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Senate Select Committee on Electricity Prices
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Canberra ACT 2600
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Lodged (online): https://senate.aph.gov.au/submissions/pages/index.aspx

Senate Select Committee on Electricity Prices

The Energy Supply Association of Australia (esaa) welcomes the opportunity to make a submission to the Senate Select Committee on Electricity Prices.

The esaa is the peak industry body for the stationary energy sector in Australia and represents the policy positions of the Chief Executives of 36 electricity and downstream natural gas businesses. These businesses own and operate some $120 billion in assets, employ more than 51,000 people and contribute $16.5 billion directly to the nation's Gross Domestic Product.

Energy in Australia is changing rapidly and will continue to do so. The Senate Select Committee is a welcome opportunity to assess the challenges facing energy markets and consumers in Australia. To deliver this we need efficient, dynamic and effective market reform delivered by timely policy reforms. Our shared goal is the evolution of a smarter energy future where informed customers have more control over how much power they use, when they use it and ultimately how much they pay.

The rapid increase in electricity prices in the past five years has fuelled consumer backlash and understandable questioning of the operation and management of the energy sector. The precise causes vary from state to state, but two key themes stand out:

Rising network costs – much of Australia's current fleet of electricity generators and related distribution networks to connect them were built in the 1960s and 1970s. Much of this network infrastructure is getting to the end of its useful life and needs to be replaced. Meeting high reliability standards, particularly in NSW and Queensland, and the challenges of meeting peak demand have also combined to result in a major increase in network expenditure and have led to substantial increases in network charges in most states.

These root causes have coincided with a move in the NEM states to a national regulatory framework, which has led some to blame these regulatory changes for some of the cost increases. The regulatory arrangements are currently being considered in detail by multiple technical review processes that are already well advanced. The industry encourages the Committee to let these detailed reviews make appropriate recommendations before related policy changes are considered.

Greenhouse abatement – At a federal level, the carbon price and large and small scale renewable energy schemes have increased the cost of energy supply. Jurisdictional schemes include the cost of premium feed-in tariffs for household solar panels, energy efficiency "white certificate" schemes, NSW GGAS, Queensland gas scheme costs and the NSW climate change levy. Individually, these items are relatively small proportions of the overall bill. Combined they are contributing materially to price rises in most states.

Electricity prices are expected to continue to be pushed upwards by factors such as worsening peak demand, rising fuel costs, the Renewable Energy Target (RET) and pricing greenhouse emissions.

Some of these factors are within the direct control of government, such as the carbon price and the RET. Others can be influenced by the right suite of policies – in particular the key issue of peak demand.

To address increasing prices, we urge the Committee to focus on structural policy responses, rather than populist, short term fixes. We have already seen the latter in Queensland with the election promise and subsequent introduction of a 12-month retail price freeze. This type of action will only condemn Australians to higher electricity prices in the future, as it does not address underlying costs and simply masks important price signals. If the Queensland Government wants to see firsthand the likely end point of their tariff freeze policy, they need only look at the painful unwinding of the retail price freeze that the Western Australian Government has had to undertake over recent years.

Rising peak demand

Peak demand is a term used to describe the highest point of consumption during the year. The requirement to deliver high reliability of supply means that the electricity system – both generation and networks has to be built to meet this peak. When peak demand rises faster than overall consumption, unit costs (i.e. the c/Kwh or $/MWh rate) will need to rise to recover the total system costs.

In the residential sector, peak demand typically occurs in the late afternoon on a hot summer weekday. This is due to everybody coming home from work and simultaneously switching on a range of appliances, in particular air-conditioners, which have grown rapidly in popularity over many years. People who only use little power at peak times are currently heavily cross subsidising people that use a lot.

At the moment, the existing metering stock gives little scope to change this as it is not designed to record *when* consumers are using power. To ensure that peak demand is effectively addressed, we need policy settings to encourage the uptake of advanced metering infrastructure (AMI) and other technology that will give consumers more information about and control over their energy consumption, ensuring that people who consume less at peak times are rewarded.

Completing the reforms begin in the 1990s

National and state governments committed Australia to the reform of energy markets in the 1990s. This involved establishing a national electricity market and creating a transparent wholesale market for the supply of electricity. This was to be followed by introducing full competition into retail markets, the full deregulation of energy prices combined with market

transparency, allowing more flexible pricing and billing arrangements, greater incentives for consumers to avoid times of peak demand and improving the efficiency of the entire market.

This reform process has stalled. Only Victoria has made substantial progress on the necessary foundational changes to bring about a more efficient energy sector – deregulating retail prices, privatisation of generation and network assets, and the roll out of AMI. However, even Victoria still has a long way to go to develop flexible pricing structures to ensure customers can be rewarded for not only using less electricity, but for using less at peak times.

If governments are to genuinely address the root causes of rising electricity prices they will need to:

- end regulation of retail prices where scope for effective competition exists. Competition not regulation will deliver the best deal for consumers. Trying to develop more flexible and innovative prices will not happen under regimented price regulation;
- ensure that customers have more information about their usage patterns so they can move their load, reduce their load and engage in demand side participation (DSP) if they want; and
- allow network businesses to move away from the 'postage stamp' method of pricing, where the price per unit must be the same regardless of how much energy is used by the consumer and regardless of the location. This approach locks in cross subsidies and leads to poor outcomes for consumers.

These remedies are discussed in more detail in Attachment A.

Vulnerable customers

Although electricity represents a small proportion of average expenditure for most households, it can have a significant impact on a small proportion of the total customer base. Attempting to assist these vulnerable customers by distorting the price paid by all customers is poor policy and not the approach adopted for other goods and services.

Direct assistance through targeted support measures to those most likely to be in hardship, which should be transparently funded on-budget, is the most appropriate way to provide financial assistance. This may include direct support, such as energy concession payments, family tax benefits or energy efficiency initiatives targeted at these customers to help them reduce their energy costs. esaa considers that this approach should also be followed to deal with any potential adverse impacts on vulnerable households that may arise from moving to dynamic pricing.

Conclusion

New energy technology and smarter pricing structures will empower Australian households to use electricity in the way that is most cost-effective both for them and for the system. Over time, this will relieve upward pressure on electricity prices. However, it is important to note that this is a long-term challenge. Prices will not fall overnight, but empowering consumers and establishing a policy and regulatory framework that encourages efficient pricing structures will contribute significant to containing peak demand and rising retail prices.

Yours sincerely

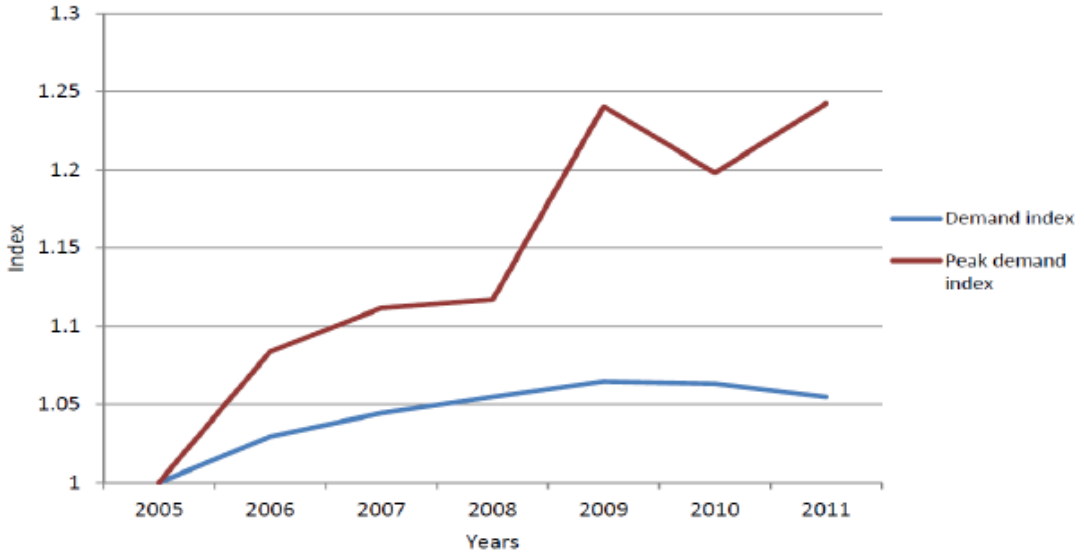
Matthew Warren
Chief Executive Officer

Attachment A

Peak Demand

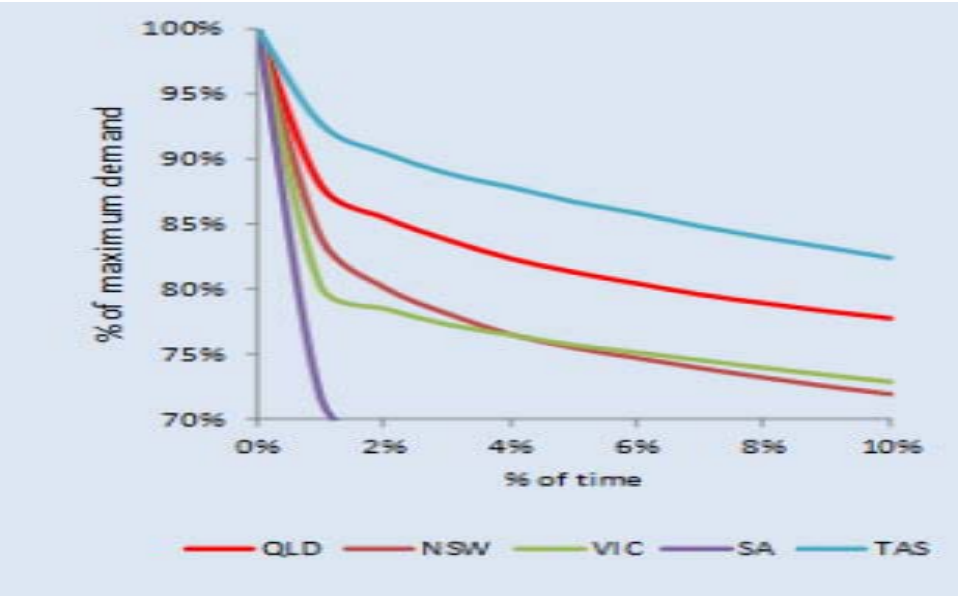
Peak demand has been rising faster than consumption for several years and is expected to continue to do so.

Figure 1: Peak versus aggregate demand growth[1]



The absolute peaks on each part of the system are typically only a few days each year. In Queensland, Energex estimates that 11 per cent of its network investment is to meet a level of peak demand that only occurs 3 days of the year. Parts of Victoria and South Australia are peakier still (see figure 1 below).

Figure 2: Peak load duration curve (2010-11)[2]



[1] Energy Networks Association: Data sourced from AEMO 2011 ESOO
[2] AEMO 2011 SOO, IMO 2011 SOO, Deloitte analysis of Net System Load Profile data for the NEM.

Energy networks must build their infrastructure for peak demand and reliability standards. Since network charges are largely on levied on consumption, the trend towards lower capital utilisation is an important driver of increased electricity prices.

Earlier this year, esaa commissioned the consultancy Deloitte to review the gross benefits of a number of initiatives to mitigate rising household peak demand. They found that significant benefits could be obtained from introducing pricing reform and direct load control of air conditioners.

Table 2: Total estimated value of gross benefits 2012-13 to 2021-22 (NPV)[3]

Initiative	Low case benefits ($m)	High case benefits ($m)
Time of use pricing	58	193
Critical peak pricing and incentives	385	1,272
Direct load control of air conditioners	200	1,338
Direct load control of pool pumps	188	231
Electric vehicles	60	537
Energy Savings Measures	361	486
Enhanced uptake of Solar PV	300	528
Total gross benefits	**1,551**	**4,585**

Source: Deloitte analysis

The gross benefits translate into a $/MWh figure for residential customers range from $4.09/MWh to $14.88/MWh (or $30-$100 per year for an average household). It's important to note that each of the initiatives have a range of other costs and benefits associated with them, and more detailed analysis would be required to underpin the value of specific policies.

Regulatory Reform

The importance of retail price deregulation

Cost-reflective pricing is important to the energy market as a whole, and is crucial to some DSP options being implemented. In particular, critical peak pricing (CPP) and time of use (TOU) pricing rely on cost reflective tariffs. Currently many customers including most residential customers do not face appropriate price signals relating to their demand at peak times. If they did, they would have an incentive to shift loads or to be more energy efficient with their use at peak times.

To ensure customers face appropriate incentives, deregulating prices is essential. Of course, this is subject to there being scope for effective retail competition. Retail price

[3] Deloitte analysis: Analysis of initiatives to lower peak demand – Final Report April 2012.

regulation stifles innovation in the sector, preventing retailers from developing a range of products which may be of benefit to many of their customers.

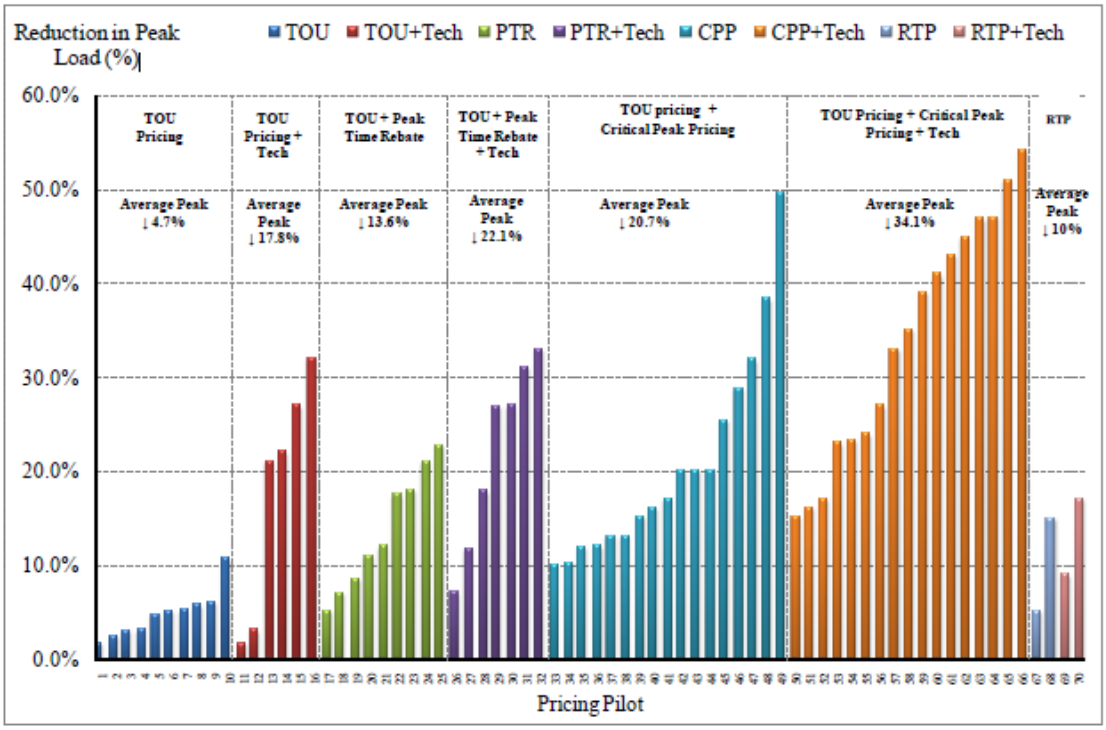
TOU pricing as it currently exists is generally restricted to a broad approach of off-peak, shoulder and peak periods. To drive greater changes in peak demand, retailers and networks will need the freedom to develop other tariff options such as CPP.

AMI enables pricing structures such as CPP and critical peak rebates (CPR). These apply on a pre-determined number of days each year. Since the peak days depend on extreme weather conditions, forecasts are used to notify customers shortly before each day that it is a critical peak day. Under CPP a high price is levied for consumption that day. Under CPR, pricing is at normal (peak) levels, but customers can gain a reward for reducing their demand below expected levels. Psychologically the latter approach is often preferred by customers even though total electricity bills over the year will not necessarily be any less.

The Deloitte report found that of initiatives to reduce peak demand, CPP has a far greater potential for savings compared to general time of use pricing. Deloitte estimated that CPP could lead to more than $1.2 billion in gross benefits from 2012-13 to 2021-22. Over the same period, the benefits of TOU pricing were calculated at up to $193 million.

Other analysis shows a similar result in terms of customer response to dynamic pricing such as TOU and CPP. In the US, Ahmed Faruqui has shown that the customer response to TOU pricing alone is far less than when other options such as CPP or peak time rebates are available. The use of technology including direct load control (labelled ‘Tech’ in the chart below) also resulted in greater reductions in peak demand.

Figure 3: Peak demand reduction arising from various dynamic pricing pilots[4]



Network pricing

Networks should have the option to charge on a TOU basis. The Victorian Government has currently imposed a moratorium on TOU network pricing. The esaa contends that this is hindering development of pricing plans which may contribute to effective DSP.

In due course, it may be worthwhile exploring allowing networks to charge on a volume or capacity basis. This would enable charges to be passed through in the most effective manner to encourage DSP and reduce the drivers of peak demand.

However, any shift in the way in which network tariffs are passed on needs to be treated with caution. The presence of retail price regulation in most jurisdictions risks harming energy retailers if network costs are imposed on them in a fashion which prevents them from efficiently passing on the costs to customers.

While networks may be driven to develop innovative pricing structures, energy retailers have the direct interface with customers and are the party that charges them for the full spectrum of energy costs, including the network component. This risks leaving retailers with a cost burden that cannot be efficiently passed on. Any changes to network charging need to be co-ordinated between retailers and network businesses. Customers will require clear information to inform them of how any changes affect their bills. The greatest scope for benefits to accrue to customers will be if incentives to customers come from both networks and retailers. These incentives need to be complementary otherwise any price signal will be muted.

[4] Faruqui, A. (2010), "The ethics of dynamic pricing", The Electricity Journal, 23(6): 13-27.

Demand Side Participation

Market price signals should drive DSP

Consistent with the allocation of resources in the broader Australian economy, the Association considers that prices should be the primary driver for DSP. DSP should be facilitated via open and competitive markets that allow for efficient cost-reflective pricing and through effective, incentive-based economic regulation of networks that appropriately rewards networks owners for innovation and investment in DSP.

All areas of the supply chain should be able to take a role in informing consumers about the potential benefits of DSP. This is not limited to energy retailers and network businesses. Obviously, most consumers' first point of contact is with their energy retailer, but with several areas of the supply chain likely to provide DSP products it is up to all participants to provide information to consumers about potential benefits. However, it ultimately falls to the consumer to choose whether or not to take up any potential DSP product offering.

With several types of business having the scope to offer products and services, whether directly or via a retailer, it is important that all businesses are faced with a level playing field in terms of regulation. The Association considers that a light-handed approach to regulation would be beneficial in terms of encouraging innovation. However, applying some regulations to one form of business, while excluding others, will distort the market for DSP services.

Retailers and network businesses need to be aware of any DSP arrangements that have been agreed between a customer and a DSP provider. Retailers need to be aware how any DSP will affect their customers and the quantity of energy they purchase in the NEM. Network businesses need to understand the impact of DSP on their infrastructure in order to help them plan for an efficiently-sized network. A clear, coordinated process needs to be in place so that when a customer agrees to a specific DSP activity, this information can be passed on to relevant parties.

Direct load control

Direct load control (DLC) offers the possibility for distribution network service providers (DNSP) to manage periods of peak demand by shifting non-time dependent loads (such as pool pumps) to off-peak periods and by cycling time-dependent loads (such as air-conditioning). While DLC could be a tool used by other parties, it is likely to be a more effective tool for avoiding capital expenditure if the DNSP has clear visibility and certainty of its use. However, the right communications architecture has to be in place as well as having the functionality embedded (or retrofitted where feasible) into the relevant appliances.

The benefits of DLC were assessed by Deloitte as part of the analysis of the benefits of peak demand reduction. The analysis found that DLC of air conditioners could result in peak reductions of up to 35% per customer and benefits from 2012-13 to 2012-22 of more than $1.3 billion. Extending DLC to pool pumps would lead to benefits of up to $231 million over the same period.

An opt-in trial of DLC of air conditioners in Perth as part of the Perth Solar City program showed that reductions in peak demand of 20% were possible through cycling air conditioners on and off during periods of high demand. In Queensland, Energex is also trialling DLC of air conditioners through the Energy Conservation Communities program by offering customers a $250 voucher for the purchase of an air conditioner with in-built peak smart technology. This technology enables Energex to send a signal to the in-built peak smart technology that tells the air-conditioner to cap its energy consumption during peak demand periods. The air-conditioner will continue to circulate and cool air, to ensure comfort levels are maintained.

One key issue will be to determine the rights and responsibilities of different parties in offering DLC. Retailers, network businesses and other parties will all consider that they have a role. For retailers, it may be a valuable way of managing price risk. If another party provides their customers with DLC services, the retailer will need to understand the implications of this on their customers' load profile so that they can procure their customers' energy requirements efficiently. For network businesses, it may be a viable alternative to network upgrades or allow for cheaper replacement options than otherwise. If another party provides customers on their network with DLC services, the network will need to understand the implications on the expected demand peaks on their network so that they can operate and maintain the network efficiently.

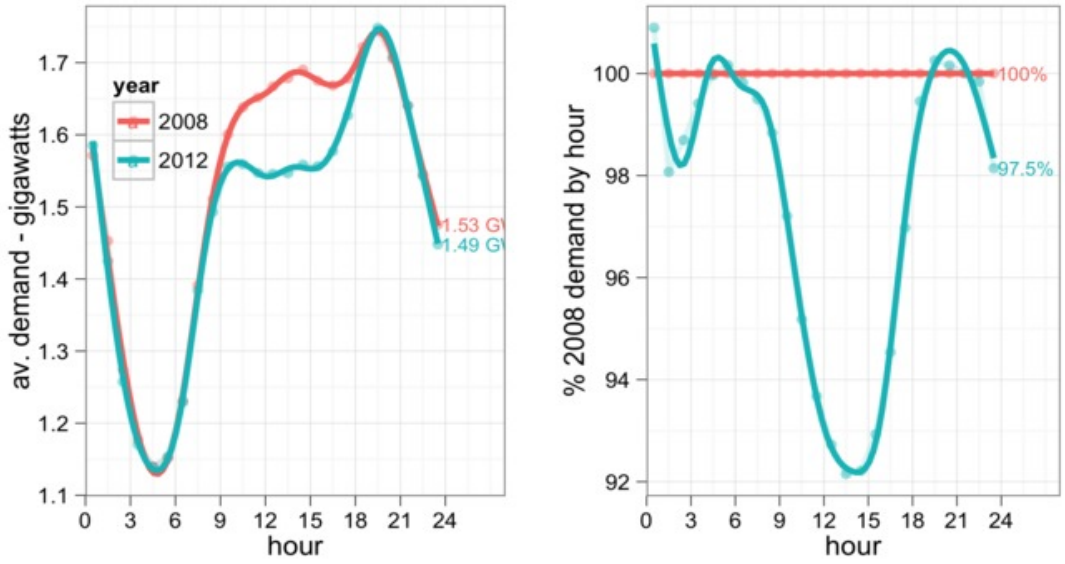
Distributed generation and storage

Consumers also have the option of investing in their own generation and/or storage. Typically they will want to be able to export surplus power (especially if they do not have storage capabilities). The most common form of distributed generation is rooftop solar photovoltaic panels (PV). In the last few years Australia has experienced a rapid expansion in rooftop PV, growing from 23 MW of installed capacity in 2008 to 1455 MW in 2011[5]. This has been driven by solar credits, feed-in-tariffs schemes and the decreasing price of panels. The increase in PV penetration has in part contributed to the recent decrease in aggregate demand for electricity.

Supporters of PV argue that it reduces electricity prices. In the short-term, PV is depressing the price of wholesale electricity during the day. However, as PV has little impact on peak demand it will ultimately only place upward pressure on prices. This is due to the fact that PV drives up the unit cost of the network.

[5] AEMO: Rooftop PV Information Paper - National Electricity Forecasting 2012.

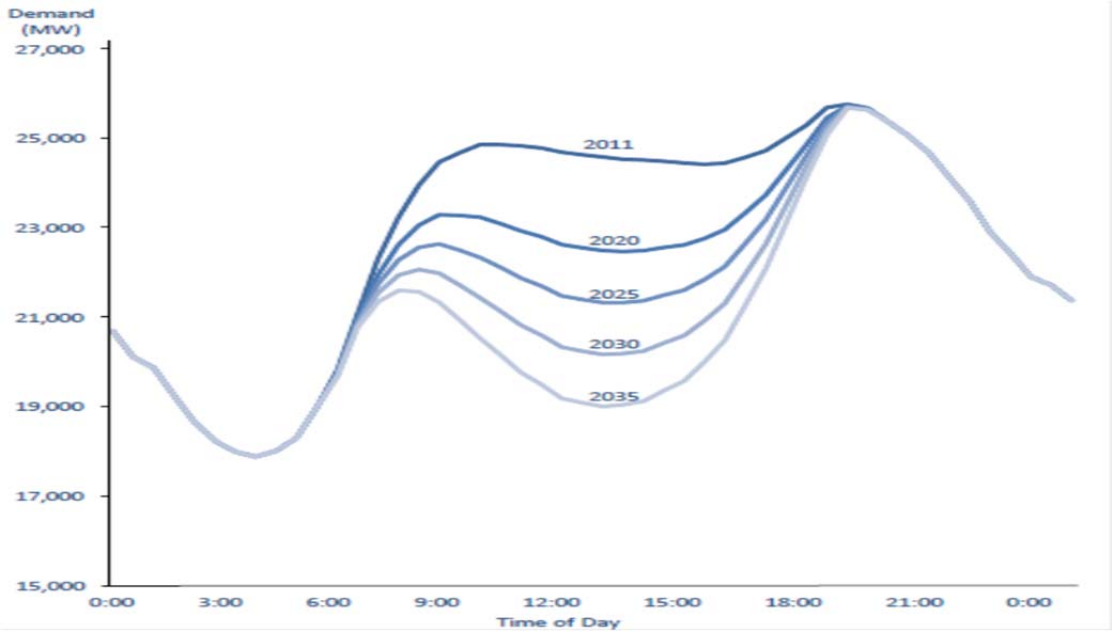
Figure 4: South Australia daily consumption[6]



As noted by the Director of the Melbourne Energy Institute Mike Sandiford "the distribution network needs to be scaled to the size of peak demand, it recoups investment over the total amount of electricity supplied through day and night. With solar PV biting into the daytime demand but barely shaving peak demand, the unit cost of distribution will inevitably rise. Distribution is already the major factor in retail electricity prices."[7] Further, if PV continues to hollow out revenue from baseload generation, without being able to provide reliable power supply, it will result in greater reliance in the future on more expensive peaking plant capacity.

[6] Mike Sandiford - http://reneweconomy.com.au/2012/whos-afraid-of-solar-pv-38844.
[7] Ibid.

Figure 5: Potential impact of maximum household solar PV on NEM demand profile[8]



While over time technology change may enable PV generated power to be stored economically, the current pricing structure provides no rationale for its adoption by households. While they face a flat price for electricity regardless of the time of day, there will be no incentive for them to purchase storage equipment.

Energy Efficiency

Where cost-effective, energy efficiency measures are likely already to be implemented, except to the extent that market failures have prevented them (although in a dynamic economy, and in the context of a carbon price, newly cost-effective opportunities will arise). These market failures, of information, of attitudes, of financial resources, and others, tend to be more prevalent amongst the smaller end users of energy – households and small and medium enterprises (SMEs). It is these sectors where the most opportunities for a step change in energy efficiency will be found.

Decisions about the best way to achieve cost-effective efficiencies can best be made by energy users, who are the only ones who have the knowledge to fully take account of their own circumstances. They may additionally need access to better information about potential opportunities, they may need greater encouragement to engage with these decisions and they may in some cases need financial support. They will also need to face appropriate price signals regarding the cost of energy. Governments should seek to devise and implement policies that effectively address these issues with minimum regulatory burden and avoiding duplicative requirements. Policies that target these issues may include:

- the removal of retail price regulation and/or introduction of more dynamic customer tariffs;

[8] Exigency analysis based on annualised installation rate of 200,000 1.5kW solar PV, future profiles normalised to 2011 NEM average demand profile, NEM growth rate assumed of 2% based on ABARE forecasts.

- product efficiency ratings and energy saving measures;
- building energy performance ratings; and
- minimising consumer access to low-efficiency appliances.

If governments can undertake policies that deliver these outcomes, then market competition will ensure that suppliers will emerge to provide the right solutions at the best available price. Governments should not seek to second-guess who these suppliers will be – those currently active in the energy retail market are likely to be amongst them, but should not be required to be.

Opportunities that arise from innovation

Technologies that are essentially available today but that are not yet widely deployed in Australian distribution networks or by their customers provide a range of opportunities for all parties (network service providers, retailers, generators, energy service providers and consumers). They include: opportunities to mitigate the rising cost of running networks; opportunities to improve capital utilisation by arresting the rise in peak demand; opportunities to empower consumers by giving them richer information about their energy use and the attendant costs; giving them the opportunity to generate, store and export electricity; giving DNSPs better information about the performance of the grid and the stresses it is subject to; and improving the quality of electricity supply by minimizing outages and voltage fluctuations.

Some of these opportunities are straightforwardly within the purview of the DNSP. These are typically grouped under the term “smart grid” and broadly can be considered as the digitisation of the network. This can include various forms of distribution automation, which includes volt/VAR control, fault location, isolation and service restoration. It can also include AMI (“smart meters”). A common theme through the various smart grid applications is enhanced information and communication technology.

Aside from the potential future cost savings, distribution automation recently carried out by Southern California Edison in the US led to a demonstrated reduction of 33 min (47%) to average Customer Minutes of Interruption (CMI) and 17% reduction of total CMI per circuit.