

Smart Moves for a Smart Market

Simple steps to ensure consumer protections keep pace with innovation in a hi-tech energy market

A report prepared by the Consumer Action Law Centre

July 2014



 consumer
action
law centre

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This report has been prepared for the Consumer Action Law Centre.

Disclaimer

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The views expressed in this document do not necessarily reflect the views of the Consumer Advocacy Panel or the Australian Energy Market Commission.

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Abbreviations

ABS	Australian Bureau of Statistics
AEMC	Australian Energy Market Commission
ATA	Alternative Technology Association
CALC	Consumer Action Law Centre
COAG	Council of Australian Governments
CPP	Critical Peak Pricing
CPR	Critical Peak Rebate
CUAC	Consumer Utilities Advocacy Centre
DLC	Direct Load Control
ESCO	Energy Service Company
EV	Electric Vehicle
NECF	National Energy Customer Framework
NEM	National Electricity Market
Ofgem	Office of Gas and Electricity Markets (UK)
PV	Photovoltaic cells (rooftop solar panels)
TOU	Time of Use pricing

Executive Summary

Australia's energy market is undergoing a period of rapid transformation, driven by a restructuring economy and higher energy prices. This is driving innovations in the way that energy products are packaged and a shift in what consumers are demanding from energy providers. Gone are the days of an entirely passive customer base waiting to have energy delivered to their homes through poles, wires and pipes and then having to pay for consumption patterns they had little idea of and little control over.

Regular price increases have heightened many consumers' awareness of energy market choices and their ability to take action to decrease energy bills.

More and more, consumers are wanting to engage in the generation of energy through rooftop solar and participate in demand side management. By actively engaging, consumers can reduce their ever increasing energy bills, take back some control over their consumption and, where it is convenient and not too costly an outlay of time and money, reduce their carbon footprint.¹

More and more, industry and regulators are looking for ways to reduce or shift consumer demand for energy,² seeking new ways to maintain the reliability of energy supply and to increase cost recovery, while facing greater scrutiny with each new round of price increases.

These dynamics have brought about an increasing national focus on demand side participation. It is hoped that an effective demand-side market in Australia can help increase the efficiency of existing network infrastructure, delay new network investment, decrease the price of energy and provide better market outcomes to consumers in the form of new products and services.

A move to greater demand side participation brings with it a raft of novel technologies, business models and market space for third party energy service providers.

¹ Graham, P. et al, *The Heat is On: The Future of Energy in Australia*, Commonwealth Scientific and Industrial Research Organisation ('CSIRO') Australia, 2006, pg 35

² See, for example, Energy Reform Implementation Group (ERIG), Final Report – Energy Reform: The way forward for Australia, 2007 and Australian Energy Market Commission (AEMC), Power of Choice review – Giving consumers options in the way they use electricity, Final report, November 2012

The inevitable increase in products, services and third party players has the real potential to increase complexity for consumers trying to navigate an already complex marketplace. With these changes will come a fundamental change in consumer and industry relationships—moving away from the standard single vertical relationship with an energy retailer, to a cluster model where consumers may have multiple relationships for their energy needs. Much like a stock exchange where consumers may buy and sell shares or hedge against changing prices, so may energy consumers use different companies for provision and sale of both their energy supply and demand.

This increasingly complex market will create challenges for consumers, regardless of whether they opt to engage with new technologies and services or not.

Those who may benefit from engaging will face a confusing and complex marketplace typified by a large number of service providers and products with little standardisation to enable easy comparison of offers and to determine if products and services are 'fit for purpose'.

Those who choose not to engage, or who cannot engage due to cost, language or technological barriers, may be excluded from realising energy savings and may end up carrying the burden of paying for innovations through higher standard prices that allow for cost-recovery smeared across the market.

Innovation is critical in this new market as it seeks to provide the products and services that will help consumers meet their needs for affordable energy and flexible products, while changing demand profiles and achieving demand reductions. Innovation must, however, be balanced with appropriate forms of consumer protection, to ensure that consumers can effectively engage with the marketplace and that the most vulnerable consumers do not get left behind.

If consumers cannot effectively engage, the risk to the market is that demand-side reforms will fail to deliver their intended purpose. The key to developing a robust, equitable and efficient market will be to ensure that consumer protections are built in from the outset.

Governments have already begun the heavy lifting of facilitating more demand side participation, through projects such as the *Power of Choice* review, and industry is responding by undertaking their own analyses of demand side opportunities³ and beginning to develop products and services.

³ See for example, Energy Networks Association (ENA), *Smart reform – People, Power, Price*, Discussion Paper, June 2013 and The Futures Project, Energy Futures Enquiry, *Using social media to*

It is critical to the fair and safe development of new energy services and products that governments and industry don't adopt a 'wait and see' approach to regulation and the development of consumer protections. In a rapidly evolving market, this can lead to unnecessary costs, delivery failure as market participants change, and a lack of trust in a market that does not protect consumer needs or deliver promised benefits.

A smart market is one that learns the lessons from what has come before and takes proactive steps to protect consumers while striving for innovation.

The collective knowledge of marketplaces, consumer behaviour and best model consumer protections can be used now to avoid some of the pitfalls that some domestic and international markets have already experienced, and create a truly competitive and effective energy marketplace for the benefit of consumers, industry and government.

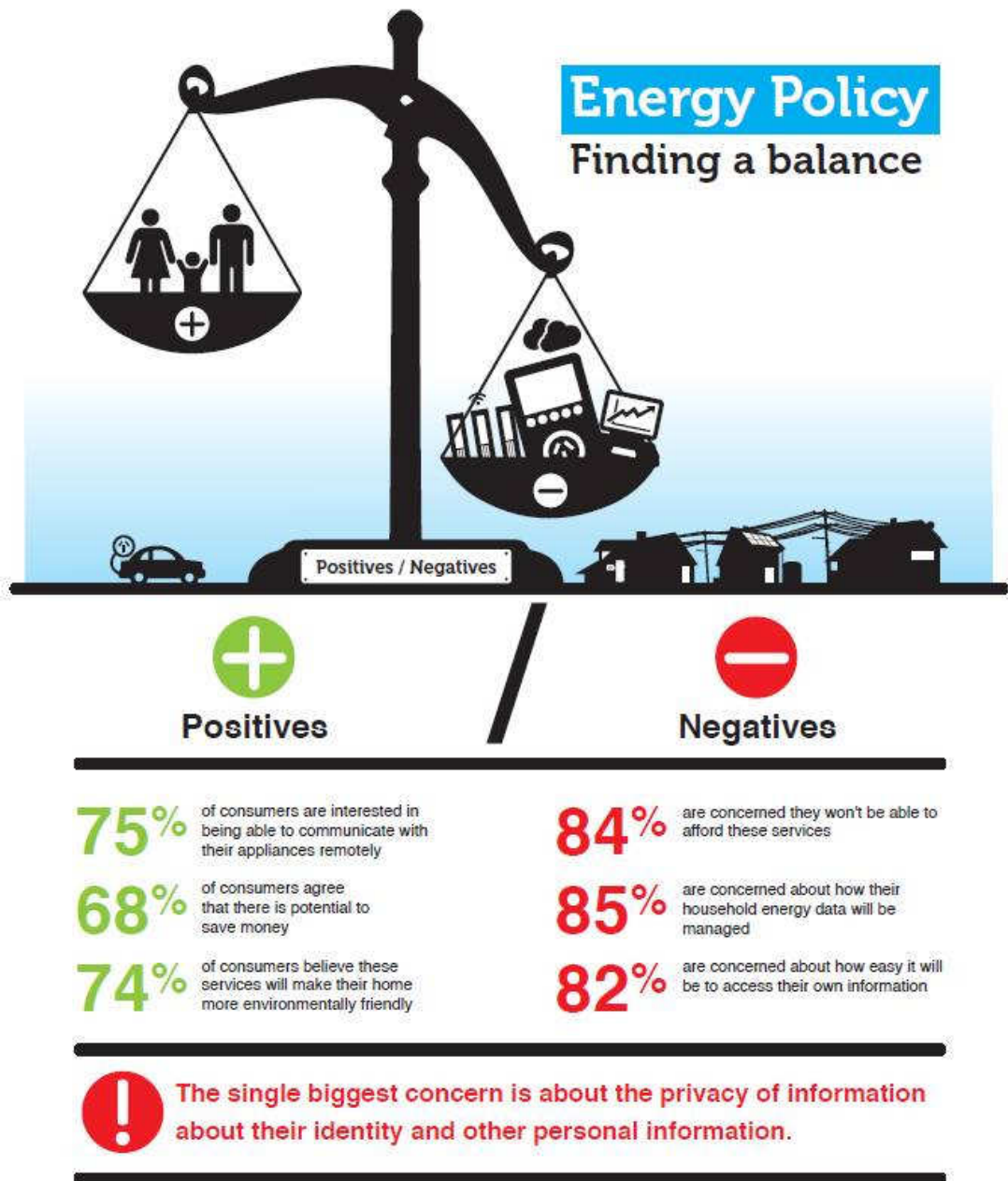
Key Points

- The energy market is becoming more complicated for consumers with continued focus on creating a robust demand-side market. However a smarter market does not need to mean a more complex market.
- Consumers in a complex market place do not always make rational or logical decisions, or even decisions that are in their best interests. Classical economic theories and policies won't ensure engaged consumers or efficient and effective competition for demand-side products and services.
- The lessons of behavioural economics will be fundamental to getting the demand-side market right for consumers. This includes recognising that:
 - **Framing of products and services will influence consumer take up.** Consumers are more likely to choose a product or service that is framed as low risk or includes a reward.
 - **Choice overload will lead to paralysis.** If consumers have to compare too many products or services, more often than not they will choose to not to change from what they already have.
 - **Consumers will base decisions on approximate measures** where the information available to them to inform the decision is too complicated or choices too vast.

capture the wisdom of crowds and identify consumer preferences in regards to energy delivery technology over the coming twenty years, May 2013

- **Consumers have a default bias, and value things more once they have already 'owned' them.** They are therefore more likely to accept the status quo, or the existing product, over change.
 - **Use-pattern mistakes are common.** Consumers make decisions thinking they can change their behaviour to receive an offered benefit, when in reality changed behaviour is unlikely, leading to consumer detriment.
- Consumers must be empowered to engage with the demand-side market, or both consumer and market benefit will not be realised. To make this happen:
 - **Consumers must see the benefit** of all new products and services. They must be designed with consumer preferences in mind and ensure that financial benefits flow directly to consumers.
 - **Privacy and data security must be addressed from the outset.** By far the biggest concern of consumers surveyed for this research was about the security and privacy of their consumption data.
 - **All consumers should be able to access the market** including vulnerable, disadvantaged and non-English speaking consumers. The potential for market exclusion is high.
 - **Information must be clear and relevant.** Contract terms and conditions, technology costs in bundled contracts and product information sheets must be simple, accurate and engaging. Disclosure of information about product attributes and use will also be essential.
 - **Flexibility will be essential.** Long-lock in contracts and undue exit fees will not allow consumers to realise benefits as their situations or understanding change.
 - **Increased standardisation of products and services will be necessary.** This should not be so onerous as to limit innovation, but undertaken to ensure maximum comparability of products and services for consumers.

What consumers told us - survey findings at a glance



Consumers in a High Tech Service Environment Survey, CALC/ATA, June 2013.

Consumer Action's survey found a genuine interest in engaging with the emerging hi tech energy market amongst consumers. With this interest also came concerns about the affordability, accessibility and security of new technologies.

1. Background

1.1. Who we are

Consumer Action Law Centre is an independent, not-for profit consumer organisation based in Melbourne. We work to advance fairness in consumer markets, particularly for disadvantaged and vulnerable consumers, through financial counselling, legal advice and representation, and policy work and campaigns. Delivering assistance services to Victorian consumers, we have a national reach through our deep expertise in consumer law and policy and direct knowledge of the consumer experience of modern markets.

As a community legal centre, Consumer Action provides free legal advice and pursues litigation on behalf of vulnerable and disadvantaged consumers across Victoria, and is the largest specialist consumer legal practice in Australia.

As a financial counselling centre, Consumer Action operates MoneyHelp, a not for profit email and telephone financial counselling service providing free, confidential and independent financial advice to Victorians experiencing financial difficulty. MoneyHelp is nationally-recognised as the first point of telephone contact in Victoria for anyone with financial counselling issues.

Consumer Action is dedicated to advancing the interests of low-income and vulnerable consumers, and of consumers as a whole. Our policy and campaigns approach includes:

- Ensuring the consumer interest is recognised and represented in policy debates that impact on the consumer interest;
- Representing an effective and credible voice for consumers, particularly disadvantaged and vulnerable consumers, in media and other forums;
- Bringing about change in laws, regulation, and industry practices, in the consumer interest; and
- Contributing to the body of knowledge of consumer issues and laws.

See our website for more information www.consumeraction.org.au.

1.2. Why publish this paper?

We have produced this paper to explore current and emerging energy products and services and examine what the Australian and international consumer experience tells us about engaging with these products and services. We also explore the real and potential pitfalls that a dynamic and innovative marketplace can bring for consumers, industry and government.

Our paper makes the case for proactive discussion and action on key protections to ensure that consumers are empowered, engaged and participating in a thriving demand side market.

1.3. Methodology

Our report focuses on current and emerging market developments and products and services, in Australia and overseas. The energy industry is a rapidly changing one—we do not seek to identify every potential innovation, rather we have focussed on those likely to drive greater demand side participation and the potential for consumer detriment that these innovations may bring.

1.3.1. Consumer survey

Consumer Action conducted an online survey of the Alternative Technology Association's (ATA) members to gauge consumer attitudes and concerns regarding new technologies and energy services. A copy of the survey—*Consumers in a High Tech Service Environment*—and key findings is provided in Appendix 1.

The survey was distributed to all subscribers to ATA's mailing list (5,300 people) across Australia in June 2013—302 households responded.

ATA members are, by their very nature, likely to be early adopters of new technologies, and it is acknowledged that they do not represent the 'average' consumer. For example, they are more likely to be tertiary educated, affluent and hold environmental values. However they are also more informed than the 'average' consumer about existing and emerging demand side technologies, and their views are considered as a bellwether of the broader consumer market on these new technologies. All survey respondents were self-selecting.

Survey respondents came from all states and territories, providing a geographical spread of views from very different energy supply mixes and climates (i.e. electricity to gas ratio). Socio-economic data was not collected from the respondents as part of this survey process. This may be a useful subject for further work.

1.3.2. Research and review

Our review has considered academic research, findings of industry trials, the experiences of utility advocacy services and regulators and the emerging trends in complaint data captured by various energy industry Ombudsmen in Australia about the experience of consumers participating in a 'hi-tech' environment.

We have also considered the lessons from other industries, including telecommunications, which have also experienced rapid change in, and uptake of, new technologies. The unforeseen impact to consumers and the lag time in effective regulation to protect consumers provide real life reasons as to why innovation and consumer protection need to keep pace with one another.

2. Consumers and marketplaces

In a complex market consumers make mistakes, they do not always act in their best interests or make seemingly logical decisions. As coined by Dan Ariely, human decision making is not always rational, rather humans can more accurately be described as being 'predictably irrational'.⁴ This phenomenon is also known as 'bounded rationality'—that is, consumers' decisions are rational within their own terms even though not rational by classical economic theory.

A recent article by Nicholas Bidden and Katherine Curchin, argues that behavioural insights—in addition to economic considerations—must form an important part of public policy developments by government. They argue that:

'real humans are not worse than economic man. We're just different and we deserve policies made for Homo sapiens, not Homo economicus'.⁵

It is no longer acceptable to allow markets to emerge and innovate on the basis of classical economics alone. The inherent consumer behaviours described by behavioural economics must be understood and considered when developing new products and services and when designing consumer policy and regulation.

2.1. Behavioural Economics

The insights provided by behavioural economics about consumer behaviour and biases can explain why some consumers elect to enter into contracts or purchase products and services that are not in their best interest, or why some consumers choose not to engage with the marketplace at all.

Some of the key themes of behavioural economics which are discussed in this report include:

'Framing' impacts consumer take up.

- How a product or service is 'framed' (or presented) will impact on consumer acceptance and take-up of a product or service. Framing presents itself as a consumer bias where consumers are more likely to choose a product or

⁴ Dan Ariely, *Predictably Irrational: The Hidden Forces that Shape our Decision Making*, 2008.

⁵ Nicholas Biddle and Katherine Curchin, Australian National University, *The promises and perils of giving the public a policy 'nudge'*. Published in *The Conversation*, 1 May 2014. <http://theconversation.com/the-promise-and-perils-of-giving-the-public-a-policy-nudge-24887>

service that has been framed as low risk and includes a reward component (e.g. a rebate) rather than a penalty (e.g. a fee).

In his 2011 report, *Behavioural Economics and Customer Complaints in Communication Markets* for the Australian Communication and Media Authority's public inquiry *Reconnecting the Customer*, Dr Patrick Xavier illustrated this behavioural insight, stating that the 'presentation of the same information in a different 'frame', can lead to a different decision'.⁶

The marketing of pay on time discounts in the retail energy market provides an illustration of the 'framing' of products—they can create a sense of 'reward' for consumers, while masking the 'risks' of being penalised if bills are paid even one day late.

Choice overload can lead to paralysis

- When consumers have to compare too many products, services or features it can lead to confusion, randomly picking one product or service or not making any choice at all (i.e. stay with the default option or product or service they already have) or choosing to walk away without any product or service at all.

Energy consumers choosing retail offers already have a number of different features to consider—different tariff options, different contract lengths, different conditions on discounts etc. This risks consumers becoming overwhelmed and not actively choosing.

Heuristics—using approximate measures in decision making

- Where a marketplace is complex and the choice vast, or when 'the decision environment is complex relative to their mental and computational capabilities',⁷ consumers may base decisions on approximate measures—such as the 'rule of thumb', or by what others do or say, rather than undertaking comprehensive analysis of their choices and making a strictly rational and logical decision. This can lead to consumers making decisions that are not in their best interests or that are less than optimal.

Consumers who choose "fixed" energy contracts commonly misconceive that the price of the product is fixed, when it is generally the term that is

⁶ Dr Patrick Xavier *Behavioural economics and customer complaints in communication markets*, 2011 pg 4

⁷ Ibid, pg 4

fixed. Even if this is disclosed on product fact sheets, heuristics mean that consumers will rely on their general interpretation of “fixed”.⁸

Inherent default bias

- Consumers are biased towards the default option and are therefore more likely to accept the status quo. The default bias is strengthened when consumers face choice overload.

Consumers value things more once they have ‘owned’ it and may not want to give it up. This can manifest in consumers staying with their current service provider or current product, even if it is not in their best interests to do so.

In relation to retail energy, this can mean that consumers are consigned to ‘standing’ contracts, which are commonly far more expensive than those sold by retailers in the marketplace. In other industries, like superannuation, default products (MySuper) have less fees and are more cost effective, recognising that they are not products with ‘bells and whistles’.

Due to imperfect information and/or imperfect rationality, consumers make mistakes when engaging with marketplaces. To avoid these mistakes consumers need clear information about product and service attributes (e.g. price per unit) and about how they will use the product or service.

Typically, information about product or service attributes is delivered through disclosure regulation. It does not follow, however, that because a disclosure regulation has been provided, consumers will understand how to use the product or service.

When consumers make mistakes about how they use a product or a service, a supplier or a marketplace may respond strategically by continuously redesigning aspects of a product/service—until regulations or standards are implemented to protect consumers.

⁸ Ofgem, *The Retail Market Review - Final domestic proposals* 2011 at <https://www.ofgem.gov.uk/ofgem-publications/39350/retail-market-review-final-domestic-proposals.pdf>

The South Australian experience

The Energy and Water Ombudsman of South Australia noted in the 2013 Annual Report that:

'there is still some confusion about how discounts are being offered in the market place. Quite often, discounts are not explained simply at the consumer level.

Work must be done by suppliers on better explaining what benefit will be available for each individual customer who accepts a discount.

There is also confusion around contract explanations and whether prices are fixed or variable over the life of the contract; the whole notion of how that transition to your new bill will occur, and what it means for the customer for the period of their contract'.⁹

Market innovations and the need for consumer protection

The aspects of consumer behaviour described by behavioural economics and that we see in our daily work, can result in suboptimal decision making and therefore reduced consumer welfare. The reduction in welfare may become exacerbated if suppliers are able to respond strategically to consumer mistakes.¹⁰

Dr Xavier argues:

'behavioural economics does not necessarily counsel heavy-handed 'paternalistic' consumer protection regulation..... A sensible approach would be to seek to install relatively less intrusive measures that inform and 'nudge' more informed, empowered, consumers towards better decisions (e.g., through the use of greater transparency and information disclosure and default options that recognise behavioural tendencies), without unduly raising service provider compliance costs or costs on other customers'.¹¹

Because poor decision making by consumers results in welfare reduction, it is an important public policy issue. In the context of new and emerging energy products and services, it is crucial to build a framework that minimises poor decision making in order to create competitive markets (based on informed consumers) where

⁹ Energy and Water Ombudsman South Australia Annual Report 2013, pg 13

¹⁰ See, for example, Oren Bar-Gill, *The Law, Economics and Psychology of Consumer Contracts*, 2007

¹¹ Dr Patrick Xavier Behavioural economics and customer complaints in communication markets, 2011 pg 5

industry has an incentive to design optimal products rather than strategically respond to consumer mistakes.

A case in point—lessons learned from the telecommunication experience

We saw the theories of behavioural economics in practice with the emergence and rapid uptake of smart phones in the telecommunications marketplace and the subsequent spike in the number of consumers affected by bill shock from excess call and data usage charges.

Consumers entered into contracts that disclosed call and data usage terms, but time and again consumers were caught off guard having used far more call and data services than they thought were provided for in their contract. Consumer protection measures by industry and regulators did not keep pace with the speed of developments in new technologies and many consumers suffered real detriment as a result.

The Telecommunication Industry Ombudsman reported a 30% decrease in complaints about bill shock in 2013, highlighting the positive effect that the introduction of regulations that require providers to alert consumers when they have used 50, 85 and 100% of their call and data usage allowances.

The Ombudsman also highlighted the importance of the introduction of requirements that providers give customers a 'Critical Information Summary', a 'plain English summary of essential service detail'.¹²

CONSUMER ACTION THINKS: The need for consumer protection to keep pace with marketplace innovations is starkly displayed in the telecommunication industry's response to the growth in bill shock, where reforms to protect consumers were quite slow compared to the rate of market development.

The impact of slow moving consumer protection measures have ripple effects beyond the marketplace itself, leading to increases in complaints to community legal services, financial counsellors and Ombudsmen, driving people who can least afford it into a cycle of debt dispute and debt recovery. In the worst cases, this can lead to bankruptcy and the court system.

¹² Telecommunication Industry Ombudsman Annual Report 2013, pg 48.

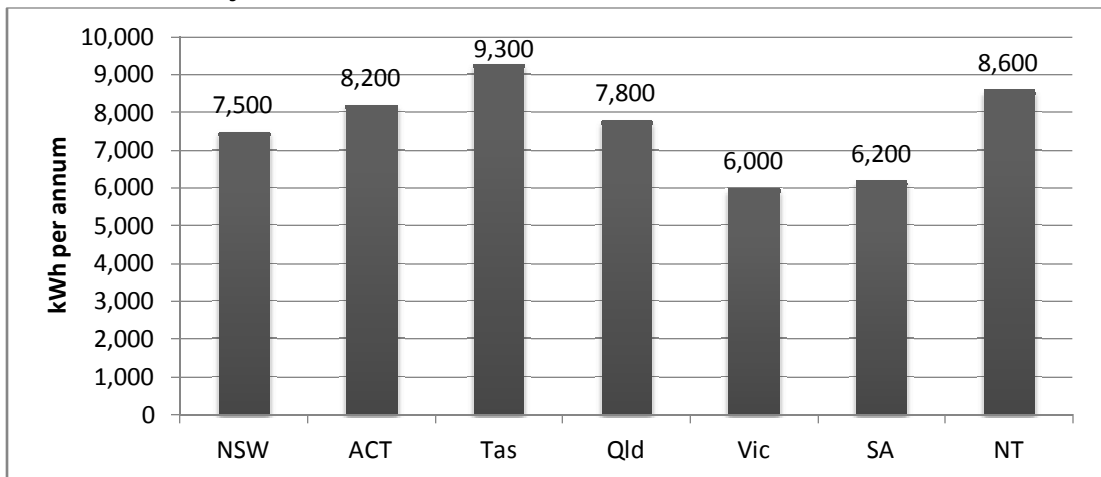
2.2. Who is the 'average' consumer?

As a service provider dealing with consumers, we know that there is no such thing as the 'average' consumer. This paper explores the residential energy market from a broad consumer perspective. We have deliberately framed the paper in terms of a 'typical' residential electricity customer rather than focussing the report on a specific consumer segment, such as those experiencing energy related financial hardship, the elderly or tenants.

Residential electricity customers in the National Electricity Market (NEM) are far from a homogenous group. The ability to benefit from emerging products and services and the risk of experiencing disadvantage will vary greatly from household to household and will be influenced by a number of factors. Factors include consumption patterns, demographic and socio-economic factors, the market reach of industry players, climate and fuel mix (such as access to natural gas, rooftop solar and solar hot water) and the household's appliance mix.

For example, a household in Melbourne without air conditioning, using natural gas for heating and hot water services, may find it more difficult to reduce or shift significant amounts of electricity consumption compared with a Sydney household that uses electricity for heating, cooling and hot water.

Chart 1: Approximate average annual household electricity consumption across the NEM jurisdictions.¹³



¹³ The figures presented in this chart are rounded numbers of those published in NERA Economic Consulting, *Cost Benefit Analysis of Smart Metering and Load Control, Work Stream 4: Consumer impacts, Phase 2 Consultation report*, February 2008. We note that these figures were based on 2006/07 data and that average consumption may have changed since then. The purpose of the chart is purely to be illustrative of the differences in average consumption between jurisdictions at a given point in time.

The impact of climate and the availability of natural gas can be observed in the differences in the average consumption levels in **Chart 1**. The coldest state—Tasmania, and the hottest—Northern Territory, have the highest average electricity consumption, while Victoria has the lowest average consumption and is the largest user of natural gas.

When considering the ‘average consumer’, it is important to understand how unevenly electricity consumption is distributed between households. Average consumption is measured across a diverse customer base, where a small proportion of households use significantly more electricity than other ‘typical’ households, thereby skewing the average consumption rates.¹⁴ Therefore:

“...improving the energy efficiency of the inefficient few would produce substantial reductions in total electricity use.”¹⁵

Average consumption will also be influenced by location, the availability of nature gas, socio-demographics and housing stock.¹⁶

This point is demonstrated by real consumption data, broken down by local government area (LGA). **Chart 2** (next page) shows average annual consumption for households within each of the LGAs in Ausgrid’s network area compared to the 2011/12 network average of 6,205 kWh per annum. The data shows significant variance in consumption within a relatively small geographic zone.

Households in Sydney had the lowest average household consumption of 4,234 kWh per annum while households in Ku-ring-gai, in Sydney’s north shore region, had an average consumption of 9,600 kWh per annum. Ku-ring-gai was the most advantaged LGA in NSW in the 2011 census,¹⁷ and this data reflects that housing type and socio-demographic factors are equally important when understanding differences in household electricity consumption.

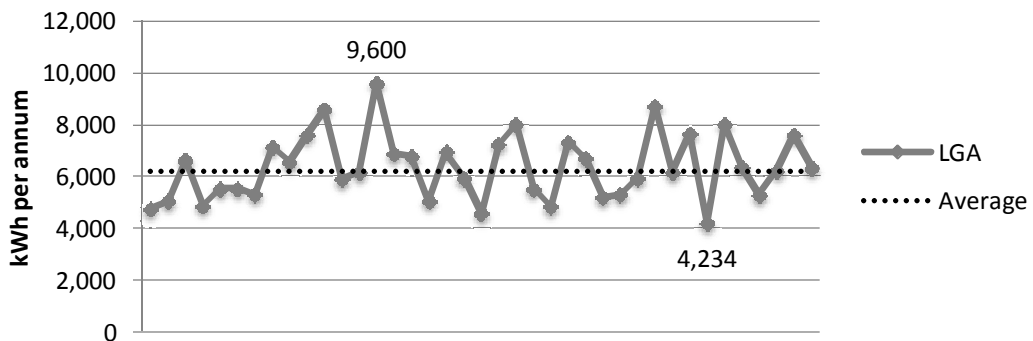
¹⁴ See figure 4 in ACIL Tasman, *Electricity Bill Benchmarks for residential customers*, December 2011, pg 22

¹⁵ *Ibid*, pg 21

¹⁶ <http://www.ausgrid.com.au/Common/About-us/Sharing-information/Data-to-share/Average-electricity-use.aspx#.UeIHZRZ3toQ>

¹⁷ Australian Bureau of Statistics (ABS), *New data from the 2011 Census reveals the most advantaged and disadvantaged areas in New South Wales*, Media release, 28 March 2013

Chart 2: Average annual household electricity consumption per local government area in Ausgrid's network, 2011/12¹⁸



Research undertaken by ACIL Tasman on behalf of the AER:

*"highlights the importance of the size of the house (number of rooms), in addition to the size of the household (number of occupants), in explaining electricity use."*¹⁹

The variability of factors and the differences in the significance of these factors in determining consumption patterns from jurisdiction to jurisdiction, from house to house and from household to household, means we cannot expect a 'one size fits all' solution to demand response for households.

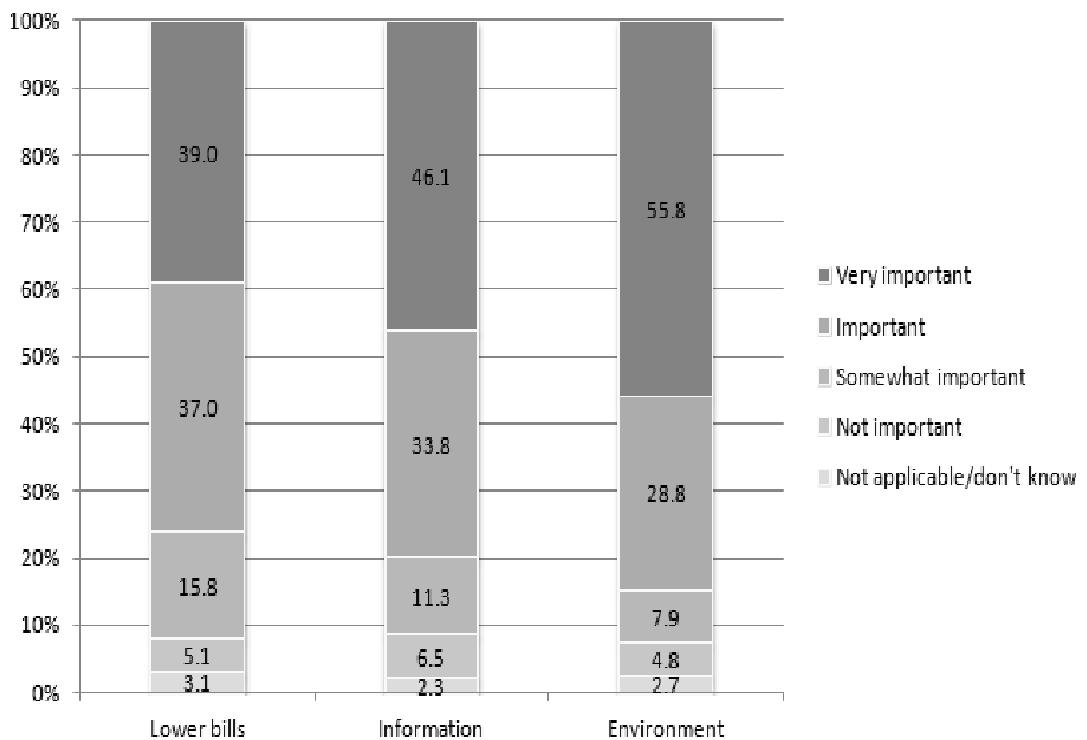
Products and services may be developed in the emerging market that do not have broad market appeal or uptake, but may nonetheless be useful for particular geographic areas, or for households with particular appliances or fuel mixes.

Consumer Action found that among respondents to its survey a high level of importance was placed on emerging technologies to give consumers options to reduce usage, improve access to information about consumption and help households become more environmentally friendly, however there were also concerns about the potential barriers to access (see **Chart 3** next page). In general, survey respondents see the benefit of technology in helping reduce energy use and becoming more environmentally friendly however, as previously discussed, this could be due to the nature of our survey sample.

¹⁸ Based on data available from Ausgrid's Average household electricity consumption by LGA 2012 at <http://www.ausgrid.com.au/Common/About-us/Sharing-information/Data-to-share/Average-electricity-use.aspx#.UeIHZRZ3toQ>

¹⁹ ACIL Tasman, *Electricity Bill Benchmarks for residential customers*, December 2011, pg 28

Chart 3: CALC/ATA Survey Results – importance of an emerging hi tech energy market²⁰



....we cannot expect a 'one size fits all'
solution to demand response for
households.

²⁰ *Consumers in a High Tech Service Environment Survey*, CALC/ATA June 2013, questions 10-12. See Appendix A.

2.3. The potential for non-participation and consumer disadvantage

To understand potential barriers to participation it is vital to:

- recognise groups likely to be excluded;
- understand what non-participation may mean for these consumers; and
- identify what actions can mitigate negative consumer impacts.

Given the immense variability among consumers, there will also be an equally large variability in responses to the emerging hi tech energy market.

For some, it may be perfectly rational to decide not to engage in demand side participation. Households with low electricity consumption may decide that the potential reward of changing consumption patterns to take advantage of different tariff structures is too low when compared to the time required to actually understand those tariffs and learn how to effectively work within them.

Products designed to shift or reduce the consumption of certain appliances at certain times—for example air conditioners and pool pumps—are unlikely to have a high uptake in areas where the penetration or use of those appliances is low. Rational non-participation may also apply to households where energy remains a relatively low proportion of overall household expenditure.

The more dependent the energy retail market becomes on new technologies, however, the greater the risk that some segments of the community will be less equipped to actively participate and reap the benefits that engagement can bring.

Non-participation will create disadvantage particularly when households have high consumption but are unable to effectively participate in demand side activities. Disadvantage will be exacerbated if the household's energy expenditure is a relatively high proportion of overall expenditure.

There is the very real potential for new energy products and services to increase costs or reduce amenity if consumers cannot adequately assess their own consumption needs.

For those who remain with their current products or services, there is a danger they will end up paying more as they progressively carry the burden costs associated with innovation in new products and services.

Those least able to absorb such rising costs are most at risk of suffering detriment. People on low or fixed incomes, those in rental properties, people with limited English, low literacy and numeracy, people with limited or no internet access, the elderly and people with disabilities may all face barriers to effectively engaging with the marketplace.

The Australian Bureau of Statistics' *Release on Household use of Information Technology, Australia 2012-13* reveals that while 83% of Australian households have internet access,²¹ there is still great disparity in the accessibility of the internet based on income and age.

Ninety-eight percent of households with household income of \$120,000 or more had internet access, compared to only 57% of households with a household income of less than \$40,000.²² While 83% of Australians accessed the internet in the 12 months prior to the survey, only 46% of older people (those aged 65 and older) were internet users and only 44% of older people accessed the internet from home in the previous 12 months.²³

Our survey found that even among more tech-savvy consumers there is genuine concern about how they will effectively engage with the emerging demand side market (see **Chart 4** next page).

- **84%** of respondents were concerned or somewhat concerned with the costs associated with the technologies required to access new and emerging energy services.
- **85%** were concerned or somewhat concerned about data management and privacy protections.
- **82%** were concerned or somewhat concerned about the ease of being able to access information about services that were suitable for them.

It is interesting to note that significantly more people were concerned about privacy (60.4%) than cost (38.4%) - this may be an artefact of the biased survey sample of early adopters, and warrants further research within a broader demographic.

The market will be rendered ineffective if it relies on a consumer participation level that only a more privileged consumer segment can afford, or will benefit from.

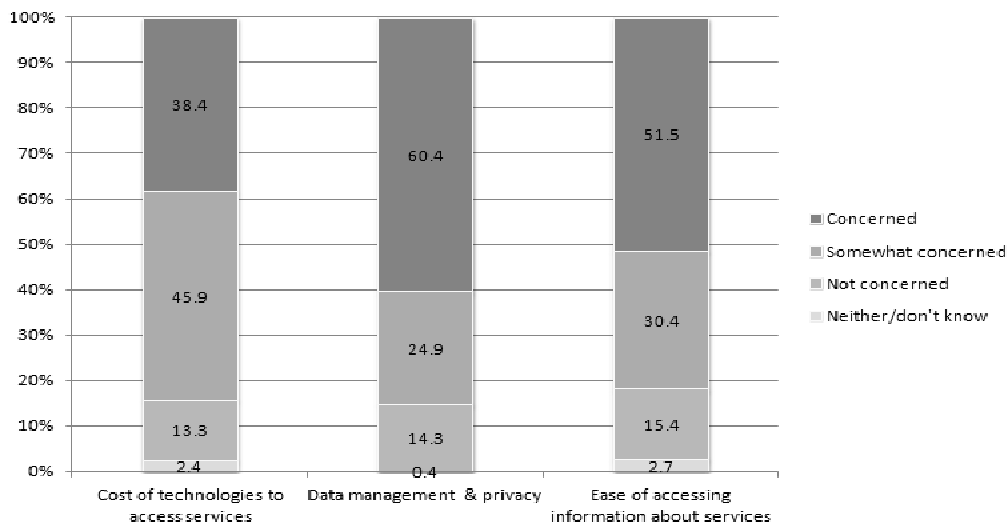
²¹ Australian Bureau of Statistics, *Household Use of Information Technology, Australia, 2012-13*, February 2014

²² Ibid.

²³ Ibid.

There is a risk that current market developments are designed only to reflect the interest and ability of consumers with certain key demographic characteristics, with little attention to the potential barriers being created for consumers who, for various reasons, cannot effectively participate in a technology driven market structure.

Chart 4 – CALC/ATA Survey Results - concerns about the emerging demand side market²⁴



Conversely, there is also potential for detriment to be caused by heavy handed regulation aimed at trying to 'protect' vulnerable consumers from emerging products and services. We caution against such an approach as some consumers may benefit if able to select the right product to suit their needs, having had access to accurate and timely information on which to base their decisions.

A case in point – lessons learned from supply side competition

Since the opening up of retail energy markets there has been a proliferation of switching or retail offer comparison websites. The sheer number of sites and the huge variance and quality in information they provide has long been a source of concern about whether they help or hinder consumer engagement in the marketplace.

²⁴ *Consumers in a High Tech Service Environment Survey*, CALC/ATA June 2013, questions 13-15. See Appendix A.

In 2012, the Australian Competition and Consumer Commission successfully prosecuted Energy Watch—an energy comparison company—for misleading conduct under the Australian Consumer Law.²⁵ The court found that Energy Watch had falsely claimed that it compared the rates of all or many of the other energy providers in a consumer's area in order to get the best deal, when in fact it did not, and that it had falsely represented the savings that could be made by using its service. The court ordered Energy Watch and its former CEO to pay over \$2 million in penalties.

In March 2014, the Consumer Utilities Advocacy Centre (CUAC) released a report, *Towards a Voluntary Code of Conduct for Energy Switching Services*, which argues

*'...without transparent information about methodologies and commission structures, consumers can have little confidence in the quality of the switching sites they use. Poor quality sites undermine consumer decision making, prevent effective consumer participation, and reduce efficient market operation.'*²⁶

CUAC reviewed five commercial switching websites and 'found a lack of consistency, a lack of transparency regarding the scope of the offers and commission arrangements, incorrect calculations producing misleading results, and different approaches to bonuses and discounts.'²⁷

CUAC has called for a voluntary code of conduct as a 'least-cost approach to achieving minimum performance standards in the price comparison and switching service sector.'²⁸

CONSUMER ACTION THINKS: The creation of minimum standards—whether voluntary or regulated—makes good business sense. They work to protect consumers, reduce the potential for a small number of unscrupulous players tainting the industry and create conditions for true engagement with the marketplace.

Minimum standards, particularly if they are voluntary, work best when implemented early and when developed in consultation with consumer groups, industry and government. If voluntary standards do not substantially improve market conduct, then governments need to consider mandatory standards.

²⁵ *Australian Competition and Consumer Commission v Energy Watch Pty Ltd* [2012] FCA 425

²⁶ Consumer Utilities Advocacy Centre, *Towards a Voluntary Code of Conduct for Energy Switching Services*, March 2014, pg 5.

²⁷ *Ibid*, pg 6

²⁸ *Ibid*.

3. The Emerging Demand Side Market

Background

Energy market innovation has typically come from changes in generation technologies. However, with the deregulation of energy markets and the move to demand side markets, this is set to rapidly change.

Groups driving and shaping technology innovation and adoption include:

- Appliance manufacturers;
- In-home energy management / display manufacturers, web and app developers;
- Energy utilities;
- Government;
- Standards committees, and
- Third party providers.

Historically, utility retailers and distributors have been industry-focused rather than householder-focussed. With the move to flexible pricing and smart appliances, these businesses' role may broaden to include managing demand response and the marketing of appliances, requiring a fundamental change in business models.

Other third parties may offer a bundling of services, or "one stop shopping", which we have seen with gas and electricity accounts, but which in future may extend to covering phone, internet, and water in a group of essential services.

The Australian and international experience

In Australia there has been a strong focus by Government (through COAG's Energy Council and its predecessors) on improving the efficiency of the National Energy Market (**NEM**) through developments in demand side participation.²⁹

The Australian Energy Market Commission's (**AEMC**) *Power of Choice* review, released in November 2012, recommended a range of reform initiatives that

²⁹ Based on various communiqués from the Ministerial Council on Energy and Standing Committee on Energy and Resources.

facilitate demand side participation and will help shape future energy market developments (see page 23 for a summary of the review).

In Victoria, the mandatory roll-out of smart meters to every home and small business has already led to new products and services to encourage demand side participation, including the introduction of voluntary time of use pricing structures in September 2013.³⁰ It has also necessitated the introduction of consumer protections to ensure that consumers are not disadvantaged in this rapidly changing marketplace. Protections include the retention of flat tariffs and the ability to easily revert back to a flat tariff.

The following overview provides examples of emerging energy products and services that have been trialled and/or been the subject of policy developments and regulatory discussions in recent years both in Australia and internationally.

It is likely that many of these products and services will be offered to residential customers, in a basic or more complex form, over the next five years. Some are already available to the mass market in certain jurisdictions; others such as cost reflective pricing, may see an increased take-up rate among residential consumers due to enhanced access to consumption data as smart meters become more common.

Other products and services currently only seen in trial environments will start to emerge over the next five years, but have received little attention in terms of the potential for creating consumer detriment or barriers to access.

AEMC *Power of Choice*: review of demand side participation in the energy market

In 2011, the State and Federal Energy Ministers asked the Australian Energy Market Commission (AEMC) to undertake a review of demand side participation in the National Electricity Market.

Titled *Power of Choice—giving consumers options in the way they use electricity*, the review aimed to identify market and regulatory arrangements that would unleash opportunities for demand side engagement in a more efficient overall energy market over the coming 20 years.

³⁰ See www.switchon.vic.gov.au

The review was the first comprehensive assessment of demand measures in Australia, including those already underway and those that were required to establish a competitive and efficient demand market.

Completed in late 2012, the review made broad ranging recommendations to the Energy Ministers about changes required to Australia's electricity market to facilitate greater consumer choice and engagement. Key recommendations included:

- Giving consumers better access to their own electricity consumption data;
- Reforming distribution pricing practices to allow for the introduction of cost-reflective pricing to drive changes in when we use energy;
- Setting up standards for access to and communication of smart meter information to help consumers choose between different service providers;
- Expanding competition in metering and other non-energy services to increase competition, improve choice and lower costs; and
- Creating a new category of energy market participant in the National Electricity Rules to allow third party energy service companies to enter the market and provide innovative and competitive services to consumers in helping them reduce their energy consumption.

Since the review was completed the AEMC and the Energy Ministers have been implementing the key reforms. There are rule changes underway for distribution pricing arrangements, competition in metering and consumer access to data amongst other things. In addition, further reviews have been initiated looking at the timeframes required for consumers to switch between energy providers, and smart meter data access and communication.

These reforms are designed to establish a fair and competitive demand market in Australia.

For further information go to: <http://www.aemc.gov.au/Major-Pages/Power-of-choice>

3.1. Smart Meters, in home displays and web portals

3.1.1. Key Discussion Points

- A greater reliance on ‘smart’ technologies to drive demand side participation may place an additional burden on already disadvantaged sections of the community.
- Utility providers must ensure the benefits demand side participation can bring are made as accessible as possible, through multiple modes and multiple channels.
- Information should be standardised to ensure consumers can undertake meaningful comparisons and make informed choices.
- New price structures or contractual terms to allow greater innovation must not result in those who can least afford it carrying the cost burdens of innovation, including those consumers who have no capacity to access or benefit from demand side participation.
- The risk of consumers becoming lost or losing out, due to the additional complexity created by cluster model relationships between consumers, retailers, distributors and other energy service providers must be assessed and addressed early in planning, innovation and regulation by industry and Government.

“Every consumer, regardless of socio-economic status, should be aware of the benefits the smart grid provides.

In order to increase awareness of a consumer-safe, consumer-friendly smart grid, utilities must be innovative and create a multi-channel approach to disseminating valuable smart grid data to low-income consumers.”

Executive Director Patty Durand – SmartGrid Consumer Collaborative

3.1.2. What are smart meters, in home displays and web portals

Smart meters will play a vital role in a functioning demand side market. In home displays and web portals provide the link for consumers to understand what all that 'data' means so they can begin to actively participate in shifting and managing their energy consumption.

- **Smart meters** are meters that are capable of 'two-way' communication that allow data and instructions to flow between a service provider and their customer.³¹ Smart meters provide real time energy consumption data and underpin the ability to move to more cost reflective pricing.³²
- **In home displays** provide real time energy consumption data and energy expenditure information by wirelessly connecting to a smart meter. Some display usage in kilowatt hours or expenditure in dollars and cents, while others use 'glanceable' ambient displays to alert consumers to their energy usage or costs at a given point. Ambient displays 'glow' in different ways and colours depending on the amount of electricity being used or the cost of electricity at that point in time.



*Origin Energy's
In home Energy Monitor.³³*



American company Ambient Device's – Ambient Home Joule changes colour to indicate when energy prices are high (red), medium and low (green).³⁴

- **Web or Online Portals** provide consumers with the ability to register and log into service providers websites to obtain their consumption and expenditure data. Web portals offer the same data that in home displays do, but require more active and deliberate engagement by consumers.

³¹ AEMC – *Smart Meter Cost Recovery Review - Final Report - 2010*

³² For more information about how smart meters work see the Energy and Water Ombudsman Victoria Fact Sheet 10 http://www.ewov.com.au/_data/assets/pdf_file/0005/4928/Fact-Sheet-10-Smart-Meters.pdf

³³ See <http://www.originenergy.com.au/4130/Energy-Monitor> for details.

³⁴ See <http://www.ambientdevices.com/about/energy-devices> for details.

Numerous trials of smart meters, in home displays and web portals are underway in Australia and internationally. In Victoria, network businesses and retailers are already utilising smart meter data to engage and communicate with customers in new ways.

- Origin Energy customers with a smart meter can register for an online energy management account, providing hourly usage data as soon as it has been received from the network business (this can take up to three days), set energy usage targets and predict the size of the next bill.
- Origin Energy customers can also take advantage of retail offers that include a free in home display which shows consumption and expenditure, in real time.
- AGL's online product, AGL IQ, offers Victorian consumers an online portal to allow consumers to view consumption data and set consumption targets.
- Second tier retailer Powershop provides Victorian consumers with similar products.

Government and industry have been actively engaged in understanding the potential benefits from smart meters and cost reflective pricing. Examples include the Federal Government funded *Smart grid*, *Smart city* project, run by AusGrid in partnership with EnergyAustralia, the CSIRO, the University of Sydney and TransGrid.³⁵

AusGrid tested and undertook cost/benefit analysis on a range of smart grid technologies, including smart meters, smart sensors and new IT systems and communications networks. EnergyAustralia, as the retail partner, tested new pricing structures and consumer information channels, such as a real time consumption-monitoring device, on existing NSW customers.³⁶

The Federal Government's *Solar Cities* program combined the use of solar technologies with other measures such as cost reflective pricing.³⁷

³⁵ For information about the project, see www.smartgridsmartcity.com.au

³⁶ The program was completed in February 2014 but the Final Report has not yet been published.

³⁷ Cities and regions included in the Solar City program were Adelaide, Alice Springs, Blacktown, Central Victoria, Moreland, Perth and Townsville. A final evaluation report, *The Solar Cities Program – The Journey*, was published by the Department of Resources, Energy and Tourism (DRET) in July 2013 and is available at <http://www.innovation.gov.au/Energy/EnergyEfficiency/Documents/solar-cities-journey.pdf>

Energy distribution businesses are also providing innovative products directly to consumers that have implications for future consumer and energy retailer relationships.

Jemena, SP Ausnet and United Energy, electricity network businesses operating in Victoria, offer registered customers online energy portals. These portals offer direct connection with consumption data, but also enable consumers to compare retail energy offers—something retail portals don't do. Users can enter the details of various retail offers to identify which is most suitable for their consumption pattern.

3.1.3. Emerging trends and practices

Internationally, smart meters are expected to become the norm in developed countries in the foreseeable future (see **Figure 1**).

Compulsory domestic smart meter roll-outs to residential customers have been completed in Italy for 36 million customers (in conjunction with a two-tier peak/offpeak tariff and a maximum power consumption limit), in Sweden (where some utilities also offer in-house displays) and in Ontario and British Columbia in Canada.

In other parts of the world voluntary and mandated roll-outs are currently being implemented at various rates.³⁸

Figure 1: International trends in smart meter roll outs³⁹

Regions	Countries	Smart Meter Implementation Projections
OECD Europe	Italy Finland United Kingdom France Ireland European Commission	100% today 80% by 2014 100% by 2020 95% by 2016 100% by 2017 80% by 2020
OECD North America	United States Canada	40 million (~33%) by 2015 Ontario: 100% by 2010 British Columbia: 100% by 2012

³⁸ International Energy Agency (IEA) –*Empowering Customer Choice in Electricity Markets* 2011. Pg 31

³⁹ International Energy Agency (IEA) –*Empowering Customer Choice in Electricity Markets* 2011, pg 31.

Regions	Countries	Smart Meter Implementation Projections
OECD Asia-Pacific	Victoria, Australia Japan Korea	100% by 2015 100% by 2020 100% by 2020
China		100% by 2020/2025

In the United States, in home displays are already readily available. Third-party providers, such as OPower and NEST, are working with utility companies using the 'cloud' to provide customer alerts and a variety of real time consumption information including ambient displays, expenditure data and raw usage data. Utilities in Sweden and Finland currently use websites for providing consumers with energy consumption feedback.

Aggregated results from 74 trials in Australia, Canada, Britain and Europe, the United States and Japan,⁴⁰ have shown that of the various in-home data feedback services, ambient displays had the most potential (11%), followed by in home displays (8%), informative bills (6%) and websites (4%).

Customer satisfaction with products appears high. With 77% of the randomly-selected customers from these trials happy to take part in the trial when approached, key findings included:

- an average of 81% of customers were satisfied with the service trialled
- an average of 71% of customers were happy to continue with the service, and
- 40% were still regularly using the service one year later.⁴¹

Mobile platforms, rather than websites, have been shown to be particularly important for engaging low-income customers,⁴² as they allow the user to view consumption data wherever they are. Studies have also shown that in-home displays coupled with smart meters can reduce electricity consumption by about 10% on average and that users have a high degree of satisfaction with such displays.⁴³

⁴⁰ Ariu, T, Lewis, P. E., Goto, H., Dromacque, C., Brennan, S., *Impacts and Lessons from the Fully Liberalized European Electricity Market*, Central Research Institute of Electric Power Industry, 2012, pg 56

⁴¹ *Ibid*, pg 57

⁴² <http://defgllc.com/news/articles/5-ways-to-engage-low-income-customers-in-efficiency/>

⁴³ Ariu, T, Lewis, P. E., Goto, H., Dromacque, C., Brennan, S., *Impacts and Lessons from the Fully Liberalized European Electricity Market*, Central Research Institute of Electric Power Industry, 2012, pg 70

While real-time household energy data can at least theoretically be displayed on an app or website, domestic Victorian smart meters are currently not configured for greater than half-hour granularity, and only dispatch information in batches. While Victorian smart meters have messaging and notification capability, an in home display or similar product is required to access messages/notifications. Additional equipment or a change in configuration of meters is required in order to provide further energy use insights such as current or peak load or a minute-by-minute history.

While consumers currently may receive automated alerts from their utility (a bill being overdue or an expected high bill), this may become further tailored in future in response to greater penetration of smart meters and customer preference for their choice of frequency of alert and media used (email, SMS, twitter, through your TV etc).

In home displays and web portals can make smart meter data more useful and actionable for consumers. Utilities may use data to tailor messages to help their customers understand and manage their energy use. In addition, the ability to receive power outage or peak period reduction alerts and autonomously investigate energy usage data may all but eliminate the need to contact their utility's customer service department in case of queries.

Currently, most residential electricity consumers only interact with their electricity retailers. However this is changing. The *National Energy Customer Framework (NECF)* identified the possibility of network businesses having direct contractual relationships with residential customers.

As previously mentioned, a number of Victorian network businesses are now offering online energy portals to their smart meter customers. As Victorian network businesses to date have had very little consumer visibility, this could indicate an interest in developing direct customer relations with households in their network areas in the future in order to better 'sell' energy services.

Markets in Australia and overseas are also seeing the rise of third party energy companies, or 'Energy Service Companies' (ESCOs).

Energy Service Company (ESCO) is the broad term used to describe businesses that provide energy services without being part of the electricity supply chain. ESCOs may offer services designed to assist consumers' decision making in relation to demand side response products.

It is envisaged that ESCOs may play a role in helping some consumers with technical and commercial decision-making, as well as risks associated with technology investments.

Retailers are already contracting services in relation to their online portals to third party companies. These companies have specialised expertise in analysing and communicating consumption patterns and their associated costs to customers.

It is reasonable to expect that businesses like these may eventually develop direct services for residential customers. As residential energy products and services becoming more complex, consumers may come to value third party/ independent services that can inform, compare, assess or broker on their behalf.

3.1.4. Consumer impacts - what we know and what we can see coming

The consumer benefits of smart meters are many, including:

- ✓ allowing consumers to actively manage their electricity use due to increased information on their usage trends;
- ✓ the reduced meter reading costs and the elimination of meter readers requiring access to private property;
- ✓ the ability to check a connection and swiftly connect or disconnect remotely;
- ✓ improved billing accuracy and verification, and lack of estimated bills;
- ✓ improved customer support from the electricity retailer due to the availability of interval data to address usage or billing queries, and
- ✓ reduced potential for energy theft or fraud.

Smart meters also generate concerns for consumers, including:

- ✗ the passing through of the cost of the meter and any other equipment without being aware of the benefits;
- ✗ the potential for a lack of choice in the type of meter or ability to opt out;

- × limitations for consumers living in rental accommodation having access to in home technologies to help them reduce consumption from fixed appliances;
- × questions around the accuracy of the meter and the perception that bills have increased solely due to the installation of the smart meter (rather than, for example, increased electricity use due to seasonal changes or increase in wholesale tariffs etc.);
- × confusion over the ownership of the meter and the data it generates;
- × an added layer of complexity to the relationships between consumers and energy providers, with new relationships with distributors and ESCOs operating alongside, or in competition with energy retailers; and
- × health and safety issues.

Consumer Action notes that many of these concerns are likely to have stemmed from the Victorian mandated roll out of smart meters, which is no longer possible in other jurisdictions due to changes to the *National Electricity Law and Rules* in 2013. These concerns do, however, highlight the potential for consumer disengagement if the introduction of new technologies is not accompanied by appropriate and accessible consumer-focussed information campaigns and protections.

A recent report by the Energy and Water Ombudsman Victoria (EWOV) highlights that smart meters continue to be a cause of confusion and complaint in Victoria. EWOV received 1,029 complaints about smart meters in the January to March 2014 quarter, 59% related to billing issues and 10% to concerns about the installation of a smart meter.⁴⁴

Continued efforts need to be made to ensure that consumers understand the benefits and the downsides of the roll out of smart meters, both in Victoria where smart meters are already in use and in other states where they are expected to be available in a competitive market. Government and industry must ensure that information about smart meters is accessible and digestible.

Leeway must also be provided to those consumers who may take longer to understand the significant change to energy provision that smart meters can bring.

⁴⁴ http://www.ewov.com.au/__data/assets/pdf_file/0020/10937/Solar-and-Smart-Meter-Update-Jan-to-March-2014.pdf, pg 5

EWOV Smart Meter Case Study - 2013/42946

The customer received high electricity bills which she disputed. Since the installation of a Smart Meter, the price per Kilowatt Hour on her bill had increased. She contacted her retailer but was not satisfied with its response. EWOV completed a system search and determined that the Smart Meter was installed at the customer's property on 22 June 2012, and that a further change or adjustment was made to the meter on 17 January 2013.

The retailer advised that when initially installed the meter was configured as a basic meter until 17 January 2013. On this date, as part of the Smart Meter rollout, it was reconfigured to operate as a manually read interval meter. The retailer explained that price increases occurred on 1 July 2012 and 1 January 2013 and bills affected by these increases were broken into relevant time periods to ensure correct rates were applied. EWOV found the bills had been issued correctly.

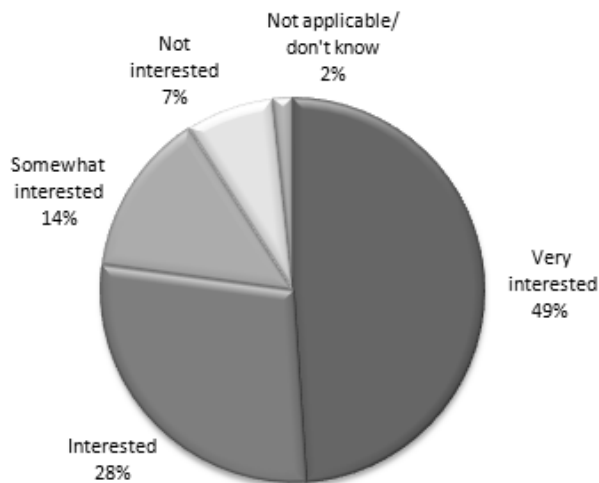
CONSUMER ACTION THINKS: This complaint highlights the complexity and confusion for consumers in moving from a basic meter to a Smart Meter and the barriers to active participation this confusion can create.

Full case study <http://www.ewov.com.au/reports/solar-and-smart-meter-update-january-2014/smart-meter-case-study>

Web portals and display units were by far the most popular initiative among respondents in the Consumer Action/ ATA survey.

Seventy-seven percent of respondents indicated they were interested or very interested in the benefits that in home displays and web portals can bring (see **Chart 5** next page). The survey respondents were overwhelmingly positive about the use of such devices, as improved access to information in itself was seen as a benefit. Although interest in information for its own sake is likely to be higher amongst ATA members than in the general population, the results indicate that continued innovation in this area warranted.

Some respondents expressed concerns about the other implications these devices may generate in terms of impact on the environment and the price of electricity. Many also expressed concerns about privacy. Privacy and data security are major issues for industry and Government to consider and are explored in Section 4.

Chart 5 CALC/ATA Survey results - Interest in display units and web portals⁴⁵**CALC/ATA Survey - Consumer Comments - Interest in display units and web portals**

Comments provided by survey respondents regarding information about energy consumption through **web portals or in home devices** included:

"The **more you know the better** you are able to make a decision. I don't believe an external provider is needed to achieve that."

"It would **be good to know how my usage compares with others**, and how I could change my usage to reduce costs."

"Improve discussion about energy use between family members and even other households."

"Anything that gives real time information about energy bills helps make the market work properly. There are probably enormous energy bill savings available that are being lost simply because it is too late to do anything by the time you get the bill."

"More to monitor. **Web portal requires internet access**. With older persons need to have ability to keep heating/cooling on. The web portal I have seen shows only **power consumption in half hour blocks**, and you have to try to work out what was on when."

⁴⁵ *Consumers in a High Tech Service Environment Survey*, CALC/ATA June 2013, question 5. See Appendix A

➤ **Consumers must see the benefit**

To date, consumers have been wary about the use of smart meters, as the Victorian roll out has added cost to bills but consumers have not seen the benefits of smart metering directly. This distrust and poor reputation will mean that consumers in other states that will not be subject to a mandatory roll out will be more likely to exhibit a default bias, and choose not to opt for a smart meter even if the products and services that they enable would benefit them.

To overcome this, consumer benefit (rather than market benefit) must be the focus of programs aiming to increase the penetration of smart metering. The AEMC is currently undertaking reviews on how to increase competition in the provision of metering services⁴⁶ and providing consumers with improved access to their own consumption data⁴⁷—ensuring consumers capture the benefit must be at the heart of these reforms.

➤ **Privacy and data security must be addressed from the outset**

Consumer fears about the privacy and security of their consumption data stem from poor quality information in the market place, both about the role of smart meters and the use of data. Consumers have valid concerns (outlined earlier in this chapter) about the ownership of data and who may be able to access it for what purpose. If these fears are not addressed early, consumers in states which do not yet have smart metering may decide not to install a smart meter based on poor information or hearsay.

Chapter 4 of this report addresses this issue in detail, however the key to building consumer trust is to ensure that consumer preferences about consumption data management takes precedence over the industry preference of facilitating third party participation and industry access.

The AEMC's *Power of Choice* review considered the role of ESCOs and has recommended amendments to the *National Energy Rules* to create a new type of energy market participant that is not involved in the sale or supply of electricity. The COAG Energy Council is currently considering the regulation and protections necessary for ESCOs and third-party service providers.⁴⁸

⁴⁶ <http://www.aemc.gov.au/Rule-Changes/Expanding-competition-in-metering-and-related-serv>

⁴⁷ <http://www.aemc.gov.au/Rule-Changes/Customer-access-to-information-about-their-energy>

⁴⁸ <http://scer.govspace.gov.au/files/2014/02/Demand-Side-Participation-Update-table.pdf>

Robust regulation of these companies and the products and services they provide must be proactively developed to ensure appropriate consumer protections keep pace.

➤ **Potential for market exclusion**

Any new technology that involves the installation of appliances comes with a cost to consumers. In a competitive market where consumers can choose to have a meter or not, the cost of smart meters or in-home displays could be prohibitive to some consumers who would benefit from their installation, or to renters who are unable to make choices about many appliances in their homes. This must be considered in the development of markets for these products.

Further, there is already a trend towards bundling in-home displays for ‘free’ into the cost of an energy contract. In these instances, the consumer is unable to make an informed choice about the value of the technology to them versus the benefit they receive from having it. It will be important to ensure that the cost of in-home displays and smart meters is made clear to the consumer in any market offer or product contract.

The tools to engage with demand side participation—including in home displays and internet portals—may not be accessible for those who are time-poor, come from culturally and linguistically diverse backgrounds, have limited or no internet access (or limited internet savvy), low literacy and numeracy, or come from low-income households.

A lack of access to the internet to utilise smart data, or a lack of capacity to install smart technologies within the home, could prove to be a major stumbling block for the penetration of demand side participation in the residential energy market and be the cause of significant consumer detriment.

For example, an April 2014 study by SmartGrid Consumer Collaborative indicates that there is a growing energy divide in the United States for low income earners, particular older consumers, who lack access to utility web portals and other online

Only 57% of households with a household income of less than \$40,000 have internet access at home.

Only 46% of older Australians (65 years and over) are internet users.

Only 44% of older Australians accessed the internet in their homes in the past 12 months.

*Source: Australian Bureau of Statistics
Release, Household Use of Information
Technology, 2012-2013*

services.⁴⁹

➤ **Information must be clear and relevant**

The majority of consumers have a limited ability to assess complex information, either through a lack of time, interest or understanding. Increasing use of web portals and in-home displays, which can access better information about customer consumption patterns or market products and offers, has significant potential to present consumers with much more information (and more complex information) about their energy consumption and products which may suit their ‘needs’.

Information provided through web portals and in-home displays must provide simple and clear information to consumers if both the consumer and market benefits of this technology are to be realised. For those consumers that would like more detailed information, this should be easily and logically accessed in drill down menus or through links from the home screen.

It will also be important to address consumer concerns about use of web portals and in-home displays for purposes other than the provision of information about consumption and price signals. Regulation of service providers—be they existing retailers and distributors or new-entrant third party providers—must ensure that these technologies are used first and foremost for consumption and billing information, and only secondarily as channels for marketing on an opt-in basis. This is discussed in more detail in Chapter 4.

3.2. Cost Reflective Pricing

3.2.1. Key Points

- Cost reflective pricing—including Time of Use pricing, Critical Peak Pricing and Critical Peak Rebates— will underpin the success of many expected demand response initiatives.
- While cost reflective pricing may deliver many benefits to residential consumers, there are risks.
- Time of Use pricing is more likely to shift *when* people consume energy, but Critical Peak Pricing or Rebates is more likely to change *how much* people consume.

⁴⁹ http://smartgridcc.org/wp-content/uploads/2014/04/FINAL_-2014-SGCC-Low-Income-Press-Release.pdf April 2014

- Cost reflective pricing will create winners—who can benefit from varying prices—and losers, who will bear the brunt of rising flat tariffs. Therefore cost reflective pricing products should only ever be offered on an opt-in basis.
- Cost reflective pricing options will create complexity and confusion for consumers if not adequately explained, leading to poor decision making, financial detriment and sub-optimal competition.
- Transparency, flexibility and ease of comparison will be required in cost reflective pricing products if roll-out is to be effective and demand reduced.

3.2.2. What is cost reflective pricing?

As its name suggests, cost reflective pricing is based on the principle that energy prices should vary according to the true cost of generating the energy at the time at which it is used.

Providing prices that accurately reflect the cost of using energy at different times of day will be a key component of creating changes in energy demand patterns. By charging a tariff that is indicative of the real system costs of using energy at specific times, consumers may be able to make more informed choices about the value of the energy they use, and adjust their behaviour accordingly.

Cost reflective pricing is typically reliant on smart meters for real time information about energy consumption. Having access to consumption data, distribution businesses and retailers can then develop new pricing structures that encourage households to reduce consumption at specific times or shift consumption from one time period to another, to reduce their energy bills.

It is argued that cost reflective pricing (or 'dynamic pricing') creates a more 'equitable' way of charging, as the actual cost of consumption is passed on to those who are responsible for the demand, rather than it being spread evenly amongst the customer base. When it comes to the provision of an essential service however, the concept of 'equity' in the marketplace needs to be more broadly framed than simply by a 'user pays' model. Barriers to consumer engagement, including issues of low income, age, language and disability, must also be considered.

Cost reflective pricing can take multiple forms and combinations. The main forms currently deployed or being considered are:

- **Time of Use (TOU)** pricing, where prices vary during the day based on fixed demand 'blocks'; to reflect the different cost of supplying energy at

different times. For example, energy consumed during the evening peak is more expensive to supply than during the morning low period.

- **Critical Peak Rebates and Pricing** (CPR & CPP respectively), CPRs are where a payment is offered back to consumers to reduce their usage at certain times. CPP are much higher prices at pre-identified critical peaks in energy demand (i.e. in the evening on very hot days), in exchange for lower energy prices at other times.

As identified by the Standing Council on Energy and Resources:

“For both of these products to be effective consumers need to be aware of the price signal and be able to respond.”⁵⁰

Cost reflective prices are not new. Many distributors have historically offered peak and off-peak rates to distribute consumer demand more evenly over the course of the day. The ‘old’ way was to separately connect appliances (such as hot water systems and slab-heating) to ensure that they draw electricity at off-peak times, and allocate the tariff accordingly. As such, consumers themselves do not need to be conscious of or respond to price signals.

In South Australia and Tasmania, peak rates have been allocated to months with greater demand and off-peak rates to months with lower demand, referred to as ‘seasonal pricing’. Seasonal pricing does provide households with a price signal of sorts and may encourage a reduction in consumption but does not encourage load shifting.

Time of Use retail tariffs are already in use in a number of Australian jurisdictions:

- Victoria introduced voluntary TOU retail products in September 2013.
- In Victoria, solar customers under the premium and transitional feed-in tariff arrangements were commonly re-assigned to TOU tariffs.
- In NSW, three part (peak, shoulder and off peak) TOU tariffs have been available for many years.
- In Queensland, one of the regulated retail tariffs, Tariff 12, is a TOU tariff.

⁵⁰ Standing Council on Energy and Resources’ (SCER) Energy Market Reform Working Group (EMRWG), *National Smart Meter Consumer Protections and Safety Review, Protections, Officials’* report, November 2012, pg 36

Time of Use retail pricing is to be further encouraged following proposed changes to distribution pricing rules for the NEM. The AEMC is currently consulting on reforms to distribution pricing arrangements designed to improve cost reflectivity, efficiency, and provide pricing signals to those consumers who contribute to peak demand.⁵¹ While it is uncertain how retailers will package reformed network tariffs into retail tariffs, it seems clear that these reforms will speed up retail cost reflective tariffs.

TOU tariffs offered to date have not typically been coupled with smart meters and real time consumption information. With the roll-out of smart meters, tariff structures and the price signals they give can become more sophisticated and consumers can play a more active role in shifting demand and controlling their energy costs.

When it comes to the provision of an essential
service the concept of 'equity' in the
marketplace needs to be more broadly
framed than simply by a 'user pays' model.

3.2.3. Emerging trends and practices

As TOU and CPP structures address different aspects of peak demand—load shifting and load reduction—it is possible that future developments will include tariffs that combine both TOU and CPP.

The Productivity Commission, in its *Inquiry into Electricity Network Regulatory Frameworks*, made the following observations of price signals, time varying pricing and the value consumers place on amenity and comfort:

“It is not surprising that people demand significantly more power when outside temperatures are particularly hot or cold. Consumers may well place a very high value on the comfort and amenity gained from their use of network capacity during periods of peak demand.

Growth in peak demand therefore need not indicate an economic problem, at least not on its own. Rather, the issue is whether the level of peak demand is economically efficient. This depends on whether the amenity and other benefits that consumers gain from their peak electricity consumption are at least commensurate in value with the high cost of having it supplied.

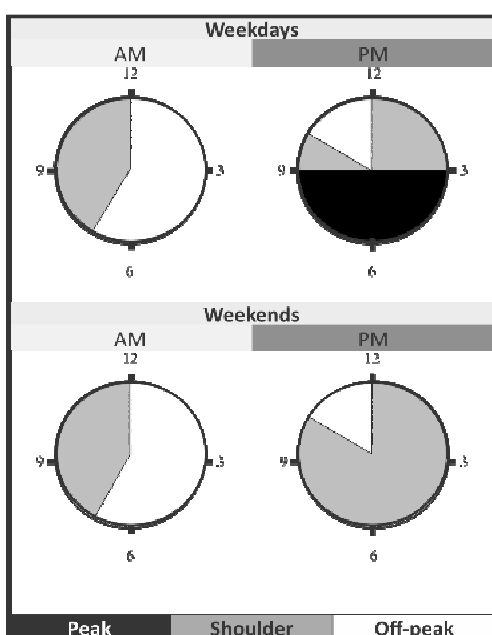
⁵¹ Australian Energy Market Commission, *Rule Change—Distribution Network Pricing Arrangements*, available at; <http://www.aemc.gov.au/Rule-Changes/Distribution-Network-Pricing-Arrangements>.

Appropriately structured time-based prices that reflect those high costs would help to confirm this. Faced with such price signals, consumers would have a financial incentive to consider reducing or shifting the timing of some or all of their peak electricity use, and suppliers would receive a signal about the value that consumers place on additional peak capacity.⁵²

Time of Use Pricing

The introduction of TOU pricing in Victoria in September 2013 was coupled with a voluntary TOU pricing structure to guide the development of products (see **Figure 2**).

Figure 2: Victoria's TOU tariff – Peak, shoulder and off-peak times⁵³



Distribution businesses in Victoria are required to have both flat and TOU network tariff structures available for consumers to choose from. There are transitional arrangements in place until April 2015 that ensure consumers can switch back to a flat tariff, although in some instances they may incur an exit fee for doing so.

TOU pricing, while bringing the opportunity to decrease electricity bills for some, will impose higher bills on others.

Higher bills under a TOU tariff may better reflect what consumers should have been paying already if it was not for the cross-subsidies between households that currently occur in a predominantly flat rate market.

A household's ability to benefit from TOU pricing depends largely on the households' normal consumption pattern and its ability and/or willingness to load shift. Consumers that typically benefit from TOU pricing are those who are home during the day (and therefore have the option of moving their energy use) or those who don't normally use energy during peak times.

⁵² Productivity Commission, *Electricity Network Regulatory Frameworks*, Inquiry Report, June 2013, Chapter 9, pg 338

⁵³ Ibid.

Other consumers are likely to be worse off on a TOU tariff, particularly those who are simply unwilling or are unable to shift their demand. These consumers will need to significantly reduce their usage or find ways to attempt to shift their demand to receive comparable bills to those they would receive on current flat tariffs.

The Adelaide *Solar City* program found that participants **shifted** approximately **7%** of peak consumption to other times when compared to the control group.⁵⁴ These findings are similar to other research showing **TOU** tariffs have a bigger impact on **shifting demand**, rather than reducing it.^{55,56}

Long term benefits of lower prices will only be realised if the right roll-out model is adopted—which must include standardised education and information provision, retail product development and transparency within and across retail prices.

A move to mandatory TOU pricing raises broader policy concerns, as it creates instant winners and losers. This has been recognised in the past with the roll-out of voluntary, rather than mandatory TOU tariffs supported by arrangements that encourage consumers to better understand their electricity usage.⁵⁷

However, voluntary products are unlikely to achieve the desired outcome of broad-scale demand reduction, as those consumers likely to opt-in and to benefit most from the tariff, do not consume energy at peak times anyway.

In separate works, both Frontier Economics⁵⁸ and the Standing Council on Energy and Resources' Energy Market Reform Working Group identified that moving to voluntary TOU tariffs would make it more expensive for retailers to supply customers on a flat tariff. The Energy Market Reform Working Group concluded:

"it is likely that consumers who are able to benefit from TOU offers due to their individual consumption profile will switch to these offers while consumers who have a high proportion of their consumption at peak times will choose a flat tariff. This will have the effect of exposing retailers to higher wholesale costs

⁵⁴ Adelaide Solar City, *Final Report*, June 2013 at www.originenergy.com.au/files/adelaide-solar-city-final-report.pdf

⁵⁵ See, for example, Frontier Economics, *Retail Tariff Model*, A report prepared for the AEMC, August 2012

⁵⁶ Commission for Energy Regulation, *Electricity Smart Meters Benefit Customers and Ireland*, press release 16 May 2011 <http://www.cer.ie/docs/000036/cer11088.pdf>

⁵⁷ See www.switchon.vic.gov.au and Standing Council on Energy and Resources' (SCER) Energy Market Reform Working Group (EMRWG), *National Smart Meter Consumer Protections and Safety Review, Protections*, Officials' report, November 2012

⁵⁸ Frontier Economics, *Retail Tariff Model*, A report prepared for the AEMC, August 2012, pg 42

*to service these customers as the underlying profile becomes peakier.*⁵⁹

The Working Group also warned that it is

*'...likely that the underlying cost of offering flat tariffs would rise over time and retailers will pass on these increased costs to all customers on this flat tariff in the form of a higher unit price.'*⁶⁰

This will leave consumers who do not opt in to TOU pricing even worse off, with some consumers being faced with the choice of a very high flat rate or switching to a TOU tariff and doing their best to monitor consumption and shift as much as possible of their demand to shoulder or off-peak times.

Critical Peak Pricing and Rebates

The Adelaide *Solar City* program included CPP trials, with a recent report outlining the findings.⁶¹ The trial included a significantly higher unit rate from 2 to 8pm on 10 summer days and found that on average participants **reduced** their overall energy consumption by **14%** on those days.⁶²

Research by Frontier Economics found that annual bill savings are made from demand response but that households need to reduce demand (rather than merely shifting it) to get the benefit of lower bills.⁶³

In order for a 'typical' household to achieve significant annual savings (e.g. \$200), it would need to reduce peak consumption by as much 18%.⁶⁴ CPP can be an attractive product for many households as they reduce rather than shift load. Frontier Economics concluded:

*"More dynamic tariff structures provide more opportunity for customers to avoid high marginal electricity prices. Critical Peak Pricing structures provided the greatest incentives for customers to alter patterns of consumption."*⁶⁵

⁵⁹ Standing Council on Energy and Resources' (SCER) Energy Market Reform Working Group (EMRWG), *National Smart Meter Consumer Protections and Safety Review, Protections, Officials' report*, November 2012, pg 20

⁶⁰ Ibid

⁶¹ Adelaide Solar City, Final Report, June 2013 at www.originenergy.com.au/files/adelaide-solar-city-final-report.pdf

⁶² The CCP price was 390.4 c/kWh and all participants were notified a minimum of 24 hours prior to the event.

⁶³ Frontier Economics, *Retail Tariff Model*, A report prepared for the AEMC, August 2012

⁶⁴ Calculation based on households consuming 8,000kWh per annum.

⁶⁵ Frontier Economics, *Retail Tariff Model*, A report prepared for the AEMC, August 2012, pg 43

Research has shown that consumers react mainly to *changes in* the price of electricity rather than to the price of electricity itself. For example, a significant change in price throughout the day is a more likely call to take action to reduce consumption, than the price being set at one continuous high level.⁶⁶

Once flexible pricing becomes familiar to consumers and moves into the mainstream, more consumers may opt into voluntary CPP products, rather than staying on a flat tariff or choosing a TOU tariff.

International progress

Internationally cost reflective pricing is also being deployed to reduce peak demand.

- In the United States studies of residential customer responses to various forms of cost reflective pricing showed that households will reduce usage in response to pricing signals and are capable of delivering an effective and sustained response.⁶⁷

TOU tariffs induced a drop in peak consumption of 3-6%, while CPP resulted in a reduction of 13- 20%. Users with smart thermostats and direct load control (see section 3.3 for more on direct load control) showed a drop of between 27-44%, highlighting the important role of automated technologies in reducing transaction costs and increasing demand response. The studies suggest that residential customers will respond to relatively small changes in price, although the savings are on average less than US\$5 per month.⁶⁸

- 125 households with smart meters in Ontario, Canada were offered TOU and CPP, resulting in energy savings of 6% overall.⁶⁹
- Retailers in Finland have introduced a range of TOU tariffs varying by time, day and season to target 500,000 residential customers with electric heating, resulting in a 15% reduction off peak load in conjunction with technical improvements.⁷⁰

⁶⁶ Ariu, T., Lewis, P. E., Goto, H., Dromacque, C., Brennan, S., *Impacts and Lessons from the Fully Liberalized European Electricity Market*, Central Research Institute of Electric Power Industry, 2012, pg 23

⁶⁷ Faruqui, A. and S. Sergici, *Household Response to Dynamic Pricing of Electricity – A Survey of the Experimental Evidence*, Brattle Group, Cambridge, Massachusetts, 2009.

⁶⁸ Ibid.

⁶⁹ Cooke, D., *Empowering Customer Choice in Electricity Markets*, International Energy Agency, 2011, pg 48

⁷⁰ Ibid, pg 47

- In France, a CPP trial was given to 300,000 residential customers with a “traffic light” system, resulting in a 50% reduction in consumption during peak hours with 84% of customers reporting being “satisfied with this system”.⁷¹
- Italian regulated residential electricity tariffs are now all TOU. The TOU tariffs were introduced with very little difference in peak and off-peak rates to give people time to adjust.⁷²

3.2.4 Consumer impacts - what we know and what we can see coming

While the concept of prices varying depending on demand is not new to consumers (cheaper phone calls or internet at night, or flights during holiday periods), the idea of electricity costs varying throughout the day or year “does not make sense” according to the majority of respondents to a survey on dynamic pricing in the United States.⁷³

The research found that the strongest word associations among respondents to ‘dynamic pricing’ were:

- × a rip-off
- × confusing
- × unfair
- × expensive.

For those who thought cost reflective or dynamic pricing made sense, savings were the biggest driver for switching.⁷⁴

The CALC/ATA Survey respondents were shown the TOU tariff structure that distribution businesses and retailers offered in Victoria from September 2013 (**Figure 1**). The survey found (see **Chart 6** next page) that:

- 25% of respondents felt that this tariff structure would *not* be beneficial to their households.

⁷¹ Ariu, T., Lewis, P. E., Goto, H., Dromacque, C., Brennan, S., *Impacts and Lessons from the Fully Liberalized European Electricity Market*, Central Research Institute of Electric Power Industry, 2012, pg 60

⁷² Ibid, pg 23

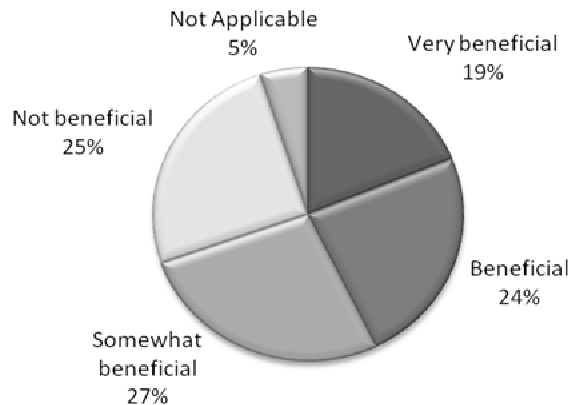
⁷³ <http://defglc.com/news/article/why-doesnt-dynamic-pricing-make-sense-for-electricity-customers/>

⁷⁴ Ibid

- 19% believed the tariff structure would be very beneficial to them.

This is likely to be similar across the broader consumer base, where people's household size, composition and behaviour are likely to be as varied as those of survey respondents.

Chart 6 CALC/ATA Survey results - views on TOU tariff⁷⁵



CALC/ATA Survey - Consumer Comments - time varying/cost reflective pricing

Comments provided by survey respondents regarding **time varying pricing** included:

"I **do not believe in savings**, because I will be charged the same off peak, and charged a higher price in peak time."

"My wife and I are over 80 years and **may need heating or cooling at times** irrespective of the electricity load factor."

"Would also **be interested** in clothes washing/drying and dishwasher being done overnight if I could **get a discounted rate**."

"I'm **sceptical** about the advantage of all the proposed technology as energy consumption is more likely to be determined by the householders' work/study/other commitments (in other words, when people are home) which **limits the flexibility** of energy use."

⁷⁵ *Consumers in a High Tech Service Environment Survey*, CALC/ATA June 2013, question 17. See Appendix A

The response to cost reflective pricing and the assessment of the potential benefits and barriers that can be derived from them makes sense in the context of behavioural economics.⁷⁶

With increasing complexity and diversity of tariff options, it will become difficult for consumers to keep pace and to make optimal decisions. The risks of choosing an inappropriate tariff and subsequently experiencing bill shock are very real.

Consumers have a 'default bias' and are more likely to trust and stay with the status quo even if they are likely to financially benefit from changing.⁷⁷ In all likelihood there will be a lower uptake of cost reflective pricing products where they are voluntary and consumers have to opt in.⁷⁸ The lower take up rate means that many consumers who may benefit from TOU or CPP pricing products will remain on a flat tariff to their financial detriment.

Further, while the price responsiveness of usage decisions may increase initially as consumers become more familiar with responding to price signals, this initial enthusiasm may wane over time and consumers may become less reactive or stop responding to price signals altogether.⁷⁹

Products 'framed' as rebates or that provide incentives for savings are more likely to be accepted by consumers than products 'framed' around an increase in price. By framing products in this way consumers do not believe they risk losing by participating.⁸⁰

For this reason, Critical Peak Rebate products may have a far greater take up rate, leading to a realisation of peak demand reduction that Critical Peak Pricing cannot attain.

⁷⁶ See for example, Louise Sylvan, Deputy Chair, Australian Competition and Consumer Commission, *The interface between consumer policy and competition policy*, Consumer Affairs Victoria Lecture, 2006 and Ian McAuley, *You can see a lot by just looking, Understanding human judgement in financial decision-making*, Centre for Policy development, October 2008

⁷⁷ Frontier Economics, *Cost-reflective retail pricing: Risks and opportunities for retailers*, Presentation to the AEMC Power of Choice Review – Third Stakeholder Reference Group meeting, 11 May 2012

⁷⁸ Ibid

⁷⁹ Gordon, K., Olson, W., Nieto, A., *Responding to EPAAct 2005: Looking at Smart Meters for Electricity, Time-Based Rate Structures, and Net Metering*, Edison Electric Institute, 2006, pg 6

⁸⁰ See discussion in Frank A. Wolak, *Economic and Political Constraints on the Demand-Side of Electricity Industry Restructuring Process*, Review of Economics and Institutions, Vol. 4 – No. 1, Winter 2013

Consumers often make 'use-pattern mistakes'. People assume that they can change their patterns of use to benefit from savings or bonuses, but find that they are unable to change their normal behaviour. This can occur for a variety of reasons, including:

- income levels;
- employment status;
- stage of life;
- a change in circumstances; or
- a fundamental misunderstanding of how the product should be used to achieve savings.

Use-pattern mistakes occur when consumers assume they can change their normal energy consumption habits to benefit from savings or bonuses, but later find they are simply unable to. This can lead to a loss of savings and in some instances greater costs.

Market players have a financial incentive to take advantage of this consumer behaviour through redesigning products, contracts and pricing schemes.⁸¹ The constant shift and change in products and services can encourage use-pattern mistakes, higher bills and the benefits of savings being lost.

To help consumers realise the benefits of reducing peak demand through cost-reflective tariffs it is vital to understand the potential impact that the design of products and services can have on consumer take up rates.

To develop appropriate products and services including consumer protections, policy makers and industry must consider the following:

➤ **Contract terms and conditions must be clear and fair**

It must be clear to consumers what they are signing up and paying for.

Currently there is a consistent lack of transparency about the structure of energy offers. With the development of new products and services, using new technologies, pricing structures and third party players, there is the increasing potential for retail offers to have a variety of unclear cost components.

We are already seeing the bundling of energy management tools into specific retail offers.⁸² If the competitive pressures are low, we may see retailers increasingly

⁸¹ Oren Bar-Gill, *The Law, Economics and Psychology of Consumer Contracts*, 2007

⁸² For example, Origin Energy offering its free home energy monitoring device to consumers that sign up to a specific market offers.

tying these products to specific market contracts. This can lead to pricing structures that include hidden cost recovery for 'free' tools, which a consumer may not realise they are paying for and may not receive a benefit from.

Strengthening the regulation of contract terms and conditions to promote consumer confidence and the making of informed and optimal choices will promote competition and ensure an engaged and active marketplace.

➤ **Flexibility is essential**

Cost reflective pricing products are likely to be of direct benefit to many households but may be highly unsuitable for others. Flexibility is crucial to the smooth introduction and community acceptance of these products.

Long lock-in periods (e.g. 3 year contracts) make these products risky for many households that may otherwise benefit. Given circumstances change, a cost reflective pricing product that was suitable for a household two years ago may be causing financial detriment now because the make up of the household has changed.

Consumers should not be financially penalised by long lock in periods, when a change in circumstances means they can no longer access the benefits that cost reflective pricing once provided.

A regulated one year maximum contract term for CPP products would encourage greater take up rates and reduce the potential for industry to unfairly benefit from changes in household circumstances or from the inevitable use-pattern mistakes that some consumers may make.

➤ **Disclosure of Information about product attributes and product use**

Disclosure of use regulation may reduce consumer use-pattern mistakes and may prevent energy retailers from benefiting from such mistakes.

If the regulatory framework simply focuses on disclosure of information about product attributes (e.g. price per kilowatt-hour and late payment fees) and omits information about product use (e.g. consumption patterns and the frequency of late payments) mistakes are likely to continue to occur, and demand reduction is unlikely to be achieved.

Disclosure of use can be both general and customer-specific. For example, in relation to late payment fees:

- A **general disclosure** would be information about the percentage of residential consumers who are charged late payment fees annually.
- A **customer specific disclosure** would be to communicate on bills about the number of late payment fees accrued since the contract commenced.

General and specific disclosures allow consumers to make more informed choices about whether they can use a product or service in a way that will result in the greatest benefit, leading to a more effective market geared to reducing demand.

➤ **Increased standardisation**

Cost reflective pricing will increase the complexity of energy offers and will increase the potential for consumers making mistakes or picking a product that is 'near enough' but is not 'good enough'.

Consumers reviewing cost reflective pricing offers will have to consider a multitude of factors to assess whether a product is right for them, such as:

- when they use electricity;
- how much they use;
- how much they may be able to shift or reduce usage in order to achieve rebates or savings;
- whether their circumstances are likely to change during the term of the contract, which will impact how much they can shift or reduce their usage;
- whether tools or other products or services that are bundled into the offer will be of benefit to them or whether they are paying for something they are not likely to use;
- whether they are likely to pay bills within a given number of days in order to receive a discount;
- whether they are likely to pay late and be charged with late payment fees; and
- whether they are likely to change retailer prior to the end of a fixed contract term and whether they will be charged an exit fee for doing so.

To ensure consumers are empowered to effectively participate in an electricity market where cost reflective pricing is commonplace, there must be increased standardisation of some aspects of energy offers. Consumers must be able to

compare 'like with like' when weighing the many and varied factors that go into making a good choice.

➤ **Regular and ongoing awareness campaigns**

Information and awareness campaigns are often short and sharp. An initial campaign to encourage consumers to assess cost reflective pricing may result in many households concluding that they are better off on a flat tariff at that point in time. Two years later however, circumstances may have changed and that household may be able to reap the rewards that cost reflective pricing can bring.

If there are no regular and ongoing awareness campaigns, the market cannot expect an increased take up of products and more effective competition, particularly in light of the default bias we know consumers have.

➤ **Energy prices should be fixed under fixed term contracts**

There is a real risk of consumer dissatisfaction and financial hardship where consumers engage with the market and invest time selecting the optimal 'deal', only to find that the agreed price has been increased arbitrarily and they risk paying an exit fee if they do not accept the increase.⁸³ The damage to effective competition and choice is also very real, as the marketplace may be increasingly perceived as unfair and out to rip consumers off.

In the United Kingdom, the regulator Ofgem has recognised the unfairness of price increases during the term of a fixed contract. It has made changes as part of its *Simpler, Fairer, Clearer* retail market reforms, and energy retailers are no longer allowed to increase energy prices if the consumer has entered into a fixed term contract.⁸⁴

The regulation of retail contract terms and conditions should be reconsidered and is currently the subject of a Rule Change request submitted to the AEMC by CALC and CUAC in February 2013.⁸⁵

A fixed contract should mean what it says and what the ordinary consumer understands it to mean - the price is fixed for the term of that contract.

⁸³ See, for example, Gavin Dufty and May Mauseth Johnston, *The NEM – In a bit of a state? Observations from the Vinnie's Tariff-Tracking Project*, November 2012

⁸⁴ See, <https://www.ofgem.gov.uk/ofgem-publications/85375/simplerclearerfairerfactsheet.pdf>

⁸⁵ See <http://www.aemc.gov.au/Rule-Changes/Retailer-Price-Variations-in-Market-Retail-Contract> for information about this Rule Change process as well as Consumer Action's campaign website fixit.org.au

A case in point – Introducing flexible tariffs in Victoria

The rollout of smart meters was first approved by the Victorian Government in 2006. Over five years from 2009, over 2.7 million smart meters were installed throughout Victoria to improve consumers' ability to monitor and control their electricity use. Smart meters record electricity use every half-hour, enabling more dynamic and 'cost reflective' pricing, and remotely communicate with electricity suppliers, enabling suppliers to offer new services to consumers. Importantly, smart meters enable more cost-reflective pricing which, it is claimed, bring benefits to individual households and the market overall by improving efficiency and competition.

Due to delays, cost over-runs, and poor planning, consumers in the main paid for this infrastructure before receiving any benefits. However, since September 2013 Victorians have had access to 'flexible prices' which provide different prices at different times of the day (see Figure 2 on page 37).

Recognising the challenges for consumers in moving to new 'flexible pricing' plans, some key protections were adopted by the energy industry together with the Victorian Government, including:

- Flexible pricing is voluntary, or 'opt in'.
- Households can try a flexible pricing plan with their current retailer and change back to their previous plan without an administration fee until March 2014 (the 'right of reversion').
- An information campaign and website, Switch On (www.switchon.vic.gov.au), including a 'flexible pricing profiler' to help consumers understand how shifting the time of day of electrical use can result in savings.
- An interactive website, *My Power Planner*, that enables consumers to enter their consumption data to compare current retail offers, including flexible prices.
- An Energy Information Fund which provided grants of \$1 million to community organisations to deliver information about flexible pricing and the electricity market to hard-to-reach communities, including culturally and linguistically diverse communities, seniors, rural communities and people with disabilities.

The right of reversion was adopted recognising the need for consumer flexibility to enhance trust and confidence in these new products. It's success is hampered however due to limitations, including not applying if a consumer switches retailers when choosing a flexible pricing offer and some charges still applying if the consumer exercises their right of reversion (retailers are able to recoup the value of up-front inducements as exit fees).

The My Power Planner tool has been applauded by consumer groups, including CHOICE and the Consumer Utilities Advocacy Centre, for enabling independent comparison based on personal consumption. The information website is extensive and useful, however limited proactive advertising campaigns to inform the community has perhaps contributed to low levels of uptake.

In May 2014, it was reported only 3200 consumers, or 0.001 per cent of customers, had switched to flexible prices. While the 'opt in' approach protects consumers, low uptake suggests more needs to be done to improve confidence in the energy industry before flexible pricing is able to deliver benefits to individual households and the broader energy market.

3.3. Capacity Control Products

3.3.1. Key Points

- Much needs to be done to build consumer trust and confidence in emerging capacity control products.
- Consumer preferences about how they control their appliances and energy consumption must not take a back seat to industry preferences for certainty in load control.
- Consumers should not end up paying the cost of policy initiatives that do not provide the promised long term benefits.
- A rapid and unchecked growth in capacity control products will create unnecessary complexity and confusion for consumers.
- Consumers need to know what they are paying for before they sign up.
- Consumers should not be locked into long contracts or charged harsh early exit fees, given the substantial financial impost if a capacity control product does not meet their needs.
- Supply capacity control has no place in a truly smart market.

3.3.2. What are Capacity Control Products?

An emerging tool for smoothing demand and curtailing rising energy prices is capacity control technologies that allow:

- an external company to have remote control over household appliances in order to limit demand at key times; and
- a consumer to control household appliances to reduce demand at key times.

Capacity control products are regarded as a key measure to reduce peak demand by the federal government.⁸⁶

Direct load control

Direct load control generally refers to an agreement that allows a distribution business to manage a consumer's appliance(s) in a manner that is beneficial to the distribution business in exchange for a payment to the consumer.

Direct load control contracts are expected to apply to appliances such as air conditioners, pool pumps, hot water systems (that are not separately wired) and, further into the future, electric vehicle chargers.

Products that provide consumers with direct control over the load their appliances draw at a given point in time are likely to also become a feature of the hi-tech energy market.

Smart thermostats that work to cycle back air conditioners at peak times are already emerging as an effective means of responding to and reducing peak demand. Following recent Australian trials of smart air-conditioning systems, smart pool pumps, smart hot water systems and smart electric vehicle charge points, it is expected that smart meter-enabled appliances will become integrated in the marketplace with related retail energy pricing products in the near to medium-term.

⁸⁶ E3 Committee, Consultation Regulation Impact Statement (RIS), *Mandating 'Smart Appliance' Interfaces for Air Conditioners, Water Heaters and other appliances*. RIS closed for consultation in May 2013

Supply capacity control

Unlike direct load control, supply capacity control products restrict the total capacity that a household may draw from the energy market at any given time, or cumulatively over a billing period.

While this is a necessary feature of energy supply as a whole—as supply capacity may need to be restricted during emergencies such as bushfires—supply capacity control products introduce significant potential for inequity if used as a demand reduction tool for households.

For example, retailers may be tempted to use supply capacity control products as a credit management tool and vulnerable consumers may try to manage their energy bills by limiting their capacity to this essential service to an extent that threatens their wellbeing.

Concerns that supply capacity control may be used as a credit management tool by retailers and the issues that occupants of rental accommodation may face have also been raised by the Energy and Water Ombudsmen of Victoria and NSW in submissions to the SCER's *National Smart Meter Consumer Protection and Safety Review Consultation Paper - National Energy Retail Rules Amendment Rule 2013*.⁸⁷

The benefits of load reduction that can be achieved by supply capacity control are outweighed by the potential for detriment to consumers on low or fixed incomes, including the elderly, the unemployed, renters and people with disabilities. Accordingly, we do not support supply capacity control and have not explored it any further in this report.

Opening the market up to supply capacity control products could quickly erode current regulatory protections and undermine long-agreed principles of shared responsibilities about energy affordability and access to this essential service.

⁸⁷ EWOV, Submission to SCER National Smart Meter Consumer Protection and Safety Review Consultation Paper - National Energy Retail Rules Amendment Rule 2013, December 2013. EWON, Submission to SCER National Smart Meter Consumer Protection and Safety Review Consultation Paper - National Energy Retail Rules Amendment Rule 2013, December 2013.

3.3.3. Emerging Trends and Practices

Similar to cost reflective pricing, it is anticipated that direct load control will become more mainstream in the medium term, once smart meters have become “part of the furniture” and smart appliances are more prevalent.

Direct load control products involving cycling air conditioning and space heating have already been deployed both in Australia (see page 60 for an example) and in a number of other developed countries.

Direct load control of air conditioners has been the main focus to date. In the residential sector, air conditioners contribute 5 - 6% of total energy demand but nearly 40% of peak demand, which is very costly for the electricity supply system.⁸⁸

An air-conditioned household consumes around 40% more energy than the average non-air-conditioned household, and contributes 200-250% more to peak demand on summer days. As a result, in the absence of cost reflective pricing, households that are not air-conditioned end up subsidising those households that are. In 2003, non-air-conditioned households in NSW subsidised air-conditioned households to the tune of \$86 annually.⁸⁹

As the use of air conditioners contributes significantly to the peakiness of electricity consumption and direct load control can cycle the compressor (e.g. turn it off for 15 minutes each hour) while leaving the fan on, it is regarded as an option that can have significant impact on reducing peak demand as well as an acceptable product for consumers who will still receive the amenity of air conditioning.

In the United States, more than 5 million residential customers are enrolled in direct load control programs.⁹⁰ Air conditioning and electric water heaters, which comprise 70% of residential peak load nationwide, are the two most common targets of residential direct load control programs (between 1981 and 2001, the proportion of U.S. homes with air-conditioning rose from 57.3% to 75.5%).⁹¹

It is expected that in the United States there will be significant growth in direct load control programs over the near term.⁹²

⁸⁸ George Wilkenfeld & Associates, *A National Demand Strategy for Small Airconditioners*, National Appliance and Equipment Energy Efficiency Committee ('NAEEEC'), 2004, pg 18

⁸⁹ Ibid, pg 18

⁹⁰ Kassakian, J., Schmalensee, R. et al, *The Future of the Electric Grid*, Massachusetts Institute of Technology, 2011, pg 152

⁹¹ Ibid, pg 15

⁹² Ibid, pg 152

While direct load control has typically been offered by distribution businesses, other parties may also wish to offer direct load control products. Different parties can have different reasons for offering direct load control products, influencing their approach:

- *Distributors:* To better manage their networks in emergencies and at other times.
- *Retailers:* To reduce exposure to the wholesale spot market at times of high demand and price. In the competitive market, retailers will be keen to differentiate themselves from their competitors and offer a range of direct load control products.
- *Retailers or other third parties:* As a component of 'home energy management' products that assist consumers to better manage or reduce their electricity bills. The third parties may seek to aggregate consumers' load flexibility and sell to the consumer's distributors or retailer.⁹³

Importantly, demand reduction through the use of direct load control products is not necessarily reliant on the installation of a smart meter, but can be activated in a number of ways. Smart meters, home area networks, timers and thermostats connected to appliances, internet and smart phones are all possible activation methods. Furthermore, direct load control can be standalone or bundled with a retail energy contract. The range of options that will be available to consumers will dramatically increase the complexity of the market.

Direct load control trials for air conditioners have found that consumers notice little change in amenity from cycling air conditioner compressors.⁹⁴

- The Energex pilot (see page 60) has been operating direct load control on air conditioning units in south east Queensland since 2012. This practice has now been incorporated as part of its standard business given the effectiveness at load reduction and the lack of any negative impact on consumer amenity.
- Energy Australia's SmartFlow product, trialled under the *Smart Grid, Smart City* program, has participating consumers with small air conditioning units

⁹³ Energy Market Reform Working Group (EMRWG), *National Smart Meter Consumer Protections and Pricing*, Draft policy paper two, December 2011, pg 35

⁹⁴ See, for example, Solar Cities Perth trial in *Solar Cities, Catalyst for Change, Background Paper*, October 2011, pg 14

receive an annual rebate of up to \$99 for participating in six load control events during periods of high demand, while those with large units can get an annual rebate of up to \$264.⁹⁵

- Other models may include retailers offering a lower rate for the sale of electricity (i.e. fewer cents per kWh or lower supply charge) in exchange for direct load control.

To access the benefits of direct load control, consumers need to have access to the appliances in question. As such, it is likely that there will be an uneven geographic spread of take up rates of direct load control products and services.

Having eligible appliances installed may not be sufficient to be offered a direct load control contract. Households with very small appliances or that are infrequent users of them, are less likely to be regarded as desirable direct load control customers. This could limit the take up of products and could reduce consumer access to the benefits direct load control can bring.

In areas with high penetration and use of appliances such as air conditioners and pool pumps it is likely there will be more competition among market participants (including third party entities), leading to the potential for greater savings for consumers. There is a risk, however, that with greater penetration and take up rates, households without direct load control will become even less attractive to service providers.

In theory, the long-term consumer benefit of direct load control is a downward pressure on electricity prices due to deferred spending on network augmentation and/or lower retail exposure to high pool prices. Industry submissions to the *National Smart Meter Consumer Protection Review* commonly emphasised that to ensure load reduction is met and benefits realised, there was a need for lock-in contracts and for limits on the ability of consumers to manually over-ride the load control.⁹⁶

There is also a fine balance between ensuring benefits arising from demand load control can be realised and ensuring consumers have autonomy over their own homes.

⁹⁵ A small unit is classified as a compressor size of 1,500 kW or less while a large unit is greater than 3,000 kW

⁹⁶ Standing Council on Energy and Resources' (SCER) Energy Market Reform Working Group (EMRWG), *National Smart Meter Consumer Protections and Safety Review, Protections*, Officials' report, November 2012

Products that may provide the same load reductions, without consumers giving up control of their appliances, are already in development. Market players may start to provide automated demand response equipment such as smart thermostats, to empower consumers to control the load being drawn by an appliance at a given time.

In the United States, which is also experiencing increasing summer peak demand due to air conditioning, studies of residential users with smart thermostats and direct load control showed a drop in consumption of between 27-44%, highlighting the ability of automated technologies in increasing demand response.⁹⁷

In Austin, Texas, over 50,000 residences were given thermostats that cycled their air conditioning units back on weekdays from 4-8pm, saving customers up to 15% on their heating and cooling costs and contributing 45MW of peak capacity back into the grid.⁹⁸

A number of utilities in the United States (PG&E, Reliant, NV Energy and Gibson Electric Membership Corporation and Mid-South Energy to name a few) have conducted trials of smart thermostats.⁹⁹ Early results suggest that consumers like using the smart thermostats and particularly like being able to remotely control the thermostat using their smart phone.¹⁰⁰

In time, consumers using a smartphone or computer to remotely communicate with smart appliances to change settings themselves, turn the appliance on or off or place it on a timer will become more mainstream.

As acknowledged by the Energy Market Reform Working Group, developing an appropriate regulatory framework becomes more difficult given the multiple channels by which direct load control can operate.¹⁰¹ A focus therefore needs to be placed on consumer interactions with, and experience of, the products and their vendors.

⁹⁷ Faruqui, A. and S. Sergici, *Household Response to Dynamic Pricing of Electricity – A Survey of the Experimental Evidence*, Brattle Group, Cambridge, Massachusetts, 2009.

⁹⁸ Cooke, D., *Empowering Customer Choice in Electricity Markets*, International Energy Agency, 2011, pg 48

⁹⁹ <http://gigaom.com/2012/12/21/early-results-pge-customers-like-controlling-thermostats-with-iphones/>

¹⁰⁰ <http://gigaom.com/2012/12/21/early-results-pge-customers-like-controlling-thermostats-with-iphones/>

¹⁰¹ Standing Council on Energy and Resources' (SCER) Energy Market Reform Working Group (EMRWG), *National Smart Meter Consumer Protections and Safety Review, Protections, Officials' report*, November 2012, pg 65

3.3.4. Consumer impacts - what we know and what we can see coming

The perception that an energy provider will only act in its own interest (and not the consumer's) means that consumers are wary of allowing companies to control household appliances.

It is also very difficult for consumers to estimate the benefits or otherwise of taking part in direct load control before signing up to it.

Direct load control products will be voluntary, requiring the explicit informed consent of the consumer. This will necessitate the provision of detailed, accurate and standardised information about the product terms and conditions, how to use them and the type of benefits that may flow from their use. Regular monitoring of the energy retail market and the effectiveness of competition will be required to ensure that consumers are signing up for direct load control with real understanding and consent.

Our survey found that the vast majority of respondents felt that emerging products and services like direct load control, remote communication with appliances, display units and web portals would reduce energy costs, improve information and make homes more environmentally friendly (see **Chart 7** next page). It is assumed that rates of interest will be higher amongst our sample than the broader consumer base.

Respondents were less enthusiastic when asked if they would allow their energy provider to have access to their appliances in return for rebates and or reduced energy bills (see **Chart 8** next page).

- On average only 17% of respondents advised that they would be very interested in such an arrangement.
- On average, 35% of respondents advised they were very interested or somewhat interested in direct load control.
- 20% advised they were not interested in direct load control at all.

Chart 7: CALC/ATA Survey Results – views on the benefits of emerging energy services¹⁰²

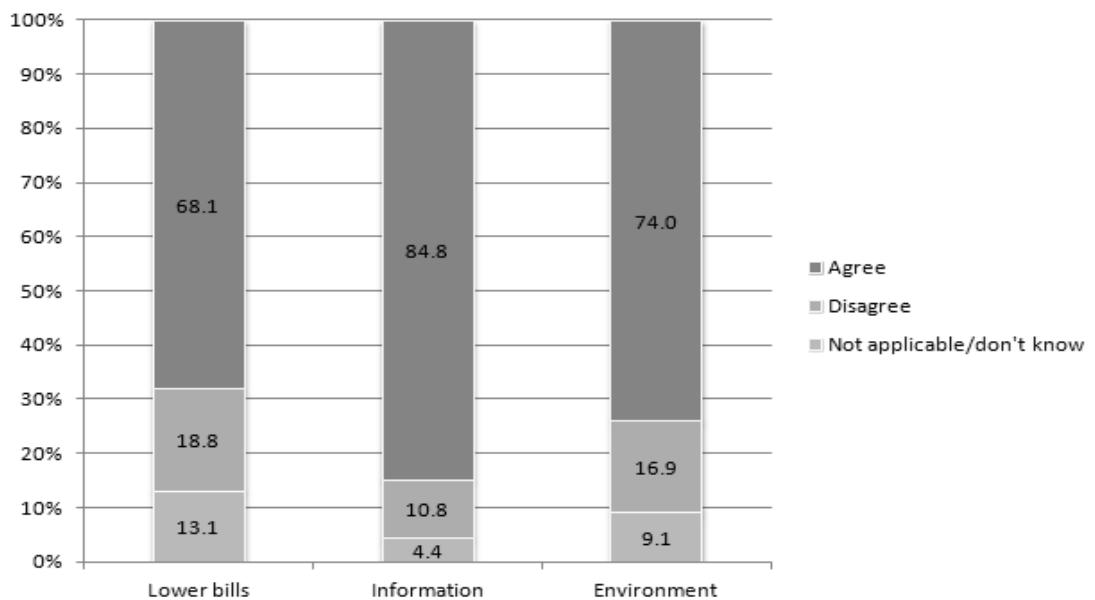
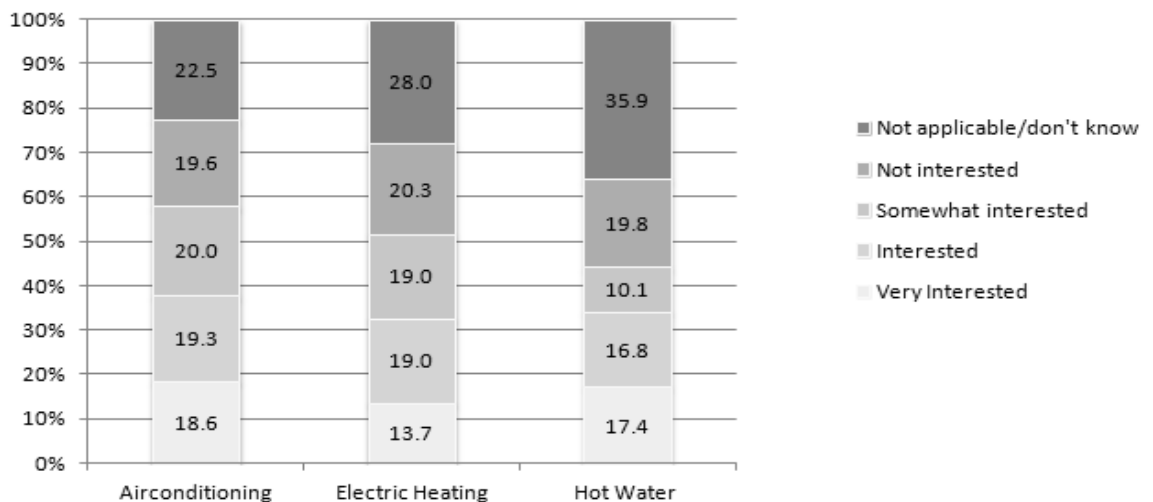


Chart 8: CALC/ATA Survey Results - attitudes to direct load control products¹⁰³

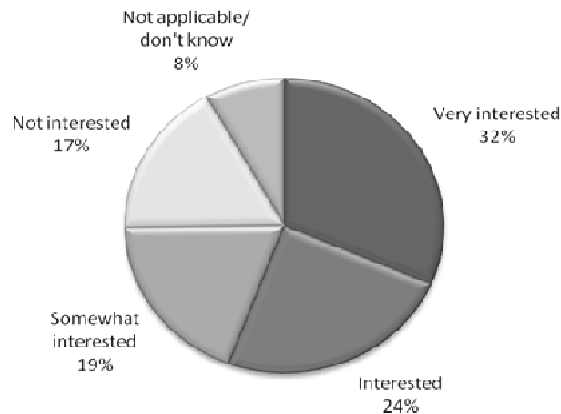


¹⁰² *Consumers in a High Tech Service Environment Survey*, CALC/ATA June 2013, question 6-8. See Appendix A

¹⁰³ *Consumers in a High Tech Service Environment Survey*, CALC/ATA June 2013, question 1-3. See Appendix A

A number of respondents advised that direct load control would not be applicable to them or they did not know if it would be (see **Chart 9**), highlighting that in areas where gas hot water and heating is available or where consumers do not own air-conditioners, direct load control may be difficult to market.

Chart 9: CALC/ATA Survey results: interest in remote communication with appliances¹⁰⁴



Many respondents did not like the idea of signing over control of their appliances, preferring to retain control themselves in order to achieve demand reduction and cost savings.

With the potential for numerous parties offering direct load control products—which may be applied to numerous appliances and may vary significantly in terms of incentive payments, timeframes, contract length and product bundling—there is a risk that consumers will be overloaded with choice, which will impact the uptake of these products.

Choice overload and how consumers respond to it has long been recognised as an impediment to effective competition and engagement. As articulated by the then Deputy Chair of the Australian Competition and Consumer Commission Louise Sylvan in 2006:

“[W]hen no easy rationale presents itself, or the decision making is very complex, the consumer gets into decisional conflict. They can walk away from the market, leading to deadweight loss, or they just pick something even though it turns out to be a rather poor choice for them.”¹⁰⁵

¹⁰⁴ Consumers in a High Tech Service Environment Survey, CALC/ATA June 2013, question 4. See Appendix A

¹⁰⁵ Louise Sylvan, Deputy Chair, Australian Competition and Consumer Commission, *The interface between consumer policy and competition policy*, Consumer Affairs Victoria Lecture, 2006, pg 8

Confus-opoly

When a marketplace provides so many products with different terms and conditions it makes consumers so '*overloaded with options or information that they choose not to choose*'.¹⁰⁶

Should demand load control not gain significant uptake, there will be costs incurred in technological and appliance development that will be borne by the community without resultant benefits.

The proposal to mandate appliances to enable direct load control, for example, will add to the cost of manufacturing (and hence the cost of appliances) but the long term benefits from a reduction in peak demand are seen to outweigh these costs.¹⁰⁷

As the policy framework focuses on enabling the market to deliver direct load control products and not on how the market can deliver the benefits of direct load control to consumers, there is a risk that consumers may pay the cost of the policy initiative without receiving the long-term benefits.

If the take up rates of direct load control are very low, the less palatable option available to policy makers is to include these products in default contracts.¹⁰⁸ Behavioural economics tells us that consumers will stay with default options rather than making a decision, which will result in consumers being channelled into direct load control agreements when it may not be in their best interest.¹⁰⁹

A common theme amongst survey respondents was that they did not like the idea of a distribution business or a retailer taking control over their appliances. While some consumers may prefer the idea of handing over control to reduce electricity costs, many favour products and services that allow them to take action and reduce costs themselves, including applications on smart phones and computers that allow consumers to remotely communicate with appliances to manage load (**Chart 9**).

This consumer preference should be explored more thoroughly, as it could indicate that policy proposals such as mandated appliance interfaces for direct load control overestimate the appetite for these products in the first place.

¹⁰⁶ Ian McAuley, *You can see a lot by just looking, Understanding human judgement in financial decision-making*, Centre for Policy development, October 2008, pg 20.

¹⁰⁷ Ibid.

¹⁰⁸ Controlled off-peak electricity is currently a default product for households where the meter separately measures electricity used for appliances such as hot water systems or slab heating.

¹⁰⁹ Ian McAuley, *You can see a lot by just looking, Understanding human judgement in financial decision-making*, Centre for Policy Development, October 2008, pg 20

CALC/ATA Survey - Consumer Comments – direct load control

Comments provided by survey respondents regarding direct load control included:

*"The trouble is one **can't trust** the suppliers to turn appliances on or off at a time that reduces one's costs or usage - as with everything else to do with smart meters, whatever they do will be in their best interests, not mine."*

*"Once contracted, you will **lose control** of the operation of your appliances, should electricity providers mismanage the network, consumers will not necessarily be high in priority for electricity at peak times....."*

*"It could help to **optimise usage** based on patterns of behaviour. It could keep things comfortable at a more suitable level, e.g. adapting to changing conditions and to humidity. I'd want **some assurance** though that I **retain final override** in case of e.g. an extremely frosty night, or sick people staying home unexpectedly."*

*"Reduces personal control of my energy appliances. I would prefer **to determine my own usage patterns**, and I am not convinced that a profit making company has my best interests in mind."*

*"I **don't like** the idea that Energy companies have access to my home products."*

*"I am concerned that I will not have the decision-making control of the features. I **want assurance** that I have the ability to decide whether to opt in or out of any feature at any time."*

➤ Consumer preferences must play a role in the emerging capacity control market

Understanding consumer preferences about control of appliances and energy consumption, including retaining the ability to over-ride a load control function, is vital to building a functional and trusted market.

Consumer preferences about the characteristics of capacity control products and their willingness to use them must be understood and must influence the design of these products. If products and services are designed around industry preferences about certainty, including no over-ride option and long lock-in contracts, rather than consumer preferences for flexibility and retaining control over their households, the market will not thrive.

➤ **Rapid and unchecked growth needs to be avoided**

A rapid and unchecked growth in capacity control products—with multiple market players and various contract types containing different terms and conditions, incentives, contract lengths and product bundling—will create unnecessary complexity and confusion for consumers. This could limit the effectiveness of these products in achieving the aim of demand reduction. Take up rates may be stifled because it is 'all too hard' for consumers to navigate, or because products get a 'bad name' after consumers lose faith having made mistakes about the benefits they may deliver.

Limits on the rate of expansion of the capacity control market should be established. This will ensure that innovation occurs in a marketplace with measured and gradual growth, where consumers can become accustomed to the concepts, products, and use of capacity control devices and the benefits that can be derived from them.

➤ **Assessing the benefits when consumers can't 'try before they buy'**

Direct load control products are based on the same principles as cost reflective pricing. With cost reflective pricing a consumer can assess whether to use an appliance at a time they know the price is high and can weigh up the pros and cons of doing so. It is, however, more difficult for households when they are signing up to a load control offer to assess the potential loss of amenity (a subjective and highly individual measure) that the product may create.

For example, how will consumers properly weigh up the future loss of amenity caused by the automated cycling down of an air conditioner at peak times against the energy cost savings that may flow to them, without having experienced that loss of amenity?

Consumers must be provided with clear information about the likely impacts to amenity in their situation, i.e. what a household with a similar number of occupants, similar appliances and usage patterns can expect when signing up to a direct load control product.

➤ **No long lock-in contracts**

As outlined in the section on cost reflective pricing, the energy needs of a household can vary significantly from year to year. For example, a new baby in the house can lead to a greater use of air conditioning or heating and more people home during the day, or a change in employment status may mean that people are at home using energy far more often.

Consumers need the flexibility to leave direct load control contracts if the loss of amenity that was alright last year is not alright anymore.

While we recognise the importance of load reduction being secure or ‘bankable’ in order to deliver long term benefits, locking households—which account for less than one third of the load on the National Electricity Market¹¹⁰—into long term contracts is not the smart approach.

The regulatory framework must ensure sufficient flexibility is provided to consumers who opt into capacity control products, to the exclusion of long lock-in contracts and harsh termination fees.

➤ **Complex bundling of direct load control products with other services**

Bundling products is an attractive marketing tool as it creates a single multi-dimensional product that gives energy retailers greater pricing flexibility. In markets where competition is low the potential for consumer detriment being caused by product bundling is high.

For example, consumers in the Australian Capital Territory wanting to sign up to a particular market contract with retailer ActewAGL, have to accept the bundling of other products and services, including agreeing to a land line telephone contract, in order to receive the savings on offer.¹¹¹

Bundling of products and services is a legitimate innovation by suppliers, and can lead to more competitively priced goods and services. However, it can have serious anti-competitive effects where it is practiced by suppliers with significant market power, leaving consumers with little ability to exercise their own market power by choosing another supplier.

It can also create unnecessary complexity which leads consumers to make sub-optimal choices, as illustrated by Oren Bar-Gill:

“Mistakes about a product’s value can lead consumers to buy a product that they should not buy or to refrain from buying a product that they should buy. These are welfare-reducing consequences of consumer mistakes. With multidimensional products the question is no longer a binary one..... if consumers misperceive the value of a certain product dimension, or of an

¹¹⁰ Residential electricity consumption in NSW, ACT, Victoria and Queensland is less than 30% of total consumption according to Table 3.3 in Electricity Supply Association Australia (ESAA), *Electricity Gas Australia*, 2013

¹¹¹ St Vincent de Paul Society, *Australian Capital Territory, Energy Prices July 2009 – July 2013* by May Mauseth Johnston, September 2013, pg 8.

enhancement of a certain product dimension, then we cannot count on the market to produce the optimal product design.”¹¹²

Processes for unbundling in dispute resolution, particularly if the products and services cross ombudsman and regulators, can also be extremely problematic. This issue is likely to arise with new solar leasing businesses (see box on page 60).

Where incentives are offered as part of a bundled direct load control/retail market contract, the value or cost of the direct load control measure must be made explicit in dollar or value terms.

Product bundling of direct load control should be closely examined when designing an appropriate regulatory framework, which provides space for innovation and competition and creates safeguards for consumers in the marketplace. Regard should be paid to:

- ✓ explicit informed consent must be provided prior to locking consumers into bundled direct load control contracts;
- ✓ clear and relatable information about the potential for loss of amenity must be provided;
- ✓ the costs associated with the direct load control should be spelled out; and
- ✓ offers should be standardised so consumers can make proper comparisons, and make smart choices.

➤ **Potential for market exclusion**

Capacity control products may not be attainable for consumers on low or fixed incomes or those living in rental accommodation, as they cannot afford the products themselves or are unable to negotiate with landlords to have them installed.

Consumers with low literacy and numeracy rates, languages other than English or who are not ‘tech-savvy’ may be excluded from the potential that direct load control products can

Unless care is taken when designing products and the consumer protection framework, consumers who could most benefit from reductions in high energy bills may find themselves excluded from the marketplace.

¹¹² Oren Bar-Gill, *The Law, Economics and Psychology of Consumer Contracts*, 2007, pg 15

bring—unless technologies are simple to use and have manual overrides.

➤ **Technical problems, maintenance and product redundancy**

Technically, there are many issues householders may also be concerned about:

- the reliability, maintenance and expected redundancy of technologies;
- whether interrupted operation will harm the appliance;
- whether their household wiring will need upgrading to accommodate the new appliance;
- whether they can transfer their appliance to another dwelling or energy provider;
- how well it will operate with other existing and yet-to-be-acquired technologies in the house; and
- whether communication capabilities of the appliance leaves them vulnerable to hackers or market players misusing their data.

Due to the potential involvement of electricity retailers, distributors and appliance manufacturers in the supply and operation of the equipment, it is vital to have a single point of contact and a simple and accessible complaint handling process if issues arise.

➤ **Capacity Control Products should never be used as a credit management tool**

We support the Energy Market Reform Working Group's position that retailers should be able to offer direct load control as part of their electricity supply offers but that they should be prevented from using direct load control to "manage customer accounts".¹¹³

In particular, retailers should not be able to require that a consumer with account arrears be placed load or capacity control contract prior to negotiating an affordable payment plan or as a means of avoiding disconnection.

¹¹³ Standing Council on Energy and Resources' (SCER) Energy Market Reform Working Group (EMRWG), *National Smart Meter Consumer Protections and Safety Review, Protections, Officials' report*, November 2012

Policy consideration should also be given to the potential for the bundling of direct load control retail market offers with significant pay on time discounts being used by retailers to “manage customer accounts”.

A case in point – Energex and Direct Load Control

Since 2008, Energex, the electricity distributor for South-East Queensland, has developed initiatives to reduce peak demand. Since 2012, it has operated a “Positive Payback” rewards program, which currently applies to air-conditioning, hot water systems and pool pumps.

For hot water systems and pool pumps, consumers are eligible for a \$100 (hot water systems) or \$250 (pool pumps) reward if they select a ‘hot water economy tariff connection’, which only allows for electricity use outside peak demand times (4-8pm). This is a form of time-of-use tariff, rather than direct load control.

There is an additional load control program for pool pumps, with a reward payable (\$150) where a consumer purchases a minimum 5-star energy efficient pool pump.

Consumers who replace or purchase a new and accredited air conditioner and agree to participate in the load control program, are rewarded with \$150 (for systems less than 4kW), \$250 (for systems between 4kW and 10kW) or \$500 (for 10kW or greater) as part of Energex’s ‘peak smart’ program.

This hybrid of a load control program and Critical Peak Rebate automatically cycles the air conditioner operation, similar to placing it on the economy setting, for short periods on the few days a year when there is forecast to be greatest peak demand. The system is designed to be ‘set and forget’ so consumers will not notice any difference to their amenity.

Energex’s model does not rely on smart meters or technology, but rather uses ‘ripple control’ (frequency sensitive relays triggering circuit breakers) which doesn’t require new network investment. (Ripple control is not available in all jurisdictions, including Victoria).

To receive their reward, consumers must complete an online application, agree to comply with terms and conditions and install a ‘signal receiver’. Consumers can opt out of the peak smart program by giving seven days written notice, but must uninstall and return their signal receiver (at their own cost) before the cancellation takes effect.

Energex has entered into partnerships with a number of appliance retailers which have agreed to promote the reward program in their marketing and advertising material.

While there is yet to be any evaluation of the programs, Energex reports that uptake has been positive, and is largely due to 'making it easy for our customers'. Energex also reports it is on progress to reach its target of 144 MW peak demand reduction for the period 2010-15.

The air conditioner program was based on a 2007 – 2009 trial, in which 94% of consumers reported that they did not notice any difference to their comfort levels when their air conditioner was cycled.

More information is available at:

<https://www.energex.com.au/residential-and-business/rewards-for-air-conditioning-pools-and-hot-water>

A case in point – lessons learned from the solar experience

The rise and rise of rooftop solar (PV) panels provides a useful insight into the difficulties consumers face with the rapid development of new complex technologies.

Australia's solar energy market has grown rapidly over the last five years, driven by generous State feed-in tariffs and Federal rebates. Rising energy prices have also driven consumers to seek alternative ways to source energy. The effect has been that over 1 million Australian households now have a PV system on their roof¹¹⁴ and the price of systems is dropping, with solar now cheaper than buying electricity from the grid.¹¹⁵

The rate of development of the solar market outstripped the development of consumer protections to support it. Consumers have faced a wide range of problems in accessing, installing and using solar technologies, including installation

¹¹⁴ <http://ret.cleanenergyregulator.gov.au/Latest-Updates/2013/April/one-million-solar-panel-systems-installed>

¹¹⁵ <http://reneweconomy.com.au/2014/solar-grid-parity-why-australia-leads-the-world-80853>

of faulty panels and inverters, difficulties connecting to the grid, lack of recourse as companies have unexpectedly exited the market, and incorrect billing with changing feed-in tariffs.

This has seen complaints about solar companies to Consumer Affairs rise from only five per month in 2007 to 183 per month in 2014.¹¹⁶ The Energy and Water Ombudsman Victoria receives between 2500 and 4500 solar complaints per quarter, with top consumer issues incorrect billing (69% in the last quarter) and problems with receiving feed-in tariffs (31% in the last quarter).¹¹⁷

The Clean Energy Council has attempted to address this lack of consumer protection by developing a voluntary Code of Conduct for solar retailers.¹¹⁸ There is, however, no requirement for solar retailers to become signatories.

New solar leasing business models will introduce further complexity and confusion for consumers. Under these models, a company will install PV panels for 'free', with the household paying for the panels through a monthly charge or a charge per kWh of energy generated. This model has the potential to make solar power more accessible, including for those on low incomes or living in rental accommodation. However, it also has the potential to create financial detriment if the true costs of leasing are not transparent and clear—consumers should have the right to compare the purchase of solar using a lease model compared to purchasing outright or other credit contracts (i.e. personal loan, extending a mortgage). If left unregulated, this good market innovation could simply create winners (people who can afford to buy solar panels outright) and losers (people paying very high costs of credit for 'free' solar panels).

CONSUMER ACTION THINKS: Australia's solar market is still very dynamic and in need of strong consumer protections. Consumer Action recommends that any solar leasing company applying for exemption from retailer authorisations must sign up to the Clean Energy Council's Solar PV Code of Conduct and be a member of all relevant industry Ombudsman schemes.

Solar leasing companies must also be required to provide consumers with clear and transparent information about the true cost of credit.

¹¹⁶ <http://www.smh.com.au/national/rise-in-consumer-complaints-over-solar-power-20140519-38k8b.html>

¹¹⁷ See the quarterly EWOV Solar and Smart Meter Update, archived at: <http://www.ewov.com.au/reports/solar-and-smart-meter-update-april-2014/archive-solar-and-smart-meter-update>

¹¹⁸ See <http://www.solaraccreditation.com.au/retailers/solar-pv-retailer-code-of-conduct.html> for more information.

4. Data Access, Privacy and the Marketplace

4.1. Key Points

- Consumers are concerned about privacy and security in the evolving hi tech energy market.
- Consumer preferences about how their consumption data is managed must take precedence over the industry preference of facilitating third party participation and industry access.
- An automated and instantaneous approach to sharing consumption data between market players could further entrench an already distrustful customer base.
- Consumer access to consumption data must be easy, cheap and have standard terms and conditions of use.
- Consumption data should be afforded the same privacy protections as personal information.
- An agreed set of primary and secondary purposes for data usage should be established.
- Use of data for an agreed secondary purpose, such as direct marketing, should require consumers to opt into their data being used for the purpose, rather than opting out.
- The level of consumer distrust cannot be managed by compliance with minimum standard and regulations alone, industry must do more to engage consumers and engender confidence in the marketplace.

4.2. Data Access and Privacy Considerations

Having ready access to energy and metering data and control over how it is stored and shared will be vital for consumer engagement and building trust in the demand side energy marketplace.

In its *Power of Choice* review, the Australian Energy Market Commission (AEMC) recognised that:

*"all consumers have a right to access, receive, and control the sharing of, their energy and metering data (this is in accordance with privacy, security and other consumer protections arrangements)."*¹¹⁹

All energy and metering data provided to consumers is subject to confidentiality, security and privacy arrangements under federal and state energy laws.

Insights into consumer behaviour and preferences can be sourced from real time data collected by smart meters, making it a very marketable commodity. Retail offers can be structured around it, advertising can be geared towards individual habits and preferences and market players can profile households with it.

While this data can lead to tailored and individual products that provide the best service and lowest cost for a consumer, it also has the potential to enable one industry player to gain unfair competitive advantage over other energy service providers.

It can also highlight very specific household living habits—when you're at home, when you're not, when you shower, when you use your heater or air conditioner—leaving consumers feeling exposed, vulnerable and distrustful.

4.2.1. Data Access

There are two forms of consumption data consumers may want access to:

1. Real time unverified data from smart meters to assess running costs; and
2. Validated billing data, which consumers can use to analyse usage, consumption patterns, costs and bills, but that can only be provided by the consumer's retailer and/or distribution business.

¹¹⁹ Australian Energy Market Commission (AEMC), *Power of Choice review – Giving consumers options in the way they use electricity*, Final report, November 2012, pg 51

Under the *National Energy Customer Framework* consumers have a right to access their verified billing data free of charge. The *National Energy Rules* provide consumers with a right to request unverified data, however in some circumstances consumers, or their authorised representatives (including Energy Services Companies) may have to pay a fee to access it.

While verified data is already available to consumers free of charge, it is ready access to **unverified data**, in a simple and clear form, which is essential. Access to this data will allow for informed and active engagement, where consumers can make optimal choices to suit their needs, ultimately leading to increased competition and lower retail margins.

In its review of smart meter web portals, the Moreland Energy Foundation concluded:

*"A detailed energy consumption profile is important because peak, shoulder and off- peak rates can significantly change the cost for consumers who use their electricity at different times of the day. This means consumers can make an informed choice on the best retail offer for them, based on how much energy they are using and when."*¹²⁰

While unverified data may be available to some consumers, the process for obtaining it can be a barrier to access in and of itself.

For example, in Victoria, consumers can access unverified consumption data if they have an in home display unit or their supplier has an online portal. As consumption data is subject to confidentiality arrangements, consumers must first register to access this data, via the online portal or by registering their in home display unit.

Third party energy service companies (ESCOs) may provide a useful service in the residential energy market, helping consumers understand their data and compare which energy products would best suit their consumption needs.

While some consumers may be able to afford to outsource the evaluation of consumption data to ESCOs, many will not. Further, many consumers may have genuine concerns about providing access to consumption data to third parties given the granular insights it can provide into how a household operates.

¹²⁰ Moreland Energy Foundation, *Smart Meter Web Portals – A suitable means to evaluate retail energy offers?* April 2013, pg 7

An engaged and trusting marketplace will not develop if a consumer's optimal choice is to simply hand over their consumption data to third party entities, such as ESCOs or rival retailers, in order to obtain a better energy offer.¹²¹

A 'handing over data model' could create a retail market lacking in transparency and could lead to a move by retailers and ESCOs for automated and instantaneous data requests and access, which can breed further distrust in a customer base that already has concerns about how data is collected, stored and used.

The primary focus for regulators and industry should be providing the greatest number of consumers, rather than third party players, with appropriate tools to easily access their own consumption data.

Data access processes must be simple and should:

- include standardised information on how to seek access to data and the benefits of doing so, made available in multiple formats, such as print, online and video and in languages other than English;
- include standardised terms and conditions of access and use, written in plain language and should not require a law degree to understand;
- ensure any costs associated with seeking access to unverified consumption data are made explicit before an access request is made; and
- ensure any costs for access are minimal, and accurately reflect the cost of administering the provision of access for that consumer. Costs should not pose a barrier to access and should be waived in situations of hardship or where affordability issues are raised.

4.2.2. Privacy, Security and Trust

Through our survey and research we have found that consumers are concerned about the management and storage of their consumption data and personal information, and how companies may use this information for marketing purposes.

Data security, access and privacy arrangements in energy markets were considered though the AEMC's *Power of Choice* review and have been strengthened by amendments to the *Privacy Act 1988* (Cth).

¹²¹ See Sapere research group, *Scoping study for a consumer energy data access system (CEdata)* for the Department of Resources, Energy and Tourism (DRET), August 2012 regarding discussion about customers authorising retailers and ESCOs to access consumption data.

The Lockstep report into smart meters and privacy provided to the Victorian Government, concluded:

“There needs to be an appreciation that even though the fact of electricity consumption data collection has not changed, the dramatically increased frequency of collection—from once every three months to once every 30 minutes—significantly changes the value and meaning of the data. The richness of the data can yield information about behavioural patterns within each household. It is this richness which creates the most important new privacy risks for householders.”¹²²

Consumer concerns about consumption data being used for purposes other than providing a bill are very real. Consumers do not want their data being used for marketing by their own retailer, other retailers or third party players, without their express permission.

In a market fuelled by innovation, where big data is a big commodity, it is vital that secondary uses of consumption data do not overshadow its primary purpose.

In our view, electricity consumption data must be afforded the same protections that personal information is afforded under privacy laws and regulation. In particular, consumption data should be subject to similar protections as those provided under the Australian Privacy Principles (APPs) enshrined in the *Privacy Act 1988 (Cth)*.¹²³

As argued in the Lockstep’s report:

“In privacy, a central issue is the degree to which any secondary use of information is related to the primary purpose for collection, and the likelihood that individuals would perceive secondary use to be reasonable.

The further along the spectrum we venture, the harder it becomes to argue that the secondary usage is directly related to the primary collection purpose.”¹²⁴

The APPs only apply to private entities with an annual turnover of \$3 million or more, and as such most large energy businesses are already required to comply with the *Privacy Act 1988*. The APPs could well fail to regulate emerging third party

¹²² Lockstep consulting, *PIA Report, Advanced Metering Infrastructure (AMI) for Dept of Primary Industries*, August 2011, pg 28

¹²³ See Seed Advisory, *Advice on Privacy for the National Smart Metering Program: Consultation Draft, Draft Report for the Energy Market Reform Working Group*, April 2013

¹²⁴ Lockstep consulting, *PIA Report, Advanced Metering Infrastructure (AMI) for Dept of Primary Industries*, August 2011, pg 22

players however, including smaller ESCOs with a turnover of under \$3 million whose business models rely on accessing and using consumption data alone.

We therefore support the development of a limited and industry-specific privacy regime, to ensure that all market players are bound by appropriate minimum privacy standards. Such a regime should:

- develop common standard contract terms that cover all *permitted* uses of metering data;
- articulate the *agreed* primary and secondary purposes for the collection and use of metering data; and
- ensure that consumers have to **opt in** (rather than opt out from) to any use of metering data for any *agreed* secondary purpose.

4.3. Consumer Impacts – what we know now and what we can see coming

Industry and consumer interests can vary significantly when it comes to data sharing, data access and privacy regulation. Concerns about privacy and security can engender a perception that ‘big brother is watching’ and a fear that data will be used to advantage industry at the expense of consumer interests.

For this emerging market to be effective, all parties need to be engaged in the ramping up of communication and data flows between households, devices, retailers, distributors and third party players. In this mix it is consumers who are the lynchpin – without their buy-in the market will not thrive.

Our survey found that respondents’ **single greatest concern** in relation to the emerging energy services driven by new technology was privacy and data management.

We asked respondents to rate their level of concern about how their household consumption data would be managed and by whom and whether their privacy would be protected in the emerging market. **85%** of respondents advised they were concerned or somewhat concerned about these issues.

Respondents nominated privacy and data management issues in 3 of the 4 top-ranked concerns about the emerging hi-tech energy market (see **Table 1** following page).

Table 1: CALC/ATA Survey results - respondents' ranking of concerns associated with new and emerging energy services¹²⁵

Ranking	Concern	Average rate [^]
1 st	Privacy of information about your identity and other personal information	3.23
2 nd	Whether energy or other businesses will use your consumption information to target their marketing to you	3.86
3 rd	Whether you can adequately afford to access these energy services	4.38
4 th	Privacy of information about your household's electricity consumption	4.46
5 th	The effect on existing appliances and whether you will be able to purchase/access new appliances	5.15
6 th	Whether you will be confident negotiating a new contract with an energy (or other business) in relation to any of the services identified in this survey	5.31
7 th	Whether you will have increased comfort in your home with the use of new energy services such as remote communication	5.55
8 th	Whether you have sufficient information regarding the different appliances	5.89
9 th	Whether you will need enhanced access to the internet	7.18
[^] This is the average ranking score (from 1 to 9) that the respondents gave for each issue - with 1 being the highest level of concern and 9 being the lowest level of concern.		

Distrust can breed an aversion to making any change to the status quo.

Distrust can breed an aversion to making any change to the status quo, and behavioural economics tells us that consumers already have a default bias for sticking with what they know, rather than making a choice that may provide a better outcome.

A market that allows distrust to permeate, even if it is based more on perception than reality, will struggle to engage consumers and will not achieve the desired aims of demand reduction.

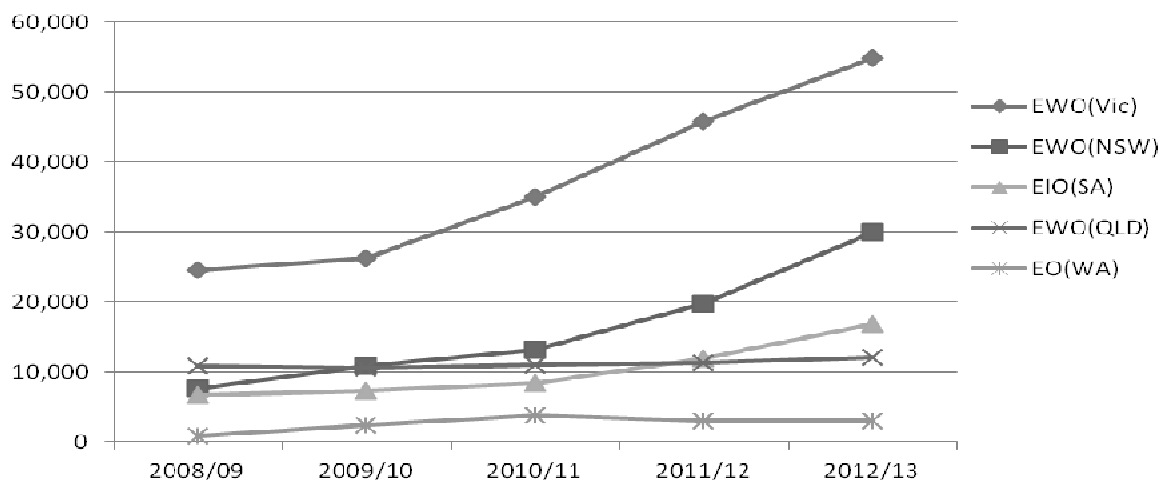
¹²⁵ Consumers in a High Tech Service Environment Survey, CALC/ATA June 2013, question 19. See Appendix A

The large increase in complaints to most Energy Ombudsmen around Australia over the past five years, tells us that consumer dissatisfaction with energy markets continues to grow.¹²⁶ Complaint numbers have increased in some jurisdictions at a rapid rate; in NSW alone, there has been a 291% increase in electricity complaints made to the Ombudsman since 2008. In NSW and Victoria annual complaint numbers are no longer in the thousands, but in the tens of thousands (see **Charts 10 and 11**).

Chart 10: Percentage increase in electricity complaints to Energy Ombudsmen in 2012/2013, compared to 2008/2009¹²⁷

	2008/09	2012/13	% increase compared with 2008/2009
EWO(Vic)	24,578	54,903	124%
EWO(NSW)	7,650	29,924	291%
EIO(SA)	6,702	16,921	153%
EWO(QLD)	10,873	12,107	11%
EO(WA)	874	3,112	256%

Chart 11: Complaints about electricity made to Australian Energy Ombudsmen - 2008-2013¹²⁸



¹²⁶ A review of Annual Reports of Energy Ombudsmen from Victoria, New South Wales, South Australia, Western Australia and Queensland reveal year on year increases in electricity complaints between 2008 and 2013, with the exception of WA which has seen a slight reduction in complaints in 2012 and 2013.

¹²⁷ Data Source – Annual Reports 2008/09, 2010/11, 2011/12 and 2012/13, EWOV, EWON, EIOSA, EWOQ, EOWA.

¹²⁸ Ibid.

Dissatisfaction and distrust with energy markets is not unique to Australia. A recent joint *State of the Market Assessment* into the retail energy market in the United Kingdom found a deterioration in consumer confidence and trust with the energy industry, with only approximately 50% of consumers being satisfied with their energy supplier.¹²⁹

Complaints and consumer distrust are rarely caused by one thing. The significant increase in energy prices, the aggressive and sometime misleading or deceptive conduct of door to door salespeople and the complexities consumers have faced in the rapid up take of solar, coupled with a sometimes negative picture painted in the media, have all contributed to a rise in complaints, dissatisfaction and distrust.

Respondents to the CALC/ATA survey made the following observations about privacy, data access and security, which provide some insights into how consumers may react to the emerging hi tech market:

CALC/ATA Survey - Consumer Concerns – privacy issues

Comments provided by survey respondents concerned about **privacy issues** included:

"Lack of privacy and control is a major concern to me."

*"Monitoring my power use is an **invasion of my privacy**. Wireless control is control of my behaviour. Reading my power bill already allows me to adjust my usage. I do not need '**big brother**' to do this for me."*

*"I feel uncomfortable in permitting energy companies to have a greater insight into the energy consumption within my home. I would want to ensure that there were very **strict privacy guidelines** about what purpose they use the information gathered."*

*"**Who else will have access** to the information obtained & how will privacy be protected?"*

"Very concerned about privacy and allowing agencies any access to my household. Have had bad experiences already."

*"I **don't trust** the utilities. They have access to my private data - this has **an economic value** and they are not paying me for it."*

¹²⁹ Ofgem, Office of Fair Trading and the Competition and Markets Authority, *State of the Market Assessment*, March 2014, pg 10

*"I would like to have **government assurances** in the form of a bill passed through state or federal parliament to guarantee that portal information is not passed to third parties and only kept between the house owner and the service provider."*

In relation to **data security** more broadly, comments included:

"It sounds incredibly insecure. Already it has been demonstrated that a simple method can be used to determine energy usage of a house and so target it for burglary. This gives an incredible range of options to be targeted by others to give information or modify devices and their control remotely. I would not trust the security of these devices based on most computer security information I have."

"What security will prevent a hacker from controlling my premises?"

"Negative is the sharing of detailed information with energy providers which can clearly identify when the house is not occupied and therefore reduce the security of the property if the data is not properly managed."

"In addition to privacy, the security of my data and appliances concerns me."

Much has already been done to consider and address privacy and data security from a regulatory perspective, with the changes to the *Privacy Act 1988*, which requires organisations to manage personal information in an open and transparent way and with the recommendations and changes that will flow from the AEMC's *Power of Choice* review.

The AEMC is currently undertaking rule change processes to allow customers better access to their own consumption data and to expand competition in the provision of metering services to properties, both of which open new channels for access to data and privacy concerns.¹³⁰

Industry will however, need to do more than simply comply with minimum regulatory requirements to re-establish trust and rebuild confidence with Australian consumers.

The key to addressing consumer distrust and perceptions of being taken advantage of by industry is to keep it simple and streamlined with the security of a household's energy data and personal information being paramount.

¹³⁰ See <http://www.aemc.gov.au/Rule-Changes?status=1&topicId=0> for more information.

- **Access to and use of consumption data should be made easy for the consumer.**

Metering data needs to be translated into a relatable and 'real world' language, where consumers can interpret it easily and make optimal choices about how to manage their own consumption.

- **Rules about sharing data between market players must be both transparent and consumer initiated.**

A continued power imbalance where retailers, distributors or third party energy companies have access to information about usage patterns or consumption that consumers themselves do not have, will not increase trust or consumer confidence in the market.

- **Safeguards should be implemented to ensure:**

- data ownership is clear;
- access to data is granted when required;
- data is only used for agreed primary purposes and can only be used for secondary purposes with explicit consent;
- data is not deleted without consent; and
- no unauthorised party can access data or use it for marketing purposes or profiling without permission.

Steps to standardise and simplify the process for access to consumption data will lead to a more engaged and more trusting customer base.

Simple steps will also go a long way to allay consumer fears regarding third parties, hackers or competitors gaining insight into their household behaviour through their data.

5. What's on the Horizon

There is much innovation on the horizon, which may not have applications to households in Australia in the short term, but which should nonetheless form part of the thinking and design of a fair and transparent marketplace to ensure our ability to benefit from future technologies.

Consumers, already faced with a dizzying array of pricing structures, market players and hi tech 'solutions' for managing consumption levels, will find themselves being pitched new products and services that will make navigating the market even more complex.

The types of energy products offered may also change in future. New aggregated products may include energy efficiency, cogeneration, demand management, export to, and import from the distribution system. Rather than purchasing an amount of energy (kWh), a consumer may choose a thermostat-measured "comfort level" for heating, or select a "pay as you go" or capped cost.

Third parties may bypass the energy provider altogether in order to provide energy-related services and products, such as:

- Wi-fi thermostats that bypass the smart meter to control a consumer's appliances and communicate directly with the "cloud".
- Installing a second meter to either verify meter readings or to provide additional functionality—such as the Wattcost (which clips onto the smart meter and provides more granular data).
- Inverter suppliers for solar photovoltaic (PV) systems can provide information on a consumer's gross usage and power generation that existing net meters used for billing purposes cannot.

Insights into consumer behaviour and preferences will become a more marketable commodity. For example, with greater granularity of data, a kettle boiling may trigger ads for tea on the consumer's TV. Pay TV providers may offer discounts on their services and hardware if you provide them with access to your energy data so they can tailor advertising to consumption habits.

While consumers may find these ideas disturbing and intrusive, most Australians who use Facebook or Google are already exposed to this practice. For example an advertisement for a camping store appears when the user searches for tents. Users of Google and Facebook implicitly agree to their terms of service and data privacy

arrangements, however more stringent controls are needed when it comes to direct marketing based on energy data.

Group energy-purchasing schemes and renewable energy cooperatives are still in their infancy in the Victorian market and currently represent the only aggregation of small customer energy supply and generation. In an increasingly complex energy market, third parties may soon be able to offer a service to optimise all other energy services for the consumer and tailor a product based on current consumption data from their smart meter. These third parties could base their offering on more localised products, and could negotiate more favourable bulk energy buying and selling prices, demand control and other system support services to utilities that an individual consumer could not. In the United States, companies like Comverge, Viridity Energy and CPower already provide these services.

With low-income, non-English-speaking and low literacy households missing out on many of the benefits of smart grids, aggregators could help address the imbalance.

Electronic marketing and social media provide new opportunities for aggregators to reach consumers. “Groupon”-style promotions may be used for marketing appliances and email energy reports could easily target and promote smart appliance purchases. If, however, electronic means are the predominant medium for disseminating information to consumers, consumers without internet access will be disadvantaged.

Changes in patterns of use

The impact of household energy patterns on the grid is likely to further change in the coming years for a number of reasons:

- Increased onsite renewable energy generation and battery storage.
- More efficient appliances.
- Increased building energy efficiency due to stricter buildings standards.
- The effect of population in diminishing house size per person.
- Extreme weather events or change in climate patterns resulting from climate change.
- New technologies in the home such as electric vehicles and smart appliances.
- Changing appliance costs, as some technologies become more affordable.
- The ability to de-link from the grid and operate in island mode.

The impact these elements will have on energy supply and demand is unclear—in some cases they could have a net upward impact on overall energy consumption or peak demand, and in others they could lead to decreasing consumption or demand.

While energy prices in Victoria have increased substantially in real terms over the past few years, there has been very little change of energy cost as a proportion of household income over past 20 years.¹³¹ It is anticipated that with the declining cost of renewable energy generation, price issues will become less urgent in the years to come.¹³² Looking far into the future, long-term projections indicate that electricity demand will reduce by up to 22% (compared to 2006 levels) by 2050.¹³³

Smart Appliances

“Smart” appliances currently commercially available include:

- Climate control (heating, air conditioning, including thermal storage air conditioning).
- Refrigeration (refrigerators, freezers).
- Thermal storage air conditioning.
- Water heating.
- Lighting (e.g. Philips offer a wi-fi product that can be remotely activated).

Penetration of smart appliances in the residential sector is likely to increase when they reach maturity in their development, are considered secure in operation and there are clear processes in place in case of fault in operation or system integration.

Electric vehicles

Electric vehicles (EVs) today have batteries, usually lithium-ion, ranging in energy capacity from about 5 kWh for short-range hybrid vehicles to around 50 kWh for high performance battery-only vehicles.¹³⁴ EVs have the potential to be detrimental to the operation of the electric grid if a large number of units charge simultaneously (for instance when people arrive home at the end of the working day). They also have the potential to provide energy supply grid stability during peak demand

¹³¹ Neilson, F., *Energy Futures Inquiry: Using Social Media to Capture The Wisdom of Crowds and Identify Consumer Preferences in Regard to Energy Delivery Technology Over the Coming Twenty Years*, The Futures Project, 2013, pg 39

¹³² Ibid

¹³³ Graham, P. et al, *The Heat is On: The Future of Energy in Australia*, Commonwealth Scientific and Industrial Research Organisation ('CSIRO') Australia, 2006, pg 106

¹³⁴ Kassakian, J., Schmalensee, R. et al, *The Future of the Electric Grid*, Massachusetts Institute of Technology, 2011, pg 117

periods or blackouts and smooth load by charging at different times across the night.

Consumer demand for these vehicles has been lacking to date. While the internal combustion engine is expected to remain dominant in the short term, the number of EVs is predicted to increase significantly in Australia in the next 10 years.¹³⁵

In China, EV charging is done through swap stations where batteries can be exchanged.¹³⁶ Australian company Better Place modelled their EV rollout on recharging only, without providing any further grid supply or support services. The CSIRO, in partnership with the Victorian Government, distributor SP AusNet and others, is taking things further in a live trial of EVs. The trial is to investigate the integration of EVs into household power and energy management systems, their likely impact on the grid, and their potential to supply household electricity and manage peak electricity demand.¹³⁷

At the Toyota Infotechnology Centre in the United States, communications are being trialled between a utility, a home charger, an EV and a driver's mobile phone to coordinate optimal charging times and potentially reduce overall grid impacts from EVs.

Due to their higher cost compared to conventional petrol-fuelled vehicles, EVs are likely to be clustered in selected high-income, eco-conscious neighbourhoods. Low-income groups are therefore less likely to access such energy services.

Distributed energy generation and consumption, energy storage, off-grid technology

Distributed generation for small energy consumers consists of small scale fossil-fuel and renewable energy generation such as:

- gas turbines;
- diesel engines;
- PV;
- co-generation;
- solar thermal (including hot water) and geothermal;
- biomass;

¹³⁵ <http://www.csiro.au/Outcomes/Energy/Powering-Transport/Electric-driveway.aspx>

¹³⁶ Webber, C., *DSM Market Potential Assessment: Austin Energy*, DNV KEMA, 2012, pg 8

¹³⁷ *Electric Driveway: vehicles and household power*, Commonwealth Scientific and Industrial Research Organisation ('CSIRO') Australia, 2014, accessed 9 June 2014, <http://www.csiro.au/Outcomes/Energy/Powering-Transport/Electric-driveway.aspx>

- micro wind and micro hydro;
- fuel cells; and
- either standalone storage (such as lithium ion batteries, flywheels, compressed air, or pumped water) or combined generation and storage options which are embedded in the network close to end users.

Off-grid technologies may involve any of the above, but are not connected to the grid.

Energy storage was the largest segment for clean-tech investment in the third quarter of 2011.¹³⁸ However energy storage technologies have only been used in a small number of pilot projects and remain too costly for most applications. While it is currently not cost effective to store electricity on the grid in bulk, a high penetration of EVs and the development of new storage technologies are likely to alter this, although it is unlikely before 2030.¹³⁹

A number of projects in Europe (such as GRID4EU and EcoGrid) have been investigating the issues around distributed energy generation and the potential for grid automation and control solutions. In the United States, The Bonneville Power Administration is investigating allowing wind generators to supply the extra electricity to battery storage to correct any imbalance caused by intermittent wind generation¹⁴⁰. Legislation passed in 2011 provides tax incentives for grid storage for residential applications, in addition to grants from the Department of Energy which support community energy services.¹⁴¹ American Electric Power, Con Edison, Detroit Edison, Duke Energy, First Energy, and Southern California Edison are all undertaking trials.¹⁴²

While distributed generation may be viable and supported by Government subsidies and consumer sentiment (as can be seen by the rapid rate of PV installations in recent years), the extent to which it will be seen, and the form that it will take, will depend on:

- local environment concerns and restrictions (emissions, noise);

¹³⁸ KEMA Inc., *Market Evaluation for Energy Storage in the United States*, Copper Development Association, 2012, pg 4-1

¹³⁹ Kassakian, J., Schmalensee, R. et al, *The Future of the Electric Grid*, Massachusetts Institute of Technology, 2011, pg 2

¹⁴⁰ Ibid, pg 56

¹⁴¹ KEMA Inc., *Market Evaluation for Energy Storage in the United States*, Copper Development Association, 2012, pg 4-4

¹⁴² Ibid, pg 5-6

- the level of which any issues can be managed (such as voltage waveform distortion); and
- the changes brought about by the introduction of smart meters and the emergence of third-party aggregators and the types of service contracts they may seek to promote.¹⁴³

Upfront costs of distributed energy generation and storage and low feed-in tariff rates have historically been barriers to uptake by households. With the cost-effectiveness of going off-grid still some years away, it is likely that innovative ways of funding the purchase and installation of equipment will be developed. This is already seen in solar leasing models.

Due to the permanent nature of installation, household distributed generation and storage is almost exclusively undertaken by homeowners, with renters only being able to access this technology through body corporate or community ownership schemes. The cost of these technologies excludes low-income households, and system requirements may exclude some residential sites due to limited land (for geothermal) or roof orientation (for solar).

These barriers will prevent householders taking up off-grid distributed generation with storage en masse for the foreseeable future.

Mini-grids

Mini-grids incorporate clusters of distributed generation, storage, uninterruptible power supplies, or a combination of the three, with a single link to the grid and the capability of operating independently from the grid for extended periods.

There are currently 160 active mini-grid research trials worldwide. It is perceived that in most instances the cost of configuring an area as a mini-grid does not currently justify the reliability benefits, which may be achieved through other means, such as backup generators.¹⁴⁴

In Australia, the CSIRO is working on a number of mini-grid projects that target sites requiring reliability of supply, such as hospitals, shopping centres, apartment complexes, housing estates, industrial estates, educational institutions, and island and remote communities.¹⁴⁵

¹⁴³ APVA, pg 27

¹⁴⁴ Kassakian, J., Schmalensee, R. et al, *The Future of the Electric Grid*, Massachusetts Institute of Technology, 2011, pg 115

¹⁴⁵ *Minigrids research*, Commonwealth Scientific and Industrial Research Organisation ('CSIRO') Australia, 2012, accessed 9 June 2014, <http://www.csiro.au/Outcomes/Energy/Minigrids-research.aspx>

5.1. Consumer Impacts – What we know and what we see coming

The consumer impacts of the coming energy market innovations and reforms are uncertain, given the vast array of products and services outlined or predicted in this report, and those which are yet to emerge. What does seem certain is that the energy market will become increasingly more complex with continued focus on the demand-side market and the increasing use of web-based smart technologies.

There is real potential in this period of change for consumers to become disengaged or disadvantaged because of overwhelming choice and information. Behavioural insights about the way consumers make choices and respond to information, and consumer protections built with these in mind, will be fundamental to ensure that consumers are empowered to engage, and that both consumer and market benefits are realised.

Conclusion – Consumers in a Complex Market

Australia's energy market is becoming more complex as the nature of energy demand changes, and consumers are exposed to greater opportunities for demand side participation. During this dynamic time, innovation will be the key to ongoing prosperity but also to consumers realising the benefits of new products and services in managing their energy expenditure. For this new market to be competitive, productive and fair, it will be vital to empower consumers to engage with it.

Significant concerns about privacy and security, a general lack of understanding of energy concepts, personal usage patterns and which appliances use the most energy, awareness of smart grids, and fear of discomfort and remote control all present barriers to consumers embracing the potential benefits of the emerging demand side market.

If consumers fail to engage, or can't engage in an informed way, there is a real risk that the market will not achieve its intended aims of peak load reductions, increasing the efficiency of existing network infrastructure, delaying new network investment, decreasing the price of energy and providing better outcomes for consumers.

Further, if consumers are left behind because the market has been designed for the privileged few, there is significant potential for inequity, hardship and adverse impacts to the already most vulnerable members of our communities.

Simple steps to ensure innovation and consumer protections keep pace will enable this emerging market to be truly smart.

From our experience in dealing with consumers and energy markets over many years, our survey results and research, we consider the following broad principles will help guide the progress of the market:

- Industry and policy makers must consider what we have already learned about how consumers interact with and experience the energy marketplace, to ensure that the same mistakes of unchecked growth and consumer detriment are not repeated.
- Consumer preferences for engaging and using demand side technologies must

form part of the design of products, services and information. A market that ignores consumer preferences for retaining control over consumption, household appliances and metering data will not thrive.

- Consumers are not always rational when making choices about products and services and may not take the path the market has predicted they will take, or want them to take. Time and again we have seen the current model of saturation marketing, vague cost/benefit analysis and complex disclosures fail to engage the customer base. Industry will need to work hard to create a new model for informing and engaging consumers.
- The level of consumer distrust and concerns over privacy and security must be acknowledged, explored and addressed by industry and regulators.

The following specific steps will help avoid the many pitfalls this market already faces:

1. Easy access to real time data for all consumers, in a relatable format, is the priority. Consumers must be provided with the choice of a variety of tools to understand and manage their own consumption.
2. A consumer protection framework that empowers consumers. This needs to cover current market participants as well as new third party providers, and incorporate principles outlined in this report, including flexibility, product use disclosure, some product standardisation to enable comparison, clear and fair contract conditions, and accessible dispute resolution.
3. Education programs aimed at engaging consumers with this new marketplace and outlining the advantages it can bring, should focus:
 - first on the individual (e.g. how to save money, increase control over consumption);
 - then on the environment (e.g. avoiding new power stations and reducing carbon emissions);
 - then on the benefit to the wider community; and
 - finally the benefit to utilities (better grid and load management).

A one size fits all education program will not achieve the aims of creating an engaged market. Customer segmentation based on demographics, smart grid awareness, needs and preferences should be carefully tailored, and the

means of communication and language chosen carefully considered.

4. To address issues of consumer distrust, information should be disseminated by independent institutes, political agencies and consumer protection organisations in order to be seen as credible, impartial, build confidence and arouse interest.¹⁴⁶ Funding for such programs should fall to industry, who will be the ultimate beneficiary of an engaged customer base.
5. The focus should be on providing 'smarter' information, not simply 'more' information.

We know that increasing the amount of information available to consumers can create complexity and confusion, which in and of itself can be a barrier to participation. Information needs to be smarter and designed around what we know about consumer preferences and behavioural economics.

6. Information using relatable examples or case studies showing initial investment as well as ongoing savings in the near and longer term will help consumers make optimal choices, as will tailoring these figures to the individual household.¹⁴⁷

Consumers are uncertain and distrustful about initial set up costs, bill predictability and price volatility and whether the promised benefits will actually flow - clear, accessible and relatable information will go some way to addressing this.

There is great potential for a thriving demand side market to create numerous benefits for well informed and engaged consumers.

It is the responsibility of industry and policy makers to learn from the mistakes of the past and take steps now to build appropriate consumer protections and consumers' preferences into the design of the market and the products and services it will support.

¹⁴⁶ Webber, C., *DSM Market Potential Assessment: Austin Energy*, DNV KEMA, 2012, pg 137

¹⁴⁷ Ibid, pg 193

Appendix A - Summary of CALC/ATA Survey Results

Consumers in a high tech service environment

Consumer Action, with assistance of the Alternative Technology Association (ATA), conducted an online survey of consumers' attitudes and concerns regarding new technologies and energy services. The survey was distributed to 5,300 people on the ATA mailing list across Australia in June 2013. 302 households responded.

Interest in new energy management services (survey questions 1-5)

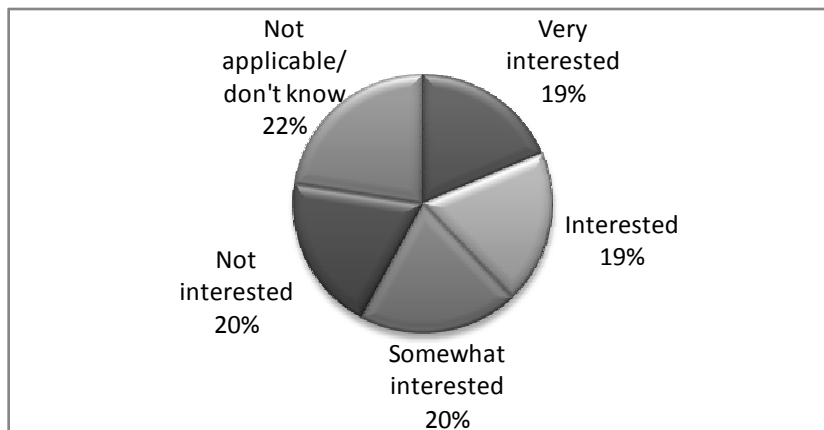
Respondents were asked to consider the information provided below and indicate how interested they may be in using these services in their homes.

Q1. Direct load control of air conditioners

Direct load control is a new function enabled by smart meters which will allow energy service providers to communicate directly with some of your appliances to reduce their use at peak times, such as air conditioners.

To enable energy businesses to have access to your appliance you would voluntarily enter into an agreement with them, and agree to contract terms which are likely to include rebates, or reduced energy bills, in return for them accessing your appliance.

Chart A - Interest in DLC of air conditioners

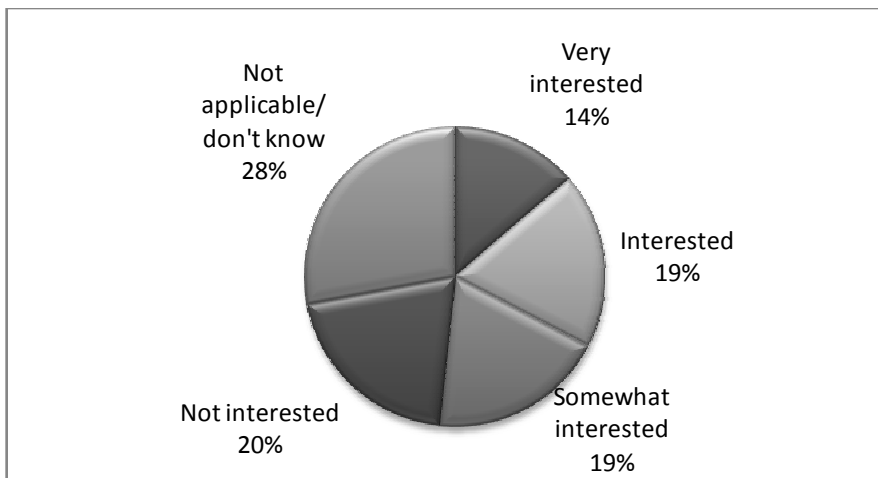


Q2. Direct Load Control of electric heating for split systems

As above, this is a new function enabled by smart meters which will allow energy service providers to communicate directly with your appliances. In this example it would communicate with your electric heating system, to reduce its use at peak times.

You would voluntarily enter into an arrangement with your energy business to enable them to access your appliance. Contract terms are likely to include rebates, or reduced energy bills, in return for them accessing your appliance.

Chart B - Interest in DLC of electric heating (split systems)



Q3. Direct Load Control of electrical hot water systems

As above, this is a new function enabled by smart meters which will allow energy service providers to communicate directly with your appliances. In this example it would communicate with your electric hot water system, to reduce its use at peak times by ensuring it was only heating water at, for example, off peak times.

You would voluntarily enter into an arrangement with your energy business to enable them to access your appliance. Contract terms are likely to include rebates, or reduced energy bills, in return for them accessing your appliance.

Chart C - Interest in DLC of hot water system

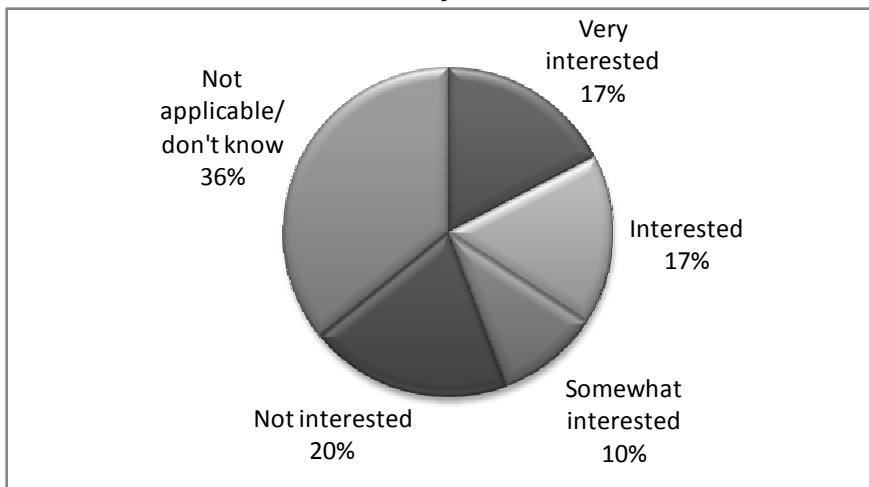
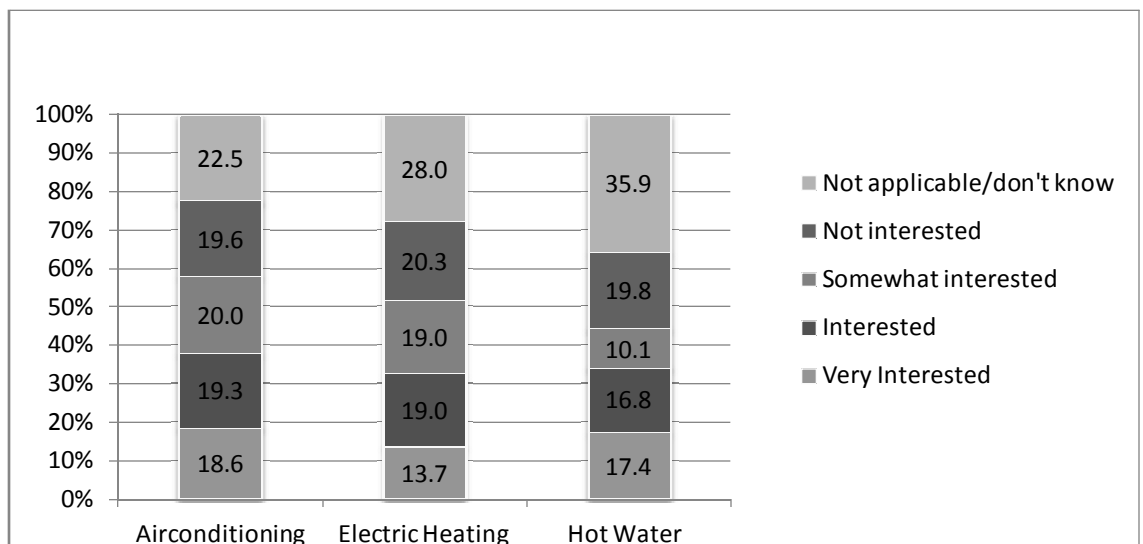
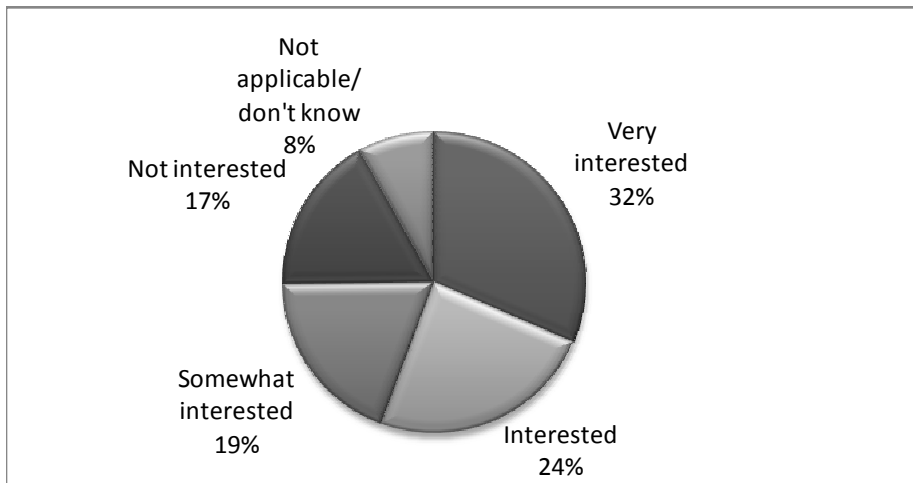


Chart D - Comparison of interest in DLC for air conditioners, heaters and hot water

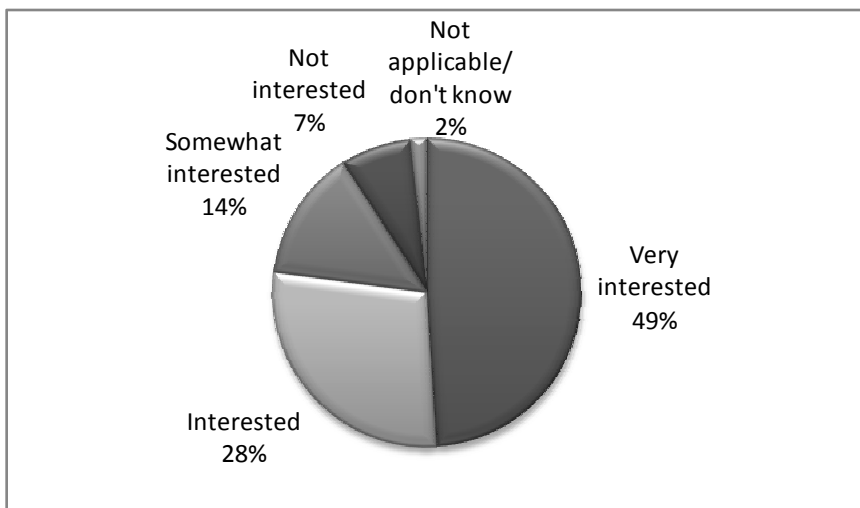


Q4. Remote communication with appliances

Through 'apps' on your smart phone or computer, you would be able to communicate with appliances, such as your heating unit when not at home, and for example, change your heater's settings to switch it on or off or adjust temperature settings.

Chart E - Interest in remote communication to appliances (through 'apps')**Q5. Display units/web portals that enable information to be provided to you by your service provider (or other parties) about your energy use.**

This will enable direct communication between you and your service provider (or other parties) to provide information on the way you are using electricity, such as how much and at what time of day. These display units could also include additional features such as forecasting usage (and cost), comparing consumption between similar households, and providing energy efficiency advice.

Chart F - Interest in display units/web portals

The impact these energy services may have (survey questions 6-8)

Based on the information provided in the previous section about Direct Load Control, Remote Communication and Web Portals, respondents were asked to indicate whether they agree or disagree with the following statements:

Q6. I believe some or all of the energy services outlined would help me reduce my electricity bills

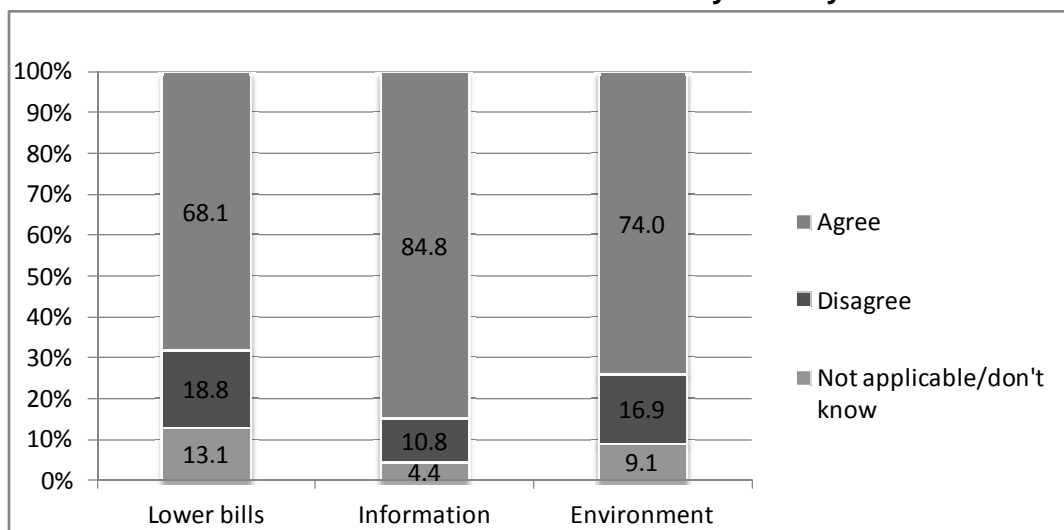
Q7. I believe some or all of the energy services outlined would make me more informed about my electricity consumption

Q8. I believe some or all of the energy services outlined would enable me to make my home more environmentally friendly

68% of respondents agreed that these energy services would help them reduce their electricity bills and 85% agreed that they would make them more informed.

74% agreed that it would enable them to make their homes more environmentally friendly.

Chart G- Whether new and emerging energy services will reduce respondents' energy costs, improve information levels about consumption and enable homes to become more environmentally friendly



Potential benefits of new and emerging energy services (survey questions 10-12)

Respondents were asked about the importance of new and emerging energy services being able to deliver benefits in relation to the following:

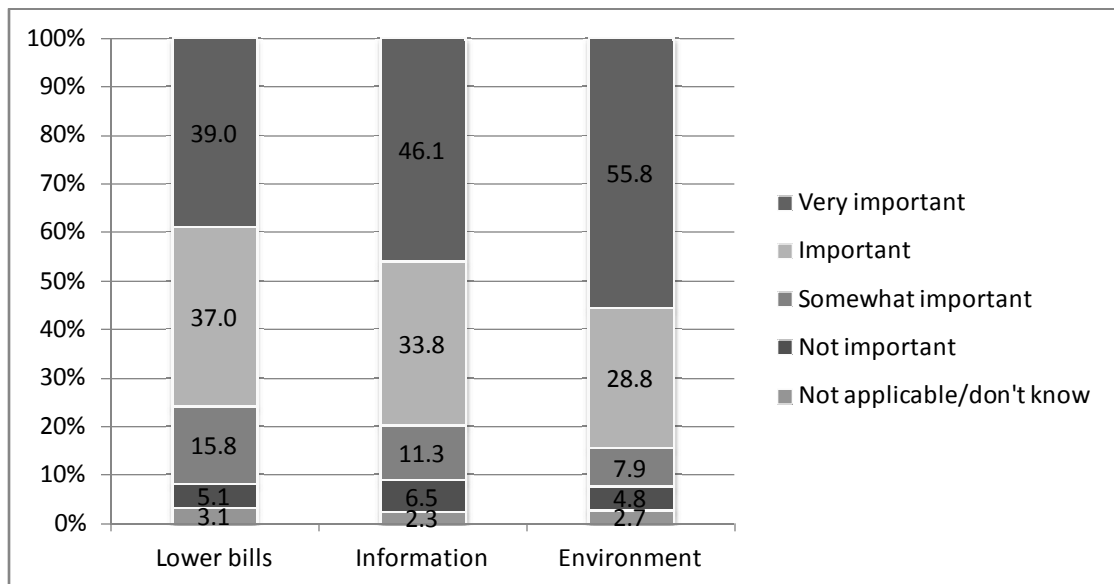
Q10. That they can reduce my electricity bills

Q11. That they can improve my awareness and understanding of my household's electricity consumption

Q12. That they can reduce my household's impact on the environment

76% of respondents believed that it was very important or important that these services can reduce their electricity bills. 80% of respondents believed it was very important or important that they improved awareness and understanding of their electricity consumption, while 85% of respondents rated the environmental outcomes as very important or important.

Chart H - The importance of new and emerging energy services being able to reduce energy costs, improve information levels about consumption and enable homes to become more environmentally friendly



Barriers to accessing energy services (survey questions 13-15)

Respondents were asked to indicate whether they were concerned or not about the following issues:

Q13. The ease at which I can access information about energy services suitable for my household

Q14. How my household's consumption data is managed and by whom, and whether my privacy is protected

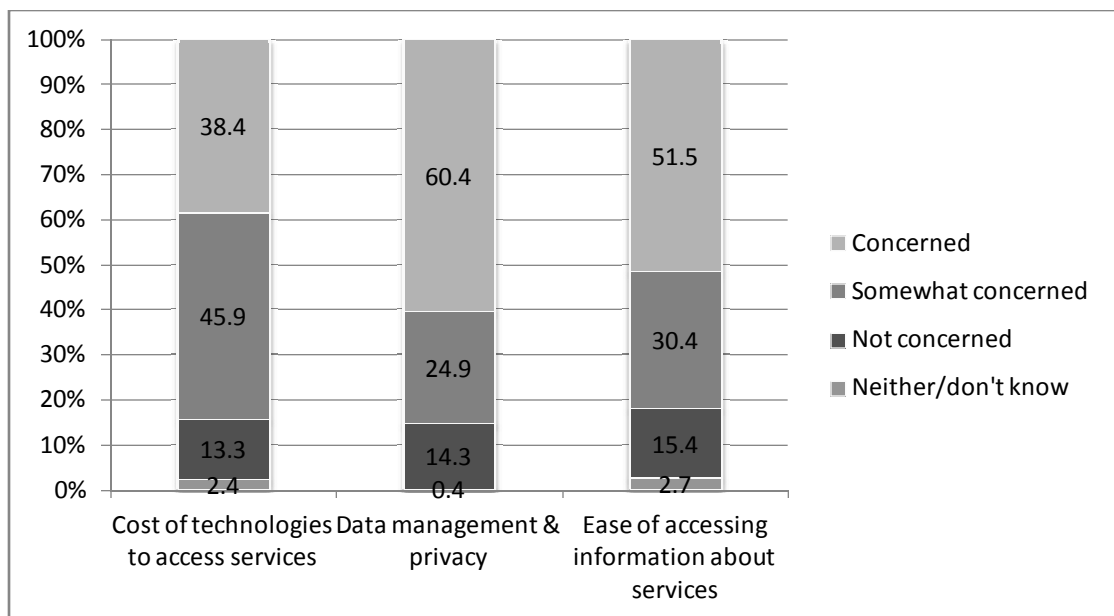
Q15. The cost of the technology required to access these services

84% of respondents were concerned or somewhat concerned about the costs associated with the technologies required to access these services, only 13% were not concerned about cost considerations.

85% stated that they were concerned or somewhat concerned about data management and privacy protections, while only 14% of respondents were not concerned.

82% of respondents indicated that they were concerned or somewhat concerned about how easily they would be able to access information about suitable services, while 15% stated that this was not a concern.

Chart I - Level of concerns about the cost of new and emerging energy services costs, data management and privacy, and the ease of accessing information about these services.



Ability to respond to price signals (survey question 17)

Q17. Time varying pricing means that your service provider charges different rates throughout the day (time of use pricing) to reflect the cost of supply, and/or increase the rates at times of high demand after notifying the customer. Customers able to respond to these price signals by reducing peak time consumption or shifting consumption to off-peak periods are more likely to benefit from time varying prices.

An example of proposed time of use / flexible pricing for implementation in Victoria from September 2013:

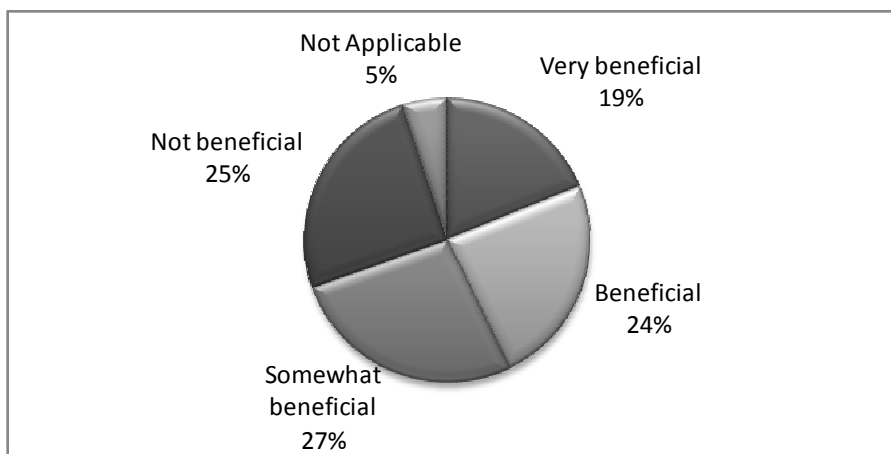
Peak time (most expensive) 3pm - 9pm

Shoulder times 7am - 3pm weekdays, 9pm - 10pm weekdays, 7am - 10pm weekends

Off-peak times (least expensive) 10pm - 7am all days

Please indicate how beneficial you think time varying pricing could be for your home.

Chart J Whether TOU tariffs would be beneficial to respondents' households



Concerns about future trends

Q19. Please rank your concerns over future trends by hovering over each choice and dragging to the position of your preference. Rank for 1 to 9.

Table A - Respondents' ranking of concerns associated with new and emerging energy services

Ranking	Concern	Average rate [^]
1 st	Privacy of information about your identity and other personal information	3.23
2 nd	Whether energy or other businesses will use your consumption information to target their marketing to you	3.86
3 rd	Whether you can adequately afford to access these energy services	4.38

Ranking	Concern	Average rate^
4 th	Privacy of information about your household's electricity consumption	4.46
5 th	The effect on existing appliances and whether you will be able to purchase/access new appliances	5.15
6 th	Whether you will be confident negotiating a new contract with an energy (or other business) in relation to any of the services identified in this survey	5.31
7 th	Whether you will have increased comfort in your home with the use of new energy services such as remote communication	5.55
8 th	Whether you have sufficient information regarding the different appliances	5.89
9 th	Whether you will need enhanced access to the internet	7.18
^ This is the average ranking score (from 1 to 9) that the respondents gave for each issue		

Q18. Jurisdictional representation of survey respondents

Table B - Respondents' jurisdictional representation

Jurisdiction	Percentage
Victoria	57
New South Wales	11
Tasmania	5
Queensland	5
Western Australia	9
South Australia	6
Northern Territory	1
Australian Capital Territory	6

Appendix B- CALC/ATA Survey questions

Consumers in a high tech service environment

Survey completion time: 5-10 minutes

Energy services are becoming more complex with new technologies and service providers entering the energy market.

The ability of consumers to use new technologies and engage with new types of service providers effectively is not guaranteed.

The Consumer Action Law Centre has partnered with the Alternative Technology Association in an effort to ask you your thoughts about the way the energy market is heading, including how or if you may engage with these new services, technology and options.

Consumer Action is an independent, not-for-profit, campaign-focused casework and policy organisation. Consumer Action offers free legal advice, pursues consumer litigation in the public interest and provides financial counselling to vulnerable and disadvantaged consumers across Victoria.

New and improved services

Outlined below are questions that relate to some of the new and emerging energy services for residential electricity consumers.

We have included a summary of the relevant energy service next to each question however, for additional information on how these services function and how you may interact with them, please refer to the Alternative Technology Association's Smart Meter Guide sent to you with this survey.

Please consider the information provided below and indicate how interested you may be in using these services in your home, based on the way you currently use electricity.

1. Direct load control of air conditioners

Direct load control is a new function enabled by smart meters which will allow energy service providers to communicate directly with some of your appliances to reduce their use at peak times, such as air conditioners.

To enable energy businesses to have access to your appliance you would voluntarily enter into an agreement with them, and agree to contract terms which are likely to include rebates, or reduced energy bills, in return for them accessing your appliance.

- ☐ Very interested
- ☐ Interested
- ☐ Somewhat interested
- ☐ Not interested
- ☐ Not applicable or don't know

2. Direct Load Control of electric heating for split systems

As above, this is a new function enabled by smart meters which will allow energy service providers to communicate directly with your appliances. In this example it would communicate with your electric heating system, to reduce its use at peak times.

You would voluntarily enter into an arrangement with your energy business to enable them to access your appliance. Contract terms are likely to include rebates, or reduced energy bills, in return for them accessing your appliance.

- ☐ Very interested
- ☐ Interested
- ☐ Somewhat interested

☐ Not interested

☐ Not applicable or don't know

3. Direct Load Control of electrical hot water systems

As above, this is a new function enabled by smart meters which will allow energy service providers to communicate directly with your appliances. In this example it would communicate with your electric hot water system, to reduce its use at peak times by ensuring it was only heating water at, for example, off peak times.

You would voluntarily enter into an arrangement with your energy business to enable them to access your appliance. Contract terms are likely to include rebates, or reduced energy bills, in return for them accessing your appliance.

☐ Very interested

☐ Interested

☐ Somewhat interested

☐ Not interested

☐ Not applicable or don't know

4. Remote communication with appliances

Through 'apps' on your smart phone or computer, you would be able to communicate with appliances, such as your heating unit when not at home, and for example, change your heater's settings to switch it on or off or adjust temperature settings.

☐ Very interested

☐ Interested

☐ Somewhat interested

- ☐ Not interested
- ☐ Not applicable or don't know

5. Display units/web portals that enable information to be provided to you by your service provider (or other parties) about your energy use.

This will enable direct communication between you and your service provider (or other parties) to provide information on the way you are using electricity, such as how much and at what time of day. These display units could also include additional features such as forecasting usage (and cost), comparing consumption between similar households, and providing energy efficiency advice.

- ☐ Very interested
- ☐ Interested
- ☐ Somewhat interested
- ☐ Not interested
- ☐ Not applicable or don't know
-

How these energy services may impact upon you

Based on the information provided in the previous section about Direct Load Control, Remote Communication and Web Portals, please indicate whether you agree or disagree with the following statements:

6. I believe some or all of the energy services outlined would help me reduce my electricity bills

- ☐ Agree
- ☐ Disagree

☐ Not applicable or don't know

7. I believe some or all of the energy services outlined would make me more informed about my electricity consumption

☐ Agree

☐ Disagree

☐ Not applicable or don't know

8. I believe some or all of the energy services outlined would enable me to make my home more environmentally friendly.

☐ Agree

☐ Disagree

☐ Not applicable or don't know

9. Are there any other impacts (positive or negative) you believe these energy services may have on your household?

Potential benefits of new and emerging energy services

How important is it that new and emerging energy services are able to deliver on the following aspects:

10. That they can improve my awareness and understanding of my household's electricity consumption

- ☐ Very important
- ☐ Important
- ☐ Somewhat important
- ☐ Not important
- ☐ Not applicable or don't know

11. That they can reduce my household's impact on the environment

- ☐ Very important
- ☐ Important
- ☐ Somewhat important
- ☐ Not important
- ☐ Not applicable or don't know

12. That they can reduce my electricity bills

- ☐ Very important
- ☐ Important
- ☐ Somewhat important
- ☐ Not important

☐ Not applicable or don't know

What barriers you may face to accessing these energy services

Please indicate whether the following issues are of concern or not:

13. The cost of the technology required to access these services

- ☐ Concerned
- ☐ Somewhat concerned
- ☐ Not concerned
- ☐ Neither or don't know

14. How my household's consumption data is managed and by whom, and whether my privacy is protected

- ☐ Concerned
- ☐ Somewhat concerned
- ☐ Not concerned
- ☐ Neither or don't know

15. The ease at which I can access information about energy services suitable for my household

- ☐ Concerned
- ☐ Somewhat concerned

☐ Not concerned

☐ Neither or don't know

16. If you have any other concerns or wish to elaborate, please provide comments:

Your ability to respond to price signals

Time varying pricing means that your service provider charges different rates throughout the day (time of use pricing) to reflect the cost of supply, and/or increase the rates at times of high demand after notifying the customer. Customers able to respond to these price signals by reducing peak time consumption or shifting consumption to off-peak periods are more likely to benefit from time varying prices.

17. An example of proposed time of use / flexible pricing for implementation in Victoria from September 2013 is:

Peak time (most expensive) 3pm - 9pm

Shoulder times 7am - 3pm weekdays, 9pm - 10pm weekdays, 7am - 10pm weekends

Off-peak times (least expensive) 10pm - 7am all days

Please indicate how beneficial you think time varying pricing could be for your home.

☐ Very beneficial

- ☐ Beneficial
 - ☐ Somewhat beneficial
 - ☐ Not beneficial
 - ☐ Not applicable or don't know
-

18. Please assist us in our research by confirming where you currently reside.

- ☐ Victoria
 - ☐ New South Wales
 - ☐ Tasmania
 - ☐ Queensland
 - ☐ Western Australia
 - ☐ South Australia
 - ☐ Northern Territory
 - ☐ ACT
-

19. Please rank your concerns over future trends by hovering over each choice and dragging to the position of your preference.

(Rank from 1 to 9)

- ☐ Privacy of information about your household's electricity consumption

- ☐ Privacy of information about your identity and other personal information
- ☐ Whether you can adequately afford to access these energy services
- ☐ Whether energy or other businesses will use your consumption information to target their marketing to you
- ☐ Whether you will have increased comfort in your home with the use of new energy services such as remote communication
- ☐ The effect on existing appliances and whether you will be able to purchase/access new appliances
- ☐ Whether you will need enhanced access to the internet
- ☐ Whether you have sufficient information regarding the different appliances
- ☐ Whether you will be confident negotiating a new contract with an energy (or other business) in relation to any of the services identified in this survey

20. Please describe energy services that you hope would be provided in future (eg display units/web portals with the ability to determine which home appliance uses the most electricity, approximate cost of your appliances per hour, or real-time energy bill cost forecasting)