their behalf with access to NMI standing data. The second issue concerns distributors providing direct access to energy or metering data to consumers with smart meters. This includes provision of access to data held in local meters using wireless data transfer.

On the first issue, the AER considers that, where the FRMP is not a party to a data request (from a customer), DNSP's providing data are currently at risk of contravening the Electricity Rules. The AER stated it considers DNSPs should inform the FRMP on behalf of the customer that access to the relevant data is occurring.

On the second issue, the AER notes that some market participants have allocated a portion of their MSATS user IDs to unrelated third parties, enabling the latter to access standing data held in MSATS. The AER notes this is inconsistent with clause 7.7 of the NER.

The AER does not propose to take enforcement action in relation to potential breaches in these areas from 29 June 2012 until 31 December 2013, to provide sufficient time for industry and policy makers to clarify the requirements of the NER and other energy legislation, or alternatively, for market participants to change their practices.

In the meantime, the AER indicated it will closely monitor industry behaviour, and may use its discretion to take any enforcement action it considers appropriate at any time. In particular, it indicated it would consider taking action prior to 31 December 2013 if there are other aggravating factors associated with the disclosure of confidential information, such as a significant market impact or breach of privacy.

[29] Note that Origin Energy, Jemena and UED portals are currently restricted to remotely read interval meters.

3.2 Barriers to data and competition

3.2.1 Information and efficiency

Current arrangements (including those already under development by retailers and other energy sector participants), and supporting rules and regulations, do not address key information imperfections in retail markets.

Timeliness of information: Existing regulations and arrangements do not fully support prompt access to historical consumption data, or real time access to local meter data (where these are available). This means consumers do not have full information on the cost of electricity at the point of deciding how much electricity to use and when.

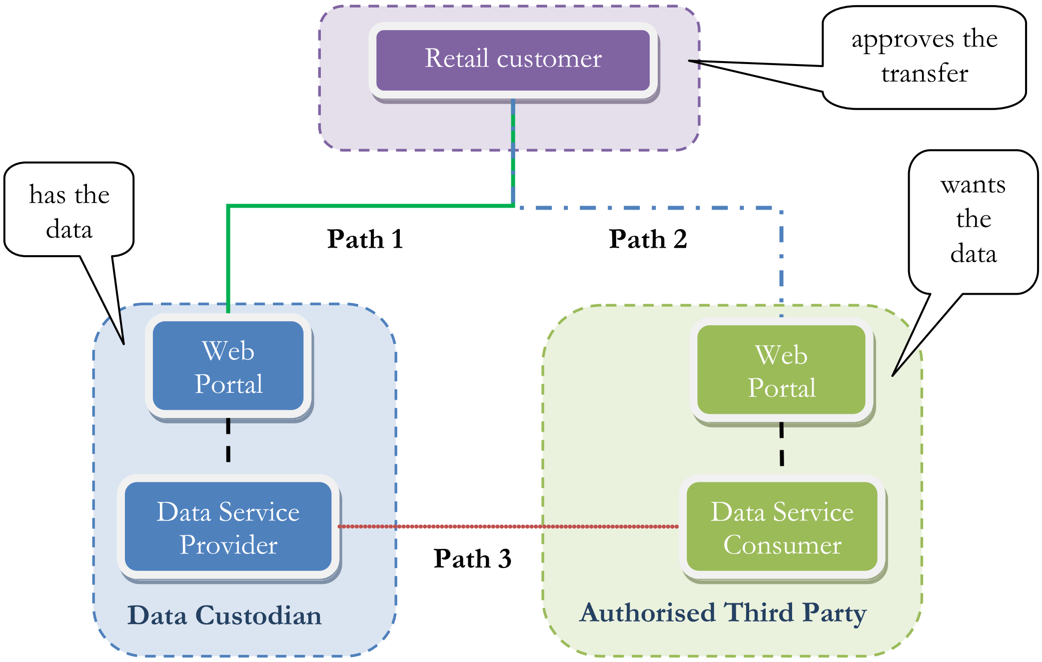
Information asymmetries: There are significant information inequalities between electricity suppliers, and also between suppliers and customers. Barriers to energy data access are stifling the development of a vibrant ESCO sector. These inequalities have adverse effects for retail competition and contribute to higher long term electricity prices than otherwise.

Retail prices do not match supply costs: Information systems do not empower consumers and suppliers to converge retail prices toward supply costs, including via the effective use of price comparator and energy data analysis services. At present, prices and costs significantly diverge for around 60 per cent of customers. This divergence contributes to consumption, supply and investment decisions leading to electricity prices that may be higher than customers are collectively willing to pay.

3.2.2 Data paths

A key information barrier relates to energy data access paths. Current arrangements, including those already under development by retailers and other energy sector participants, support only the first path in Figure 10 below – the direct transfer of data to consumers on request. They do not support or enable data transfer Paths 2 and 3 to ESCOs or competing retailers providing interpretation and analysis to enable the consumer to make informed decisions about their energy consumption and cost.

Figure 10: Overview of current NEM energy data access and exchange system



Developed from a presentation by David Mollerstuen to a CPUC R.08-12-009 Technical Workshop, December 12, 2011.

Path 1 is important and valuable for consumers. As noted earlier, retailers are making substantial efforts to improve the efficiency and timeliness of Path 1, notably via the development of automated, self-service web-portals.

MDPs are also developing an equivalent to Path 1, alongside the services being offered by retailers. The AER has indicated that in doing so, MDPs risk contravening the NER and that they should inform FRMPs that access is occurring.

There are significant impediments to the timeliness and efficiency of Path 2. A key problem is the absence of standardised format and structure for the data delivered via Path 1, regardless of the identity of the data custodian. This means that ESCOs or alternative retailers may need to devote significant efforts to process data in a variety of formats and structures.

3.2.3 Barriers to data access for ESCOs

It seems unlikely that, under current arrangements, consumers will have the resources to use data accessed via Path 1 in Figure 10 above to make informed energy price and consumption choices. Consumption data from interval meters are very large and complex. To be useful the data require interpretation and analysis, including of:

- how an individual consumer's profile compares with similar consumers (in terms of say location, dwelling type, household size and workforce status); and
- the relative cost of supplying an individual profile compared with the current effective price being paid (likely to be based on a deemed or average profile).

Depending on an analysis of consumption data, consumers can be expected to be interested in understanding how much they could potentially save by:

- switching to a different retail tariff product, better suited to their individual profile,
- switching to a retail tariff product offered by an alternative retailer;
- ongoing monitoring of electricity use and expenditure, so as to manage quarterly expenditure and minimise the risk of 'bill shock';
- adopting or investing in various energy efficiency measures, or changing consumption patterns (reduced use during peak price periods), to modify the existing consumption profile; and
- investing in alternative forms of energy supply, possibly including local generation and perhaps in the future energy storage.

There is no system currently in place or in development to support Path 3 for data access whereby the customer can authorise a third party, including an ESCO or competing retailer, to access their data. In addition, the AER has raised concerns over whether MDPs can offer Path 1 access to consumers.[30]

Data access is a pre-requisite for enhancing consumers' ability to better understand their consumption and make well informed decisions in their interests. Energy data access also appears to be a pre-requisite for the emergence of a vibrant ESCO sector. To the extent access continues to be a barrier, therefore, it represents an impediment to improving Australia's overall energy efficiency performance.

3.2.4 Retail market competition

In addition to consumer related concerns with existing information arrangements, identified earlier, a further set of concerns relates to possible information inequalities between retailers. As noted in Chapter 2, under existing arrangements, retailers and other service providers could be operating at a significant information disadvantage relative to LRs.

The LR appears to be able to access metering, energy and standing data for all customers within the retail supply area for which it is the LR. This includes interval data.[31] It appears that other retailers can access metering and energy data only after a customer transfer has been effected (other than via Path 2). Moreover, unless they are registered market participants, ESCOs do not have data access rights, even after they have entered into contracts with customers.

As noted earlier in this chapter, the AER recently expressed concerns regarding the opportunity for unauthorised third parties to access standing data via the transfer of MSATs passwords. As noted in Chapter 2, LR's MSATs access includes access to the metering and settlements data of all customers in the LR supply region. The AER compliance bulletin

[30] AER, Op. Cit.

[31] See page 27 of the AEMO MDM procedure which includes the LR as one of the parties that have access to the report: MDM RM18 Electricity Interval Data Report.

focused on access to standing data but does not rule out the possibility third parties could gain access to individual customer metering data.

To be clear, there is no suggestion that any LR is misusing their privileged access to energy data. Nevertheless, the present inequality of access to information between different types of retailer could place other retailers and ESCOs at a significant commercial and competitive disadvantage, following a move to actual profiles. If so, this could impose costs on consumers and the broader economy.

Retailers may have incentives to use data delivery via Path 1 in Figure 10 above to encourage consumers to modify their consumption profile to reduce supply costs. Retailers may, however, have little or no incentive to use Path 1 to enable consumers readily to consider switching to different retail tariff products, including those offered by alternative retailers. Moreover, they may have little or no incentive to use Path 1 to enable consumers to assess: alternative forms of energy supply; all energy efficiency opportunities; local generation and/or energy storage.

Following a move to settlement by profiles, prudent alternative retailers are likely to seek to understand a consumer's profile before entering into supply commitments. This reflects the evidence that, for around 60 per cent of customers, supply costs under actual profiles could vary by greater than 10 per cent of supply costs under deemed profiles.

This entails a competing retailer accessing the customer's energy data before rather than after entering into new customer contracts. Under current arrangement, this access may only be possible via a multi-step process, spanning days and possible weeks. This suggests the process of initiating a switch following a move to large scale use of profiles in 2013 may require more than one session (currently the case) and require significantly greater effort on the part of both the consumer and the competing retailer.

Under the present regulatory framework for FRC, there is a clear policy objective that customer initiated switching should be low cost and convenient for consumers. While various checks and balances are necessary before a consumer switch between retailers is implemented, the process of initiating a switch is currently simple. It requires just one transaction and can be completed in a single session.

3.2.5 Other data access

Alternative means of accessing consumption data are available. This includes directly accessing metering via HAN. However, as noted by the AER, where this access is facilitated by MDPs, this may contravene the existing Electricity Rules.

The availability and marketing of consumption measurement devices that bypass existing metering systems highlights both the demand for consumption data and the difficulty in accessing that data. It is likely, however, that only a small portion of the consumer base would be motivated to invest in alternative devices. In practical terms, therefore, bypass does not affect the conclusion that reform of the existing information access system and transfer system is necessary to meet COAG policy objectives in relation to electricity market reform.

3.3 Different perspectives

There are different perspectives as to whether there is a case for some form of regulatory change or other government intervention relating to consumer and ESCO/alternative retailer access to energy consumption data. Some of the parties consulted believe that existing arrangements are adequate and that no change is necessary or justified.

At least part of the explanation for the different perspectives discussed above appears to be different expectations about the impact of the move toward actual consumption profiles, especially in Victoria. Parties that do not perceive a problem were more likely to take the view that the change to actual profiles will not significantly affect retailer COGS, or electricity retail and related markets, including DSP. In other words, they may not be aware that around 30 per cent of wholesale electricity costs relate to less than one percent of trading intervals. They are also more likely to take the view that differences in the format of raw data transferred to consumers do not materially increase data handling costs for consumers and third parties.

On the other hand, parties that do perceive there is a problem are more likely to take the view that a move to actual profiles could have significant impacts for COGS, retail and related markets. Moreover, such parties are concerned that, in the absence of changes to current arrangements, a transition to far more efficient retail and related markets enabled by the move to actual profiles will be impeded.

Parties that do not perceive there is a problem with current arrangements may substantially benefit from retaining these arrangements. Alternatively, the parties that do not perceive there is a problem are potentially substantially disadvantaged by the development of alternative arrangements whereby profile data is easily obtained.

For example, some local retailers expressed the view the move to actual profiles would have limited impact and there is no case for changing existing arrangements for data transfer. This view appears to be on the basis that aggregate profiles for local retailers would not change and local retailers could therefore continue to offer a single flat tariff.

As discussed earlier, however, where profiles are readily accessible to third parties, it would be possible for competing retailers (and DSP providers) to offer significantly lower prices. For around a third of the customer base, competing alternative retailers could offer price discounts greater than 10 percent while fully retaining existing retail margins and recovering COGS.

If this occurs, then over time, aggregate profiles for local retailers could deteriorate – with a larger proportion of higher cost customers and a smaller proportion of lower cost customers. This would affect retail margins and could eventually result in a situation where price rises are required to recover COGS and retailer costs. This could reinforce the movement of customers to more favourable tariffs.

Existing large retailers may be seeking to avoid or minimise costs and risks associated with changes to retail markets following a move to actual profiles. This could include seeking to avoid the additional complexity associated with moving to multiple tariffs for each LNSP, where tariff levels are related to actual rather than deemed profiles.

Conversely, as discussed above, under existing arrangements, the cost of customer acquisition for competing retailers could increase significantly, in the event they are required to have more than one interaction with consumers to obtain profile data to initiate a switch from the existing retailer. On the other hand, they could benefit from the implementation of alternative arrangements as they could have a greater opportunity to acquire profitable new customers from competitors.

Some of the concerns with existing arrangements identified are as follows.

- It is not realistic to expect the majority of consumers to be able to identify their consumption profiles from data downloaded from retailer portals, or to compare their profile with those of other consumers.
- Similarly, it is not realistic to expect that all consumers will have the necessary information equipment, technical skills or motivation to access profile data and transfer these to third parties.
- It is impractical and costly for third parties to receive and process non-standardised raw data received from individual consumers, particularly in the absence of a data standard. As a result of this issue, at least one information service provider abandoned an attempt to develop new energy and bill management services targeted toward consumers. Others have sought technological alternatives to accessing meters for delivering standard consumption data to their energy management systems.
- In the absence of profile information, it could be difficult for third parties to give customers clear advice on the financial impact of alternative retail tariff and DSP/energy management offers, consistent with product disclosure obligations under consumer law and in particular the NECF. Under these conditions, consumers could find it more difficult to assess alternative retail offers.
- Tier 2 retailers could be operating at a significant information and competitive disadvantage relative to local retailers.
- The absence of a standardised format for profile data could inhibit the accuracy and effectiveness of price comparator services in the next few years.
- Similarly, third parties offering other (non price comparison related) DSP services, such as local generation, may find it difficult to offer consumers advice on the net cost of DSP options in the absence of profile information. In the future, there may be similar difficulties around optimising the value of local electricity storage, for example from electric vehicles.

Parties expressing these concerns were more likely to support some sort of initiative to enable convenient, access to individual customer profiles by authorised third parties. This could include consideration of a CEdata.

During stakeholder consultations, parties expressing concerns with existing arrangements saw a need to develop and implement alternative arrangements as a matter of some urgency. They felt that new arrangements would need to be in place in Victoria by around mid 2013.

Other parties expressed views that a data standard is not required or that access to profile information is not required for price comparison or bill management. On these views, data is provided in the format the customer requests and competing retailers (and by implication information and DSP service providers) can estimate an individual customer's profile for pricing or other energy advisory purposes without reference to actual profiles.

While some forecast annual bills may be in error, and some consumers may later discover they are worse off after switching to a new tariff structure, retailer, or DSP service, these outcomes were considered manageable. In a similar vein, on this view, price comparator websites, such as the AER website, could continue to operate effectively without reference to actual profiles.

Alternatively, on this view, third parties could obtain profile data by requesting customers to download raw data from retailer web portals and delivering these to third parties. This may take some additional time and work on the part of customers and third parties, but this was not considered problematic.

Similarly, whereas at present consumers can initiate a switch of electricity supplier with a single interaction with a competing retailer, it was accepted in the stakeholder forums that in future it may take two or more interactions with a competing retailer over several days before a switch could be initiated. This reflects the delay while consumers obtain profile data from their retailer, deliver this to a third party, and for the third party to assess the profile and offer a price or service to the consumer.

Parties that do not perceive a problem did not see the need for consideration of any change to the status quo. If any problems were to emerge at some time in the future, these could be addressed by way of an industry process in the absence of any great urgency. Parties that do not perceive a problem were more likely to take the view there would be ample time available to develop and implement alternative arrangements. Indeed, they often expressed the view that alternative arrangements should be developed and implemented with care and at a measured pace.

3.4 Overall assessment

The overall assessment is that, without change to existing arrangements, achievement of specified 2007 COAG policy objectives for electricity markets may be jeopardised. In the absence of change, consumers will not be enabled to manage their energy use and greenhouse gas emissions, and Australia's energy prices will not be efficient as possible, whilst also allowing for a reliable power system.

Regulatory arrangements do not support direct data access to local meters, even where this is technically and commercially feasible. There are significant information asymmetries between market participants, and between suppliers and consumers. As a result, there is a significant risk that retail prices will continue to diverge substantially from underlying supply costs.

Related shortcomings with current arrangements include the:

- AER finding that customer data access via MDP portals or HAN facilitated by MDPs are likely to contravene the Electricity Rules;
- absence of standardised data structure and formats to support interoperability;
- lack of a clear and simple process for the timely transfer of consumption profiles from data custodians to ESCOs or competing retailers, where authorised by consumers;
- significant information asymmetries between a customer's current and potential future retailer or ESCO; and

- absence of a convenient mechanism for consumers to use actual consumption profiles for price comparison purposes (for customers with interval metering), inhibiting customers' ability to assess the competitiveness and efficiency of tariff offerings.

Current arrangements (including those already under development by retailers and other energy sector participants), and supporting rules and regulations, support only the direct transfer of data on request by consumers (Path 1 in Figure 10 above). The distributor/MDP web portals available for some supply areas in Victoria represent an example of significant progress toward Path 3. They do not, however, comprehensively support or enable Paths 2 and 3.

Despite the efforts underway to improve the efficiency and timeliness of existing information access, there are nonetheless grounds for significant concerns that current arrangements for information access inhibit a transition to more efficient retail electricity markets, enabled by the use of actual consumption profiles.[32] Developments underway, while positive, do not address the following consequences and risks:

- higher effective retail prices and fewer retail supply services than might potentially be available for many customers, following a transition to use of actual consumption profiles;
- higher costs for end-users engaging in demand side participation (DSP) arising from the capital costs of alternative technologies for acquiring consumption data,
- ongoing barriers to the development of ESCOs with adverse effects for Australia's overall energy efficiency performance;
- a possible decline in the competitive position of Tier 2 retailers, and DSP suppliers, as a result of being unable to access historical consumption profiles for all customers within a given supply region on the same basis as LR; and
- a possible decrease in electricity retail market activity (or continuation of low levels of activity).

On balance, the arguments in favour of changing existing processes governing access to consumption data appear to be more credible than arguments in favour of leaving existing processes unchanged. Arguments in favour of retaining the *status quo* appear to reflect the commercial interests of the parties concerned rather than well founded evidence and analysis.

[32] Of course it is recognised that access to historical consumption data is only one aspect of the matters that are important and relevant in customer and retailer decision making.

4. Energy information reform – proposals for a CEdata

The assessment of current arrangements and development in the previous chapter has concluded that, despite current positive developments, there remains a set of policy problems around consumer data access and authorised direct data transfer to ESCOs or competing retailers. This chapter describes options and issues for consideration towards developing a CEdata that would improve and reform existing arrangements for the provision of energy data to customers and their designated agents. This includes:

- proposed key objectives for a CEdata;
- proposed key features or attributes of a CEdata;
- a brief description of three possible forms for a CEdata; and
- a discussion of some of the issues to be resolved in any form of CEdata.

4.1 Key objectives for a CEdata

The proposed objectives for a CEdata seek to overcome or address key limitations and shortcomings with existing arrangements. They also draw on COAG policy statements in support of consumers being able manage their energy use and greenhouse gas emissions, so as to ensure retail prices are as efficient as possible while maintaining supply reliability.

The proposed key objectives are as follows.

1. **Timeliness of information:** - a CEdata would provide consumers with timely access to their energy consumption data, so they know their electricity costs at the time they make decisions on their consumption. This includes continuous access to data generated by local meters in near real time, where this is technically supported by existing metering infrastructure and the committed metering upgrade pipeline.

2. **Information equality:** - to empower consumers, they should be able to authorise parties other than their existing supplier to access data on their behalf. Similarly, to ensure energy markets are competitive, existing and would-be suppliers (including DSP suppliers) would have equal access to individual customer data, subject to customer authorisation.

3. **Competitive retail prices:** – a CEdata would assist in converging retail prices toward efficient supply costs; to the extent this is efficient. This convergence would lead to more efficient consumption and supply investment decisions, and lower long term prices than otherwise.

Removal of energy data-related barriers to DSP would facilitate a more effective ESCO sector, in line with the recommendations of the Prime Minister's Task Group on Energy Efficiency. It would also facilitate retail market competition, in its broadest sense, including DSP.

In order to achieve these objectives, a CEdata will need to have the following key elements:

1. **Data access rights for consumers**. A CEdata requires specification of customer data access rights to energy data, both remote settlements data and local metering data (where this is technically available). Data access rights include specification of customer's rights to authorise third parties (retailers and ESCOs) to access energy data on their behalf. The specification of data access rights would also address privacy rights, consistent with a presumption in favour of consumer data access.
2. **Data access obligations for data custodians.** Under a CEdata, designated data custodians would have obligations to provide customers, and authorised third parties (designated ESCSOs) with their energy data, including close to real time access to energy data held in local meters where this is technically feasible.
3. **Interoperability**. As is already the case for data transfers within the industry, data transfers from the industry to customers, retailers and ESCOS should use interoperable data formats and structures. This would include data privacy and encryption standards to the extent necessary to meet data privacy rights as defined. Interoperability reduces transaction costs and facilitates the use of energy data for the purpose of price comparison, notably via the AER comparator service.
4. **Regulation of CEdata**: Participants in CEdata should be regulated to ensure conformity with customer authorisation and data privacy requirements. This is likely to involve the development of clear rules governing the behaviour of retail and ESCO CEdata participants, The definition of data access rights for consumers, alongside obligations for data custodians, will go some way toward addressing the substantive information inequalities between suppliers. In addition, there could be value in reviewing existing LR privileged access to energy data for NMIs, particular where these have moved to interval metering.

A CEdata is likely to entail two key extensions to existing arrangements regarding *energy* data:

- Extension of the NMI discovery process so that it applies to MDM or energy data, not merely to standing data. This is likely to require enhancement to the NMI discovery process, as discussed below.
- Extension of the NMI discovery process beyond a retailer (or entities authorised by a retailer) to ESCOs authorised by consumers. This is likely to require enhancements to recognition of parties other than registered market participants, as discussed below.

A CEdata would ensure that available historical data is provided in timely fashion to consumers and authorised third parties. Once a customer is registered, the period for completion of any data access transaction will be constrained by the duration of data processing and electronic transfer. This would better enable consumers to manage their energy consumption and costs.

A CEdata should provide at least one calendar year's worth of data available with relative ease. This would provide sufficient information to reveal a customer's annual consumption profile.

4.2 Broad models for CEdata

While there may be a clear case for establishing a CEdata, the form it should take is less clear. A CEdata could potentially take several different forms without compromising effectiveness. Three high level models for a possible new energy information system identified in the course of this scoping study are as follows:

1. A distributed CEdata service. The CEdata service is provided by existing energy data custodians – notably retailers. Henceforth, this is called Distributed CEdata

2. A centralised, indirect, CEdata service provided to ESCOs. ESCOs would in turn provide CEdata services to consumers. Henceforth this is called B2B CEdata.

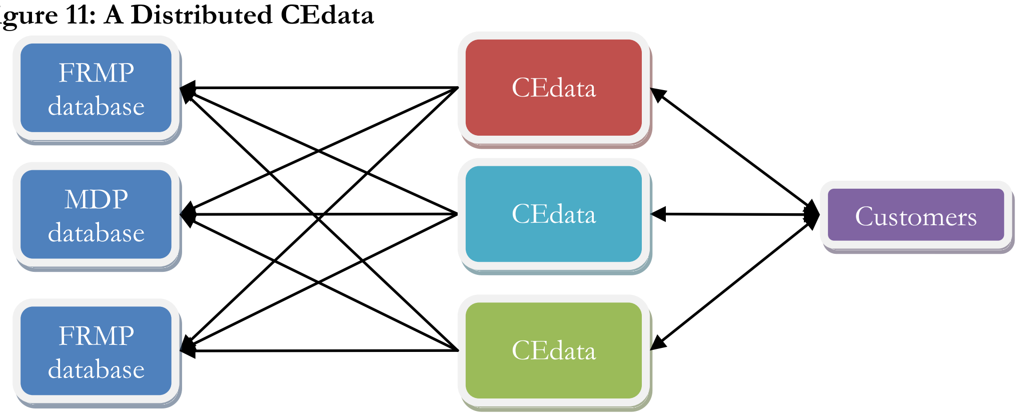
3. A centralised CEdata service provided directly to consumers. Henceforth this is called B2C CEdata.

All three models seek to improve access to existing energy consumption data generated and held by the energy industry, and ultimately funded by consumers. They do not envisage the development of an entirely new energy data base.

4.2.1 Distributed CEdata

The key feature of a Distributed CEdata is there are multiple CEdata customer access platforms and these in turn operate from multiple energy data databases. These could conceivably span both FRMP and MDP data warehouses.

Figure 11: A Distributed CEdata



A Distributed CEdata requires interoperability between multiple energy data warehouses and multiple CEdata platforms. A Distributed CEdata therefore entails a common set of energy data standards and protocols for data access.

It is important to recognise that the industry already has in place standards and protocols in place. These include:

- the form and structure of energy data (the NEM12 format);
- existing protocols regarding data security and privacy (for example under the NECF, jurisdictional regulations and MSATS protocols);
- a procedure for accessing standing data for parties other than the existing retailer and distributor (NMI discovery); and
- the specification of retail tariffs for the purpose of price comparison (via the Guidelines for retailers associated with the AER price comparator service).

Against this background, the incremental work to extend existing systems interoperability to the delivery of CEdata may not be substantial. This could minimise incremental costs.

A key advantage of a Distributed CEdata is that it is not limited by the fact LR accumulation energy data is not held in the MDM system (the energy data warehouse part of MSATS). This means that a Distributed CEdata could provide access to data from accumulation meters, as well as interval meters. As a result, a Distributed CEdata could make energy data available in relation to around 10 million small businesses and households.

A related advantage of a Distributed CEdata is that its scope potentially includes the ability to access data in the local meter in close to real time, and on a continuing basis. This could have significant advantages, including for the continuing delivery of near real time demand side participation services. This could include various forms of dynamic retail pricing.

Real time or near real time data access, and access to raw data, largely amount to the same thing. At present real time data and raw data access functionality, other than directly from local meters, may be limited by bandwidth limitations for some smart metering systems. This could, however, change in the future.

Under a Distributed CEdata it is more likely that participating ESCOs would form a new class of market participant, compared with other CEdata options. ESCOs would be subject to parts of the Electricity Rules concerned with maintaining the security and integrity of MDM energy data. Most notably, they would have obligations with respect to obtaining explicit authorised customer consent prior to data access, for data security and privacy, as well as any mandated standards for service delivery to consumers. ESCOs would not be required to comply with the obligations of market participants, including in relation to prudential requirements.

ESCOs and alternative retailers would need to have access to the NMI discovery process (or an evolution of this). They would not, however, be obliged to meet all the present criteria for registering as NEM market participants. In effect, participating ESCOs would become "licensed" participants in NEM energy data markets. Such a development would be consistent with the recommendations of the Prime Minister's Task Group on Energy Efficiency.[33]

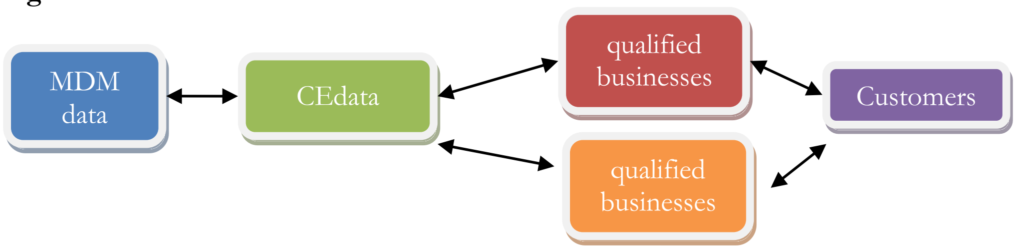
A Distributed CEdata matches NEM supply points (NMI) with individual customers using existing retailer CIS, or other identifying information held by the data custodian (see discussion in 4.3.3 below). Depending on the resolution of privacy concerns, this may obviate a requirement to create any new national customer information database in association with the introduction of a CEdata. Alternatively, a Distributed CEdata could involve a central customer identification system. This would increase costs but may be necessary to maintain the integrity of an efficient and effective Distributed CEdata especially as customers switch retailers.

[33] Task Group on Energy Efficiency,2010, *Report of the Prime Minister's Task Group on Energy Efficiency*, Department of Climate Change and Energy Efficiency

4.2.2 B2B CEdata

A key feature of a B2B CEdata is that it relies on a central energy data base – the energy data held in the MDM system. Unlike a B2C CEdata discussed below, a B2B CEdata does not make energy data available directly to consumers. Instead, it makes energy data available to a defined and limited set of qualified businesses, including retailers and ESCOs. Accordingly, a B2B CEdata is not itself a consumer facing data access service but rather a conduit to such a service.

Figure 12: B2B CEdata



An important limitation of a B2B CEdata compared with a Distributed CEdata is that it would only be able to supply energy data held in the MDM data warehouse. This is currently limited to the energy data generated by interval meters and second tier customers. This is expected to be in the order of around 35 percent of NEM connection points by the end of 2013 or around 3.5 million premises.

A further limitation is that a B2B CEdata would not enable access to real time energy data. Moreover, a B2B CEdata would not enable access to raw metering data (before substitutions and validations), including from local meters. This means that some of the potential benefits of CEdata, relating to real time consumption decisions, may not be available under a B2B CEdata.

A B2B CEdata relies on ESCOs and retailers to deliver energy data and related services to customers. It is therefore similar to a Distributed CEdata in that there would be multiple CEdata to consumer access platforms.

A B2B CEdata creates an interoperable data structure standard and exchange protocol, as determined by the supplier of a CEdata service. Subject to requirements set out in a procurement process and subsequent contract for services, a CEdata service provider would be able to select appropriate technical solutions for data security and customer authorisation.

A B2B CEdata service would be likely to utilise or build on the existing NMI discovery process. An important feature of a B2B CEdata is that it could provide a basis for the evolution of a national customer identification system. A B2B CEdata would itself form an emerging customer identification system that is independent of retailers' CIS.

A key operational aspect of a B2B CEdata is interaction with the MDM energy data warehouse. A B2B CEdata service provider would need to ensure adequate systems were in place to protect the security and integrity of the MDM energy data warehouse. Under existing MDM arrangements, there is already a distinction between parties that have data read only access and parties that can also write (modify) MDM data.

As with the Distributed CEdata, a B2B CEdata could involve the creation of a new class of market participants for ESCOs wishing to participate in energy data related services.

However, a B2B CEdata need not require the formation of a new class of market participant in the NEM. Instead, a B2B CEdata operator could simply stipulate the obligations participating ESCOs and retailers would be required to meet, as a condition of gaining and retaining rights to participate in a B2B CEdata. Relevant regulators or policy makers could either set these obligations directly or impose them indirectly, for example via a service contract with the selected a B2B CEdata service provider.

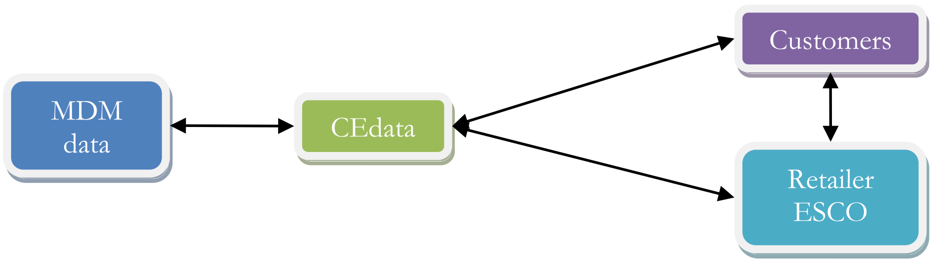
Because a B2B CEdata does not deliver services directly to customers, a B2B CEdata may need to stipulate certain aspects of the delivery of data and other information services to customers, such as accuracy and timeliness. In doing so, a balance needs to be struck to ensure that obligations are not overly onerous and prescriptive, while at the same time ensuring that CEdata related services and benefits are in fact delivered to customers.

A key potential advantage of a B2B CEdata is that it creates space for energy data service innovation by retailers and ESCOs. As with a Distributed CEdata, there is less risk that possible energy data services supplied to consumers could be "crowded out" by CEdata.

4.2.3 B2C CEdata

A B2C CEdata also relies on a central energy data base – the energy data held in the MDM data warehouse. Unlike a B2B CEdata discussed above, a B2C CEdata supplies energy data directly to consumers, as well as to ESCOs or competing retailers.

Figure 13: B2B CEdata



In core respects a B2C CEdata is similar to a B2B CEdata described above. As with a B2B CEdata, a key scope limitation is energy data held in the MDM data warehouse. This limits the scope of a CEdata to around 35 per cent of the NEM customer base. It also limits CEdata to historical energy data, rather than real time or near real time data sourced from local meters.

The key differentiator between a B2C CEdata and a B2B CEdata is that the service provider has direct control over the provision of data services to customers. This reduces risks around the nature of data services delivered to end users and other parties. For this very reason, however, there is a greater risk that a B2C CEdata could inhibit innovation and competition in the delivery of CEdata enabled services to consumers.

4.3 Key issues

Any move toward a CEdata will require navigation of a number of issues. Resolution of these issues has implications for the costs and benefits of a CEdata.

4.3.1 Inter-operability with price comparators

A CEdata would not directly involve the provision of services to enable consumers and other parties to assess the relationship between consumption profiles and price, or to compare the price of different retail or DSP service offerings relative to a given profile. Instead, such services could be provided by other parties, including price comparators, such as the AER service, or by ESCOs.

A pre-requisite is that CEdata data formats and structures need to be capable of being applied to price comparators- the data structures and formats are inter-operable with price comparators. Consultations in the course of the project suggest that the existing price comparator service provided by the AER could incorporate consumption profile data. While it does not currently have this capability, it has been designed so that this capability could be introduced in the future.

4.3.2 Privacy and security

There has been widespread community concern about privacy and advanced metering infrastructure. This reflects the richness of interval data and the potential to yield information about behavioural patterns within households.

A basic issue for any CEdata is that energy data for a given NMI must be linked with the customer making a request for energy data for that NMI. Privacy and security issues arise from the possibility that erroneous links could be made, leading to situations where a person gains access to another person's energy data.

Privacy concerns need to be seen in context. The data are encrypted for transmission from Smart Meter and MDP. No customer information is contained in the standard NEM12 file format, which is identified by NMI. Standing data in AEMO systems do not hold customer identity information. Energy data and standing data transfer between Market Participants must use secure, encrypted networks.

Energy data cannot itself be used to ascertain the identity of an individual. It therefore does not meet the definition of personal information in the Privacy Act 1988 (Cth). Similarly, the Victorian Privacy Commissioner has held that an individual's energy usage data is not, by itself, "personal information".[34]

Businesses that hold customer data already have obligations regarding the security and privacy of that data under the National Privacy Principles (NPP). This highlights the significance of security and privacy of any businesses that hold customer data matched with energy data.

The industry appears broadly to have embraced a conservative approach, generally endorsed by stakeholders, that extends the NPP to energy data in general. This includes a requirement to obtain consumer's opt-in for use of data by third parties (other than as specified under the Electricity Rules), and opt-in for use of data for secondary purposes. There appears to be a

[34] Office of the Victorian Privacy Commissioner, Submission to the Essential Services Commission on Smart meters, 17 May 2010

broadly held view that explicit informed consumer consent is the basis for three-party data transfer transactions between a customer and any ESCO or retailer.

Although de-identified and not personal information per se, consumption data prior to the commencement of a customer's residency applies to the energy behaviours of other person(s), prompting privacy concerns. Conversely, given the location and configuration of a premise is itself a major factor determining the consumption profile, another perspective is that the historical consumption profile is useful to new residents of the property.

4.3.3 Customer identification

Under a CEdata, consideration needs to be given to the conditions under which a customer request for energy data is accepted or otherwise. This will have implications for the cost and complexity of implementing a CEdata.

Under current arrangements, there are two main forms of customer identification for the purpose of providing customers with energy data access:

- Type 1: the data requester confirms he or she is the retail account holder for a given metering data stream, usually by confirming customer specific data held in retailer CIS; or
- Type 2: the person requesting data for a given metering data stream provides details regarding the related NMI and local meter, thereby confirming access to the relevant retail account as well as physical access to the local meter.

The Origin Smart portal is an example of Type 1. It requires the data requester to provide customer account information. In doing so, the data custodian verifies that the person seeking data access is the same person nominated as the primary retail account holder, using standing customer data held in its CIS.

The Jemena-UED MDP web portal is an example of Type 2. It requires the data requester to provide the NMI, the associated meter serial number, and physical address. As customers do not have access to the NMI discovery process, the requirement to provide a NMI confirms the customer has access to an electricity account (bill) in respect of the premise.

When a consumer registers at the Jemena-UED web portal, the MDP forwards the customer's request to the relevant FRMP for that NMI. It is understood there is no process or requirement whereby the account details for a given NMI are verified before the data are transferred to the data requester. As noted by the AER, there is a risk that current MDP portals contravene the Electricity Rules.

Under a CEdata, consideration needs to be given to whether the Type 2 method of customer verification is permissible, alongside Type 1. In either case, as customers seek data access, there is an interaction between the customer and the data custodian. In the process of this interaction, the customer would be required to demonstrate he or she is the account holder and resident. On the customer side, this could involve widespread processes to confirm identity, including provision of driver's license or other identification documents, alongside invoices naming a customer, identifying the NMI, and a physical address.

Where the data request is made by an ESCO on behalf of a consumer, there is of course an additional requirement – informed consent of customer authorisation of the ESCO that is capable of being verified. There are processes in place in the industry to address authorised consent, in the context of customer initiated switching between retailers. It appears these processes could be extended and modified as required to apply to a CEdata.

Under either Type 1 or Type 2 approaches, any extensions and modifications to existing arrangements would need to take into account:

- proportionality: the requirements for confirmation of customer identification for the purpose of retailer switching, which is a significant financial transaction, may be too onerous for accessing energy data, which may be a non-financial transaction (or a micro-financial transaction); and
- timeframes: existing timeframes for confirming customer identity and authorised consent for retailer switching can span weeks and would not be appropriate for a CEdata.

4.3.4 National customer identification system

A CEdata does not appear to entail the development of a national customer identification system (NCIS). Consideration of whether there is a need for a NCIS could be worthwhile in the course of developing a CEdata. The issue is the extent there is an advantage in using customer account rather than individual network connection points (NMI), as the key identification method for the purpose of operating energy market information systems and processes.

There may be broader reasons why a move toward an NCIS may be attractive. For example, the existing Electricity Rules envisage competition in the provision of smart metering services for small customers.[35] Competition can also be expected in the provision of in-home smart metering related services, such as remote control and monitoring of appliances using dedicated energy HAN. Customers moving premises may wish to retain metering or HAN service suppliers, and associated equipment. In such cases, the important data are customer related, not NMI related. The emergence of competition and switching in metering and related services may highlight shortcomings in a system based on network connection points, rather than with customers.

In the context of a CEdata, a NCIS may assist in addressing potential difficulties arising from customers moving between premises and potentially being able to access historical data for a premise relating to the previous occupant's energy consumption. This could potentially represent an issue in terms of the previous occupant's privacy.

4.3.5 Aggregated data

A wide number of uses exist for de-identified aggregated and non-aggregated interval consumption data. Both consumer and industry stakeholders have drawn a distinction between 'noble' and 'ignoble' uses, the latter mainly meaning extra and unwanted direct marketing. Legitimate uses of data require varying degrees of geographic granularity:

- For general research purposes the benchmark geographic standard is the Australian Bureau of Statistics (ABS) Statistical Area Level 1 (SA1). SA1 is the smallest unit for

[35] This is of course the reason a derogation from the rules was required under Victoria's AMI program which does not support metering contestability during the five year AMI deployment period.

release of census data. This includes 400-800 households and can be aggregated to suburb, distribution area etc.;

- Finer granularity is required for independent analysis of transmission/distribution infrastructure investment (sub-station level) or local load infrastructure investment analysis (10 households).

Both ABS and Deloitte (on behalf of the Victorian government) have obtained data for de-identification and aggregation from retail and distribution businesses. AEMO has obligations to provide data to jurisdictional regulators, and has stated in consultations for this study that it can provide aggregated data to government agencies.[36]

Like other technical issues, the preservation of consumer privacy in the aggregation of consumption data for research and energy planning purposes is not an insoluble matter. Box 1 illustrates the procedures followed by Deloitte in accessing interval data from 64,520 metering points and quarterly billing data one million metering points for a customer impacts study of AMI for the Victorian government.

Box 1: Deloitte, *Advanced metering infrastructure customer impacts study - Final Report Volume 2*, Department of Primary Industries, 18 October 2011

Appendix B: Data capture and privacy management

Protection of privacy and confidentiality

Deloitte ensured the preservation of the privacy, sensitivity and confidentiality of collected data through the following measures:

- Data was requested only on the basis of demonstrated need to facilitate successful completion of the project
- All data that enters Deloitte's models was de-identified – that is:
  - no customer names were provided in any primary data sources
  - where geographic information associated with a customer record was provided to Deloitte, a Census Collection District (CCD) identifier was appended and all other address-type information was removed from the customer record
  - all customer address-type information was deleted
- Data supplied was only used only for the purposes of our work and Deloitte will not retain any records that would allow the identification of individual customers.

There are significant concerns surround the use of individual and aggregated data as a means for extra and unwanted direct marketing. As the Victorian Privacy Commissioner stated

> *'if the usage data is shared beyond the electricity provider, this type of information could be used by other electricity companies, for research purposes or even by third parties for direct,*

[36] However, as elsewhere noted, AEMO does not have accumulation data for Tier 1 customers.

targeted marketing based on usage. One can envisage situations where law enforcement agencies or insurance companies would desire this information as well.'[37]

Even data aggregated at suburb level gives energy businesses and government agencies (responsible for energy efficiency programs, for example) information to target markets and cold call consumers.

Stakeholders offered two models for managing privacy issues associated with aggregated data:

1. Acquiring explicit informed consent (opt-in) for use in aggregated data for purposes possibly including marketing, and defining boundaries by a minimum number (say 200) of agreeable consumers. Over time geographical boundaries will contract as more consumers opt-in.

2. Alternatively, a condition of energy information market participation may be legitimate use of aggregate data for primary purposes associated with supply and demand side energy management, with penalties including exclusion for participants pursuing excluded 'ignoble' uses i.e. marketing.

[37] Office of the Victorian Privacy Commissioner, Submission to the Essential Services Commission on Smart meters, 17 May 2010

5. Costs and benefits

This section evaluates the benefits and costs of a CEdata. The present project is a scoping study and not a cost benefit analysis. Accordingly, the following comments on costs and benefits are intended to assist in considering whether it is worthwhile pursuing some form of CEdata. They do not constitute a cost benefit analysis.

The research and analysis undertaken for this scoping project suggests that the benefits of moving to a CEdata are likely to be materially greater than costs. This reflects two key points:

- Under the CEdata system options detailed in section four, no substantial new or further investment in energy information infrastructure is likely to be necessary. The cost is limited to creating and operating new systems that improve *access* to existing information. This cost is modest compared with the cost of developing the existing and committed energy information infrastructure.
- Potential benefits from a CEdata could be significant. This reflects the value of even modest improvements to the efficiency of markets with turnover in the order of $23 billion per annum,[38] including the benefits of substantial improvements in energy efficiency identified in the PM's 2010 Task Group on Energy Efficiency report.

Any net benefits are likely to increase significantly in line with the continued deployment of interval metering. Moreover, the greater the upward pressure on electricity supply costs, the greater the potential benefits from a CEdata.

5.1 Benefits

Potential benefits from moving to a new energy information access system take three main forms:

1. More competitive retail pricing (prices that are lower than otherwise);
2. More effective energy management by customers based on timely access to energy information; and
3. Increased product innovation, including new services by retailers and ESCOs.

There are significant potential economic benefits from more competitive retail pricing as a result of improved customer access to energy information. The move to interval metering is likely to reveal substantial mismatches between retail prices and supply costs for the majority of customers, and prompt a shift to more economically efficient prices where prices more accurately reflect costs. It seems likely there are significant economic costs at present due to the likelihood of retail prices being significantly below cost for around a third of consumers, and above costs for another third (Section 2.3.2).

[38] This is assuming an average retail price of $250/MWh and an annual mass market consumption volume across the NEM of 92,000GWh.

In any event, retail contracts in most NEM retail markets are available that significantly discount from standing contract or regulated prices, with price savings of up to 18 per cent on offer. Despite this opportunity, a substantial proportion of the customer base continues to pay higher retail prices.

This may at least in part reflect difficulties on the part of customers in comparing alternative retail offerings. If the establishment of a CEdata enhances competition, it would place downward pressure on the approximately $23 billion mass market expenditure on electricity each year. The potential benefit from competition could be around $100 million per annum.[39] [40]

A portion of competition benefits represent wealth transfers, rather than net economic benefits. Nevertheless, downward pressure on overall prices influences costs, and contributes to greater economic efficiency and real economic benefits.

As noted throughout this report, enhanced energy information access and transfer is likely to contribute to DSP. DSP includes demand response; energy efficiency; and distributed forms of generation, and energy storage.

Demand response benefits could be significant in their own right. As part of a 2008 analysis of the benefits of implementing smart metering, gross demand response benefits were estimated at between $250 and $738 million in NPV terms (2008 dollars).[41] While only a portion of any demand response benefits from smart metering would be attributable to a CEdata, a CEdata could be a necessary condition for achieving a substantial portion of possible smart metering demand response benefits.[42]

Demand response benefits could in part take the form of avoided expenditure on electricity networks. According to a recent report provided to the AEMC, if the top one per cent were removed from overall peak demand, between $3.4 billion and $11.1 billion in network costs could be avoided in the NEM over the period 2011-2030.[43] Any reduction in peak demand could also result in reliability benefits (e.g. reduction in the length and frequency of outages).

Demand response benefits could also in part take the form of avoided wholesale electricity (generation) costs. As discussed in Section two, relatively small differences in the average consumption profiles between the Integral Energy and EnergyAustralia supply areas result in a divergence in the cost per MWh or wholesale electricity of $6.14, or 11 per cent of the Integral Energy unit cost.

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[39] For example, 5 per cent of $23 billion is $1.15 billion. Assume 30 per cent of customers have already switched to more competitive contracts, and this falls to $350 million. Assume also that a CEdata has a "footprint" for a third of the NEM mass market, and this falls further to $103 million.

[40] All values discussed in this section are annual nominal values (undiscounted). An assessment of the appropriate discount rate and period for analysing cash-flows are matters for a cost benefit analysis.

[41] See Table 3, pages 42-45 of Standing Committee of Officials of the Ministerial Council on Energy: *Cost-Benefit Analysis of Options for a National Smart Meter Roll-Out (Phase Two – Regional and Detailed Analyses), Regulatory Impact Statement For Decision*, June 2008; June 2008.

[42] It is relevant that the 2008 studies concluded that in-home displays were unlikely to be viable.

[43] Ernst and Young report provided for the AEMC Power of Choice review, page 26.

Wholesale electricity costs are assumed to represent around $9.8 billion of the mass market portion of total NEM turnover. Of this, 30.8 per cent is attributable to peak price events spanning just 30 hours per year on average. A two per cent reduction in the cost of peak wholesale electricity would be $60.5 million.

A CEdata would remove a significant barrier to the emergence of an ESCO sector. As noted in the Prime Minister's 2010 Task Group on Energy Efficiency report, there are substantial potential economic and other benefits from closing the gap between Australia's actual and potential energy efficiency performance.[44]

Benefits would also accrue by way of avoided expenditure on necessary hardware and software components (for example, IHDs and clamp meters) that are currently needed in order for a customer to access their consumption information. In light of the number of interval meters being rolled out, and the cost of this hardware, these savings could be quite substantial.

If it is assumed that five per cent of customers with interval meters would be interested in accessing their consumption information (i.e. would be prepared to purchase an IHD or clamp meter), and given the costs of such devices, then the savings in Victoria alone could be in the range of $22.5 to $45 million. The roll-out of interval metering in NSW and Queensland would mean there would be customers in these jurisdictions that would also benefit from avoided expenditure on relevant hardware.

If a CEdata contributed to an economic efficiency gain of just 0.5 per cent of the value of the electricity used in the mass market, this would be significant. It would be equivalent to $115 million per annum. For present purposes, a total gross benefits estimate of around $115 million per annum is considered reasonable.[45]

Benefits are likely to be concentrated in those jurisdictions where there is significant interval metering. For example, on the basis of the 0.5 per cent efficiency gain above, the potential benefit in Victoria is in the range of $27.5 million.[46] Based on the current proportion of interval meters installed the potential benefits in NSW and Queensland would start at $5 million and $3.3 million and grow with the continuing roll out of interval metering.[47]

5.2 Anecdotal evidence on CEdata costs

5.2.1 Overview

There is significant uncertainty over the costs of creating and operating a CEdata, and costs will of course depend on decisions regarding the form of CEdata adopted and on key issues

[44] Task Group on Energy Efficiency, 2010, *Report of the Prime Minister's Task Group on Energy Efficiency*, Department of Climate Change and Energy Efficiency.

[45] To be clear, this is a summation of the values discussed above, which are not intended to be additive.

[46] This is assuming an average retail price of $250/MWh and annual mass market consumption for Victoria of 22,000GWh.

[47] This is assuming average retail prices of $250 /MWh and annual mass market consumption of 35,500 and 23,000 GWh respectively for NSW and Queensland, and approximately 11% roll out of interval meters.

including the process for confirming customer identity. Preliminary discussions with stakeholders revealed a diverse range of opinions as to the likely cost of a CEdata.

In the context of a scoping study, no quantitative analysis of the cost of a CEdata was undertaken for the present project. Where possible, we have used the available anecdotal evidence, gathered in the course of the present project, on the creation of Path 1 energy data access systems, as a starting point for assessing the cost of a CEdata.

It is notable there is no regulated cost recovery for any of the existing services. They appear to be funded commercially. Costs of current information access services appear to be less than the cost of maintaining *ad hoc* processes for manual data access.

For large retailers, CEdata costs appear modest compared with internal retailer costs.[48] For small retailers, the total cost may be more significant, and may rely on manual processing until demand volume is sufficient. It may be possible for smaller retailers to outsource and thereby reduce the cost significantly (because the supplier may be offering a similar service to more than one party).

5.2.2 Key factors influencing CEdata cost

The major incremental costs of a CEdata in whatever form include:

- the design and development (or procurement) of a web portal or set of web portals;
- the number of web portals that form a CEdata;
- customer registration and verification processes, including systems necessary to conform with privacy and security requirements;
- call centre costs where customers require assistance with the web portal; and
- ongoing maintenance and development as required.

Some costs are likely to be capitalised ('one-off'), while others are expensed (on-going).

In the case of a Distributed CEdata, incremental costs would relate to the development and implementation of interoperability between multiple CEdata services. These costs may not be significant, given that there is already an interoperable format for exchanging energy data in the NEM – the NEM12 data format, and data exchange procedures already apply under MDM, CATS and other parts of MSATS.

Systems for storing and managing historical consumption data are already necessary for billing and market settlement purposes. Similarly, systems for matching individual consumers with NMI's are also already in place under the NMI discovery process.

The cost of a B2B CEdata could be similar to a Distributed CEdata. Both models require a high level of interoperability, and involve multiple parties in the supply and transfer of consumption data to customers, alternative retailers, ESCOs and price comparators.

While the cost of a B2C CEdata may not be greater than for other forms of CEdata, it is possible the benefits could be less than under other forms. This reflects the greater risk that

[48] That is, combined retail operating costs (cost to serve) and required retailer margins.

a B2C CEdata displaces competitive data supply services, resulting in weaker innovation and performance.

On the basis of stakeholder discussions in the course of this scoping study, it appears that the annual total cost of providing individual data access systems may be less than $1 million per annum. This assumes, rather conservatively, that annual operating costs are broadly similar to capital costs, and that capital costs are recovered over a relatively short duration.

If it is assumed a CEdata involves creating and operating around a dozen data access systems, in the case of a B2B CEdata, this suggests an aggregate CEdata system cost of around the order of $12 million. Similarly, it is possible a Distributed CEdata may require significant extension of, or modification to, existing data portals, and hence may result in a similar aggregate expenditure. Scale economies could be possible under a B2C CEdata, which may result in some avoided costs relative to the other options. On balance, a lower bound of $12 million for any of the three CEdata options identified seems a reasonable assumption at this point.

There are of course numerous reasons costs could exceed the suggested $12 million. These include the possibility the cost of extending present systems for confirming customer identity could be substantial.

If there were a one hundred per cent increase in costs, then CEdata costs would double to $24 million. For present purposes, a range of somewhere between $12 and $24 million appears reasonable for a CEdata.

Some stakeholders suggested the costs of a new consumer energy information access system would be substantial and potentially in the order of $100 million. No evidence was adduced to support these suggestions. They appear to be based on assuming an entirely new energy information system would be required. As noted throughout this report, the proposals for a CEdata require only the energy data that are already being produced by the existing energy information system (including the committed pipeline of metering upgrades).

Note that the $24 million value is economy wide and is highly sensitive to assumptions around the number of CEdata components or iterations. For example, for a B2B CEdata, the cost of the central component of the B2B CEdata (the link between the AEMO MDP data warehouse and consumer facing webportals operated by retailers, ESCOs, the AER and others) could be $2million.

5.2.3 Cost recovery

While the cost of a new information access system may be modest, the issue of the recovery of this cost and of financing the initial capital investment is nonetheless relevant. If, as the present analysis suggests, the net positive value of the information is significant, then a CEdata should be able to be 'self funded'. Essentially, CEdata costs would be recovered from a portion of net economic benefits attributable to a CEdata, e.g. through a fee for service.

There would remain a requirement to finance the capital necessary to establish a CEdata. If a CEdata were a viable proposition, financing should be available either from the public or private sectors.

Cost recovery would vary depending on the form a CEdata system may take. Under a Distributed CEdata, cost recovery would be a matter for the parties themselves. In principle, it would be no different from cost recovery for the existing retailer and MDP portals.

For a B2B CEdata, cost recovery could be achieved by applying charges to parties accessing the CEdata. As noted, here the cost recovery task may be modest, relating to a $2 million annual cost. CEdata Costs would be met by competing retailers and ESCOs accessing information on behalf of consumers. Retailers and ESCOs would in turn recover this cost via the delivery of valuable services to their customers, including in the form of retail supply, local generation and energy efficiency services.

Cost recovery for a B2C CEdata could be more problematic. This is because applying charges to end use customers is likely to deter a majority of consumers from accessing a B2C CEdata. In principle, however, provided the net positive value of the information is significant, then costs could be recovered from a portion of net economic benefits, e.g. through a market fee.

Both B2B and B2C CEdata models are likely to involve some form of central procurement process. It is important that any procurement process should be competitive, in order to minimise costs and maximise benefits. Based on consultation in the course of this project, there appear to be several parties with the capabilities and potential interest in entering into a competitive process to deliver CEdata.

Cost recovery can be addressed in a number of ways within a CEdata service procurement and contracting context. One option could be to specify the services and charges to be delivered by the service provider over a given period and to hold a competitive process. Potential service providers would have strong incentives to maximise the value of the service, within any constraints, while minimising the service procurement cost (if any). Depending on the relevant constraints, it is possible that the successful service provider could finance the new service. If this were so, there may be no requirement for Budget or other external funding. At the same time, it will be important to ensure adequate safeguards are in place to prevent the operator of the CEdata from misusing its trusted relationships with consumers and ESCOs.

To the extent cost recovery for a CEdata is required and "regulated" under CEdata contracting arrangements, charges for third parties accessing the new system should be simple and transparent. In the event of a central service, a two part cost recovery model is likely to be efficient without being overly complex. Under this, third parties entitled to access consumption data would face a fixed annual charge. Additional charges would be associated with each information transaction, thereby enabling charges to be proportional to data usage (and cost of delivery).

Where customers continue to access consumption data using only Path 1, there would appear to be no case for changing current arrangements. Consumption information should continue to be available to consumers at no incremental cost (beyond existing cost recovery arrangements for metering services).

Under central models, the service provider would need to establish strong systems and operational links with AEMO with respect to access both to MDM and standing MSATS data. This suggests that AEMO should be closely involved in the procurement process and the specification of the services to be provided.

AEMO may be well placed to provide a procurement service itself, operating within any governance arrangements to be established. There may be a requirement to amend the NER so AEMO is compliant with its obligations under the NER while at the same time providing access to individual NEM consumption profile data.

5.3 Net benefits

Net benefits from a CEdata could have a positive payback ratio. This reflects the modest costs of a CEdata relative to the potential value of even modest improvements in the efficiency of retail electricity markets. Further consideration would need to be given to both costs and benefits of a CEdata, including the associated risks. This consideration should take into account timing issues including the level of investment required, the payback period and the appropriate discount rate on investment.

6. Reform options, timing and next steps

Reform of existing arrangements and rules, governing the provision of energy data to consumers and their representatives, is a significant undertaking. In addition to affecting consumers, reform would also affect a range of energy markets, including: remote energy supply; distributed generation, energy efficiency and analysis of energy consumption and prices. There is a potential for significant differences in perspectives and priorities among the parties concerned. This highlights the need for effective leadership and governance to ensure an efficient and effective outcome.

Reform decisions depend on the extent the findings set out in this report are accepted and adopted by relevant decision makers. They also depend on preferences and concerns regarding effective energy market competition and the priority given to achievement of relevant COAG objectives.

This section outlines a possible way forward for reform decisions, timing, and responsibility for leading a reform process. It includes:

- proposed CEdata objectives;
- proposed key elements of a CEdata;
- a brief survey of some associated policy and regulatory issues;
- some suggested criteria for assessing CEdata options; and
- a possible fast track process to align development of a CEdata with addressing the matters raised by the AER's June 2012 compliance bulletin by the end of 2013.

6.1 CEdata objectives

Proposed key objectives for a CEdata include the following.

1. **Timeliness of information:** - in line with COAG and other policy statements associated with the introduction of smart metering, a CEdata seeks to provide customers timely access to their energy consumption data to enable them to manage energy consumption and expenditure decisions.

2. **Information equality:** - incumbent and alternative energy suppliers, including competing retailers and ESCOs (including DSP suppliers) would have equal access to consumption information, subject to customer authorisation. This would further empower consumers and enhance retail competition, and is in line with the recommendations of the Prime Minister's Task Group on Energy Efficiency relating to encouragement of ESCOs.

3. **More competitive retail prices:** - assist retail prices to converge toward efficient supply costs; to the extent this is efficient. This convergence would lead to more efficient consumption and supply investment decisions, and lower long term prices than otherwise.

6.2 Key elements of a CEdata

The key elements required to implement the proposed CEdata objectives include the following.

1. **Data access rights for customers:** - Development of clear rules and processes regarding the terms and conditions under which customers may access energy data on a timely and convenient basis. This includes specification of customer data access rights, including the rights to authorise third parties (ESCOs) to access energy data on their behalf. The definition of data access rights should also include definition of data privacy rights, consistent with a presumption in favour of consumer data access.

2. **Data access obligations for data custodians:** - Development of a statement of the corresponding obligations for data custodians to provide customers, and authorised, third parties (ESCOs) with their energy data, including close to real time access to energy data held in local meters where this is technically feasible. This will include definition of privacy obligations.

3. **Interoperability:** - Energy consumption data formats and structures, for the purpose of transfer to customers and authorised ESCOs, should be interoperable and standardised. This facilitates the use of energy data for the purpose of price comparison, notably via the AER comparator service. This includes data privacy and encryption standards to the extent necessary to meet data privacy rights as defined.

4. **Regulation of CEdata:** - Participants in CEdata should be regulated to ensure conformity with customer authorisation and data privacy requirements. This is likely to involve the development of clear rules governing the behaviour of retail and ESCO CEdata participants, and associated penalties for non-compliance.

The definition of data access rights for consumers, alongside obligations for data custodians, will go some way toward addressing the substantive information inequalities between suppliers. In addition, there could be value in reviewing existing LR privileged access to energy data for NMIs, particular where these have moved to interval metering.

6.3 Policy and regulatory issues

There are a number of policy and regulatory decisions and processes that would affect, or be affected, by the development of a CEdata. This includes the AEMC Power of Choice Review, and the ongoing development and implementation of the National Electricity Rules. There should be close and effective coordination between any decision to proceed with a CEdata and related policy and regulatory developments.

Establishment of a CEdata requires development of supporting regulatory frameworks. These frameworks would be required to implement policy settings in relation to: energy data access rights for customers; data access obligations for data custodians; interoperability; and regulation of CEdata.

In addition to the content of the framework – the detailed policy settings – consideration would need to be given to the status and form of regulations, including whether changes would be required to the National Electricity Law, associated regulations, or in relevant parts of the Electricity Rules. These changes are required to put in place heads of power for detailed rules and procedures to support a CEdata. Consideration could also be given to the possible use of a Statement of Policy Principles, issued by the Ministerial Council for Energy (now the Standing Council for Energy and Resources (SCER)).

The heads of power are likely to enshrine principles around: data access rights for customers and data access obligations for data custodians; as well as control over data (for example to prevent unauthorised transfers) and possibly clarification of data ownership. Regulations and rules would also be required that: enable interoperability, govern ESCOs participating in CEdata; and address current information inequalities between LRs and other retail market participants. This is likely to require extension of NMI discovery processes to apply to energy data as well as standing data, and also to apply to participating ESCOs.

Regulation of CEdata would oblige ESCOs and retailers to obtain informed customer consent as a pre-requisite for accessing individual consumption profiles from CEdata. ESCOs and retailers would also be required to comply with relevant privacy, data security regulations and operational standards.

Under B2B and B2C CEdata, which rely on MDM data, it would be necessary to enable AEMO to allow increased access to MDM data. It may also be necessary to provide AEMO with immunities with respect to MSATs data made available to a CEdata supplier or other designated parties under a CEdata.

The obligations of participating ESCOs could be specified either under:

- the terms of service for access to a CEdata; or
- in rules or regulations governing the participation of ESCOs in the NEM.

Under the latter approach, there may be a case for creating a new class of market participant in the NEM – participants in the energy information market. Participants in this class would be required to register with AEMO and pay a standing market fee. This class of market participants would be bound to uphold privacy and security requirements associated with data management of sensitive information, and subject to proportionate penalties in the event they fail to meet their obligations.

Under either B2B or B2C CEdata, it may be possible for key aspects of the design and operation of energy information access system to be "regulated" by way of an operating contract with the CEdata service provider or service providers. To the extent this occurs, it may be possible to streamline the development of detailed procedures and rules associated with a CEdata.

Any operating contract with a CEdata provider could address the following matters, among others, in the context of the CEdata service procurement process:

- maintenance of the security and integrity of MDM data warehouses;
- any constraints on service charges, possibly including the form of charges;
- required levels of service performance, including service availability, privacy and security;
- monitoring and enforcement of rules pertaining to use of data by retailers and ESCOs, including revocation of data access in the case of unauthorised access or other material breaches; and
- reporting on actual compared with required service performance levels.

While developing rules and regulations may present challenges, for example with respect to privacy and security of data, existing regulatory models, systems and practices are available and proven in the energy and other sectors. The challenges appear manageable. Some of the preparatory work and analysis appears to have been developed as part of the National Smart Metering Program (NSMP). Further regulatory development could also be developed pursuant to the AEMC's Power of Choice review process.

A NCIS does not appear to be a pre-condition for CEdata. The development of a CEdata may, however, provide an opportunity to consider the long term adequacy of basing energy sector processes around network connection points rather than individual customer accounts. A NCIS may also offer cost and other advantages.

6.4 Criteria for assessing CEdata options

Suggested criteria for assessing the three CEdata options identified in Chapter 4 above are as follows:

1. **Effective**: - what is the relative efficacy of a given CEdata option relative to the proposed objectives for a CEdata – namely empowering consumers to manage their energy use and greenhouse gas emissions, so as to ensure retail prices are as efficient as possible while maintaining supply reliability? In particular, how effective is a CEdata option in terms of: timeliness of data access, equality of information access and retail market competition? The more effective the CEdata option, the greater the potential benefits from a CEdata.

2. **Cost and cost control**: - what is the cost of a CEdata option compared with effective alternatives, and are costs more or less controllable? The greater the cost, the lower the net benefits from a CEdata. In considering cost, it is important to consider the end to end cost of a CEdata option, not merely the direct cost (the cost of providing a B2B or B2C CEdata service). It is also important to consider any variations in the controllability of costs. On this basis, variances in the cost of CEdata options may be much less than would first appear.

3. **Complexity:** – how much complexity does a CEdata option entail, in order to be effective? The greater the complexity, the higher the risk the CEdata option will not be fully effective, or that costs will be higher than anticipated. Some CEdata options require high levels of coordination between multiple parties, both in the development and ongoing operation of a CEdata. This may give rise to relatively high levels of complexity.

4. **Risk**: - to what extent is a CEdata option exposed to risks? Risks could include hold up problems on the part of one or more participants in a CEdata system. More complex options give rise to greater hold up risks. If possible risks eventuate, a CEdata may be less than effective and may cost more than anticipated.

5. **Timing:** - to what extent is a CEdata option likely to take longer to develop and implement than other effective options? To the extent an option involves delay compared with others, then benefits from an effective CEdata are deferred. This reduces net benefits and hence the effectiveness of a CEdata.

6. **Cost recovery:** - to what extent does a CEdata option raise cost recovery and associated capital raising issues for funding capital investments to develop a CEdata option? Cost recovery issues could increase complexity and risk, including over the control of costs, and lead to greater costs or reduced effectiveness of a CEdata.

The proposed criteria are of course inter-related. There are trade-offs between cost and complexity, and between timing and risk. The proposed criteria also depend on the perspective being adopted. For example, from a fiscal or budget perspective, cost recovery may be a more significant criterion.

Table 1 below provides a summary assessment of the three CEdata options relative to the proposed criteria.

Table 3 Summary assessment of three CEdata options

Model	Effective	Cost	Complex	Risk	Timing	Innovation	Cost recovery
Distributed	Yes?	Varies	High	High	Slow track	High	Low
B2B	Yes?	Varies	Med	Med	Fast track	High-med	Low-med
B2C	Yes	Varies	Med	Med	Fast track	Low	High

If decision makers are confident that the energy sector can deliver a CEdata within a rules or co-regulatory framework, then a Distributed CEdata could be preferred. It could be effective and builds on existing retailer and MDP developments. It has the lowest risk of supplanting market offerings and is simplest in terms of cost recovery.

A Distributed CEdata is, however, subject to complexity and risk, and may be difficult to implement in a timely manner. The development of a CEdata is likely to conflict with the commercial interests of major retailers, and potentially reduce a commercial advantage held by some but not all retailers. This makes it susceptible to hold up problems. The outcome could be a diluted CEdata and deferred economic benefits.

If decision makers are concerned that the costs of delay in introducing a CEdata are high, then a central model (B2B CEdata or B2C CEdata) would be advantageous. A disadvantage is that governments may have a greater exposure to procurement processes, delivery and possible cost recovery risks. A further disadvantage is these models do not fully address the effectiveness criterion, since they rely on data in the MDM and may not support direct access to local metering data.

It is possible that policy makers could prefer B2C CEdata over B2B CEdata since B2B CEdata still relies on industry (including third parties) to deliver information services directly to consumers. B2B CEdata has significant advantages in terms of simplicity and speed of delivery. Policy makers may, however, be concerned that B2B CEdata, while efficient, may not be as effective in terms of fully empowering consumers to utilise energy consumption data.

A B2C CEdata model offers governments and regulators with high levels of control over the supply of CEdata services to consumers. It may also offer some scale economy advantages relative to other options. A B2C CEdata could be set up in such a way that it interacts more seamlessly with the AER and other price comparator services. These services could be major usres of any B2B CEdata service.

The major drawback with a B2C CEdata is that it may stifle innovation and supplant existing industry moves to improve the provision of energy data to consumers. It may also require high levels of government intervention and a more challenging cost recovery and financing challenge, and greater difficulties in terms of long term cost control.

6.5 Next steps

The development of a CEdata is a significant undertaking, concerning a range of interested parties. A decision to proceed with a CEdata may be controversial, as significant groups have indicated they do not support change to existing arrangements for the provision of energy data to consumers. A decision to proceed with a CEdata may need to be considered as part of broader decisions regarding reform of energy markets, including the AEMC Power of Choice Review.

There is potential for significant differences in perspectives and priorities among the various parties concerned. This highlights the need for effective leadership and governance to ensure an efficient and effective outcome

Decisions regarding a CEdata depend on the extent the findings set out in this report are accepted and adopted by relevant decision makers. They also depend on preferences and concerns regarding effective energy market competition and the priority given to achievement of relevant COAG objectives.

Decisions are required regarding the timing, form and responsibility for delivery of a CEdata. Decision makers include governments, industry regulators, participants in energy information markets, and the market operator.

Two timing scenarios are discussed below – a standard track and a fast track scenario.[49] The key difference between the two scenarios is that the fast track envisages urgency in implementing CEdata. A fast track scenario assumes the objective is for a CEdata to be committed and substantially in place by the end of 2013. This would enable the development of a CEdata to form part of the response to the AER's June 2012 compliance bulletin highlighting deficiencies in existing rules and processes concerning energy data access.

Under a standard track scenario a CEdata would be substantially developed and in place sometime in the second half of 2014. It is assumed there would be around a one year delay in establishing a CEdata relative to a fast track scenario.

[49] Of course, there are many alternative timing scenarios, including ones where an energy data exchange system is not in place until 2015 or after.

This highlights that an important issue is assessing the costs of delay. Based on discussions so far, there are significant differences of perspective on the costs of delay, given that some observers believe there is no cost. Timing is likely to be a key issue that needs to be determined early in the process. Views on timing could be a deciding factor in terms of the form of CEdata adopted.

6.5.1 Standard track scenario

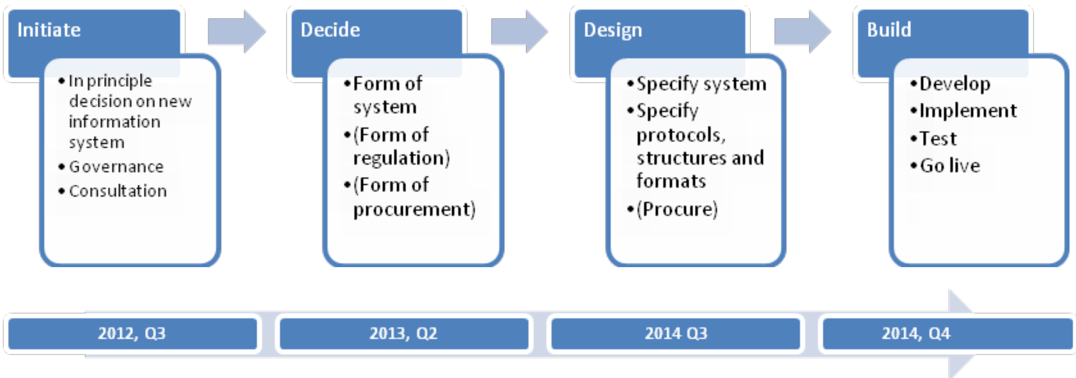
The main stages in the development and implementation of a possible CEdata are set out in Figure 14 below.

The Initiate stage includes an in-principle decision to proceed with CEdata, as well as a decision on fast track or standard track timing. The Initiate stage also addresses governance and plans for consultation over the course of the process.

A key decision is the extent governance is led by government, by energy information market participants, or a combination. While there could be consultation at this stage, depending on the governance model adopted, it is possible this could be limited to consultation regarding the process and in particular the Decide stage.

The Decide stage could be effected via the SCER machinery. This enables joint decision-making with interested jurisdictions. Other parties likely to be involved in the Decide Stage include the AEMC, the AER and AEMO.

Figure 14: Standard track timing



The Decide stage is where the substantive consultation and decision making takes place on the form of CEdata. This includes decisions on the various central information hub and non-hub options discussed above.

Depending on matters determined at the Initiate stage, governance may include policy guidance or the initiation of regulatory or rules change/regulatory impact assessment processes. A rule change/RIS process is likely to require six months or more to complete, including consultation with affected stakeholders.

In the event of a centrally procured solution, it is possible only a more limited rule change would be necessary. However, consideration would need to be given to options around a competitive procurement process. A specification and procurement stage will also entail significant lead time but possibly less time than a rule change/RIS process.

The Initiate stage could consider whether there are aspects of the NSMP that could be applied to the development of CEdata. For example, it is possible that parts of the NSMP relating to business processes and procedures for access to energy data under a smart metering mandate may be relevant in the present context. On the other hand, it will be important to establish at the outset that the objectives and outcomes from any process leading to CEdata are independent from the NSMP process.

Depending on the path adopted, the Decide stage is where the various streams are brought together. Rules or regulations, or a decision to procure a hub, are made.

Following the Decide stage, there is a Design stage where the key operational parameters for the new information system are developed and specified. The Design and Build stages would be undertaken by market participants or any entity allocated the task of procuring a CEdata service. The main tasks would rest with market participants and operational entities, with oversight from the governance structure.

The final stage is the development and implementation of CEdata. This culminates in the point at which the CEdata service goes live and authorised users (and consumers) are able to access data.

Each of these steps could involve significant amounts of time. It should be noted that, on the experience so far, the duration of the Build stage may be less than 6 months. For example, it appears that some energy information participants could scale up their existing systems.

6.5.2 Fast track scenario

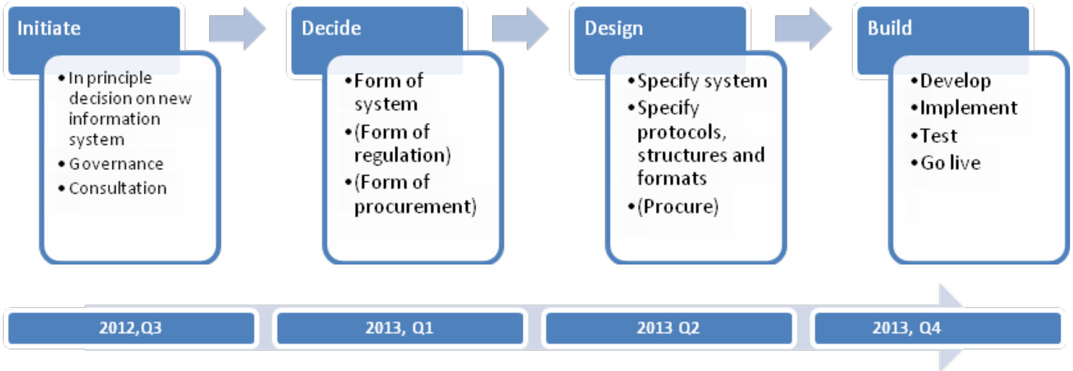
The fast track scenario addresses any requirement to implement CEdata with urgency. This track enables a response to the issues raised by the AER's June 2012 compliance bulletin by the end of 2013.

Based on the consultation and analysis so far, B2B CEdata may be able to be implemented more quickly than Distributed CEdata. A B2B or B2C CEdata funded by government may not require a Regulatory Impact Statement and full cost benefit analysis.

Minimising the duration of the process for delivery of CEdata may have a number of important benefits. These could include minimising overall costs, and avoiding costs from delay, including those arising from policy uncertainty. It would also enable synchronisation of the development of a CEdata with development of a response to the issues raised by the AER by the end of 2013.

The changes in the timing of the main stages in the development and implementation of possible CEdata are set out in Figure 15.

Figure 15: Fast track timing



Appendix 1 Glossary

Accumulation meters	Electricity meters that measure total electrical energy use (kWh, MWh) between meter readings, but not the time of use.
Advanced Metering Infrastructure (AMI)	AMI refers to a group of capabilities including: remote meter reading; recording of energy imported or exported from a metering point by half hourly trading interval; remote disconnection and reconnection (re-energisation and de-energisation); load control; and remote detection of loss of supply
Australian Energy Market Commission (AEMC)	AEMC is responsible for Rules and policy advice covering the National Electricity Market
Australian Energy Market Operator (AEMO)	AEMO is responsible for operation and settlement of energy trading markets in the National Electricity Market
Australian Energy Regulator (AER)	AER performs economic regulation of the wholesale electricity market and electricity transmission networks in the National Electricity Market (NEM), and enforcement of the National Electricity Law and National Electricity Rules
aseXML	A Standard for Energy Transactions in XML (aseXML) for business-to-business electronic data interchange. aseXML is owned and its use authorised by AEMO
B2B	business to business services
B2C	business to consumer services
CEdata	Consumer energy data access system enabling consumers and their authorised representatives to acquire energy consumption data
Cost of goods sold (COGS)	COGS is the combined wholesale electricity costs, Network Use of System (NUoS) charges and other costs other than retailer cost to serve and a required retailer mark up on sales
Customer Information System (CIS)	Customer data bases held by market participants
Consumer Administration and Transfer Solution (CATS)	CATS is a NEM solution operated by AEMO for the transfer of consumers between retailers, the management of standing data, the administration of National Metering Identifier (NMI) registration, and the facilitation of NMI discovery
Demand side response (DSR)	Demand side response refers to actions by energy users to reduce their demand for network supplied energy in response to pricing signals during periods of peak demand or network stress. This may include the use of distributed generation, shifting consumption to off-peak periods or simply choosing to consume less and foregoing a level of activity

Distributed Generation (DG)	Distributed generation, also called embedded generation, refers to generation units that connect to the distribution network (close to load), rather than to the transmission network. This may include co-generation units, back-up generation or renewable energy generators, including residential solar
Demand side participation (DSP)	Demand side participation refers to the ability of energy consumers to make decisions regarding the quantity and timing of their energy consumption that reflect their value of the supply and delivery of electricity
Distribution Business (DB)	A business that owns and manages the distribution of electricity through the 'poles and wires' network
Direct Load Control (DLC)	DLC refers to the ability of AMI to communicate with and control (with customer's consent) the operation of appliances within the customer's home or business
Distribution Network Service Provider (DNSP)	See Distribution Business
Energy Rules	A reference to any or all of the National Energy Retail Rules, National Electricity Rules and National Gas Rules
Energy efficiency (EE)	Energy efficiency refers to the use of less energy for the same outcome or level of output, or increasing the level of output from the same amount of energy
Energy Services Company (ESCO)	ESCOs provide products and services in adjunct energy markets that provide the knowledge and expertise in e.g., energy efficiency to support consumer's demand side response
Financially Responsible Market Participant (FRMP)	The retailer that is financially responsible for supplying the electricity to a premise
Full Retail Contestability (FRC)	Extending the right to choose an electricity retailer to all customers, regardless of consumption
In-Home Display (IHD)	A domestic device connected to a smart meter (typically by the special purpose wireless protocol) for displaying electricity consumption data in various formats
Home area network (HAN)	Home Area Network - A special type of local area network where a smart meter is connected over a wireless protocol with other devices such as an In Home Display and "smart" appliances
Host retailer	See Local retailer
In-Home Display (IHD)	A device connected by wireless technology to a smart meter providing display of meter data and a user-interface with the HAN
Interval meter	Electricity meter capable of recording energy use over short intervals, typically every half hour. Note that only remotely readable meters are AMI or smart meters

Incumbent Retailer	See Tier 1 retailer
Information Privacy Principles (IPPs)	Privacy principles as laid down for example by the federal Privacy Act for government bodies. Not applicable to privately owned DBs and RBs – see National Privacy Principles
Local Network Service Provider (LNSP)	See Distribution Business
Local Retailer	This is the area or host retailer responsible for the supply of electricity within a designated retail supply area to those customers who haven't chosen another retailer
National Customer Information System (NCIS)	A possible national customer data base operating alongside NMI and retailer specific Customer Information Systems
National Metering Identifier (NMI)	A unique identifier of each registered metering (connection) point in the NEM
National Energy Customer Framework (NECF)	NECF aims to streamline the regulation of energy (electricity and natural gas) distribution and retail regulation functions in a national framework including appropriate consumer protection
National Electricity Market (NEM)	National Electricity Market is the name of the Australian wholesale electricity market and the associated synchronous electricity transmission grid based in five interconnected regions - Queensland, New South Wales, Tasmania, Victoria and South Australia
National Electricity Rules (NER)	The NER govern the operation of the National Electricity Market
National Energy Retail Rules (NERR)	The NERR govern the operation retail energy markets, in those jurisdictions that have acceded so far (Tasmania and the ACT)
National Privacy Principles (NPPs)	National Privacy Principles - As laid down by the private sector provisions of the federal Privacy Act and applicable to most DBs and RBs
National Smart Meter Program (NSMP)	The NSMP was established by the Ministerial Council on Energy to develop a national framework for smart metering. It operated from mid-2008 to April 2011, when a majority of deliverables were complete or transferred to responsible individual parties
NEM12	A standard file format for energy consumption data required by AEMO for electronic data transfer in the NEM
Network Use of System (NUoS)	NUoS (or network) charge refers to the regulated charges a distribution business may charge for its transmission and distribution services. These charges are regulated by the Australian Energy Regulator
Meter Data Management (MDM)	The part of MSATS that relates to meter (energy) data
Meter Data Provider (MDP)	The MDP is responsible for reading meter data and forwarding it to the relevant market participants

MSATS	The NEM market settlement and transfer solution operated by AEMO
Retail Business (RB)	A retail business buys electricity from the generators and sells it to end-use consumers. A retailer is responsible for billing services
Smart meter	This term is typically interchangeable with 'Advanced metering infrastructure' or AMI. While all smart (and AMI) meters are interval meters, not all interval meters are smart meters
Tier 1 retailer	See Local Retailer
Tier 2 retailer	A Tier 2 retailer is any retailer competing for customers within a particular retail supply area that is not the Local Retailer for that area

Appendix 2 Consultations

Class	Stakeholder
Consumer organisations	Alternative Technology Association
	Choice
	Clean Energy Council
	Credit, Commercial and Consumer Law Program, Queensland University of Technology
	St Vincent's de Paul
	Australian Council of Social Services
Data users	Australian Bureau of Statistics
	Billcap
	ENERNOC
	energy Makeovers
	Telstra
Distributors	Ausgrid
	ENA
	UED Multinet
	CitiPower and Powercor Australia
Energy agencies	AEMC
	AEMO
	AER
	ENA
	Vic DPI

Class	Stakeholder
Meter Provider	Landis+Gyr
Retailer	AGL
	APG
	Energy Retailers Association of Australia
	Origin Energy
	Red Energy
	Simply Energy
	TRUenergy

Appendix 3 Relevant Electricity Rules

Section 7.7 Entitlement to metering data and access to metering installation:

(a) The only persons entitled to access energy data or to receive metering data, NMI Standing Data, settlements ready data or data from the metering register for a metering installation are:

(1) Registered Participants with a financial interest in the metering installation or the energy measured by that metering installation;

(2) Metering Providers who have an agreement to service the metering installation, in which case the entitlement to access is restricted to allow authorised work only;

(3) financially responsible Market Participants in accordance with the meter churn procedures developed under clause 7.3.4(j);

(4) the Network Service Provider or providers associated with the connection point;

(5) AEMO and its authorised agents;

(6) an Ombudsman in accordance with paragraphs (d), (e) and (f);

(7) a financially responsible Market Participant's customer upon request by that customer to the financially responsible Market Participant for information relating to that customer's metering installation;

(8) the AER or Jurisdictional Regulators upon request to AEMO; and

(9) Metering Data Providers who have been engaged to provide metering data services for that metering installation or in accordance with clause 7.14.1A(c)(6).

Electronic access to energy data recorded by a metering installation by persons referred to in paragraph (a) must only be provided where passwords in accordance with clause 7.8.2 are allocated, otherwise access shall be to metering data from the metering data services database or the metering database.

(c) The responsible person or AEMO (as the case may be) who is responsible for the provision of metering data services must ensure that access is provided to metering data from the metering data services database to persons eligible to receive metering data in accordance with paragraph (a).

(c1) The responsible person must ensure that access to metering data from the metering installation by persons referred to in paragraph (a) is scheduled appropriately to ensure that congestion does not occur.

(d) Despite anything to the contrary in this rule 7.7, AEMO may provide metering data relating to a Registered Participant from a metering installation, the metering database or the metering register to an Ombudsman acting under a duly constituted industry dispute resolution ombudsman scheme of which the Registered Participant is a participant, if the Ombudsman has requested the data for the purpose of carrying out a function of that scheme in respect of a complaint made by a customer of the Registered Participant against that Registered Participant under that scheme.

(e) AEMO must notify the relevant Registered Participant of any information requested by an Ombudsman under rule 7.7(d) and, if it is requested by that Registered Participant, supply the Registered Participant with a copy of any information provided to the Ombudsman.

(f) AEMO must, acting jointly with industry Ombudsmen, develop procedures for the efficient management of timely access to data by Ombudsmen in consultation with Registered Participants in accordance with the Rules consultation procedures.

(g) The Metering Provider must provide electronic access to the metering installation in accordance with the requirements of paragraph (b) and electronic or physical access, as the case may be, to the metering installation to facilitate the requirements of rule 7.12(f).

7.8 Security of Metering Installations and Data

7.8.1 Security of metering installations

(a) The responsible person must ensure that a metering installation is secure and that associated links, circuits and information storage and processing systems are protected by security mechanisms acceptable to AEMO.

(b) AEMO may override any of the security mechanisms fitted to a metering installation with prior notice to the responsible person.

(c) If a Local Network Service Provider, financially responsible Market Participant, Metering Provider, or Metering Data Provider becomes aware that a seal protecting metering equipment has been broken, it must notify the responsible person within 5 business days.

(d) If a broken seal has not been replaced by the person who notified the responsible person under paragraph (c), the responsible person must replace the broken seal no later than:

(1) the first occasion on which the metering equipment is visited to take a reading; or

(2) 100 days,

after receipt of notification that the seal has been broken.

(e) The costs of replacing broken seals as required by paragraph (d) are to be borne by:

(1) the financially responsible Market Participant if the seal was broken by its customer;

(2) a Registered Participant if the seal was broken by the Registered Participant;

(3) by the Metering Provider if the seal was broken by the Metering Provider; or

(4) by the Metering Data Provider if the seal was broken by the Metering Data Provider,

(5) and otherwise by the responsible person.

(f) If it appears that as a result of, or in connection with, the breaking of a seal referred to in paragraph (c) that the relevant metering equipment may no longer meet the relevant minimum standard, the responsible person must ensure that the metering equipment is tested.

7.8.2 Security controls

(a) The responsible person must ensure that energy data held in the metering installation is protected from direct local or remote electronic access by suitable password and security controls in accordance with paragraph (c).

(b) The Metering Provider must keep records of electronic access passwords secure.

(c) The Metering Provider must only allocate 'read-only' passwords to Market Participants, Local Network Service Providers and AEMO. For the avoidance of doubt, a financially responsible Market Participant may allocate that 'read-only' password to a customer who has sought access to its energy data or metering data in accordance with rule 7.7(a)(7).

(d) The Metering Provider must hold 'read-only' and 'write' passwords.

(e) The Metering Provider must forward a copy of the passwords held under paragraph (d) to AEMO on request by AEMO for metering installations types 1, 2,3 and 4.

(f) AEMO must hold a copy of the passwords referred to in paragraph (e) for the sole purpose of revealing them to a Metering Provider in the event that the passwords cannot be obtained by the Metering Provider by any other means.

(g) Subject to the authorisation of the responsible person which is for the purpose of managing congestion in accordance with rule 7.7(c1), if a customer of a financially responsible Market Participant requests a ‘read-only’ password, the financially responsible Market Participant must:

(1) obtain a ‘read-only’ password from the Metering Provider in accordance with paragraph (c); and

(2) provide a ‘read-only’ password to the customer within 10 business days.

(h) The responsible person referred to in paragraph (g) must not unreasonably withhold the authorisation required by the financially responsible Market Participant.

(i) The Metering Provider must allocate suitable passwords to the Metering Data Provider that enables the Metering Data Provider to collect the metering data and to maintain the clock of the metering installation in accordance with rule 7.12.

(j) The Metering Data Provider must keep all metering installation passwords secure and not make the passwords available to any other person.

Clause 28 Historical billing information (SRC and MRC)

(1) A retailer must promptly provide a small customer with historical billing data for that customer for the previous 2 years on request.

(2) Historical billing data provided to the small customer for the previous 2 years must be provided without charge, but data requested for an earlier period or more than once in any 12 month period may be provided subject to a reasonable charge.

(3) Application of this rule to standard retail contracts This rule applies in relation to standard retail contracts. (4) Application of this rule to market retail contracts

This rule applies in relation to market retail contracts (other than prepayment meter market retail contracts).

Clause 86 Provision of information

A distributor must, on request by a customer or a customer's retailer, provide information about the customer's energy consumption or the distributor's charges, but information requested more than once in any 12 month period may be provided subject to a reasonable charge.

Appendix 4 Australian consumer web portals

Two of those data access portals under development by retailers and distributors were opened to consumers during the completion of this project.

Origin Smart

Origin Energy offers its Victorian customers with a smart meter *Origin Smart*, an online portal providing

- Graphical display of energy consumption from hourly to annual perspectives;
- Total to-date bill cost, bill forecasting and goal setting;
- Comparison with similar households for consumption and cost;
- Estimates of energy use within the home based on characterisation of dwelling, occupancy and appliances (not actual measurement).
- Advice on energy efficient behaviours including typical 'tips' and personal feedback.

Origin Smart is available only to current Origin Energy customers, and the Origin Smart account must be opened in the name of the primary account holder. NMI, account number, customer name, postcode, email, mobile, date of birth and drivers licence details are required for customer verification.

Electricity Outlook and Energy Easy

Victorian distributors Jemena and United Energy offer their customers with a smart meter an online portal, respectively named *Electricity Outlook* and *Energy Easy*, an online portal providing:

- Display of energy consumption data including the last 4 hourly (unverified) meter reading;
- Estimates of consumption costs (not fixed charges or discounts) based on entering single or peak/off-peak rates from bill;
- Tracking progress against goals set;
- Download of data in csv file (7 fields per ½ hour interval); and
- Connection of IHD/HAN to the smart meter.

The portal is available to homes and businesses in the Jemena/UED distribution areas independent of the customer's retailer. A name, email, address, NMI, and meter serial number are required for registration. According to the portal End User Terms of Use, in submitting a registration request the applicant represents that they are the occupier of the premises in respect of which they are requesting access to energy consumption data. It is understood that the distributor forwards the customer's request to their retailer, consistent with NER 7.7(a)(7). This indirectly utilises the retailers' verification processes. These requests are essentially processed manually.