

# REVIEW

**Australian Energy Market Commission**

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## **OVERVIEW SUMMARY**

Power of choice review - giving consumers options in the way they use electricity

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**About the AEMC**

The Council of Australian Governments, through its Ministerial Council on Energy (MCE), established the Australian Energy Market Commission (AEMC) in July 2005. The AEMC has two principal functions. We make and amend the national electricity and gas rules, and we conduct independent reviews of the energy markets for the MCE.

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# 1 Introduction

Efficient markets are characterised by effective participation of both the supply and demand side. Opportunities for efficient operation of demand side participation (DSP) in the national electricity market (NEM) are not as well developed as supply side opportunities. The purpose of this review is to improve the opportunities for DSP.<sup>1</sup>

While there is some evidence of uptake of DSP in the NEM over recent years, opportunities to maximise efficient DSP could be improved. Electricity demand, particularly peak demand, has grown over recent years. Significant new investment (and access to capital) is needed across the supply chain in order to meet further projected increases in peak demand over the longer term. Enabling consumers to make informed choices about the way they use electricity can help achieve efficient investment across the demand and supply sides. If the costs of supplying electricity outweigh the value consumers derive from consuming it, a reduction or shift in demand will be efficient.

While DSP opportunities provide benefits, there are also likely to be costs in taking up DSP options by consumers and other parties. These include the loss in value from changing consumption, the form of upfront costs and costs when DSP options are exercised. Those costs need to be weighed against the benefits that DSP provides. The market will operate efficiently when the lowest cost combination of DSP and supply options is used to meet consumers' demand for electricity services.

## The review

The Ministerial Council on Energy<sup>2</sup> asked the Australian Energy Market Commission (AEMC) to undertake a further review of DSP in the NEM. It follows previous studies into DSP in electricity markets, which has seen some reforms over time to improve uptake of DSP in the NEM.<sup>3</sup>

The purpose of this review is to identify opportunities for consumers to make informed choices about the way they use electricity. Consumers require information, education, incentives and technology to make efficient choices. This will also require incentives for network operators, retailers and other parties to facilitate and respond to consumer choices in a manner that results in lowest cost service delivery.

A key outcome for the review will be to recommend the possible changes needed to the existing market and regulatory arrangements that ensure efficient demand side options

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1 DSP refers to the ability of consumers to make informed choices about how much electricity they use at different times. These choices should efficiently reflect the value they obtain from using electricity services. Examples of DSP can include, but are not limited to, such measures as electricity conservation, peak demand shifting, fuel switching, utilisation of distributed generation and energy efficiency.

2 The Standing Council on Energy and Resources (SCER) was established in late 2011 and replaces the previous Ministerial Council on Energy (MCE). SCER is now responsible for progressing key energy reform elements of the MCE.

3 MCE Terms of Reference are available on the AMEC website:  
<http://www.aemc.gov.au/Media/docs/MCE%20Terms%20of%20Reference-35e6904a-e39d-4348-8ad5-1a7970af354d-0.pdf>.

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are properly considered and correctly valued in both the planning and operation of the NEM.

### **The directions paper**

The directions paper identifies the suite of market conditions needed across the supply chain for uptake of DSP by consumers and a range of other parties. The directions paper also sets out the issues and identifies opportunities to improve and support promotion of the market conditions. Our assessment has been based on issues raised by stakeholders, submissions to the review, and evidence gathered through supporting reports. In undertaking our work, we have been informed by the National Electricity Objective (NEO) which is our overarching guiding criteria for the review.

This overview report seeks to provide a summary of key issues identified in the directions paper and outlines the specific areas we intend to investigate further. We encourage stakeholders to consider the issues raised in the directions paper when preparing their submissions. We will be holding a public forum for stakeholders to present their views and provide the AEMC with feedback on the key considerations for the next stage of the review. The public forum is planned for 19 April 2012 in Sydney.<sup>4</sup>

### **Facilitating efficient DSP**

We are of the view that there are a number of opportunities to improve and support the market conditions necessary to deliver efficient DSP in the electricity market. That is, there are a number of issues that we will investigate further to ensure that segments of the market and the supply chain are collectively incentivised to value DSP and support consumer decision making. Realising such opportunities will help consumers to receive the right level of information and products and services. This will enable consumers to make informed consumption decisions consistent with their own preferences and circumstances. Figure 1.1 summarises the key areas of focus and issues identified in the directions paper.

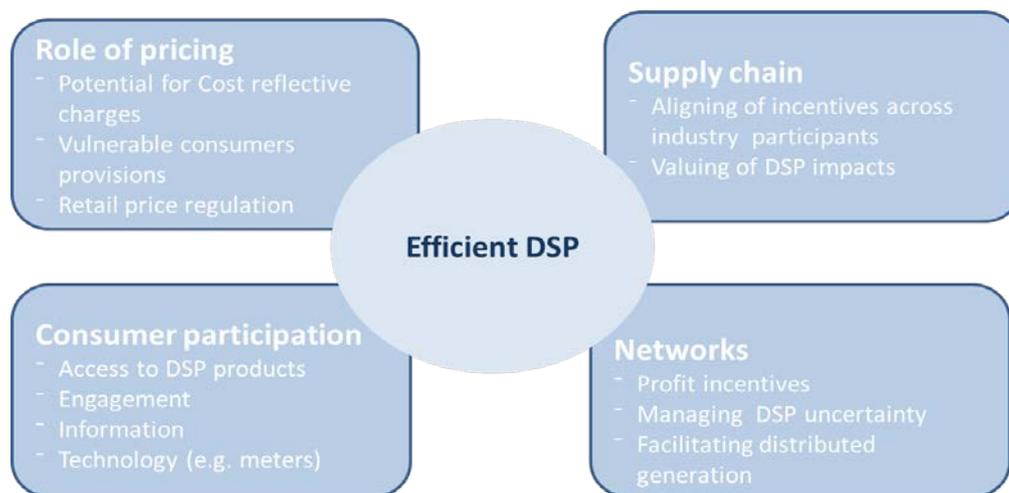
A number of themes are emerging for the review. These relate to the current uptake of DSP options across the market and the tools consumers and other parties need to capture the benefits DSP provides. These are outlined below. Section 6 of this overview provides the key actions we intend to progress during the next phase of the review. These will be informed by stakeholder feedback to the directions paper.

As part of the review, we have also considered the interaction between energy efficiency measures and policies and DSP in the NEM. We discuss our approach for assessing the effectiveness of these measures and interactions with DSP in section 5 of this paper.

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<sup>4</sup> Details, such as registration for the public forum, will be shortly made available on the AEMC website.

**Figure 1.1 Summary of key issues and opportunities for enabling efficient DSP**



The themes emerging at this stage of the review include:

- There are various forms of DSP. Each has different characteristics and uptake will differ based on the preferences of the implementing party. DSP options can generally be grouped into two categories, each having different costs and benefits for different parts of the supply chain: contracted DSP (such as network support payments or direct load control); and uncontracted DSP (such as changes in electricity use based on price e.g. time sensitive retail tariffs).
- Different market conditions will enhance different types of DSP. The nature of energy use in Australia is changing and advancements in technology mean that the role of DSP is changing in the market. This could enable different consumer sectors to better capture the value of DSP.
- There are aspects of the current market arrangements that promote DSP. This is evidenced by some parties taking up DSP opportunities where it has been cost effective to do so.
- There are also an increasing number of pilots and trials underway which are testing how to best capture the value of DSP and understand consumer response. A key consideration is how to transition from the pilots and trials to large scale deployment of such initiatives.
- For consumers to be able to make more informed decisions about how and when they use electricity, there is a need for better information. How market participants (such as retailers, network businesses and other parties (e.g. Energy service companies (ESCOs) and aggregators) engage with consumers has been raised as important, and we consider that this should be investigated further.
- If consumers wish to more actively participate in the market, and to capture the value of DSP opportunities, they need to have access to a range of products<sup>5</sup> and services. While there is more choice in the industrial and manufacturing sectors, such choices are currently limited in the residential and small business sectors. A

<sup>5</sup> Products may include tariffs, terms and conditions, appliances, information and other services.

<sup>6</sup> Power of Choice review - giving consumers options in the ways they use electricity

key theme for this review is how to incentivise the market to provide appropriate products to consumers.

- The current network and retail tariffs do not necessarily reflect cost of supply and delivery of electricity. Hence, most consumers currently do not have options to capture the value of DSP actions. There are a number of reasons for this which we are investigating further.
- As more consumers participate in the market, and take up innovative products and services, there may be an increasing role for ESCOs to facilitate those choices. How the existing arrangements enable these companies to operate in the market will be reviewed in the next stage of the review.
- Metering is an important enabler in supporting DSP. Currently, a large proportion of the residential and small business sector do not have access to appropriate metering technology to facilitate offering and uptake of a number of DSP options. While we are considering how the arrangements support investment in technology, we are also investigating ways to facilitate choices to take up DSP in the absence of such technology.
- Retail and network businesses play a key role in promoting DSP outcomes. We have found that there are opportunities to improve incentives and remove restrictions for these market participants.
- There are opportunities to facilitate distributed generation in the market. We note that there are a number of processes in train to review issues raised for connecting distributed generation. We intend to consider the incentives on network business to facilitate distributed generation.
- A key element of the review is to ensure each part of the supply chain sees the costs and benefits of DSP options and aligns the commercial interests of the participants with an efficient market outcome. An important question to consider is to what extent cost-reflective tariffs support greater co-ordination across the supply chain.

### **Making a submission**

We welcome stakeholder feedback to our directions paper through written submissions, bilateral meetings and other forums. We particularly welcome any evidence that can be provided which may assist us in assessing the issues and developing potential options for change as the review progresses.

We will be holding a public forum for stakeholders to present their views and provide the AEMC with feedback on the key considerations for the next stage of the review. The public forum will be on 19 April 2012 in Sydney.

Submissions to the directions paper close on **4 May 2012**.

## 2 Drivers and rationale for DSP - nature and use of demand

The demand for energy is a derived demand. It is derived from consumers' demand for the services electricity provided in our society and economy. The reliability of energy services and the efficiency with which resources are deployed to provide those services has significant flow on effects for the performance of the whole Australian economy.

Over the past fifty years, total energy consumption in Australia has had periods of substantial growth.<sup>6</sup> While demand has increased, Australia's energy intensity<sup>7</sup> has declined with the adoption of more energy efficient technologies and practices, and a shift in the economy towards less energy intensive activities. However, a key challenge is the increases occurring in peak demand compared to average demand. The shift in the way energy is used is important to consider when looking at which sectors may influence demand for electricity in the NEM and where DSP could promote greater efficiencies in the future.

In December 2011 we published a report by Ernst and Young (EY) that provided a snapshot and examined the drivers of electricity demand in Australia. The analysis included the influence of different sectors of the economy on electricity demand and the influence of different activities.<sup>8</sup>

Chapter 1 of the directions paper is informed by that report, and outlines the current nature of electricity use across sectors of the economy, forecast changes in that use and drivers of demand in the short and medium term. Box 2.1 on the following pages provides a brief description of the key points from that chapter.

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<sup>6</sup> We note that the AEMO's latest ESOO forecasts a fall in demand for 2011/12. See Australian Energy Market Operator, *2011 Electricity Statement of Opportunities*, Update March 6 2012.

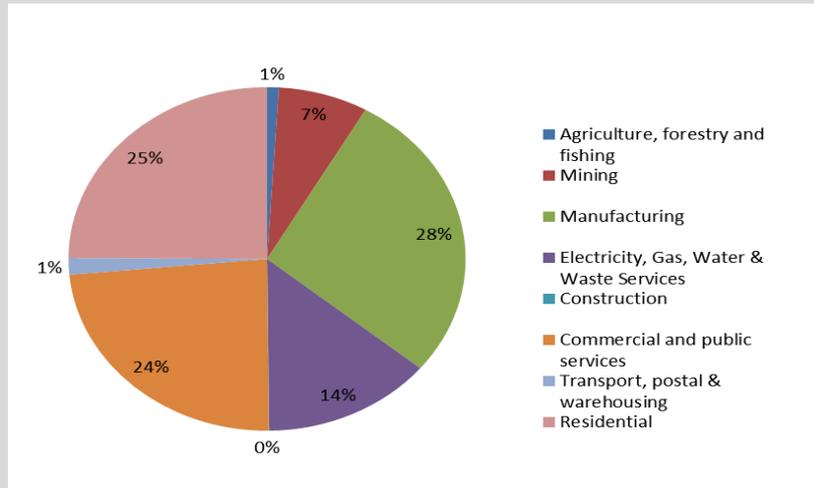
<sup>7</sup> Energy intensity is a measure of the energy efficiency of a nation's economy. It is calculated as units of energy per unit of GDP.

<sup>8</sup> See the AEMC website for the Ernst and Young *Rationale and drivers for DSP in the electricity market-demand and supply of electricity*, December 2011.  
<http://www.elkera.com/ns/2003/bnml-standard>><http://www.aemc.gov.au/Media/docs/EY%20Final%20Report%20-%20clean%20amended%20for%20website-1295dc06-199b-4b09-b9d7-8e52ca564492-1.PDF>

### Box 2.1 Nature and drivers of electricity demand in Australia

- In 2009-10, approximately 75 per cent of Australian's total electricity consumption was used in the industrial, manufacturing and commercial and public services sector.
- The residential sector accounted for approximately 25 per cent of consumption. We discuss the differences in energy use below.

Figure 2.1 Energy consumption by sector, 2009 - 10



- **Consumption by sector:** Analysis undertaken by EY highlights that future growth in electricity consumption is likely to be in the commercial and public services sectors, as the economy shifts towards less energy intensive industries. The residential sector is likely to remain a large consumer of electricity. However, average demand by the residential sector may continue to decline as there is an increased uptake of energy efficient appliances and buildings and small scale generation (such as rooftop solar PV).<sup>9</sup>
- **Changes to annual and peak demand usage:** It is important to consider the differences between average demand and peak demand and how electricity use has changed.<sup>10</sup> Even though energy use has become more efficient than in the past, peak demand is growing at a faster rate than average demand. For example, in the NEM, since 2005, average demand has grown by around 0.5 per cent and peak demand has grown by around 1.8 per cent.<sup>11</sup>

9 See Australian Energy Market Operator, *2011 Electricity Statement of Opportunities*, Update, 6 March 2012. AEMO note that the adoption of energy efficiency programs and the installation of rooftop solar photovoltaic systems may be contributing to reduced forecasts for average annual demand.

10 Peak demand represents the maximum load on a section of network or generation plant over a defined time period e.g. maximum demand may occur between 3pm and 6pm in a specific location. Average demand represents the average load on a section of network or generation plant over a defined time period e.g. average daily demand or average annual demand.

11 We note that AEMO has released an ESOO update, which provides revised forecasts for maximum demand. AEMO forecasts show that maximum demand is growing, but at a slower rate than what was published in 2011 ESOO. This update report can be found at <http://www.aemo.com.au/planning/esoo2011.html>

- **Utilisation of the electricity supply chain:** The difference between average and peak demand has flow on effects for utilisation of the electricity supply chain. Electricity infrastructure is better utilised when average demand is close to the peak demand (hence high load factor<sup>12</sup>). Where the gap between the level of average and peak demand increases there is a less efficient use of installed infrastructure (low load factors). Assets are built to handle peak demand but, at most times, are required to provide much less electricity.
- **Peak demand is important in the context of DSP:** This is because all network infrastructure is designed to safely and reliably meet the level of peak demand. Peak demand also drives investment decisions for some generation. Therefore, peak demand reductions can, in some cases, help defer infrastructure development at various points in the supply chain. DSP may also help to mitigate price volatility at peak times as an alternative to peaking generation. Hence, in some instances, DSP could be a cost-effective alternative and lead to reduced overall system costs.
- **Growth in peak demand in the residential sector:** Generally, the industrial, commercial and public services sectors have relatively flat demand profiles, whereas the residential sector has a relatively "peaky" demand. In the NEM, growth in peak demand has largely been driven by the residential sector. Evidence suggests that the key drivers of this demand may include such factors as temperature, the penetration of air-conditioning and energy intensive appliances (including televisions, water heating and personal computers).<sup>13</sup>
- **Differences between consumer sectors is important:** DSP opportunities may help to address key challenges within the NEM. These may be broad challenges such as reducing the growth of peak demand or specific challenges such as looking at DSP options that focus on local areas where distribution network augmentations could potentially be avoided. For example:
  - **Industrial, commercial and public service sectors:** DSP initiatives in the industrial, commercial and public service sectors may be better targeted at reducing overall power consumption, including at peak times. This is because, as indicated, the load profiles of industrial, commercial and public service customers do not exhibit the same peakiness as residential customers, and could have a greater impact on peak demand given their total energy use. Examples of potential initiatives include products that are geared towards greater adoption of contracted forms of DSP including load control, stepped demand and capacity tariffs. Increased penetration of energy efficiency measures could also be considered.<sup>14</sup>

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<sup>12</sup> The load factor refers to average power divided by the peak power over a period of time. This measure is used to assess how near an asset (such as a network) is being utilised to its theoretical maximum.

<sup>13</sup> See the AEMC website for *Rationale and drivers for DSP in the electricity market- demand and supply of electricity*, pp. 40-46, Ernst and Young, 2011, Sydney.

<sup>14</sup> See AEMC Power of choice, directions paper, chapter 3 for a detailed description of the types of demand side participation options currently in development or potentially available to the market.

- **Residential sector:** For the residential sector, DSP initiatives could be targeted to increase the ability to alter energy use at times of peak demand. Noting that EY found that temperature is a key driver of peak demand, and DSP option would need to maintain an acceptable level of comfort of the consumer. DSP initiatives which may offer the greatest opportunity for this sector may include: increased uptake of energy efficient appliances and buildings, increased adoption of products and services that are designed to offer financial incentives to customers to shift load to non-peak times. It is important to note that such products and services would need to consider consumer preferences and behaviours, including differences between classes of residential consumers. Other options could include technologies that enable devices to switch off particular appliances during peak load times (e.g. hot water, pool pumps and air conditioner control devices).
- The role for DSP in reducing overall demand, and network expenditure more particularly, is complex. This is because demand related expenditure is, by its nature, designed to meet localised demand constraints and not overall state or NEM region demand.

### 3 Methodology and assessment approach

The purpose of the review is to identify market and regulatory arrangements that enable the participation of both supply and demand side options in achieving an economically efficient demand/supply balance in the electricity market.

We define DSP as the ability of consumers to make informed decisions about the quantity and timing of their electricity use. Demand for electricity is derived from the value that consumers obtain from using the services that electricity provides.

Consumption of electricity services requires inputs other than just electricity. In particular, appliances are required which convert that electricity into useful outputs such as refrigeration, heat, light etc. It is therefore not only the price of electricity that will affect consumption decisions, but also the cost and availability of those complementary appliances.

DSP options are the actions that are available to consumers (or to intermediaries acting as agents of consumers) to reduce or manage their electricity use. Examples of DSP by consumers can include (but are not limited to) peak shifting, electricity conservation, fuel switching, utilisation of distributed generation and energy efficiency. Discussion of the range of DSP options that are either currently available, or may be available in the future, is provided in chapter three of the directions paper.

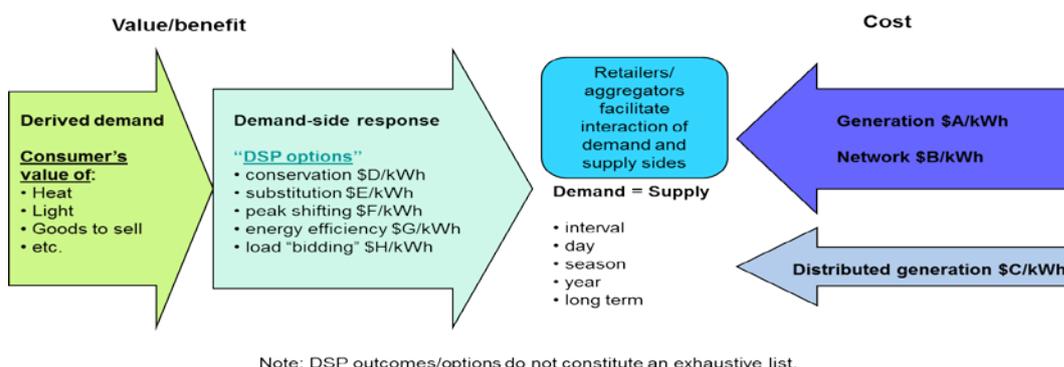
For the review, we consider that efficient DSP is an action by consumers (either independently or via a third party) to manage or reduce their electricity consumption which delivers a net benefit on the wider market. That is, the costs of supply avoided are more than the loss in value incurred to the consumer plus any costs incurred in exercising DSP. Hence, efficient DSP should occur when the compensation offered to the consumer for its DSP reflects all the costs and benefits for the market from that DSP option.<sup>15</sup> The optimal (efficient) use of resources from a societal viewpoint will occur when the lowest cost combination of DSP and supply options is used to meet total demand.

Essentially all forms of DSP can be viewed as a transaction. At the core of all forms of DSP, the consumer is willing to change its electricity consumption pattern in return for some form of reward as compensation. In contracted DSP, that reward could be a direct payment plus the savings in retail bills. In price responsive DSP, the compensation comes in the reduction to electricity bills. The efficiency of price signals is also important for the arrangements for contracted DSP as the price signals will influence the extent of the payment required for the consumer to agree to shift or reduce consumption.

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<sup>15</sup> Chapter 6 of the directions paper finds that current retail tariffs are not cost reflective and discusses the range of issues that need to be addressed in considering any move to more cost reflective pricing signals.

**Figure 3.1 Efficient DSP**



For efficient market DSP outcomes, there are a number of fundamental market conditions that are required:

- consumers (or their agents) would need to be able to compare the value they place on electricity services with the costs incurred in providing those services and also to understand the value of benefits of DSP;
- market participants (such as retailers, networks, ESCOs and aggregators) need to be able to identify opportunities for efficient DSP and to facilitate and encourage the appropriate action; and
- alignment of the incentives influencing the consumer in deciding upon a DSP action and the wider impacts on the electricity market supply chain.

In undertaking its work, the AEMC is required to have regard to the NEO.<sup>16</sup> The NEO therefore forms the overarching principle for the assessment framework used to evaluate whether conditions are being satisfied in the market and any potential options for reform to the existing market and regulatory arrangements. This includes identifying and assessing the ability of such changes to promote efficient DSP.

We are undertaking the review in two stages. The first stage, and the focus of the directions paper, has included considering:

- how consumers value their electricity use and participate in the electricity market;
- lessons on the current application of DSP options in the NEM, drawing on evidence from the current pilots and trials;
- what market conditions are needed to support consumers in exercising the choice to manage their electricity consumption;
- the impacts - costs and benefits - for both the consumer and the wider market when the consumer makes a decision to change their electricity consumption and the appropriate methods for valuing such costs and benefits;
- the appropriate role of the various parties along the supply chain - market operator, network businesses, retailers and other parties - in facilitating DSP; and

<sup>16</sup> The NEO is set out in section 7 of the National Electricity Law (NEL).

- consideration of how the various segments of the supply chain interact and support consumer choice.

For the next stage of the review we will consider any potential options to improve current arrangements. In doing so, we will consider the cost and benefits of such options against the NEO and how the various market and regulatory arrangements may interact and impact on the market more broadly. Any recommendation arising from our assessment will be technology neutral.

Our final report will seek to recommend a desired, consistent range of market and regulatory arrangements and a detailed implementation plan.

While we will have regard to which participants are best placed to implement such arrangements, it is important to note that we are not pre-judging consumer decisions on how, when and how much they should be consuming at a given price level. Consumers, given the right information and tools, will be in the best position to decide what course of action is best for them.

### **Other considerations**

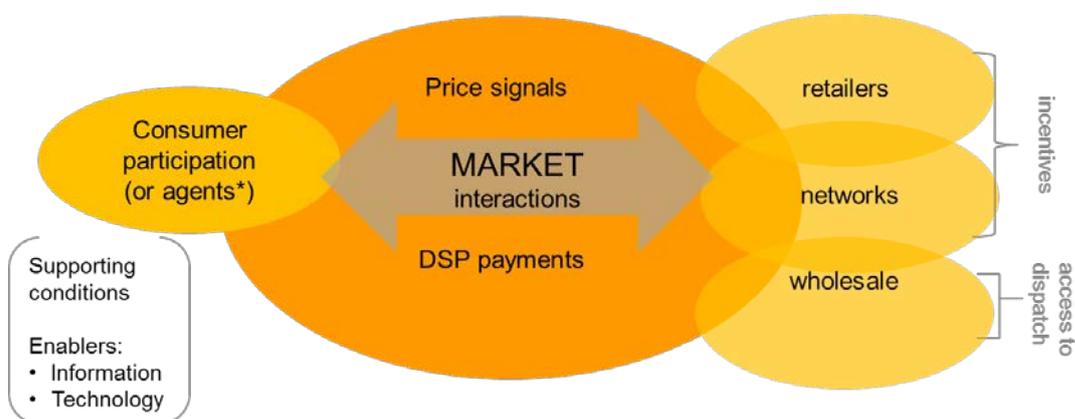
Under the MCE Terms of Reference we are required to consider and assess energy efficiency measures and policies that impact on or seek to integrate with the NEM. Therefore, we are assessing those energy efficiency measures and policies in terms of their cost effectiveness in achieving their program or policy objectives and impacts on broader electricity market.

## 4 Market conditions and opportunities to facilitate uptake of efficient DSP

There is some evidence that DSP opportunities are being taken up where it is cost effective to do so in the NEM. While there is evidence of some parties undertaking activities, the nature and levels of available load reduction capacity varies significantly between sectors, and also the types of DSP measures being implemented. There are also some pilots and trials in train that are seeking to test different approaches (such as contracts that utilise time sensitive pricing, rebates and rewards). However such contracts do not appear to be widely available in the market. Some stakeholders have also noted that there is currently limited participation of third parties who may be able to offer DSP services and products in the market generally.

Figure 4.1 highlights the market interactions and conditions necessary across the supply chain to support uptake of efficient DSP.

**Figure 4.1 Market conditions for efficient DSP**



\*Note that agents may include ESCOs and aggregators

Each segment of the market (that is, the wholesale market, networks, retail businesses and other parties) can play a role in facilitating uptake of efficient DSP. How the supply chain works collectively to support efficient DSP outcomes for the market is also important. DSP opportunities will create different impacts for different parts of the supply chain, and hence it is important that these benefits are captured by the relevant parties. Consumer participation in the market is key in promoting efficient DSP, including how different enablers may help to provide the tools for consumers to make informed choices about their electricity use.

Based on our assessment of issues raised at this stage of the review, we consider that there are opportunities to improve the uptake of efficient DSP in the electricity market. Such opportunities exist in the way network, retail businesses and other parties are incentivised to take up DSP where efficient to do so. There may also be opportunities to improve how these parties respond to consumer preferences and support consumers to make better energy consumption decisions, through the products and services they offer. We have also identified some areas where consumer participation in the market can be enhanced, through improving information and use of smarter technology.

## 4.1 The market

In order to achieve efficient DSP outcomes for the market, networks, retailers and other third party intermediaries (i.e. aggregators, ESCOs) will need to have a strong interest in capturing the value of flexible demand and also play a key role in supporting consumers' decision making about their energy use.

As noted, there is some evidence of each of these market participants taking up some DSP opportunities. For example, retailers have considered DSP as an alternative means of hedging wholesale electricity market spot price volatility (i.e. contracting with consumers to reduce load when prices are high). For network businesses, investment is generally driven by the need to build sufficient network capacity to meet peak demand according to a specified level of reliability of supply.<sup>17</sup>

In certain circumstances demand management programs have been used to mitigate the need for capital investment. In such cases, the network businesses have either purchased a DSP service from a DSP service provider or developed their own DSP product in house. In the wholesale market, the system operator is able to contract DSP for reliability of supply purposes.

The next sections outline our considerations across the segments of the market, and those areas where we intend to investigate further as part of this review.

### 4.1.1 Wholesale and ancillary services markets

There may be some opportunities to improve arrangements in the wholesale market to facilitate take up of DSP and improve how consumers engage with the market. Specifically, how consumers (and third parties such as aggregators) access the wholesale market, and improving provision of information to AEMO for its demand forecasts. Chapter eight of the directions paper provides our considerations for the wholesale market.

The wholesale energy market arrangements of the NEM provide for generators to sell electricity and participants to purchase electricity from the wholesale pool. Typically such participants are energy retailers, who purchase electricity to then sell to businesses and households.

Participants who control potential demand side resources have greater flexibility in how they participate in the market than equivalent sized generators. Demand side resources have a choice to either participate as a scheduled load, register as a market customer without registering as a scheduled load, or simply to respond to the published wholesale price and negotiate a pass-through tariff with a retailer.

While generators can make offers to sell energy into the wholesale pool, consumers in the NEM can also bid to provide demand side response. Consumers wishing to participate in this way would need to be registered participants of the NEM and would have to comply with relevant market operating requirements and obligations.

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<sup>17</sup> The reliability standard is an output-based measure expressed in terms of 'maximum permissible unserved energy'. It is effectively an expression of the maximum allowable level of electricity at risk of not being supplied to consumers in any region. An acceptable level of redundancy for unexpected contingencies is built into the reliability standard.

Improving access to the wholesale market could enable parties exercising DSP options to capture the benefits of reducing demand for electricity in the wholesale pool, and in doing so could deliver wider benefits to the market through reducing peak prices.

A key area for consideration for the review is whether the current wholesale market arrangements provide for a transparent, working market for DSP providers to bid into the wholesale market and receive value for their services. Also whether there is a level playing field between the demand side and the supply side.

We note that a number of stakeholders have raised the need for significant changes to the current wholesale arrangements as a means to better facilitate DSP. Such options range from introducing an uplift payment, increasing the market price cap, paying DSP resource at their bid prices, introducing day-ahead market or capacity markets.

The Commission is of the view that such mechanisms may not be the most efficient means to achieve an efficient demand/supply balance. The options noted above have been reviewed in other processes and have not been supported due to their economic implications, including cross subsidisation, complexity of design and compliance requirements. Furthermore, as such changes would represent a significant reform to the current market they would require a major separate study on their own. Such assessments are outside the scope of this review.

There are a number of issues that we intend to further consider as part of the next stage of the review. These include:

- ***Facilitating the role of aggregators to participate in the wholesale market***

As noted, ESCO's and aggregators can assist consumers to manage their electricity use. Aggregators typically differ from retailers in that they act on behalf of consumers to specifically provide and coordinate demand side responses. In most cases the core business of aggregators is developing DSP programs and working directly with end-use consumers on DSP mechanisms.

Aggregators could potentially provide benefits to smaller consumers by offering options for these consumers to participate in providing demand side responses, and as such, provide additional choice and flexibility to consumers. Under the current market arrangements, in order for an aggregator to have direct access to the wholesale market, it would need to become a registered market participant and take on the financial responsibilities of a retailer. This could limit the ability for aggregators to participate in the NEM.

There may be opportunities to assist smaller consumers access to the wholesale market and whether specific provisions should be made to improve the way in which aggregators may provide benefits to facilitate DSP in the NEM. We note that the Aggregation of Ancillary Services Loads rule change considered whether aggregator businesses need to be retailers.<sup>18</sup> We intend to hold a specific workshop with industry on the issues raised above in April 2012. This will include consideration of a possible new class of market participant and the requirements attached to that class.

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<sup>18</sup> See Australian Energy Market Commission, *National Electricity Amendment (Aggregation of Ancillary Service Loads) Rule 2010 No. 11*, final rule determination, 2010, Sydney.

Some stakeholders have also raised concerns about the ability of smaller consumers to participate in the short-term financial contracts market. We intend to consider how the short-term financial contracts market supports smaller consumers and the role of aggregators in the next stage for the review.

- ***Provision for improvements to the accuracy of demand forecasts to AEMO***

AEMO needs to be able to accurately capture demand side availabilities in its forecasting process to ensure the accurate calculation of reserve conditions and dispatch outcomes. This requires AEMO to receive relevant and up-to-date information from DSP providers. In its submission on the issues paper, AEMO noted that it should be provided with accurate and timely data by market participants on their expected behaviour in all the time frames applicable to AEMO's forecasting roles. We note that appropriate confidentiality arrangements may need to be developed in order to protect the commercial interest of participants providing such information.

#### **4.1.2 Networks**

Network businesses play an important role in facilitating efficient DSP, both by pursuing efficient DSP projects and supporting consumer participation in DSP such as through tariffs and planning information. While some of these businesses have been active in taking up efficient DSP projects, there are opportunities to improve incentives for these market participants. Chapter nine details our considerations for how network businesses are incentivised to take up DSP options.

DSP can provide a cheaper alternative to network investment as a means of managing network peaks at specific locations. It is important to note that the characteristics of peak demand for a network business will differ by location and season. For example, individual areas within the network may have summer or winter peaks and may have different proportions of residential versus commercial and industrial loads, thus different peak demand profiles. The value of demand response for a network business will also depend on its stage of the investment cycle. A network business which is going through a replacement stage may have a lower marginal cost of increasing capacity, thereby decreasing the relative value of DSP. Hence the value of a DSP project will depend on location, timing and asset life cycle.

In recent times, network businesses have increasingly explored demand side solutions and potential innovative products. This is driven by a number of factors, including network cost increases, advances in technology, and the trend of decreasing asset utilisation. For the review, we have sought to consider how the existing regulatory arrangements may be supporting the conditions needed for networks to invest in and use efficient DSP options on a broader scale in their businesses.

We have found that there may be opportunities to improve incentives on distribution network businesses to pursue efficient DSP options that may contribute to achieving a more efficient demand/supply balance in the electricity market.<sup>19</sup> In order to support consumer participation, there needs to be a mix of appropriate obligations and incentives on the network businesses. The current work on the implementation of the

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<sup>19</sup> While our considerations are focused on distribution network companies, some issues can also be considered for transmission network companies.

national framework for electricity distribution planning will improve the existing obligations. The issues we intend to further consider for the next stage of the review include:

- ***Appropriate commercial incentives for distribution network business to invest in DSP***

To allow network businesses to appropriately consider DSP as an alternative to network investment, the regulatory framework needs to appropriately consider all the costs and benefits of the DSP project and also compare the relative total lifetime costs of the DSP project to the capital asset costs. Such conditions would enable DSP projects which are efficient from the market perspective to be identified. The framework would also need to align network businesses profit incentives to ensure that they can benefit from implementing such market efficient projects.

The Commission considers that there may be a potential a bias towards capital expenditure in favour of operating expenditure, both in terms of the potential to make profit and certainty about cost recovery. Therefore, other factors being equal, operating expenditure on DSP may be at a disadvantage compared to capital expenditure. This does not necessarily act as a barrier to all forms of DSP, as the developments in DSP technology will mean that an increasing proportion of DSP projects will require capital investment. However, it may result in network businesses favouring their own DSP options, which can be treated as capital expenditure, instead of purchasing solutions from DSP service providers, which are likely to be treated as operating expenditure.

It is important to note that a network business may not capture all the cost savings from avoiding a network augmentation, nor does it incur all the additional costs of a DSP option. Instead the business profit will depend upon how the costs of such projects are treated under existing arrangements.

There could be situations that the savings in capital expenditure allowance may not necessarily suffice to fund DSP projects, even when it is more efficient from the market perspective to do the DSP option. Therefore, there could be a misalignment between the impact on the network business profit and the cost differences between a network project and a non-network project. If this is the case, businesses may not be incentivised to pursue DSP projects which are more cost effective over the life of the projects.

A detailed supplementary paper has been published with the directions paper that provides detailed discussion of the issues above.<sup>20</sup> We welcome stakeholder feedback on the issues raised in that paper.

We note that the issues regarding how the current regulatory determination process promotes efficient expenditure is currently being evaluated by the AEMC under the rule changes on economic regulation of network service providers. Those rule changes are investigating how the current arrangements provide incentives for efficient capital expenditure and determines the allowed rate of return. Hence, any amendments on this aspect may affect the balance of incentive between capital and operating expenditure. We do not consider that it is appropriate, nor consistent with the provisions of the NEL, to expand the scope of that rule change to consider these issues related to DSP. In

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<sup>20</sup> See <http://www.aemc.gov.au/market-reviews/open/power-of-choice-update-page.html>

undertaking our review, we will have regard to the outcomes of the rule determinations on the above issues.

- ***Potential arrangements to manage additional risks associated with DSP projects***

Given the immature nature of the market for DSP options there is potential difficulty in getting appropriate counter-parties to accept the reliability risk for contractual DSP. There is also some level of uncertainty about the extent of demand response arising from non-contracted DSP (i.e. price based DSP options) and how to value the impacts of such types of DSP. To address this, we consider that there may be merit in considering special temporary arrangements which help to foster the development of the market. Options to assess may include the need for an exemption from the service standard incentive scheme, development of an industry forum to share data and further research to develop common and acceptable methods and best practice standards on how non-controllable DSP should be valued and estimated.

- ***Role of network businesses engaging with consumers***

Network businesses consider that it is important that they have the ability to engage directly with consumers in order to help develop and offer appropriate DSP products. Some stakeholders consider that distribution businesses could have a direct financial link with consumers which would allow them to offer monetary rewards for cutting back demand and changing their load profile (i.e. demand buyback schemes).

To date, network businesses have had limited need for such engagement with consumers but are starting to recognise the need to have effective community and service provider engagement models for DSP.

Consumers who wish to look for ways of managing their electricity use are likely to require access to information about their usage volumes and patterns. Also currently residential consumers do not have the ability to negotiate network tariffs and hence have limited possibilities to act. While the NECF will formalise a triangular relationship between consumer, retailer and DNSP, the retailer is likely to remain a consumer's first point of contact for queries about billing and energy use. However distribution businesses noted that they have access to the meter data relating to each end-use facility within its service territory and consider that they can provide access to and independent analysis of that information for consumers.

The appropriate framework for consumer engagement is important in facilitating consumer choice and ensuring that any arrangement does that not lead to consumer confusion and increased complexity. We will be further considering the respective roles of network businesses, retailers and other parties with respect to DSP products and services, and how dialogue with the consumer can take place in a transparent manner.

#### **4.1.3 Retailers**

Retailers can be direct buyers of DSP and facilitators of DSP for consumers. A retailer can engage and deploy DSP as a commercial tool to optimise its own financial position. The potential value to the retailer from DSP initiatives is through reduced risk

management costs, where the DSP's exposure to wholesale market price volatility is lessened. Opportunities exist to improve incentives and reduce restrictions for retailers to play a key role in supporting consumer choice. We discuss retailer business incentives in chapter 10 of the directions paper.

Retailers' principal role in the market is to act as an agent for consumers in purchasing and contracting for energy services and packaging them to meet consumer requirements. As the key interface between consumers and the rest of the supply chain, the retailer's contract with consumers can offer both the means for consumers to participate in DSP where they wish to, and a route by which consumers can be compensated for those DSP actions (for example through the price structure and conditions of the contract, or side payments for specified actions). The report by Futura Consulting highlights some examples of retailers' trialling or offering DSP products for consumers<sup>21</sup>.

As consumers become more informed about their electricity consumption and opportunities for reducing their bills, there will be demand for a wider range of electricity services and products. It is recognised that both information and technology can enable and foster such consumer engagement. Third parties such as ESCOs may also be able to offer some of those services. Given changes in electricity use, technological advances and services potentially entering the market, retailers will have to be flexible with the products they can offer. This may trigger changes to current business strategies.

Retailers' behaviour towards facilitating DSP will be driven by their commercial incentives which in turn are influenced by the extent of competition in the market. If it faces effective competition, the retailer should be in a position to support the deployment of DSP options where that is more efficient than purchasing and transporting additional electricity.

We note that there are existing processes under the Australian Energy Market Agreement to review and publicly report on the effectiveness of retail competition in jurisdictions participating in the NEM. We will not be investigating retail competition in this review.

For the next stage of the review, we do intend to look further at whether changes to the current market and regulatory arrangements could be made to support retailers adapting in developing DSP. We will also look at whether certain technologies can enable changes to business models and product offerings where they are required to meet consumer demands. The issues we intend to further consider for the next stage of the review include:

- ***Restrictions to retailers capturing value of DSP and facilitating uptake of DSP by consumers***

Competition in retail markets is key to providing incentives on retailers to offer products and services that consumers want, including DSP products. It is recognised that retail price regulation may limit, to some degree, the flexibility that retailers have to offer innovative tariffs and products to consumers. For example, under the postage

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<sup>21</sup> See the AEMC website at <http://www.aemc.gov.au/Media/docs/Futura%20Consulting-508587ea-32b3-42b1-9e8b-014c62231aff-0.PDF>

stamp nature of regulated prices, whereby a single price applies across a certain geographic area, the variation in preferences and consumption patterns of different consumers is masked.

Simply removing price regulation may not result in all retailers offering a wide range of DSP products to consumers. Under the existing arrangements in states which have retail contestability, retailers are already able to provide diverse market offers, including innovative DSP related tariffs, to retail consumers. However, retail price regulation can add compliance costs and reduce flexibility, and that variations in regulation across states can limit the development of nationwide retail products and make it difficult for second tier retailers to enter into the market. PwC notes that the regulated standard offer in an area can act as a reference marker for such market offers. Hence, there may be merit in considering removal or amendment of price regulation not only where competition is already effective, but also as a means of stimulating competition in retail markets. As well as allowing existing retailers to price flexibly in response to consumer requirements, new retailers or other parties such as ESCOs may find it easier to enter the market with new tariffs and products. Where the removal of price regulation is considered, it may be necessary to do so alongside complementary measures such as consumer education and continued monitoring.

Given the above and the existing process under the AEMA,<sup>22</sup> the review will assess possible improvements to the existing state regulations in the interim which would better support the role of retailers in facilitating DSP. For example, allowing retailers to recover any costs associated with facilitating DSP (e.g. billing system upgrades, education programs).

Retailers are also the vehicle through which consumers can respond to efficient network tariffs. Subject to retail price regulation, a retailer may choose to pass through the network costs it faces to the consumer so that the retailer is indifferent to the period in which its consumers choose to consume (this is also likely to have the effect of encouraging consumption in off-peak rather than peak periods). Alternatively, the retailer may choose to repackage the network costs for its consumers based on business objectives. We note that retailers in a competitive market should respond to consumers' preferences. This may result in retailers offering different tariff options (i.e. passing through network costs to some consumers, and offering a flatter tariff to others).

Finally, a retailer is likely to be in the best position to act as a gateway for enabling consumer engagement in and awareness of DSP, by providing information as part of its billing process or marketing campaigns. As noted, we intend to further consider the role of retailers and parties to engage with consumers.

- ***The merits of load profiling residential consumers on accumulation meters***

Retailers should have an incentive to encourage their consumers to consume less in the periods where the wholesale prices are highest (and to consume more in the periods of low prices). However in practice this will depend upon whether changes in consumers'

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<sup>22</sup> As set out in clauses 14.11(a) and (c) of the AEMA all state governments agree to phase out the exercise of retail price regulation for electricity and natural gas where effective retail competition can be demonstrated.

demand are reflected in the NEM settlement process. Where consumers have only an accumulation meter, their total volume of electricity consumed over a period of time can be measured by reading the meter, but their pattern of consumption within that period is not measured, and so for the purposes of charging retailers the pattern is assumed to match an average daily profile.

Retailers will attempt to purchase electricity in the wholesale market to match the average consumption profile, and any over- or under-contracting will be charged against that profile. As a result, retailers do not benefit from consumers shifting consumption from peak periods where those consumers have accumulation meters.

Consequently, there may be a case for trying to develop consumption profiles which more accurately reflect the consumption patterns of different types of consumer.

However, any consideration of such option would need to assess the effectiveness of such approach and whether adding complexity is justified.

## **4.2 Supply chain interactions**

DSP will create different costs and benefits for different parts of the supply chain. In previous sections we considered each segment of the market, and how it may take up and facilitate efficient DSP. While it is important for each part of the supply chain to be correctly incentivised, it is equally important that the supply chain collectively is able to support the deployment of efficient DSP projects.

A number of stakeholders engaged in the review have highlighted that in practice the supply chain may not act in a collective, co-ordinated manner consistent with achieving an efficient demand-supply balance. This is mainly due to the differences in commercial incentives across market participants (split incentives); and the possibility of participants being able to benefit from a DSP option without contributing towards its costs (free-rider issue). This issue is addressed in chapter seven of the directions paper.

For efficient DSP to occur, the supply chain should work in a manner which aligns the commercial interests of the buyer with the wider impact of the DSP option on the market. We have explored how the supply chain interacts in the NEM and considered whether there are any limitations in the existing arrangements that could affect the identification and deployment of efficient DSP options.

Our assessment at this stage of the review is that:

- the current arrangements may not be promoting co-ordination across the supply chain in a manner which overcomes the split incentives and free rider problems; and
- there may be merit in developing standardised, common approaches to value and forecast the impacts of DSP.

The key focus going forward will be assessing whether these arrangements can be improved, and to what extent cost-reflective tariffs and the role of third party intermediaries (e.g. ESCOs/aggregators) support greater co-ordination across the supply chain.

### **4.3 Consumer participation**

Consumer participation is a key factor for the uptake of DSP opportunities in the market. Consumers generally expect affordable, safe and reliable electricity services. Some segments of the consumer sector, such as households, commercial and small to medium business enterprises have traditionally been passive participants in the electricity market. In recent times however, interest and motivation to control energy costs and use has increased. This can in part be due to rises in electricity prices, advancements in technology that enable more sophisticated responses, and introduction of climate change policies which encourage energy efficiency.

There are many ways in which DSP opportunities can be made available to consumers, including contracting with retailers or ESCOs/aggregators to provide services that help to manage use and costs, or provide information on ways in which improvements can be made. Potential DSP options are outlined in chapter three of the directions paper.

Consumer interest and willingness to take up DSP opportunities will depend on a range of factors that can include: their view of the value of the DSP opportunity, existing habits, social norms, behaviours and attitudes. Consumer perceptions and values can also be influenced by: the ability to process information, price of products and services, awareness of energy costs, availability of time, access to finances, and general appetite or commitment to change. A number of submissions to the review have indicated that it is important to recognise that such factors will differ between consumer classes and sectors, as will their capacity and ability to make changes, hence DSP opportunities may differ and no one solution is likely to fit all.

Given the complexities of consumer decision making, any approach for engaging consumers in the market should take into account those aspects that shape and constrain peoples' choices toward energy management and programs. In addition, for social habits and attitudes toward energy use to change, parties across the supply chain need to become more innovative and play a coordinated role in how they engage and empower consumers. These issues are discussed in chapter four of the directions paper.

The following sections discuss the role that price signals, and enablers such as information and technology, can play in improving opportunities for consumer participation and informing consumer choices.

#### **4.3.1 Products and services – role of price signals**

As noted, there are a range of factors which drive consumer decision making. While prices are only one component of decisions on when and how much to consume, they do play an important role in signalling the value of DSP to consumers and other parties in the market. Consumers will engage in the market by seeking different products and services that are packaged to suit their individual circumstances. This will include how prices are structured. Improvements can be made to the incentives on parties to ensure that consumers can access products and services that suit their needs.

As part of this review, we have considered the efficiency of price signals as a tool for consumers to make informed choices about their energy use. Based on supporting

evidence gathered for this review<sup>23</sup>, current electricity prices do not generally reflect the costs of supply and delivery of electricity. We note however that the existing retail tariffs for large consumers (e.g. major manufacturers) vary considerably as they are typically bilaterally negotiated between the businesses and retailers. We discuss the efficiency of price signals in chapter five.

Consumers who want to improve their ability to make more informed choices and investment decisions may benefit from prices that reflect the appropriate costs of supply and delivery of electricity at different times of the day and year (i.e. time sensitive prices). It is important to recognise however that cost reflective prices on their own will not bring about efficient outcomes in terms of consumer decision making – consumers need other conditions to help inform their choices, such as capability to respond, information about cost impacts of consumption, technology platforms and the flexibility to choose based on preferences/circumstance. These are all being considered as part of this review.

We are of the view that a number of conditions in the market may currently be limiting the ability or incentives on parties to reflect their costs in pricing structures. These include the current structure of price regulation, the nature of incentives on networks, limitations of enablers such as metering technology and other practical issues such as transaction costs faced by parties.

We will be considering the opportunities for better pricing arrangements so that consumers have access to products and services that may better suit their own circumstances.

The issues we intend to further consider for the next stage of the review include:

- ***Impact of time sensitive tariffs on different types of consumers, including protections for vulnerable consumers***

If consumers have access to prices which reflect the costs of supplying electricity at different times of the day and/or year, many may choose to reduce or cease consumption in these high demand periods, which may both reduce their bills in the short term and avoid the need for some investment which would otherwise be required in the long term. Others may prefer the certainty of a flat tariff, even if that tariff includes a premium for the retailer to take on the price risk. Where tariff structures (including any risk premium) are transparent and consumers are informed about the options, any consumption choice they make will be equally efficient.

More cost-reflective tariffs will affect different consumers in different ways. It is important for consumers to be able to choose the type of tariff they face as some consumers would be worse off from cost-reflective tariffs, e.g. if they consume a lot at

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<sup>23</sup> Refer to report by PwC for the review “*Investigation of the efficient operation of price signals in the NEM*”, December 2011 at <http://www.aemc.gov.au/market-reviews/open/power-of-choice-update-page.html>

peak times and are unable to adjust their consumption behaviour.<sup>24</sup> Some vulnerable consumers may have difficulty paying bills due to changes in tariff structures.<sup>25</sup>

It is important that protection is available for such consumers to help them choose the best tariff for them. However, if changes to tariff structures have negative impacts on vulnerable consumers, some form of support or protection may be appropriate. Other consumers may benefit from more cost-reflective tariffs if they were able to invest in technology to take advantage of them.<sup>26</sup>

- ***Ability and incentives for network businesses to charge on a cost-reflective basis***

Transmission and distribution network service providers look to recover the costs of building and operating the electricity networks in their charges to retailers and some very large consumers. The review is concerned with whether the charges faced by the demand side of the market (being retailers and consumers) are providing efficient price signals.

The Australian Energy regulator (AER) regulates the prices that NSPs can charge their customers, through capping either prices or revenues, based on proposals submitted by the businesses.<sup>27</sup> Tariffs usually apply to all consumers in a given size category within a distribution service area. For large consumers who have a direct contract with the NSP, a capacity charge based on peak demand in a year is common, but the most common structure of charges involves a daily service charge and an energy consumption charge. For most consumers, NSPs charge a flat price for each unit consumed. For consumers with interval meters, tariffs often vary by time of day or year.<sup>28</sup>

Cost-reflective network charges would reflect the cost of increasing network capacity at peak times. Prices based on long run marginal costs (LRMC) will encourage efficient long term consumption decisions, including where to locate as well as production or appliance choices. The amount of infrastructure - and therefore the investment costs - needed to supply different groups of consumers varies depending on their location relative to power stations and the main transmission networks. Consequently the costs of supplying different load centres vary. A fully cost-reflective price would vary between small areas of the supply network.

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<sup>24</sup> We note that the SCER national smart meter program, and consumer protection and safety work program and will have regard to any outcomes of that work in this review.

<sup>25</sup> For the purposes of the review, we consider that there are two basic elements that should be taken into account in defining the vulnerability of consumers to price changes. A vulnerable consumer is affected by changes to make pricing structures more cost-reflective because there is a significant deterioration in the consumer's financial ability to pay their bills, and the consumer has a limited ability to respond.

<sup>26</sup> Appendix D of the directions paper provides a summary of a number of papers which look at how vulnerable consumers could be affected by price changes.

<sup>27</sup> A NSP's customers are either large, directly-connected consumers or retailers, who will include these network prices in some way in the tariffs they charge to end-consumers

<sup>28</sup> Refer to report by PwC for the review "*Investigation of the efficient operation of price signals in the NEM*", December 2011 at <http://www.aemc.gov.au/market-reviews/open/power-of-choice-update-page.html>

If retailers are faced with a cost-reflective network charge, they will have an incentive to either pass on the charge to their customers or to reduce their exposure to peak charges by encouraging their consumers to reduce consumption at peak times. Given the nature of network investment, pricing on the basis of long-run marginal costs may lead to a NSP not recovering all of its allowed costs. In order to signal to retailers the costs of transporting electricity, network charges should therefore include a fixed component, plus a component which varies by time of use and location. However, as noted network charges applying to the majority of small consumers in the NEM are flat charges which do not vary by time of use, and tariffs usually apply to all consumers within a distribution service area. While there are currently some regulatory restrictions on network pricing, the rules allow some flexibility in how tariffs are structured. The review will further investigate whether stronger incentives or obligations should be placed on NSPs to price on a cost-reflective basis. In considering the issue, we will have regard to the costs of implementation of any mechanisms as such costs may outweigh the benefits of having those prices in place.

- ***The role of enabling technology and information in reducing transaction costs***

The consumption of about 88 per cent of small consumers in the NEM are currently billed on an 'accumulation' basis, i.e. only aggregate consumption levels in the period between meter reads are recorded. This in contrast to larger consumers (industrial) that tend to interval meters in place. Varying prices by the time of electricity use requires the ability to know how much consumers use at different times of the day (and/or year), for which interval meters are required. The report by PricewaterhouseCoopers explains that interval meters are necessary for the purposes of time sensitive tariffs. However, even with interval meters it may not always be possible, or at least practical, to provide perfectly efficient time signals in a way that consumers can respond to them. For example, in order for a price to consumers to act as an effective signal to which they can respond, the consumer needs to know in advance what the price will be.

High wholesale prices don't always correlate with high demand - sometimes they are driven by supply shortages. It is still appropriate that consumers face these costs (to the extent that retailers face them), but as they are often caused by sudden, short-term events (most commonly the outage of a generator), they may not be predicted sufficiently in advance to be able to signal them effectively to consumers. Similarly, it may not be practical to charge different network prices for consumers on each individual street. In these circumstances, NSPs and/or retailers are best placed to determine an efficient balance between cost-reflectivity and simplicity, taking into account the transaction costs involved. The development and use of other technologies may help to reduce some transaction costs.

#### **4.3.2 Information**

For consumers to participate in the market, it is important that there is adequate information about consumption patterns, costs, and products and services so that they can adjust consumption and behaviour patterns to maximise their welfare. If consumers are not sufficiently aware, the appropriate level of information is not available, or existing arrangements are complex and seen to be costly, there is a risk that some

consumers will not take advantage of cost effective opportunities that they otherwise would have taken up to help manage their electricity costs.

The Commission considers that there are a number of improvements that could be made to how the current mechanisms support consumer engagement and participation in the electricity market. Such issues specifically relate to the existing level of consumer understanding about costs and impacts of their consumption and their ability to act on energy savings opportunities.

The issues we intend to further consider for the next stage of the review include:

- ***Potential improvements to the rules regarding consumer access to energy consumption data***

Currently, under the National Electricity Rules<sup>29</sup> consumers can access their current electricity consumption data through a retailer. There are also provisions under the National Energy Customer Framework (NECF) regarding other information that should be available to consumers.<sup>30</sup> We consider improvements could be made to the existing rules to clarify and provide guidance on the provision of consumers' energy consumption load profiles. This would provide certainty to consumers that they can access their data, engage with third parties and undertake appropriate investment decisions. Such information would also assist third parties to develop innovative products and services as the market for DSP matures.

In regard to the privacy and security of metering data, we consider that the consumer should have the right to access of their own consumption data. For example, when a service provider is in charge of information on the customer's power capacity (kW) the customer should be able to a) know that this data exists, and b) receive information on the explicit data. It should always be the consumer that chooses in which way metering data shall be used and by whom.

We note that there are currently issues regarding privacy and data ownership relating to the introduction of smart meters and that this issue is being considered under the SCER National smart meter program, consumer protection and safety work program.<sup>31</sup> We will take account of that work in considering any changes required to existing market arrangements as part of this review. We also note the Australian Government is scoping the need for an "Energy Information Hub"<sup>32</sup> for consumers (or representatives) to access energy consumption information.

It is important to recognise that given the different capacities and preferences across and within consumer sectors, there is a need to consider a variety of approaches to communicate with consumers and to deliver electricity products and services. This is likely to require new partnerships between all parties across the supply chain to

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<sup>29</sup> Clause 7.7 (a).

<sup>30</sup> More information on the NECF can be accessed at <http://www.mce.gov.au/emr/rpwg/default.html>

<sup>31</sup> See Department of Resources, Energy and Tourism for further information on these programs: [http://www.ret.gov.au/Documents/mce/emr/smart\\_meters/default.html](http://www.ret.gov.au/Documents/mce/emr/smart_meters/default.html).

<sup>32</sup> See the Department of Resources, Energy and Tourism website for further information: <http://www.ret.gov.au/Department/Documents/clean-energy-future/ELECTRICITY-PRICES-FACTSHEET.pdf>

educate and encourage greater participation and uptake of DSP responses. We outline our considerations on consumer participation and information in chapter 4 of the directions paper.

- ***Information on costs of consumption and products and services to take up DSP***

Overall, stakeholder submissions and evidence gathered for the review indicate that there is a disconnect between what consumers know about their electricity use, and what they need to know for smarter energy use decisions. Consequently, there is a need for greater innovation on the part of parties in the market to consider how they engage and provide services to consumers on a broader scale. We have noted that we intend to further consider the roles of networks, retailers and other parties to engage with consumers so dialogue with consumers regarding DSP options can take place in a transparent manner. We recognise that there is also a need to improve how existing education and information programs are delivered so that a common language is created to engage and inform consumers.

#### **4.3.3 Enabling technology**

Technology can empower consumers to monitor, manage and adjust their electricity consumption. Forms of such technologies have been in operation in the NEM for many years (for example, ripple control systems). Also, advances in integrated control systems and communication technologies have significantly increased the functionality of smart metering and demand response technologies. These advances have the potential to provide more power system and market benefits, allowing both greater consumer receptivity and higher confidence that consumers can and will respond to price-based demand response.

For the directions paper, we have looked at how investment in enabling technologies is facilitated and leveraged to help consumers manage consumption and hence allow the value of DSP to be better captured.

While it is appropriate for the market to determine the most cost-effective range of DSP technologies, we have identified a number of areas in the current environment which can better support efficient investment decisions to optimise technology and system capability. The issues we will further investigate in the next stage of the review include:

- ***Approaches to facilitate consumer investments in technology***

Currently, there is a range of factors that may reduce the attractiveness of investment in DSP technologies, including split incentives issues, transaction costs, high upfront costs and a desire for short pay back periods. There may be scope for mechanisms to help improve opportunities for consumer investments, including a role for third parties to support consumer decision making. ESCOs provide a range of business models aimed at capturing the market's potential to respond to consumer demand for increased DSP. Such companies may take over the technical and commercial implementation and operational risks associated with DSP technology investment. This approach can minimise transaction costs and provide some certainty of costs and returns for the end-consumer.

- ***Role and rights of consumers owning and using technology to enable DSP***

There are a number of DSP technologies that consumers, third parties (on behalf of consumers), or either retailers or networks can invest in. These technologies may offer the capability for each party to provide DSP solutions on the consumer's behalf. Therefore, an important consideration is the role of the consumer and the rights of other parties in those investments, including the appropriate usage arrangements that should be in place.

- ***Arrangements to facilitate commercial investment in metering technologies***

Networks, retailers or consumers may wish to invest in DSP technology such as metering that provides better information and price signals. However, there are a number of issues regarding cost recovery and risk. There are also issues regarding the need for improved information technology platforms to manage data and volumes and additional costs that this may impose. For consumers such as those in the residential sector, it is unclear how a request to install an interval or smart meter would be handled if the consumer is seeking to take advantage of more time sensitive pricing, or manage energy use of household appliances.

We note that the SCER is considering a review into contestability of smart metering services. Our review provides an opportunity to gather some initial views on the issues raised above, and the need for changes to the existing arrangements to address those issues. Where issues arise regarding data access, consumer protections and contestability, we will seek to comment on those, in order to assist and feed into SCER's existing and planned work in this area.

There should be "open standards" and a gateway to make it possible for consumers to purchase in-home control and information devices that would automatically communicate with their meter and that, in turn, would help automate or otherwise increase their demand response. Open standards might also reduce costs by encouraging competition among technology providers. Given recent initiatives on these matters by SCER, the NSSC and the House of Representatives Standing Committee on Infrastructure and Communications, the Commission does not intend to do any further investigation into these matters.<sup>33</sup>

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33 <http://www.aph.gov.au/house/committee/ic/smartinfrastructure/index.htm>

## 5 Other considerations

We have considered two other areas related to DSP as part of the review that may have the potential to impact and facilitate DSP outcomes. These are distributed generation (DG) and energy efficiency measures. A number of concerns have been raised by stakeholders about the ability to connect to the distribution network and export DG. Hence, as part of the review, we have sought to consider these issues, specifically, the connection and export arrangements for DG to support provision of DSP in the NEM.

### 5.1 Distributed generation

DG installations located close to the consumer load can provide a number of potential benefits such as improved reliability, reduced network losses, in addition to managing the consumer's demand for electricity. As a DSP option, DG also has the potential to address peak demand and thus reduce the reliance on large scale generation and network investment to meet peak demand.

Our analysis indicates that some areas of the existing arrangements require further consideration as part of the next stage of the review. These include:

- the extent to which the existing arrangements provide incentives on distribution NSPs to connect and support DG in a timely manner.
- possible opportunities to provide flexibility for DSP providers to sell their services to any party willing to purchase that service (i.e. the portability of energy supplied by a DG installation).

The extent of the discretion permitted to distribution businesses and the possibility of having multiple minimum technical standards for DG connecting to the network could impede efficient connection of DG. We note that there is a SCER recommendation to improve the existing arrangements for setting minimum technical standards for DG units and that a rule change request will shortly be submitted on the issue.

### 5.2 Energy Efficiency

The uptake of energy efficiency opportunities can happen in two ways. Consumers may uptake energy efficiency opportunities available to them through programs put in place by governments, or through their own means as a cost-effective energy efficiency measure. A key aspect for this review is how energy efficiency policies may be better integrated with policies on DSP to ensure efficient market outcomes.

We note that there has been a suite of reviews on the various forms of energy efficiency program, and the Australian Government is considering through its Clean Energy Package further work on a possible national Energy Savings Initiative (ESI). As outlined in our issues paper, we only intend to consider those programs that impose a direct obligation or incentive on NEM participants. Therefore, the measures we will look at as part of this review include the various New South Wales, Victorian and South Australian energy efficiency schemes, and the Commonwealth Energy Efficiency Opportunities (EEO) program.

To assist us with our work, we have engaged Oakley Greenwood (OGW) to assess the effectiveness and efficiency of those regulatory measures with a view to providing

advice on a best practice approach for energy efficiency measures and policies that seek to promote the efficient use of, and investment in, DSP in the stationary energy sector. OGW have provided us with the first stage of the analysis which includes a stocktake of the programs above and a review of international approaches.<sup>34</sup> The next stage of the review will comment on the extent to which these measures facilitate efficient DSP in the NEM.

Greater coordination of energy efficiency and demand response programs at the provider level could bring about cost efficiencies and a more rational allocation of resources for both program providers and consumers. This coordination could help consumers, as they could be receptive to an integrated, packaged approach to managing their energy usage. Greater consumer willingness could also increase demand response market penetration and capture energy savings and consumer bill-reduction opportunities that might otherwise be lost. Over the long term, smart grid investments in communications, monitoring, analytics, and control technologies will reduce many of the distinctions between energy efficiency and demand response and will help realise the benefits of this integration.

Chapter 12 provides more on our approach to reviewing energy efficiency programs for this review and the interaction with facilitating uptake of efficient DSP in the NEM.

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<sup>34</sup> The Oakley Greenwood report can be accessed at <http://www.aemc.gov.au/market-reviews/open/power-of-choice-update-page.html>

## 6 Way forward

We have outlined a suite of issues that require further consideration, and also offer some directional comments on opportunities to facilitate efficient DSP in the market. For the next stage of the review, we intend to consider those issues and assess potential options for reform across a number of key areas. These relate to opportunities to facilitate efficient DSP in the electricity market in the longer term, and other improvements that can be made to the existing rules to better facilitate uptake of DSP in the short term. The key areas we will be considering include:

- **Consumer participation:**
  - information, avenues for engagement, and access to wholesale market by third parties (acting on behalf of consumers);
  - how the market offers products and services; and
  - access to and utilisation of technology.
- **Role of price signals:**
  - arrangements for the market to provide prices that better reflect the costs of supply and delivery of electricity services;
  - potential for cost reflective prices to promote consumer uptake of DSP; and
  - arrangements for vulnerable consumers, where required.
- **Networks:**
  - distribution network profit incentives and ability to manage risks of DSP projects.
- **Supply chain interactions:**
  - incentives across industry participants and how the supply chain captures DSP the value of DSP impacts.

### *Other considerations*

As part of our work program we will also further consider the broader issues for distributed generation and how energy efficiency programs impact on the NEM and integration with DSP policies.

A summary of the key areas and our considerations for next stage of the review is outlined in Table 6.1.

**Table 6.1: Summary of key areas and consideration for next stage of the review**

Market conditions	Actions for next stage of review
<b>Consumer participation</b>	
<b>Engagement and information</b>	<ul style="list-style-type: none"> <li>- The changes required to provisions in rules so that consumers can have timely access to their consumption data (and whether new role of information service providers is required)</li> <li>- The role of network business, retailers and other third parties to engage with consumers - how dialogue can take place in a transparent manner when offering different products and services</li> <li>- Provision for market participants to provide better information to AEMO regarding DSP capability</li> <li>- Approaches to better facilitate the role of aggregators to participate in the wholesale market and how wholesale contract market supports these service providers. We will hold a specific industry workshop on this topic in April 2012.</li> </ul>
<b>Technology</b>	<ul style="list-style-type: none"> <li>- The role and rights of consumers regarding ownership and usage of technology to enable DSP</li> <li>- Approaches to assist consumers when they consider making investments in technology</li> <li>- Arrangements to facilitate commercial investment in metering technology</li> </ul>
<b>Role of price signals</b>	
<b>Cost reflective pricing</b>	<ul style="list-style-type: none"> <li>- The impact of time-sensitive tariffs on different types of consumers and consider additional protections required for vulnerable consumers</li> <li>- The drivers of network costs, ability and incentives for network businesses to charge cost-reflective prices</li> <li>- Commercial restrictions on retailers to capture value of DSP</li> <li>- Extent to which retail price regulation may impose restrictions on retailers to allow flexibility in pricing and changes that may be required</li> <li>- Merits of better load profiling for residential consumers on accumulation meters</li> </ul>

<b>Networks</b>	
<b>Distribution network incentives</b>	<ul style="list-style-type: none"> <li>- Options to provide the appropriate commercial incentives for distribution network businesses to invest in DSP</li> <li>- Options for special transition arrangements that help the distribution network businesses to manage any additional risks from DSP (For example, possible exemption from the service standard incentive scheme, and merit of developing common acceptable methods and best practice standards on how DSP should be value and estimated)</li> </ul>
<b>Supply chain interactions</b>	
<b>Capturing the value of DSP</b>	<ul style="list-style-type: none"> <li>- The reasons why DSP programs which could deliver multiple benefits across the supply chain are not being implemented</li> <li>- The extent to which cost reflective prices promote co-ordination across multiple market participants</li> <li>- Options to achieve co-ordination between multiple parts of the supply chain – role of energy service companies and/or need for alternative approach (i.e. single actor option)</li> <li>- Approaches to be used to value and forecast the costs and benefits of DSP (i.e. the extent of demand reduction)</li> </ul>
<b>Other considerations</b>	
<b>Distributed generation</b>	<ul style="list-style-type: none"> <li>- The incentives on distribution network businesses to connect and engage with DG installations in an efficient and timely manner, including the merits of possible additional schemes (e.g., a fee for advice scheme and a distribution network businesses revenue adjustment mechanism)</li> <li>- Options which enhance the ability of a DG installation, and other forms of DSP, to sell their demand response services to parties other than their existing retailer (the portability of DSP)</li> </ul>
<b>Energy efficiency measures</b>	<ul style="list-style-type: none"> <li>- Considering the interaction between energy efficiency regulatory policies and operation of the NEM and take up of efficient DSP</li> </ul>