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17 September 2012

Ms Sophie Dunstone
Committee Secretary
Senate Select Committee on Electricity Prices
Parliament House
CANBERRA ACT 2600

Dear Ms Dunstone

Submission to Senate Select Committee on Electricity Prices

The Department of Resources, Energy and Tourism welcomes the opportunity to provide the attached submission to the Senate Select Committee on Electricity Prices.

The submission has been prepared in consultation with the Department of the Prime Minister and Cabinet, the Department of the Treasury, the Department of Finance and Deregulation, the Department of Climate Change and Energy Efficiency, and the Department of Families, Housing, Community Services and Indigenous Affairs.

Yours sincerely,

Brendan Morling
Head
Energy Division

Australian Government

Department of Resources, Energy and Tourism

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September 2012

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Executive Summary

In recent years Australia has entered a new phase of investment in its energy supply sector to expand and replace existing energy infrastructure, largely to meet reliability standards and support growing peak demand. Expanding investment needs have seen retail energy prices rise, with household electricity prices increasing, on average, by over 40 per cent in the last three years. Further sustained increases are likely in the short to medium term.

The energy prices experienced by residential consumers are the product of a complex energy market which has been the subject of an active reform agenda for over a decade. Reform effort has focused largely on the National Electricity Market (NEM) which serves the eastern states and the majority of customers, and is a shared responsibility of the Australian, state and territory Governments through the Standing Council on Energy and Resources (SCER), previously the Ministerial Council on Energy.

Key achievements to date of this cooperative reform agenda include the establishment of the three national energy institutions: the Australian Energy Regulator (AER), the Australian Energy Market Operator (AEMO) and the Australian Energy Market Commission (AEMC); and the implementation of the three national energy laws: the National Electricity Law, the National Gas Law and the National Energy Retail Law.

The principal objective guiding the operation and development of the NEM above, as enshrined in the Australian Energy Market Agreement (AEMA), is to deliver secure, reliable and safe supplies of energy and associated services to consumers at efficient prices. Targeted and objective based reform promotes more competitive and efficient energy markets within clear, independent and accountable governance structures. It is enshrined in the AEMA and the national energy laws that this reform and the operation of the market must be done in the long term interests of consumers.

Since its establishment, the NEM has performed well in delivering an affordable and reliable energy supply to consumers. However, energy market reform is a process of continuous improvement and there are opportunities for further enhancements.

This submission outlines how the existing energy market reform agenda, and the Australian Government's energy reform priorities, are being addressed through an active SCER work program and proposed rule changes to improve market performance in a range of areas to assist in minimising long-term cost pressures.

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The Australian Government has a clear path for better-functioning energy markets through the progression of a set of critical reform issues. These include:

- Greater harmonisation of national energy markets – completing the implementation of the National Energy Retail Law, applying the electricity, gas and retail laws and governance arrangements to all Australian electricity and gas markets, and working to remove derogations and differences.

- Privatising government-owned energy assets – continued government ownership of energy businesses is impeding greater competition and efficiency, and reduces market confidence by creating uncertainty and risk for private sector investors. Where governments continue to maintain ownership of their energy assets, the Australian government urges the adoption of transparent and independent governance arrangements operated in a manner reflecting the disciplines upon private businesses.
- Implementing an improved energy productivity (demand side) framework (including ensuring that investment incentives are appropriate) to efficiently reduce peak-demand growth and provide an enhanced set of options for consumers to better manage their energy use and costs. Improving the efficiency of end use pricing to better reflect cost (including time of use) is an important step in securing this productivity outcome. The appropriate framework for the deployment and use of smart meters is also relevant to this objective.
- Further development of the gas market, through improving transparency, trading opportunities, supply response, and better utilisation of infrastructure. This is particularly important with the greater interconnectedness between gas and electricity, which has arisen from the use of gas for electricity generation.
- Increased network efficiency through the investigation of improvements to the reliability and planning of networks, changes to incentive and planning arrangements, and will review productivity benchmarking of distribution network service providers.
- Improving energy market resilience, particularly developing mechanisms to better manage risks to the energy market which might flow through the parallel financial market and the significant prudential requirements which underpin physical transactions in electricity markets.
- Consistent and strong consumer protections through the implementation of the National Energy Customer Framework.
- Improving the integration of renewables, through new market and grid operation technologies, and improving planning and connection frameworks.
- Trialling a range of innovative technologies and services to assist consumers to minimise their energy costs through the Smart Grid, Smart City project.

To support this agenda the Australian Government has an extensive energy market reform agenda underway through SCER, with various independent reviews commissioned due for completion by the end of the year. The findings and recommendations of these reviews will form the basis of future reforms.

These reviews include:

- the independent AEMC rule change process into the economic regulation of networks;
- the Expert Panel Review of the Limited Merits Review Regime, initiated by SCER, assessing whether the appeals process is providing an appropriate balance between the competing interests of all stakeholders, including consumers;

- the Australian Government's tasking of the Productivity Commission to investigate opportunities to benchmark electricity network businesses to improve efficiency and examine interconnection investment;
- the AEMC's Power of Choice Review, initiated by SCER, considering new ways of enabling consumers to have more control about how they use electricity and manage their costs through greater demand-side participation in the NEM;
- the AEMC's Review of Distribution Reliability Outcomes and Standards, initiated by SCER and New South Wales, assessing the effective balance between ensuring sufficient investment in distribution networks to maintain reliability, and pricing outcomes for customers and opportunities for greater national consistency in meeting these standard; and
- the AEMC's Transmission Frameworks Review, initiated by SCER, considering how generation and transmission network investment and operating decisions could be better aligned to deliver efficient outcomes.

The Australian Government is seeking to pursue these reforms through a cooperative reform agenda. On 25 July 2012, the Council of Australian Governments (COAG) expressed concern over the recent substantial electricity price increases arising from factors including increased network charges. COAG requested that SCER, as the body with primary responsibility for energy reform, focus current reviews of market regulation in the interconnected market on achieving efficient future investment which does not result in undue price pressures on consumers and business. SCER will report to COAG at its December 2012 meeting with a package of energy market reforms to deliver on this.

COAG further tasked the COAG Taskforce on Competition and Regulatory Reform, chaired by the Secretary of the Department of Finance and Deregulation, to provide advice to COAG in late 2012 on any action required to deliver a regulatory framework that promotes a competitive retail electricity market, including appropriate support for vulnerable customers, and efficient investment.

It is broadly considered that the range of items being progressed through SCER comprehensively cover the range of key actions required in the electricity market. These are complex areas, with a high potential for unintended consequences if policy is not developed in a sophisticated, rigorous and consultative manner. However, delivering actual outcomes can only be achieved through effective implementation by all parties, and sustained and strong collaboration between Australian, state and territory governments.

Introduction and context

This submission has been prepared for the Senate's Select Committee on Electricity Prices (the Committee) by the Department of Resources, Energy and Tourism (DRET). The Department of the Prime Minister and Cabinet, the Department of the Treasury, the Department of Finance and Deregulation, the Department of Climate Change and Energy Efficiency, and the Department of Families, Housing, Community Services and Indigenous Affairs have been consulted in the development of the submission. Following this contextual discussion on energy market reform in Australia, the structure of the submission mirrors the terms of reference that were agreed by the Senate on 23 August 2012.

Energy is fundamental to a modern economy and society, and access to secure, reliable and competitively priced energy has been a cornerstone of Australia's economic and social development. In this context, it is critical that energy policy continues to strike an appropriate balance in delivering energy security, facilitating economic development and meeting clean energy goals.

The Australian Government will publicly release its Energy White Paper in late 2012. The Energy White Paper will set out a long-term energy policy framework to guide the further development of Australia's energy systems into the next decade and beyond.

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In correspondence in August to Premiers and Chief Ministers, the Prime Minister reiterated the importance of pursuing an ongoing energy market reform agenda that ensures the National Electricity Market (NEM) is delivering outcomes that are in the long-term interests of consumers and requested that advice from the SCER and the COAG Taskforce on Competition and Regulatory Reform be drawn together for COAG consideration by the end of 2012.

Energy Market Reform in Australia

Prior to the 1990s, energy policy in Australia was solely the responsibility of individual jurisdictions. However, in light of the prospective gains with an increasingly interconnected market, and in recognition of the benefits from a nationally coordinated approach, each jurisdiction committed in April 1995 to a far reaching program of competition reform. In 2004 the Australian, state and territory governments set the ongoing agenda for a transition from standalone electricity systems to national energy regulation with the Australian Energy Market Agreement (AEMA).

The AEMA is an intergovernmental agreement that sets out the governance and legislative structure for Australia's energy markets and was endorsed by First Ministers, including the then Prime Minister, on 30 June 2004.

COAG formed the Standing Council on Energy and Resources (SCER), previously the Ministerial Council on Energy, to be the national energy policy and governance body for Australia's energy markets under the AEMA. The SCER is a collaborative forum with all jurisdictions, including the Commonwealth, contributing to energy market policy development. The SCER has a long history of bipartisan support in providing national leadership on key strategic issues and effectively integrating these strategic priorities into government decision-making in relation to the energy sector.

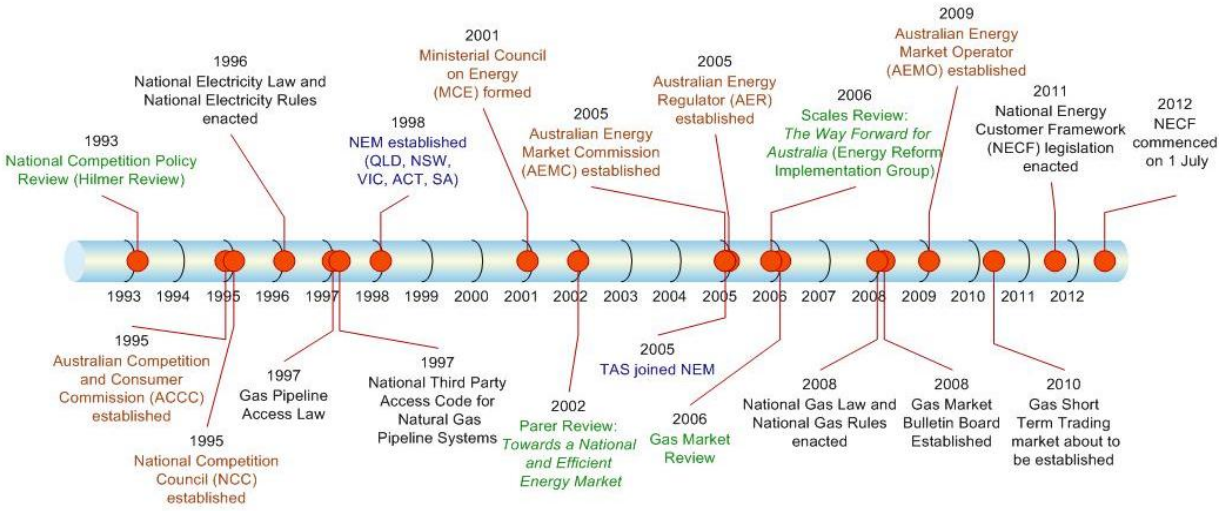
The Australian Government facilitates the forward work program of the SCER through its chairing role and the provision of a secretariat. The Minister for Resources and Energy, the Hon Martin Ferguson MP, is the chair of SCER. The Secretariat is based in DRET, which is the Commonwealth agency responsible for developing and maintaining government energy policies and programs and is the key advisor to government on energy policy.

The AEMA created obligations on jurisdictions to create a new governance framework, which has seen the establishment of the following national energy market institutions:

- The Australian Energy Market Commission (AEMC) established in 2005 is responsible for rule making and market development in respect of electricity and natural gas transmission and distribution networks and retail markets (other than retail pricing). The AEMC is fully funded by the states and territories (not the Australian Government) based on an agreed cost sharing arrangement.
- The Australian Energy Regulator (AER) established in 2005 is the principal regulator of energy in Australia, responsible for enforcing the rules for the NEM and for economic regulation of electricity and gas transmission and distribution networks and retail markets. The AER is a constituent part of the Australian Competition and Consumer Commission and as such is fully funded by the Australian Government.
- The Australian Energy Market Operator (AEMO) established in 2009, operates the wholesale market in the NEM, helps ensure the safety and security of the national electricity system and functions for a range of jurisdictional gas market operators, operates the gas bulletin board and is the National Transmission Planner. AEMO operates on a cost-recovery model through participant fees.

The SCER has delivered a number of important energy reforms, such as the National Electricity Law (NEL), National Gas Law (NGL), National Energy Retail Law (NERL), National Electricity Rules (NER), National Gas Rules, (NGR) and the National Energy Retail Rules (NERR). These laws and rules effectively transfer state and territory functions to a national framework, giving effect to the obligations created by the AEMA.

The timeline below outlines some of the significant achievements to date on this reform program.



Current reform agenda

Two major reviews of electricity and gas markets were conducted under the auspices of COAG to deliver productivity improvements in the energy sector: 'Towards a truly national and efficient energy market' in 2002 and 'Energy reform: the way forward for Australia' in 2006. While many of the outcomes of these reviews have been implemented, there remains areas where reform is incomplete which the Australian Government believes could assist in reducing further pressures on electricity prices. Those reforms include:

- Implementing commitments to retail price deregulation where effective competition exists. Where this does not yet exist governments should commit to implementing a transitional program to promote competition and move to regulated pricing structures which reflect competitive outcomes;
- Promoting greater efficiency and transparency in publicly owned businesses through improved corporate governance and accountability. Privatising energy businesses can also promote commercial discipline and remove the potential for conflicts of interest;
- Building on significant achievements in creating national energy laws and institutions, by extending governance arrangements and principles to all electricity markets, through a more national application of energy laws and ensuring energy institutions have sufficient capacity, capability and accountability to carry out required functions;
- Improving mechanisms to support consumer participation in markets and market processes; and
- A regulatory regime designed to achieve a better balance between the value that customers place on a reliable and safe supply of electricity and the cost of providing it.

Overview of the National Electricity Market

The focus of this submission is on the NEM given that it is the market which serves the majority of Australian customers and where the Australian Government has the most influence through the cooperative regime described above. Western Australia

and the Northern Territory are geographically and economically isolated from the NEM, and as such are subject to different regulatory arrangements, discussed later in this submission. Nevertheless, this submission will make reference to Western Australia and the Northern Territory where appropriate.

The NEM, established in 1998, is the world's longest interconnected power system and the largest electricity market in Australia. It provides approximately 88 per cent of Australia's generation capacity and serves about 92 per cent of Australia's electricity load. It extends about 5,000 kilometres from Port Douglas in Queensland to Port Lincoln in South Australia, including an interconnector to Tasmania, and covers six states and territories. It has around 200 large and around 100 smaller generators, five state-based transmission networks and 13 major distribution networks. Black and brown coal accounts for about 78 per cent of generation output in the NEM, gas about 12 per cent, hydro less than 8 per cent, and wind is about 3 per cent of generation output in the NEM.[1]

The NEM is based on a competitive real-time energy-only wholesale pool market, that all electricity is sold into and bought out of a single pool. It is supported by a well-established parallel financial contracts market which is used to manage price volatility and risk between wholesale and retail market participants, in addition to over-the-counter bilateral contracts.

In 2010–11, the NEM supplied about 182,835 gigawatt hours to more than nine million customers[2]. Since 2001-02 the maximum daily or peak demand each year has grown from around 26.6 gigawatts to 36 gigawatts[3].

Regulatory framework and operation

The objectives that underpin Australia's electricity markets are set out in the AEMA and in national energy laws that apply in the NEM – the NEL enacted in 1996 and the NERL enacted in 2012. Both laws were passed through the South Australian Parliament, as the lead legislator in the NEM, and applied by participating jurisdictions. The National Electricity Objective is explicitly consumer focused, which is to promote efficient investment in, and efficient operation and use of, electricity services for the longer term interest of consumers of electricity with respect to:

- Price, quality, safety, reliability and security of supply or electricity; and
- The reliability, safety and security of the national electricity system.

The NEL lays the foundation for the regulatory framework governing electricity networks. It sets out the National Electricity Objective outlined above and revenue and pricing principles, including that network businesses should have a reasonable opportunity to recover at least efficient costs.

The NERL harmonises the regulation of the sale and supply of energy to small customers (except for retail price regulation), and complements general consumer protection laws that apply at the state and territory and national levels, including the Australian Consumer Law. The NERL, and the Rules and Regulations which sit under it, form the main part of the National Energy Customer Framework (NECF),

[1] AER (2011). State of the Energy Market. www.aer.gov.au/content/index.phtml/itemId/751331
[2] Energy Supply Association of Australia, Electricity Gas Australia 2012
[3] NEMMCO SOO 2004 and AEMO ESOO 2012)

which was applied by the Commonwealth, Tasmania and the Australian Capital Territory on 1 July 2012.

Despite the clear benefits to consumers and business that the NECF provides, New South Wales, Victoria and South Australia have delayed its implementation, while Queensland is yet to consider the matter**.** New South Wales has recently publicly committed to implementing the NECF on 1 January 2013.

The operation and regulatory framework for the NEM is overseen by the three independent national institutions referred to above: AEMO, the AER and the AEMC. These national institutions are responsible to Energy Ministers collectively (through SCER), as well as market participants in the case of AEMO. They ensure that the day to day operation and regulation of the market is at arms length from governments, providing greater transparency, stability and confidence for market participants.

However, it is important to note that the AEMA reserves a number of policy areas as the sole responsibility of states and territories, for example, retail price regulation. In addition, jurisdictions have applied the national laws through application Acts and have maintained some jurisdictional arrangements in doing so through derogations or modifications to the national regime.

Australian Government's role in energy markets and reform

The Australian Government does not have responsibility for the provision of utility services such as electricity and gas and relies on the cooperation of states and territories to help drive reform.

While reforms to the NEM and new governance frameworks have provided significant benefits to the community, their progress and success is based on the ongoing commitment and support from all jurisdictions. In general, the Australian Government requires the unanimous agreement of Energy Ministers to any changes to energy institutions or energy market frameworks. As the Australian Government does not have direct constitutional power over the provision of energy services, it is limited in its ability to effect major policy change on sensitive issues such as ownership and price regulation.

Despite these limitations the Australian Government considers it has opportunities to push for national reform through COAG, SCER and the very active working groups that sit under those bodies.

<u>The Western Australian and Northern Territory markets</u>

Western Australia's networks consist of the South West Interconnected System (SWIS), which includes Perth, and a smaller North West Interconnected System (NWIS) for the mining areas in the north of the state. While not connected electrically, the two systems are connected through gas pipelines. In 2010-11, it supplied approximately 18,592[4] gigawatt hours to over one million customers in both the SWIS and NWIS.

Electricity generated was predominantly from coal (51 per cent) and gas fired generation (around 45 per cent), and renewables contributed around four per cent[5].

In contrast to the NEM, the SWIS has two components: a wholesale electricity trading market and a capacity component. However, the wholesale trading market is not a

[4] Energy Supply Association of Australia, Electricity Gas Australia 2012
[5] Energy Supply Association of Australia, Electricity Gas Australia 2012

gross pool and most electricity is traded through bilateral contracts, while the reserve capacity mechanism creates a market for capacity, including demand-side management, alongside the market for energy.

The Northern Territory's small electricity industry comprises three regulated systems: Alice Springs, Darwin–Katherine and Tennant Creek. In 2010-11 it supplied approximately 1,814 gigawatt hours to around 76,500 customers[6]. Around 98 per cent of electricity generated was from natural gas[7].

There are also many isolated small networks and stand-alone systems servicing remote communities, mostly in Western Australia and the Northern Territory. They are generally the responsibility of the respective jurisdictions or local governments; although there are a growing number of privately run systems which mainly service remote mining operations. These are predominantly diesel or gas fired.

Western Australia has separate institutional arrangements for electricity. With regards to the SWIS, it is serviced by two market institutions: the Independent Market Operator (IMO) which has the roles of both market operator and rule maker; and the Economic Regulation Authority which acts as regulator. In addition, Western Power, as the owner and operator of the SWIS, has a ring fenced component, System Management, which is responsible for secure and reliable operation of the SWIS and to manage the physical aspects of market dispatch. The Western Australian Minister for Energy also has an on-going role in the SWIS, being responsible for appointing the Board of the IMO and approving changes to protected provisions in the Rules.

The Australian Government's role in relation to the energy markets in Western Australia and the Northern Territory is more limited than that for other jurisdictions as they are not connected to the NEM and have not applied the NEL. As outlined above, Western Australia has its own institutional arrangements for electricity.

Given the small scale of the Northern Territory market, a wholesale electricity spot market has not been implemented. Rather, the Northern Territory uses a 'bilateral contracting' system whereby generators are responsible for dispatching the power that their customers require.

Both the Northern Territory and Western Australian markets have been subject to state specific reform agendas, which are also ongoing, and often pick up relevant elements of the national agenda. The Australian Government urges the governments of those jurisdictions to align their legislative regimes with those of the NEM as much as is practical.

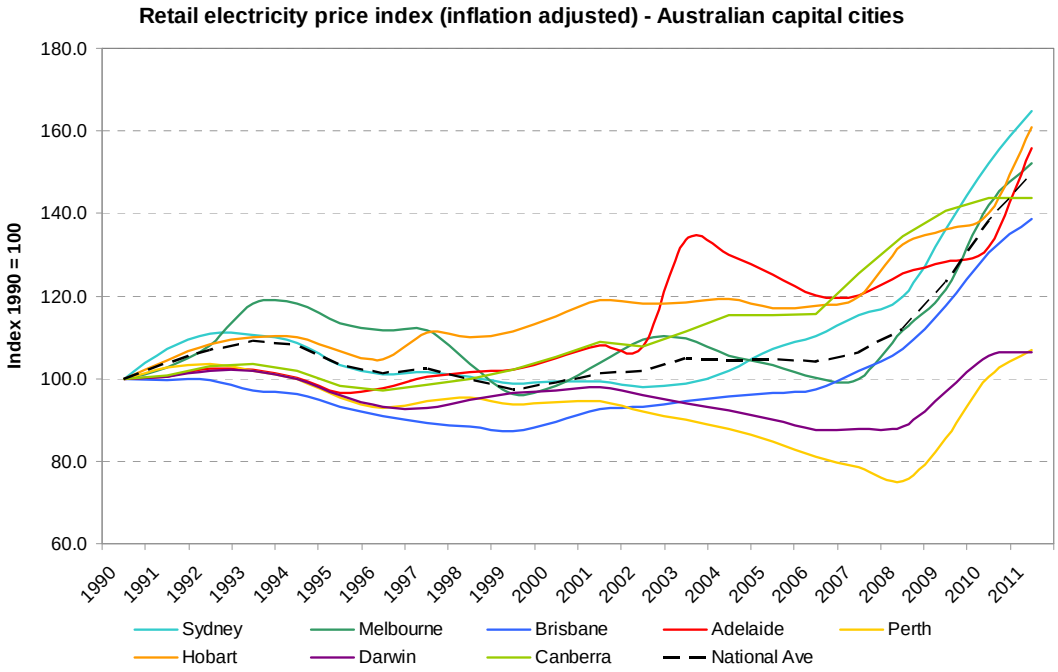
[6] Energy Supply Association of Australia, Electricity Gas Australia 2012
[7] Energy Supply Association of Australia, Electricity Gas Australia 2012

Terms of Reference A - Identification of the key causes of electricity price increases over recent years and those likely in the future

Electricity price rises in recent years

Historically, Australia has relatively stable and competitive electricity prices. That is to say, households in Australia have historically faced relatively low retail electricity prices compared with many OECD economies. In 2010 and 2011, Australian electricity prices were around the OECD average[8].

The figure below shows movements in real electricity prices for metropolitan households since 1990, using the electricity component of the consumer price index.[9] Significant price rises have occurred in most jurisdictions since around 2007. Over the past three years household electricity prices nationally have risen, on average, by over 40 per cent (in nominal terms) due to a range of factors.[10]



While increasing network investment expenditure, higher wholesale electricity prices, and government schemes are commonly cited causes of rising electricity prices, the relative proportions of these drivers differs across jurisdictions.

The AEMC report to COAG, 'Possible Future Retail Electricity Price Movements: 1 July 2011 to 30 June 2014', provides an indication of expected movements in residential electricity prices over the next few years. The AEMC estimates that residential electricity prices at a national level may increase by around 37 per cent in nominal terms over the period from 2010-11 to 2013-14 with rising network and

[8] 2011 OECD average does not account for Canada, Estonia or Iceland due to data availability.
Sources: Australian Energy Market Commission 2011, Future Possible Retail Electricity Price Movements: 1 July 2010 to 30 June 2013; International Energy Agency 2011, Electricity Prices and Taxes.
[9] ABS data smoothed by taking average of quarterly CPI figures for each calendar year
[10] ABS (2012). Consumer Price Index data for electricity (cat. no. 6401.0)

wholesale (which includes a carbon price impact)[11] costs the largest contributors to this increase).

How electricity prices are set

Prices in the jurisdictions are set by independent regulators (New South Wales, Queensland[12], the Australian Capital Territory, South Australia and Tasmania) or the state/territory government itself (Western Australia and the Northern Territory). As jurisdictional regulators apply different methodologies in determining electricity prices, the pricing outcome in each state or territory can differ. Many factors such as energy profiles, generation mix, supporting infrastructure and associated investment, and the underpinning policy and regulatory environments, can influence the level and change in pricing components across the jurisdictions.

Retail price regulation was removed in Victoria in 2009 in response to a finding by the AEMC's of effective competition in the retail market, consistent with commitments under the AEMA to phase out retail price regulation. The AEMC's report recommending Victoria phase out price regulation noted that it would provide consumers with a wider range of price and service options.

Residential and small business consumers' electricity bills represent a composite of regulated network prices – distribution and transmission costs – generation and wholesale costs, energy retailer margins, energy scheme costs and the carbon price. These factors are described further below.

While network prices in the NEM are regulated at a national level, the overall end price consumers pay for their electricity supply, comprising of all these factors, is ultimately the responsibility of individual jurisdictions. In this mixture of regulated and competitive environments it is difficult to provide an unambiguous picture of the prices which are actually experienced by consumers.

Typically, an average Australian household electricity bill in 2012-13 consists of:[13]

- Network charges - accounting for about 51 per cent of the bill, this represents the cost of building and maintaining electricity distribution and transmission networks.
- Wholesale costs - the costs associated with generating electricity and trading it in a wholesale market - around 20 per cent of the total bill.
- Carbon price - cost passed on by fossil-fuel generators for their carbon emissions - around 9 per cent of the household bill.[14]
- Retail and energy scheme costs - the costs related to the 'shop-front' for a consumer's electricity supply and costs from schemes for energy efficiency and renewables, including the renewable energy target - together about 20 per cent of the bill.

[11] AEMC (2011). Final Report: Possible Future Retail Electricity Price Movements: 1 July 2011 to 30 June 2014.
[12] The state government can intervene and makes the final determination.
[13] National average figures provided by the Commonwealth Treasury (figures include GST). These are the average projections provided to Treasury from consultants SKM MMA and Roam Consulting http://archive.treasury.gov.au/carbonpricemodelling/content/consultants_reports/Corrigendum_SGLP.pdf
[14] The carbon price component is 9 per cent of the carbon inclusive electricity price.

Components of a national average household electricity bill in 2012-13

National average figures provided by Commonwealth Treasury (inc. GST)

Key drivers of electricity price increases

The main factor attributed to rising electricity prices is increasing network business costs - including rising peak demand and reliability of supply requirements. Environmental policies are also placing some upward pressure on prices.

Network Costs

Australia's large geographic size and dispersed population means we have one of the world's largest integrated electricity networks. Though Australia has roughly the same amount of network infrastructure as the United Kingdom, we have about a third of the population and over thirty times the landmass over which to spread network costs or install poles and wires respectively. As a result, network charges make up a much bigger proportion of Australian consumers' electricity bills when compared with other countries. The recent electricity price rises are mostly driven by increases in network costs.

Electricity networks are natural monopolies so their associated charges are not subject to the pressures of a competitive market. Accordingly, they are governed by economic regulation. In the NEM, the AER sets network businesses' revenues and prices. In determining the revenue allowances for electricity networks for a five year regulatory period,[15], in order to balance investor certainty with credible forecasts of electricity demand. In determining the revenue allowances for electricity networks, the AER uses a "building block" approach that accounts for a network business' efficient operating and maintenance expenditure, capital expenditure, asset depreciation costs and taxation liabilities and a commercial return on capital. Network charges are passed through to retail tariffs.

[15] End of the current regulatory period for distribution networks by jurisdiction –NSW and ACT June 2014, QLD June 2015; VIC and SA December 2015; TAS June 2017.

Combined network revenue in the NEM is forecast at almost $58 billion over the current regulatory cycle.[16] This is a rise of around 43 per cent (in real terms) above previous regulatory periods.

Below is an example of Queensland distributor Ergon Energy's annual revenue requirements as determined by the AER for the 2010-2011 to 2014-15 regulatory period.

Ergon Energy's annual revenue requirements and X factors ($m, nominal)

	2010–11	2011–12	2012–13	2013–14	2014–15
Regulatory depreciation	145.0	146.9	150.3	164.1	144.6
Return on capital	694.7	782.4	867.7	956.2	1052.8
Operating expenditure	360.2	387.2	396.7	400.7	397.1
Tax allowance	9.6	27.4	29.6	34.4	33.4
Capital contributions	–111.8	–115.8	–120.4	–130.7	–141.5
Revenue from shared assets	–3.2	–3.3	–3.4	–3.4	–3.5
Accelerated depreciation	10.5				
Annual revenue requirements	1105.0	1224.8	1320.5	1421.3	1482.7
Expected revenues	1123.1	1210.1	1303.9	1404.9	1513.8
Forecast CPI (%)	2.52	2.52	2.52	2.52	2.52
X factors (%)	–29.61	–5.10	–5.10	–5.10	–5.10

Operating and maintenance expenditure

Operating expenditure allowances typically account for 30 per cent of network[17] revenue requirements. It typically consists of costs needed to manage and operate a network business and any administrative and overhead costs of running the business, such as salaries.

On average, real operating and maintenance costs are forecast to rise about 64 per cent in transmission and 29 per cent in distribution over the current regulatory period.[18] There are variations to expenditure allowances for network businesses due to the difference in their operating environments.

Capital expenditure

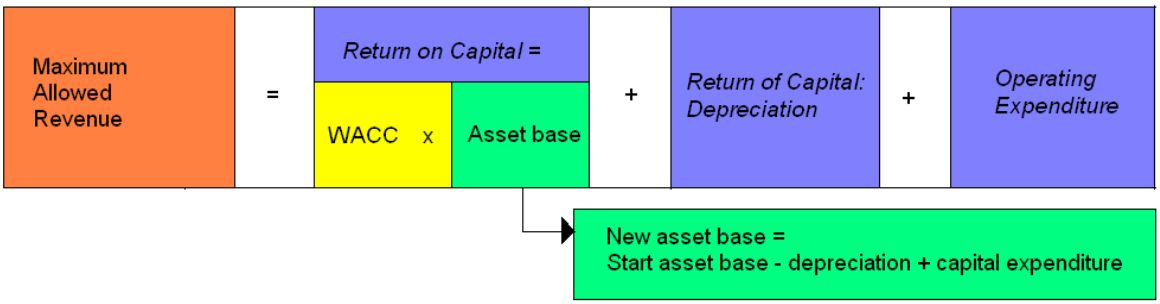
New investment (essentially the net capital expenditure (capex) to reliably meet demand growth and replace ageing assets[19]) is needed to maintain or improve the

[16] AER (2011). State of the Energy Market. www.aer.gov.au/content/index.phtml/itemId/751331
[17] AER (2011). State of the Energy Market. www.aer.gov.au/content/index.phtml/itemId/751331
[18] AER (2011). State of the Energy Market. www.aer.gov.au/content/index.phtml/itemId/751331
[19] Network assets typically have a lifespan of 30 to 40 years; refurbishment and replacement of these assets has contributed to the surge in investment since the late 1990s and, in particular, over the past five years.

reliable supply of electricity through the electricity networks for consumers over time. Increases in peak demand, growth in customer numbers, enhanced reliability settings and other technical factors are also contributing to higher costs.

The largest component of a network businesses' revenue (and therefore the annual network tariff component of a residential bill) is the Return on Capital, which can account for up to two-thirds of a network's revenue. The Return on Capital is influenced by both the size of a network's Regulated Asset Base (RAB, which reflects the replacement cost of the network plus any projected investment) and its Weighted Average Cost of Capital (WACC, rate of return necessary to cover a commercial return on equity and efficient debt costs).

In general terms, the building block approach to electricity network regulation is represented below:



The new capital expenditure undertaken by network businesses is incorporated into their maximum allowed revenue through being rolled into the RAB, which then is converted to an allowance for return on capital. Over the past regulatory period, new capital expenditure for each year of the regulatory period has been about 10 to 14 per cent of the RAB for each year of the regulatory period (see table below for Ergon Energy, for example).

AER's roll forward of Ergon Energy's regulatory asset base ($m, nominal)

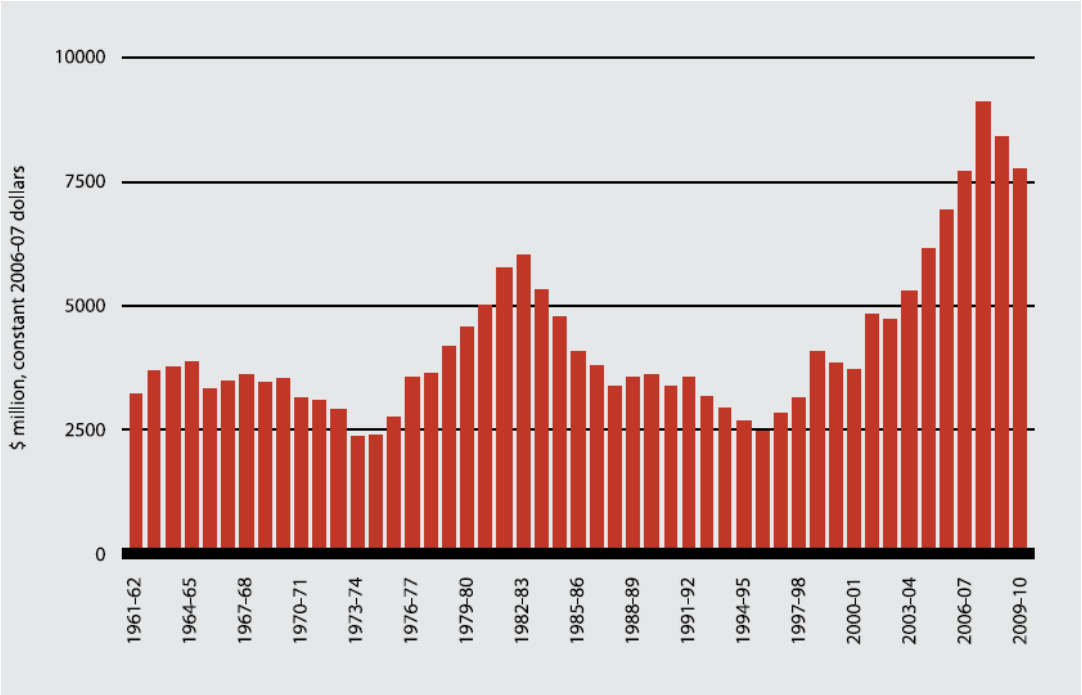
	2010–11	2011–12	2012–13	2013–14	2014–15
Opening RAB	7148.9	8050.7	8928.8	9839.8	10 833.2
Net capex [a]	1046.8	1025.0	1061.3	1157.5	1269.4
Indexation of the opening RAB	180.2	202.9	225.0	248.0	273.0
Straight-line depreciation	–325.1	–349.8	–375.3	–412.1	–417.5
Closing RAB	8050.7	8928.8	9839.8	10 833.2	11 958.0

Note: The straight-line depreciation less the indexation of the opening RAB provides the regulatory depreciation building block allowance.

(a) In accordance with the timing assumptions of the PTRM, the nominal capex values include a half WACC allowance to compensate for the average six-month period before capex is added to the RAB for revenue modelling purposes. Net capex also includes capitalised equity raising costs.

Major new capital expenditure programs have been undertaken in some jurisdictions during the current regulatory period, particularly in New South Wales and Queensland, which has flowed through to these higher RABS and therefore higher retail prices for consumers.

Electricity supply: Real capital investment, 1961-62 to 2009-10[20]

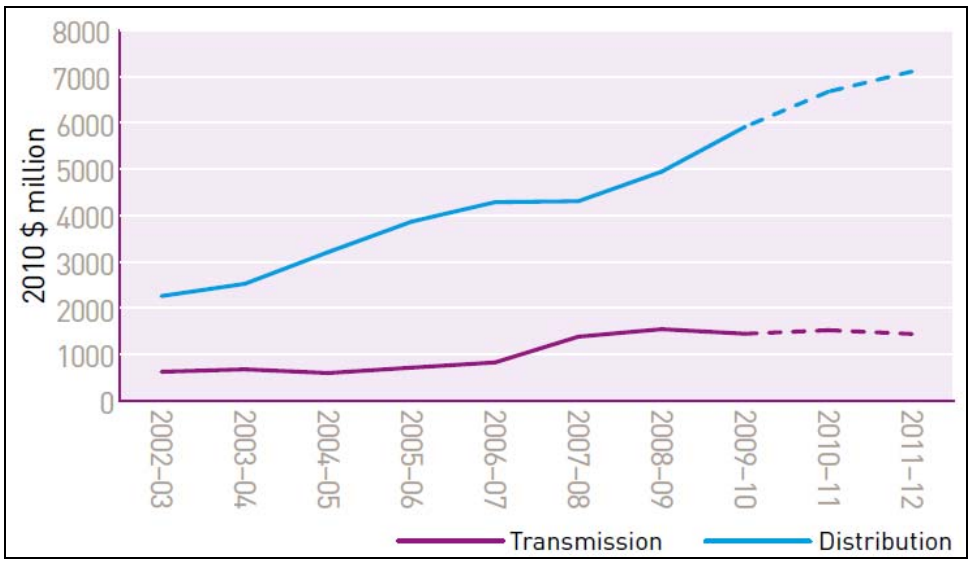


[20] Energy Network Association factsheet: www.ena.asn.au/udocs/2012/06/nem_07.pdf

However, the factors driving investment may differ between network businesses and can depend on infrastructure age and technology, load characteristics, demand for new connections, licensing, reliability and safety requirements.

The investment approved in the NEM is forecast to exceed $7 billion for transmission and $35 billion for distribution over the current regulatory periods. This is a rise in investment from the previous periods of 82 per cent and 62 per cent (in real terms) in transmission and distribution networks respectively (see below).

Total electricity network investment[21]



As noted above, capital expenditure incurred in a regulatory period is automatically added to a network's asset base at the next regulatory reset. This may create incentives to invest at a level above the expenditure approved in the regulatory determination as this expenditure is currently not subject to scrutiny by the AER. However, potential incentives to over-invest are being examined as part the AEMC's Economic Regulation of Network Service Providers rule change process whereby expenditure above approved capital expenditure levels will be reviewed from the perspective of efficiency before being rolled into the regulatory asset base.[22]

Increasing Peak Demand

The cost of replacing ageing assets is compounded by the new pressures placed on network infrastructure from Australia's continued economic growth and demand for appliances. For example, the penetration of air-conditioners in Australian households has doubled over the past decade. While it may cost around $1,500 to buy and install a 2 kilowatt (electrical) reverse-cycle air conditioner, depending on its location, such a unit could impose capital costs on the energy system as a whole of $7,000 when adding to peak demand[23] (based on DEEDI 2011:4). The additional system capital costs are recovered over time through energy bills. However, as energy is generally

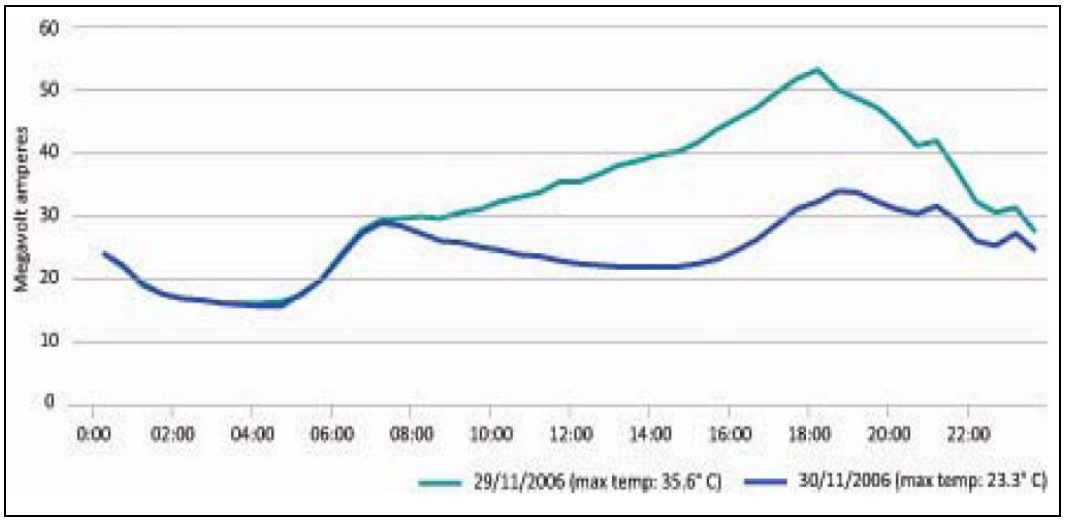
[21] AER (2011). State of the Energy Market. www.aer.gov.au/content/index.phtml/itemId/751331.
[22] See www.aemc.gov.au/Electricity/Rule-changes/Open.html
[23] The extent of these costs can be substantial. As recently highlighted by the Department of Resources, Energy and Tourism in the *Draft Energy White Paper*, while it costs around $1500 to purchase and install a 2 kilowatt air conditioner, such a unit can impose costs on the energy system of around $7000 when adding to peak demand

priced using a flat tariff approach, only some of the costs are paid by the purchaser of the air-conditioner while some of the costs are spread across all customers.

The trend of faster growth in peak demand means networks have increasingly been built to handle peak loads that are much higher than the average, typically for a few hours in the late afternoon on the hottest days of the year. In total around $11 billion worth of network infrastructure across the NEM is only being used for 100 hours each year.[24]

Addressing this issue, and similar ratios in the electricity generation sector, is a key objective of ongoing work through SCER and the AEMC on matters such as demand side participation and approaches to the setting of reliability standards.

Summer peak energy demand[25]



Demand Patterns

Population growth, such as that in southeast Queensland, means new connections to the network are required for electricity in expanding residential areas. For example, rising customer connections are highlighted in the AER's determination for New South Wales distributors in 2009. This showed that in the previous regulatory period, around 32,900 new customer connections occurred per year across the three distributors. The distributors have forecast that these connections would increase from 36,200 to 42,200 in 2009-10 and 2013-14 respectively.[26]

Conversely, recent analysis by AEMO suggests we may be seeing structural changes to household and business energy use. For example, AEMO estimates a 2.4 per cent drop in aggregate demand for 2011-12.

This has followed declining industrial consumption, consumer responses to high prices and increased uptake of rooftop solar photovoltaic technologies. Although maximum demand forecasts across the five regions of the NEM are still expected to continue to grow into the future, the growth rate will be much lower than in previous years.[27] However, this has occurred over a period of relatively mild weather

[24] Ausgrid (2011) Supply and demand: our five year network plan, 2011-12 update
[25] Energex (2010). Network management plan - Part A 2009-10 to 2013-14.
[26] Provided by the AER from 2009 determination of NSW distributors.
[27] AEMO (2012) National Energy Forecasting Report (www.aemo.com.au/)

conditions, consequently, it is too soon to determine whether this is a long term trend or a short term response only.

Reliability and Service Standards

Reliability and service standards are set by individual jurisdictions. Maintaining or improving reliability is also becoming more challenging, and requiring additional expenditure, given the ageing nature of network infrastructure and new demand pressures. To date consumers have enjoyed stable or improving reliability of supply outcomes - the average duration of outages per customer in the NEM has generally been 200 to 250 minutes per year.[28]

Jurisdictions track and assess the reliability of distribution networks against performance standards which account for the trade-off between improved reliability and cost. In New South Wales for example, licensing requirements relating to network design, reliability and performance have been gradually enhanced, requiring greater expenditure by network business to ensure compliance. This is then passed on to consumers as higher electricity prices.

The AEMC has released its initial report into reliability settings in New South Wales which suggests that there is some scope to reduce reliability and provide net benefits to consumers. These net benefits were marginal though when compared with the high value consumers placed on reliability of supply. The AEMC is also currently working on an improved national framework for both distribution and transmission reliability standards.

Other Factors

There have been specific technical financial factors impacting jurisdictional determinations in the past which has impacted electricity prices. This includes recent decisions by the Australian Competition Tribunal which, as part of a limited merits review process, has reset key parameters of the WACC, resulting in higher costs being passed on to consumers. This has led to some concern that the WACC is consequentially too high. These issues are currently the focus of AEMC rule change process and an independent panel review of the limited merits review regime.

Wholesale Cost

In the NEM, all electricity produced is traded by generators and retailers through the wholesale spot market. Participants can also enter into formal hedging contracts to mitigate the risk of price volatility in the wholesale spot market. This means that the wholesale electricity market is competitive and wholesale prices are determined primarily by resource allocation (i.e. fuel costs) and the dynamics of supply and demand.

The wholesale electricity cost component of regulated residential electricity prices is set by jurisdictional regulators (except in Victoria). Regulators determine a wholesale cost allowance for retailers based on their anticipated costs in purchasing electricity from the wholesale market and managing the associated risks. The regulators' methodology varies across jurisdictions. However, they generally factor in the long run marginal cost of generation plant options or a modelled market-based purchase cost approach, or a combination of each.

[28] AER (2011). State of the Energy Market 2011.(www.aer.gov.au/content/index.phtml/itemId/751331)

Electricity demand fluctuates throughout the year, with peaks in summer and winter. Climate and weather conditions influence the supply-demand balance. For instance, mild weather conditions, as opposed to extreme hot or cold temperatures, can lessen energy demand peaks. Also, prolonged drought conditions can raise the cost of water-cooled coal fired power stations and reduce the output of hydro systems. These factors are likely to be exacerbated by long-term climate change.

While the demand and supply balance is the primary driver of wholesale electricity costs, various other factors also play a part, including bidder behaviour, fuel costs and capital costs.

In recent retail price determinations, there has been a trend towards higher wholesale electricity cost allowances - related to increasing fuel and capital generation costs. Factors behind this include changes in generation mix, increasing gas prices and financing risks. Regulators have also sought to provide retailers with an increased wholesale electricity cost allowance so that they can better manage price volatility in the wholesale market and to ensure more cost reflective prices.

Carbon Price

Putting a price on carbon through a market based mechanism is the most environmentally effective and cheapest way to cut emissions. This is a fact that is well recognised by economists from around the world, and respected institutions such as the Organisation of Economic Cooperation and Development and the Productivity Commission. Releasing high quantities of carbon was free despite the fact that it was harming our environment. A carbon price changes this. It puts a price on the carbon emissions that Australia's largest emitters produce. This creates a powerful incentive for all businesses to cut their emissions, by investing in clean technology or finding more efficient ways of operating.

The introduction of the carbon price on 1 July 2012 directly impacts the wholesale component of electricity prices through its inclusion in fossil-fuelled generators' bids for wholesale electricity - this will flow through to consumers' electricity bills.

Treasury modelling estimates that a $23 carbon price will lead to an average increase in consumer electricity bills of around 10 per cent nationally in 2012-13. On a jurisdictional basis Treasury estimates average electricity price increases of between 9 and 11 per cent over the period 2013-17.[29]

The actual impact of the carbon price varies across states and territories and depends on a number of factors, particularly the emissions intensity of each jurisdictions generation profile. Even in interconnected eastern states, the jurisdictional prices diverge as states generate their electricity from different combinations of brown coal, black coal, gas, hydro, wind and solar power. It is also dependent on a regulator's methodology for determining energy purchase costs.

The following table shows a state-by-state breakdown of the regulator's determined carbon price increase on household electricity bills in 2012-13. An average carbon price impact is not known for Victoria due to the deregulated retail electricity market. The Queensland estimate is based on the QCA's determination for the state's main residential electricity tariff (Tariff 11 - assuming average household consumption of 5370 kWh from the QCA's draft determination) which the state government has

[29] Table 5.15 http://archive.treasury.gov.au/carbonpricemodelling/content/chart_table_data/chapter5.asp

frozen over 2012-13, except for the impact of the carbon price (see www.qca.org.au/files/ER-QCA-NEP1213-AdviseTariff3133-0612.PDF).

Carbon price impact on retail electricity bill 2012-13 by jurisdictional regulators[30]

	Carbon Price contribution (12-13)
NSW	8.9%
VIC	Not available
QLD	10.6%
WA	9.1%
SA	4.6%
TAS	5.6%
NT	6.8%
ACT	14.2%

Where available, the carbon price impact on electricity bills as determined by jurisdictional regulators is broadly consistent with Commonwealth Treasury modelling of a 10 per cent impact. Treasury modelling is on a national average basis. As regulated household electricity prices vary across jurisdictions due to differences in the underlying costs of generation (ie. emissions intensity profiles), transport and retail of electricity in different locations, so will the impact of the carbon price. The Australian Government is providing assistance to low income earners and vulnerable consumers with the electricity price impacts of the carbon price, as detailed later in response to the terms of reference part (D)(v).

Retail costs and energy scheme costs

Retail costs and margins make up a much smaller proportion of the retail electricity price compared to wholesale and network costs, and as such have a much smaller impact on price movements. Retail cost allowances as contained in recent jurisdictional retail price determinations have not increased significantly, although higher allowances for customer acquisition and retention costs have been provided by some jurisdictional regulators.

Under the Renewable Energy Target (RET) scheme, energy retailers must ensure that a proportion of their electricity supply is from renewable sources which, at the moment, are generally more expensive compared with traditional generation sources, thereby adding to supply costs. In 2011 the AEMC undertook an analysis of the impact of the enhanced RET on energy markets. The AEMC's report[31] details the estimated compliance costs for the RET to 2020 in the presence of a carbon price as forecast by Treasury at the time, as provided in the following table:

[30] Carbon price impact: 2012-13 final determinations – IPART, ESCOSA, OTTER, ICRC, WA and NT Government.
[31] AEMC (2011). Final Report: Impact of the enhanced Renewable Energy Target on energy markets

	Total National Compliance Costs ($b) (expressed in 2010/11 $)	Average National Compliance Costs (c/kWh)
2011/12	1.71	0.93
2019/20	1.5	0.77

The AEMC notes that the profitability of large scale renewable generators is less reliant on revenues from the sale of renewable energy certificates as wholesale prices are higher under a carbon emissions price. At the time this analysis was undertaken by the AEMC, no decision on the international linking of Australia's carbon pricing mechanism had been made.

Further, the AEMC estimates the RET comprises under three per cent of household electricity prices nationally in 2012-13.[32]

More recently, most states and territories have introduced feed-in tariffs (FiTs) to encourage renewable electricity generation typically through small scale systems such as rooftop solar photovoltaics. The costs associated with FiTs are passed on to all customers through electricity price rises. Many states have moved to reduce the impacts of these schemes on electricity prices.

Some states and territories have also implemented schemes which affect retail electricity prices to varying degrees according to their scope, scale and objective. Mostly, these schemes encourage energy efficiency, demand management and carbon abatement by requiring retailers or distributors to undertake specific activities.

They include initiatives such as the roll-out of smart meters in Victoria, the Queensland Gas Scheme, the Energy Savings Scheme in NSW and South Australia's Residential Energy Efficiency Scheme. The AEMC estimates that these schemes make up around three per cent of household electricity prices in 2012-13 at a national level and are not expected to significantly impact prices in most jurisdictions.[33]

Western Australia and the Northern Territory

As separate markets to the NEM, Western Australian and Northern Territory prices are subject to separate pressures, though they parallel many of those in the NEM.

Western Australia

In Western Australia, energy is traded through a combination of bilateral contracts, a day-ahead short-term energy market, and a balancing market. There is no wholesale electricity market in the Northern Territory. In Western Australia and in the Northern Territory the wholesale electricity component of standing offer prices is set by their governments.

Before 2009, electricity prices for households in Western Australian had not increased since 1997-98 and prices for small business consumers had not increased since 1991-92, in nominal terms. As such, over this period prices were artificially suppressed and became increasingly less reflective of the costs of supply. The Western Australian Government has increased regulated electricity prices by

[32] AEMC (2011). Final Report: Possible Future Retail Electricity Price Movements: 1 July 2011 to 30 June 2014.
[33] AEMC (2011). Final Report: Possible Future Retail Electricity Price Movements: 1 July 2011 to 30 June 2014.

approximately 62 per cent over the period 2008-09 to 2012-13[34] to bring them closer to cost reflectivity.

While the recent electricity price rises in Western Australia have led to prices more closely reflecting the costs of supply, they still remain below cost-reflective levels. The implications are that the Western Australian Government will be required to continue to subsidise its energy businesses to meet the shortfall between their revenue and operating costs.

When compared to other jurisdictions, the wholesale cost component for Western Australia is relatively higher and has a greater impact on Western Australian consumer electricity prices. This is due to a number of factors, mainly:

- Higher coal and natural gas costs in Western Australia due to competition with the mining industry and international demand for LNG.
- The fact that the Western Australian market is not interconnected with the rest of the country and that all of the State's electricity demand must be met from generation within Western Australia. Also, the relatively small scale new capacity is limited by economies of scale.
- Labour and material costs are higher due to increased competition for resources.

Northern Territory

The AEMC states that the key drivers for electricity price rises in the Northern Territory are the increased capital expenditure in generation and distribution infrastructure.[35] The Northern Territory's electricity supply chain (i.e. generation, distribution and retail) is dominated by vertically integrated and Northern Territory Government owned Power and Water Corporation, which estimates that approximately $1.3 billion in infrastructure investment is required over the next five years.[36]

Like Western Australia, household electricity prices in the Northern Territory do not reflect the costs of supply as they are subsidised by the Northern Territory Government. Over the period from 2009-10 to 2012-13, regulated household electricity prices in Northern Territory increased by 39.6 per cent as the Northern Territory Government tried to ensure prices more closely reflect supply costs.[37] However, the AEMC estimates that Northern Territory householders still pay around 24 to 26 per cent less than the cost reflective price of electricity.[38]

[34] www.finance.wa.gov.au/cms/content.aspx?id=15096
[35] AEMC (2011). Final Report: Possible Future Retail Electricity Price Movements: 1 July 2011 to 30 June 2014.
[36] Power and Water Corporation, Annual Report-2010
www.powerwater.com.au/__data/assets/pdf_file/0007/29266/PW_Annual_Report_2010_web.pdf
[37] http://www.nt.gov.au/ntt/utilicom/electricity/electricity_retail_pricing.shtml and
http://150.191.80.125/__data/assets/pdf_file/0016/65212/cp_table.pdf
[38] AEMC (2012). Final Report: Possible Future Retail Electricity Price Movements: 1 July 2011 to 30 June 2014.
www.aemc.gov.au/market-reviews/completed/possible-future-retail-electricity-price-movements-1-july-2011-to-30-june-2014.html

Terms of Reference B - Legislative and regulatory arrangements and drivers in relation to network transmission and distribution investment decision making and the consequent impacts on electricity bills, and on the long term interests of consumers

Network legislative and regulatory arrangements

National Regulation

Energy Ministers, through SCER, have general policy oversight of three national energy legislative arrangements including the National Electricity, Gas and Retail Laws, in accordance with the COAG agreed Australian Energy Market Agreement (AEMA), which may only be amended with the consent of First Ministers. The AEMA also provides that changes to legislative arrangements require the agreement of relevant Energy Ministers.

The AER is the independent national regulator under each of the three national Laws and is established under the *Competition and Consumer Act 2010* (Cth). The AER itself has no direct ability to determine the terms of the national Laws and Rules which establish the framework within which it operates.

The NEL lays the foundation for the regulatory framework governing electricity networks. It sets out the National Electricity Objective and revenue and pricing principles, including that network businesses should have a reasonable opportunity to recover at least efficient costs.

The NER, which provides for the economic regulation of electricity distribution in relevant jurisdictions, may only be amended by the AEMC (the statutory rule maker for the three national Laws) subject to a statutory rule change process. The AEMC 's independent rule change process is open to anyone.

Electricity networks are regulated natural monopolies characterised by capital intensive, long life assets, which are the primary determinants of power system reliability. The networks in the NEM are regulated by the AER. Outside the NEM, the Economic Regulation Authority regulates networks in Western Australia, and the Utilities Commission regulates networks in the Northern Territory.

As noted previously in this submission, regulated electricity network businesses must periodically apply to the AER to assess their revenue requirements (typically every five years). Chapters 6 and 6A of the NER lay out the framework that the AER must apply in undertaking this role for distribution and transmission networks respectively.

While the regulatory frameworks for transmission and distribution are similar, there are some differences. In transmission, the AER must determine a cap on the maximum revenue that a network can earn during a regulatory period. The range of available control mechanisms is wider in distribution, but generally involves setting a ceiling on the revenues or prices that a network can earn or charge during a period.[39]

Jurisdictional differences

The AER is responsible for its regulatory functions set out in the NER, NGR and National Energy Retail Rules (NERR) and any other functions conferred on them through jurisdictional application as agreed by the SCER. These functions include the

[39] AER (2011). State of the Energy Market 2011. www.aer.gov.au/node/6311

economic regulation of network service providers (both transmission and distribution) and compliance with the NER.

Other regulatory functions are retained by specific jurisdictions, such as setting network reliability requirements and technical and safety obligations (e.g. state specific occupational health and safety obligations).

In performing its economic regulatory functions, the AER must take into account these requirements as inputs into the network businesses revenue proposals. In addition, due to historical differences between network businesses, different approaches are used in developing demand forecasts for each network business. The AER essentially makes a regulatory determination that takes into account jurisdictional differences and requirements.

Limited Merits Review Regime

Under section 71 of the NEL, network businesses can apply to the Australian Competition Tribunal (the Tribunal) for review of an AER determination, or a part of it. This is the "limited merits review regime".

The limited merits review regime was determined as the most appropriate appeals mechanism for the electricity sector by the predecessor to SCER, the Ministerial Council on Energy. While full merits or *de novo* review can result in efficient decision making, it "is not likely to be implemented because of the high costs imposed, the regulatory uncertainty and the sheer impracticality of a review body re-making a complex economic determination that was the product of lengthy consultative process".[40] A 'limited' review restricts the matters which can be subjected to review. Limited merits review is intended to allow for a range of regulatory errors, provides for high accountability for decision-makers and to balance competing interests. However, there have been claims that the limited merits review regime has been overly favourable to regulated entities.

Under this regime, to have an AER decision reviewed, the network business must demonstrate the AER either: made an error of fact that was material to its decision; incorrectly exercised its discretion, having regard to all the circumstances; or, made an unreasonable decision having regard to all the circumstances and the Tribunal must determine there is a serious issue to be heard. If the Tribunal finds the AER erred, it may substitute its own decision or remit the matter back to the AER for consideration.

In establishing the limited merits review regime, Energy Ministers agreed that a review of the effectiveness of the regime would be required. The review was to be undertaken within the first seven years of the commencement of the merits review provisions. In late 2011, SCER agreed to bring forward the legislated review of the limited merits review regime. This review formally commenced on 22 March 2012 with the appointment of an independent Expert Panel to undertake this review.

The Expert Panel's Stage One Report [41]presented various estimates of the immediate financial impact of the outcomes of appeals to, the Tribunal. These estimates were between $2.8 billion to $3.2 billion for appeals between 2008 to 2011, noting the key difference between these estimates was that the outcomes of some reviews beginning in 2011 were not known until early to mid 2012. The Expert Panel noted that despite

[40] MCE (2005). Regulatory Impact Statement - Review of Decision-Making in the Gas and Electricity Regulatory Frameworks. http://www.ret.gov.au/Documents/mce/_documents/RIS_Merit_Review 20051206105031.pdf
[41] Yarrow, G, Egan, M and Tamblyn http://www.scer.gov.au/files/2012/06/Stage-One-Report-to-SCER-29-June.doc

the size of these estimates they were modest compared to the overall investment, of around $52 billion for this same period, and accordingly were ulikely to have translated to major changes in retail price. For example, the Panel estimated this equated to an increase of around 4.2 per cent over the five year regulatory period for a residential consumer of electricity in New South Wales. Further, it made no conclusion about whether these outcomes reflected the long-term interest of consumers or otherwise.

The key point from the Expert Panel on this matter is that some of the outcomes of the review decisions have not had convincing and coherent accounts of how these decisions might have positive effects on the long term interests of consumers and, more generally, an informed consumer would find it very difficult to discover a credible account, from any authoritative source, of why energy prices are changing as they are.[42] The Expert Panel is progressing their second stage of work to develop recommendations to address the issue of insufficient attention to the long-term interests of consumers and promoting consumer and user access to the relevant decision making processes. The Australian Government continues to examine ways in which consumer engagement may be improved and expects means to improve engagement will be considered by SCER before the end of the year.

Rising network investment and prices

As described previously, electricity network investment in the current five year regulatory cycle is running at historically high levels.[43]

There is a combination of factors behind higher network investment needs, including: ageing infrastructure requiring upgrading and replacement; new connections; energy load growth and rising peak demand; and, more rigorous licensing conditions and other obligations for network security, safety and reliability. Higher operating and maintenance expenditure and rising capital financing costs are other factors driving up network revenues and charges.

Ensuring efficient and effective network regulation

Recognising the impact of rising network charges on electricity prices paid by consumers, there is a significant amount of work underway to examine the effectiveness and efficiency of the regulatory framework applying to electricity networks and ensure it is appropriate. A summary of the work streams in place is provided below.

AEMC – Economic Regulation of Network Service Providers Rule change

One of the key objectives of the regulatory frameworks is to promote the efficient investment in (that is, investment that represents least cost over the long term for consumers), and use of energy infrastructure. Under such a framework, economic regulatory decisions would provide a balanced outcome between competing interests and protect the property rights of all stakeholders.

To test if the network regulatory framework is continuing to deliver efficient outcomes to consumers, the AEMC is currently examining a series of rule change proposals (made by the AER and a group of large energy users in September and October 2011) that apply when the AER undertakes its assessment of appropriate

[42] Yarrow, G, Egan, M and Tamblyn, J (2012). Review of the Limited Merits Review Regime - Interim Stage Two Report http://www.scer.gov.au/workstreams/energy-market-reform/limited-merits-review/
[43] AER (2011). State of the Energy Market 2011. www.aer.gov.au/node/6311

returns to network businesses. The AEMC is the independent rule maker and performs its functions autonomously from governments through a process that is prescribed in the NEL.

On 23 August 2012 the AEMC released its draft determination and draft rules on network regulation which aim to better equip the AER to develop methods and processes to achieve efficient outcomes in setting revenues and prices for consumers in a number of areas. They include how the rate of return on capital is set.

The AEMC proposes changes to the NER to improve the strength and capacity of the regulator to determine network price increases so consumers don't pay any more than necessary for the reliable supply of electricity.

The proposal aims to provide flexibility in the rules for the AER to adapt its approaches to the nature of the business it is regulating. It clarifies the AER's powers to undertake benchmarking, including requiring the regulator to publish annual reports on the relative efficiencies of electricity network businesses. The proposed rule aims to promote greater confidence in the decisions of the regulator and the regulatory process.

The AEMC is seeking stakeholder comments on the package of amendments in the draft determination with submissions due by 4 October 2012. The AEMC's final determination and Rules will be made in November 2012.

Review of the Limited Merits Review regime

On 9 December 2011 SCER agreed to bring forward the legislated review of the limited merits review regime (the review). The review, led by an independent Expert Panel, commenced on 22 March 2012. It is intended to analyse the performance of the regime to date against its original policy intent, and recommend to SCER any necessary amendments to the regime to better deliver the policy intent, consistent with the national electricity and gas objectives.

The Review is being undertaken in two stages. The first stage report (released 30 June 2012) provided a preliminary review of how the regime has operated to date against the original policy intent. Stage two of the process will present recommendations to SCER on whether amendments are required to better deliver against the objective of the review mechanism. The Expert Panel's final report will be delivered to SCER by 30 September 2012. Further information on this review, including the Expert Panel's reports published to date, is available on the SCER website:

http://www.scer.gov.au/workstreams/energy-market-reform/limited-merits-review/

Productivity Commission review

The Australian Government asked the Productivity Commission on 9 December 2011 to undertake a 15 month public inquiry into aspects of national electricity network regulation. The purpose of the inquiry is to inform the Australian Government about whether there are any practical or empirical constraints on the use of benchmarking of network businesses and then provide advice on how benchmarking could deliver efficient outcomes, consistent with the National Electricity Objective.

In addition, a second stream of this inquiry will examine if efficient levels of transmission interconnectors are being delivered, to inform the Australian

Government about whether the regulatory regime is delivering efficient levels of interconnection to support the market.

The Productivity Commission will provide its Final Report to the Australian Government by 9 April 2013, and a draft will be released on 10 October 2012 with public hearings on that report to be held in November and December 2012.

Terms of Reference C - Options to reduce peak demand and improve the productivity of the national electricity system

As outlined earlier in this submission, the relative growth in peak electricity demand (compared to annual electricity consumption) has contributed to increasing electricity prices. Addressing this relative growth will reduce future upward pressure on prices.

Options to address peak demand and improve productivity of the electricity system cover a wide range of consumer actions, supported by a range of potential consumer products and services offered by the market.

Products and services that might be offered include:

- Improved information and feedback to consumers about electricity use and costs: ensuring consumers can access information on their energy use, including when they use energy, available tariffs, and the cost of running particular appliances.
- More cost reflective pricing structures, such as time of use or critical peak pricing: a tariff in which a customer pays more for a unit of electricity at peak times, and less at other times, giving customers an incentive to reduce their energy consumption at peak times and an opportunity to benefit from lower costs at other times. Trials of such tariffs including critical peak tariffs have shown that customers do respond to these signals by reducing their consumption in the critical peak period and most can save money overall. Better information builds consumer confidence in and engagement with such costing regimes.
- For large consumers, energy purchase arrangements or wholesale market participation options that provide exposure to the wholesale price, with the opportunity for businesses to benefit from slowing or shutting down operations during peak periods.
- Direct load control of large electricity consuming appliances such as air conditioners and pool pumps: these appliances can be turned on and off automatically, or in the case of air-conditioners run in a low-power mode, to reduce demand for electricity at the most expensive times.
- Personalised and targeted energy efficiency advice: targeted energy efficiency and energy management advice helps people understand how they are using their energy, and what steps they can take to reduce their usage and costs. This could be in the form of energy audits, or energy efficiency tips. Depending on the resources of the customer, incentives or assistance to replace inefficient appliances or implement efficiency improvements may be needed to achieve or sustain energy reductions.
- Use of distributed generation and energy storage: while these may not be considered a true demand side option, the presence of embedded generation reduces the amount of energy needing to be transported, potentially reducing the infrastructure needed to meet supply. For example, the Townsville Solar City trial successfully deferred the installation of a third cable to Magnetic Island using a combination of local photovoltaic generation, storage and energy efficiency.

Some enabling technology, such as smart meters, would be needed to introduce more cost reflective pricing and maximise its benefits and to improve the energy

consumption information available for consumers, which can be used to help identify opportunities to reduce peak demand.

The Australian Government generally supports competition as a means to encourage retailers to offer a range of innovative products and services to consumer choice. Given the monopoly characteristics of network companies, regulation of the pricing approaches of this sector is required.

At the request of Energy Ministers, the AEMC is conducting the Power of Choice review of demand side participation (DSP) in the NEM. The review is considering all market and regulatory arrangements that impact on the electricity market supply chain, with the objective of ensuring that the community's demand for energy services is met by the lowest cost combination of demand side participation and supply side options.

The draft report was released on 6 September 2012. Significant proposals in the draft include:

- Wholesale markets: the review is considering a proposal for an additional option for demand response to enable consumers to participate in the wholesale electricity market and be paid the spot market price for the volume of load reduced against a baseline of 'normal' consumption. Subject to specific design details, this could reduce transaction costs for DSP without introducing undue bias.[44]
- Network regulation: the review has identified a number of aspects of economic regulation that may be disincentives for distribution businesses to invest in DSP.[45] The draft report recommends some changes to address these issues, as well as noting that these issues are also being addressed in other processes, such as the recent draft rule change on economic regulation of networks.
- Metering: a metering transition is an important enabler of DSP, because many consumer DSP products depend on measurement of the time that energy is used. The AEMC is considering options to support efficient investment in metering, including models that support consumer choice in metering and services.
- Pricing: the AEMC will recommend a mechanism for phasing in time of use pricing, by setting a default time varying network tariff for users above a certain consumption threshold, and emphasises that a transition to such pricing structures needs to be complemented with better consumer education and appropriate protections for vulnerable consumers.

DRET intends to work with state and territory governments to develop a high-level response for Energy Ministers to contribute to the COAG meeting in December 2012.

This would build on the work program already underway and documented as the SCER Demand Side Participation work program.[46]

[44] AEMC Power of Choice draft report: section 5.3: available from www.aemc.gov.au/Market-Reviews/Open/stage-3-demand-side-participation-review-facilitating-consumer-choices-and-energy-efficiency.html
[45] AEMC Power of Choice draft report: section 7
[46] www.scer.gov.au/workstreams/energy-market-reform/demand-side-participation

Terms of Reference D(i) - The identification of practical low cost energy efficiency opportunities to assist low income earners reduce their electricity costs

The Australian Government is concerned about the social and economic impacts of rising energy prices and considers it important that governments at all levels continue to support the essential energy needs of the more vulnerable groups in the community.

Energy efficiency is a significant issue for households on low, fixed and unreliable incomes. Low income households have been particularly impacted by increases in retail energy prices as a result of poor quality housing stock, limited ability to reduce energy use with more efficient appliances, and the fact that, while these households tend to consume less energy than average households, they spend proportionally more of their income on this essential service.

Improving energy efficiency is one of the fastest and most cost effective ways to reduce emissions and may also play a significant role in managing consumers' energy bills. The Australian Government is helping households and business improve their energy efficiency and will expand these efforts to help improve the productivity of our economy and move Australia towards a prosperous clean energy future.

The Government has an extensive energy efficiency agenda. This includes regulations, incentive programs and providing a wide range of information resources. Key initiatives helping energy consumers include the Greenhouse and Energy Minimum Standards legislation that provides a nationally consistent mechanism for the regulation of equipment energy efficiency, and the Commercial Buildings Disclosure Program that requires a Building Energy Efficiency Certificate to be disclosed when most office space over 2000 square metres is offered for sale or lease. In addition, the Government is supporting households to use energy more wisely through the Living Greener website, which provides information on how households can save money by improving their energy efficiency.

The Government is delivering new measures to help small businesses improve their energy efficiency and lower their costs. These will help small businesses get the support they need to stay competitive under a carbon price and share the benefits of Australia's clean energy future. Information on small business assistance is on the Clean Energy Future Website: www.cleanenergyfuture.gov.au/helping-business/.

Existing assistance measures directly targeting low income and vulnerable consumers

Clean Energy Future Plan Mechanisms

Under the Clean Energy Future (CEF) plan, the Australian Government committed $130 million (in addition to household assistance payments through the tax and transfer system) to support low income households to adjust to higher energy prices. This includes assistance through the Low Income Energy Efficiency Program (LIEEP), which will support trials of energy efficiency approaches in low income households, and the Home Energy Saver Scheme (HESS), which will help low income households experiencing financial difficulty by providing energy efficiency and financial management information, advice and advocacy support, and the Remote Indigenous Energy Program (RIEP), which will provide clean and reliable power in smaller remote Indigenous communities across Australia through the installation of fit-for-purpose renewable energy systems. Links to additional information on the CEF, LIEEP, HESS and RIEP are provided below:

- CEF: http://www.cleanenergyfuture.gov.au/helping-households/
- LIEEP: http://www.climatechange.gov.au/government/initiatives/lieep.aspx
- HESS: http://www.fahcsia.gov.au/hess
- RIEP: http://www.fahcsia.gov.au/our-responsibilities/indigenous-australians/publications-articles/housing/remote-indigenous-energy-program (see also (D(v))

Websites such as Living Greener (http://www.livinggreener.gov.au/) are also providing households and small businesses with information on energy management strategies in a form that is easily accessible and understandable.

National Energy Customer Framework (NECF) mechanisms

Under the NECF retailers must develop, maintain and implement a customer hardship policy for their residential customers. The purpose of a retailer's customer hardship policy is to identify customers experiencing payment difficulties due to hardship and to assist those customers to better manage their energy bills on an ongoing basis.

A retailer's customer hardship regime must be approved by the AER, which has set out a number of minimum requirements that provide guidance on what retailers need to do in order to have their policies approved. These minimum requirements are outlined in the NERL with one of those stating that a retailer must have evidence of processes or programs to assist customers with strategies to improve their energy efficiency, where these are required in a jurisdiction**.** For example, the Victorian Electricity Industry Act requires as part of a retailer's hardship policy that they contain provisions for the auditing of a domestic customers usage and flexible options for the purchase and supply of equipment to assist these customers to reduce their energy consumption.

Investigation of a national Energy Savings Initiative

The Australian Government is investigating the merits of a national Energy Savings Initiative (ESI), as part of its commitments through the Clean Energy Future plan. An ESI is an energy efficiency obligation scheme – often referred to as a 'white certificate scheme' – which would place obligations on energy retailers to help their household and business customers find and implement energy savings. New South Wales, Victoria and South Australia all presently operate such schemes, with one to commence in the Australian Capital Territory in 2013.

As part of this policy investigation the Australian Government is considering how a national ESI could create incentives or requirements to create certificates (representing energy saved) in low income households. The results of this analysis will be presented to the Australian Government at the end of 2012.

It is important to note that no decision to implement a national ESI has been taken by the Australian Government at this stage. Any decision to implement a national ESI will be conditional on agreement of all state and territory governments through COAG and the abolition of existing and planned state schemes. This investigation will also be informed by the work of the COAG Taskforce on Competition and Regulatory Reform to review existing carbon reduction and energy efficiency measures to assess complementarity with the carbon price.

Additional initiatives

In addition to the above, a range of other energy efficiency assistance is currently provided to low income households through state and territory governments, energy industry and third sector policies and programs.

Some energy retailers offer hardship programs that provide home energy assessments and assistance to purchase energy-efficient appliances and equipment. For example, the AGL 'Staying Connected Program' and the TRUenergy 'Hardship Policy'.

Governments and the not-for-profit sector operate various rebate, concession, information, support schemes and/or basic energy efficiency measures including home audits and energy assessments. For example, the New South Wales Government has initiatives on energy rebates and information for energy consumers. In addition, some states focus on supporting low income households. For example, the South Australian Residential Energy Efficiency Scheme and the proposed Australian Capital Territory Energy Efficiency Improvement Scheme set targets for the minimum number of low income households to be assisted. The New South Wales Home Power Savings Program focuses exclusively on households with low incomes.

Some community sector organisations also provide support to assist low income households improve household energy efficiency, such as Kildonan Uniting Care's program of 'Energy Efficiency Audits.'

Terms of Reference D(ii) - The opportunities for improved customer advocacy and representation arrangements bringing together current diffuse consumer representation around the country

Improving energy advocacy

The Australian Government recognises the importance of ensuring consumer interests are represented in energy market reform. The objective of the AEMA, as legislated in the national energy laws, places an emphasis on the long term interests of consumers. The importance of engaging consumers, through education on energy policy generally and more specifically in individual work streams is an area of increasing interest for the Australian Government and SCER.

Consumers are by nature diverse - from large user groups, to "average" residential consumers, to disadvantaged or vulnerable consumers. These groups tend to have significantly different approaches to engagement in energy market reform. In general, the term "consumer advocacy" has related more to disadvantaged or vulnerable consumers, however the Australian Government believes more effective advocacy arrangements are required for residential consumers generally.

As a function of energy policy, particularly in the consumer end, being largely regulated by states and territories, consumer advocacy has to date been progressed by a variety of diverse, largely state-based groups. While this has been successful in allowing consumer representation in those forums to date, the recent implementation of the NECF creates an opportunity to enhance consumer advocacy in the NEM more broadly.

While there are bodies which currently assist coordination of consumer groups generally at the national level, such as the National Consumers' Roundtable on Energy, there is no single national representative energy consumer body. The Australian Government notes that the Roundtable is itself, a relatively informal collection of advocacy with a sometimes diverse rang of interests. Recognising the current opportunities to create a stronger, national consumer voice, the Australian Government supports the recent creation of a working group by consumer advocacy bodies to consider options in relation to enhancing consumer advocacy in this area.

This working group has been developed in response to a report – Making Energy Markets Work.[47] It identified that over the period from 1 January 2008 to 30 June 2010, consumer advocates made at least 337 submissions to 178 formal processes operated by regulators, the then Ministerial Council on Energy and others. Several processes received more than 10 submissions from consumer advocates. The report illustrates a need for a more collaborative approach in consumer advocacy. It also identified a number of perceived weaknesses by consumer groups in the current arrangements including: a lack of a national voice; insufficient coordination of advocacy, especially at the national level; a lack of access to the full range of required skills and technical expertise; insufficient access to research; a tendency to direct resources to some parts of the narrower agenda; and a focus on the most visible issues to consumers with insufficient attention to the overall regulatory framework.

Consumer groups have also identified that while jurisdictional advocacy remains important as state and territory governments still retain some responsibilities in the

[47] Making Energy Markets Work
www.advocacypanel.com.au/documents/AP396MakingEnergyMarketsWorkJune2011.pdf

energy market (such as setting electricity prices) there is a gap in terms of consumer advocacy at a strategic, national level. This is of particular relevance with the transfer of state and territory retail regulatory functions to the AER under the NECF as it further increases the commonality of issues between jurisdictions. The Australian Government is supportive of examining options to improve the efficiency of national advocacy and specific recommendations on how this might be achieved are being considered through the review of the limited merits review regime. The SCER is also working with consumer groups on identifying ways for consumers to have a stronger more effective voice in the national energy market reform arena.

Greater engagement in AEMC/AER/AEMO and other energy reform processes

The SCER has set in place a number of mechanisms to facilitate consumer representation in advocacy, including through the maintenance of the Consumer Advocacy Panel and the recent creation by the AER of a Customer Consultative Group as part of the implementation of the NECF.

Consumer Advocacy Panel (CAP)

The CAP was established on 1 July 2008, following the decision by the then Ministerial Council on Energy to revise the legislative framework for the creation of the predecessor organisation, the National Electricity Consumer Advocacy Panel. It was established under the AEMC Establishment Act and is an independent body established to provide funding for advocacy projects on behalf of consumers in the national electricity and natural gas markets.

The CAP funds research broadly through two grant programs:

- Research initiated by the CAP: the CAP provides funding to consumer organisations, individuals and academic institutions to undertake research on priority electricity and gas issues identified by the CAP.
- Research initiated by other organisations: the CAP provides funding to consumer organisations, individuals and academic institutions to undertake research on electricity and gas issues

The AER's Customer Consultative Group

The Customer Consultative Group provides advice to the AER in relation to its functions under the energy laws affecting energy consumers across participating jurisdictions. The group is made up of the Australian Council of Social Service Australian Council on the Ageing; Australian Industry Group; Consumer Action Law Centre; Consumer Utilities Advocacy Centre; Public Interest Advocacy Centre; Queensland Council of Social Service; Saint Vincent de Paul Society (Victoria); Tasmania Council of Social Service and Uniting Communities.

Review of the Limited Merit Review Regime

As described earlier in this submission, the Expert Panel[48] (the Panel) is examining ways to address the issue of insufficient attention to the long-term interests of consumers through the legislated review of the limited merits review regime. The Panel is also examining recommendations that could promote consumer and user access to the relevant decision making processes through providing incentives to

[48] Yarrow, G, Egan, M and Tamblyn, J (2012). Review of the Limited Merits Review Regime - Interim Stage Two Report http://www.scer.gov.au/workstreams/energy-market-reform/limited-merits-review/

electricity network businesses to engage with consumers and understand their requirements at all stages of regulatory decision making.

The Panel stated in the Interim Stage Two Report "As indicated in its Stage One Report, the Panel is of the view that the more fundamental weaknesses of the regulatory system lie in:

- Lack of adequate attention being paid to the statutory policy objectives the [National Electricity Objective and National Gas Objective] at the appeals stage, which leads to relative neglect of the effect of decisions on the long term interests of consumers.
- Insufficient attention to consumer requirements at earlier stages of the decision processes, by both regulators and network businesses.

Whilst the second of these is beyond the scope of the current review of the [limited merits review] regime, there are nevertheless ways in which developments to the regime could better facilitate the wider changes that the Panel considers would be desirable."

The Panel will be providing recommendations to SCER by 30 September 2012 for consideration. The Australian Government will work with SCER to examine current processes of consumer engagement and to implement recommendations to ensure long-term benefits for consumers.

The Australian Government continues to examine ways in which consumer engagement may be improved and expects means to improve engagement will be considered by SCER before the end of the year. For example, the Australian Government will consider models of more direct engagement in network determination and policy setting processes by consumers, such as that which is maintained by the United Kingdom's Office of Gas and Electricity Markets with its Consumer Challenge.

The AEMC's Rule Change Process

Provisions are contained in the NEL, the NGL and the NERL, that *'any person'* may request the AEMC to make a rule change, which is another means by which consumers and consumer groups may participate in regulatory processes. The AEMC can self-initiate a rule change, but only in very limited circumstances.

The terminology *'any person'* is broad and goes beyond industry participants. Rather *'any person'* means that a rule change request could be made by anyone – stakeholder, academics and consumers. The intention of this is so that the rule change process is directly accessible to a broad range of interested parties. While *'any person'* might extend to individuals as a matter of law, in practice requests are generally made by groups who have more sufficient knowledge of the Rules so as to frame their request for a rule change more effectively.

Rule change processes involve various stages of public consultation. As a result, even where a rule change request has been initiated by an industry participant (rather than by a consumer group), consumer groups may make submissions to the AEMC, through the public consultation process, which must be considered by the AEMC in determining whether to make the proposed rule.

The AEMC rule change process presents consumer groups with the opportunity to be fully engaged in the process of any rule changes in the energy market. As consumer

groups have shown little tendency to initiate rule changes but significant engagement in their progress, the formal process itself may not be overly attractive to consumer advocacy groups.

Terms of Reference D(iii) - The opportunities and possible mechanisms for the wider adoption of technologies to provide consumers with greater information to assist in managing their energy use

Residential consumer access to their energy information

More sophisticated metering is able to measure electricity consumption in finer detail than traditional accumulation meters. To allow consumers to take advantage of the extra information, arrangements need to be set up for them to access the data and use it to inform decisions.

The Australian Government announced in 2011 as part of its Clean Energy Future package that it would undertake a scoping study into "an energy information hub to improve energy information disclosure that would provide consumers with easier access to their energy information currently held by retailers and distributors".

Improving consumers' access to their own energy consumption data can assist consumers to better manage their energy consumption, choose appropriate retail tariffs and potentially reduce their energy bills. Recent emerging retailer and distributor web portals are a positive step, but there is further potential to make it easier for consumers to use their energy profile data, such as when comparing retail offers or getting energy efficiency advice.

The scoping study was completed in August 2012.[49] Key areas for policy decision identified in the scoping study include:

- Data access rights for customers: development of clear rules and processes to enable customers to access their energy data in a timely and convenient basis, including the right to authorise third parties to access energy data on their behalf.
- Data access obligations for data custodians**:** development of obligations for data custodians to provide customers, and authorised third parties, with their energy data. This will include definition of privacy obligations.
- Standardisation: energy consumption data formats and structures should be standardised.
- Registration of authorised third parties who wish to access their customer's energy information via energy market databases. This would include obligations to obtain customers' explicit informed consent and comply with data privacy requirements.

DRET and other relevant government agencies will consider and advise the Australian Government of appropriate actions as part of its broader work on demand side participation in energy markets.

The draft minimum functionality for smart meters endorsed by SCER in December 2011 includes an interface to a Home Area Network (HAN) which supports the use of in–home displays or other similar devices communicating directly to the meter and providing real-time energy consumption data. While its inclusion in the minimum

[49] Available from www.ret.gov.au/ENERGY/ENERGY_MARKETS/ELECTRICITY_MARKET_DEVELOPMENT/DATA/Pages/default.aspx

functionality means it should be available in all meters, it remains a consumer choice whether or not to take advantage of this capability. SCER's smart meter consumer protection and safety review will address the arrangements needed to support consumer access to data using this capability where a smart meter is installed.

Impact of time varying pricing on low income and vulnerable consumers with electricity pricing

The AEMC assessed the available information from international studies during the Power of Choice Review; this evidence suggests that many low income consumers could benefit from time varying prices, particularly if they have relatively flat consumption profiles.[50] While it has been suggested that some particular consumer segments such as the elderly, shift workers, the unemployed, and young families may be disadvantaged by a move to time-varying prices, as they are home during peak periods, this is not always the case. The impact of a time-varying tariff depends on the structure of the tariff, the ratio of the peak to off-peak ratio in the tariff and the consumption patterns of the consumer and their ability to change this consumption pattern.

A study by Deloitte for the Victorian Government estimates that the distribution of price impacts within vulnerable consumer groups is quite wide and that no one option will meet the exact needs of each consumer group.

Perhaps more importantly, the study showed that vulnerable consumer segments would not be systemically disadvantaged by accepting a time-of-use or critical peak tariff compared to a flat tariff. Additionally while the study found it was possible that some vulnerable customers would see increases in bills, it also found that many vulnerable consumers would see decreases in their bills and that they would have the same opportunity to benefit by changing their energy use patterns.

Nevertheless, the gradual removal of existing cross-subsidies as part of a transition to time-varying pricing would mean that some consumers would pay more than they currently do. It is important that any impact on vulnerable consumers is properly understood and managed in that transition. This could include:

- Rebalancing of social support mechanisms for energy, such as state-based concession regimes.
- Assistance for low-income and vulnerable consumers with managing their energy consumption, such as through targeted energy efficiency or demand management programs.
- Relying on broader support mechanisms.

In the *Power of Choice Review*, the AEMC has recommended a staged approach to introducing time varying tariffs in the NEM which recognises many of these issues[51]. This approach is discussed in more detail below, but is designed to focus on large consumers whose usage has the greatest impact on network costs. The AEMC considers that low income consumers are likely to be below any consumption thresholds identified in this context. SCER will consider these recommendations in developing its response to the review, but the proposal does illustrate that it is

[50] AEMC 2012,*Power of Choice Review Draft Report*, p. 96. http://www.aemc.gov.au/media/docs/Draft-report-6b3493db-395f-417e-ad09-112aff544120-0.pdf
[51] AEMC 2012, *Power of Choice Review Draft Report*, p. 99 http://www.aemc.gov.au/media/docs/Draft-report-6b3493db-395f-417e-ad09-112aff544120-0.pdf

possible to design a pricing transition which considers impacts on different consumer segments.

SCER's smart meter consumer protection review is considering ways to make any transition to time-varying pricing as smooth as possible while ensuring that the needs of vulnerable consumers are protected.

Business Energy Use Management

The greater uptake of energy efficient technologies and processes by business is both a cost effective action to managing rising electricity prices, and a way to reduce overall demand on network infrastructure.

Despite its cost effectiveness, a range of barriers often impact on the wider deployment of energy efficient technologies and practices.

DRET, through research conducted on businesses participating in the Energy Efficiency Opportunities (EEO) program, has highlighted a range of key barriers which are preventing greater uptake of energy efficiency projects by business.

These include:

- The capability of the company to undertake the project

This could include a shortage of skills, finance and/or information within companies and at their sites which can impede the identification and implementation of energy efficiency opportunities.

- The attractiveness of the project

The business case for some energy efficiency opportunities is weak due to a range of issues such as payback period, project scale, decision cycles for long-life equipment, supply chain barriers, innovation effort and cost.

In this case projects are less likely to be proposed to senior management for consideration. Additional costs of implementation include risk assessments, scale, supplier identification and timing which often make such projects less viable.

- The company motivation to undertake the project

Some internal and external factors can have a strong impact on the motivation for a company to consider or implement energy efficiency projects, even if they are profitable. These include the opportunity cost of using resources for energy efficiency via other revenue generating projects, operational risk, internal incentives, practices and habits, non-market pricing and regulatory barriers. These barriers are not mutually exclusive; they are interconnected and can, at times, overlap.

A range of policy responses have been developed to address these barriers, including capacity building programs, mandatory standards, grants, loans or loan guarantees and other measures to highlight the effectiveness of efficiency gains and alter decision making processes.

Energy Efficiency Opportunities Program

The EEO program is designed to address some of the above mentioned barriers to large businesses improving their energy efficiency by encouraging them to better understand their energy use and to ensure key decision makers are provided with the right information to make well informed energy investment decisions.

The EEO program requires corporations using more than 0.5 petajoules of energy a year to assess their energy use and identify and evaluate opportunities to improve their energy efficiency.

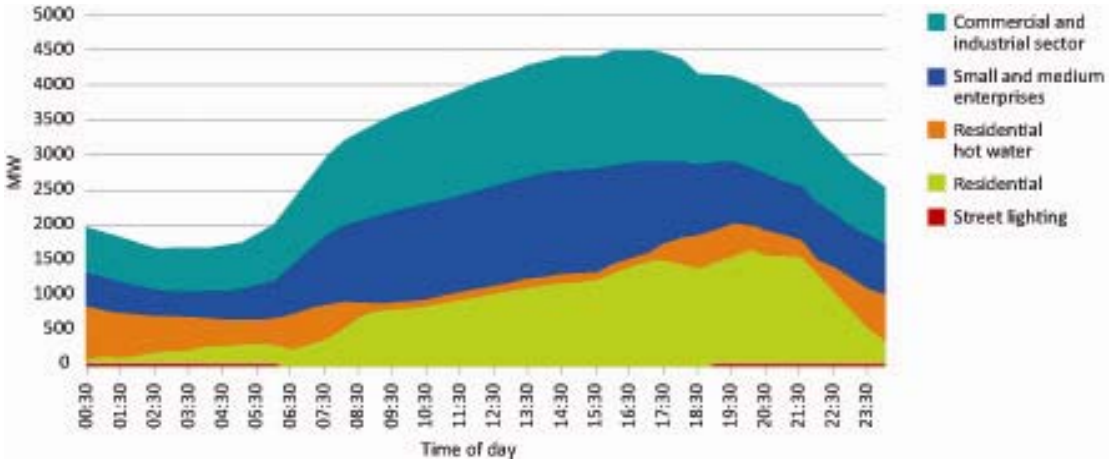
A recent Oakley Greenwood assessment of energy efficiency policies and programs found that "the economic cost/benefit tests that have been undertaken suggest that [EEO] produce[s] significant benefits for program participants and generate[s] benefits in terms of avoided or deferred economic costs for fuel and capacity across the electricity supply chain that exceed the sum of the costs incurred by all parties".[52]

The program is designed to address information failures within business that impede prudent and objective decision making on the business response to cost effective energy savings opportunities. By following a rigorous energy assessment framework EEO builds industrial capability and capacity to identify, assess and implement energy saving opportunities, to improve energy productivity and to deliver associated cost savings.

More EEO companies use 31 per cent (1,834PJ) of Australia's total energy use. 318 petajoules (PJ) or 17 per cent of that energy use is in electricity. In December 2011, companies reported identified energy savings of 164 petajoules or 2.8 per cent of Australia's total energy use. Electricity savings amounted to 28.3 PJ or 17.2 per cent of total identified savings (164.2 PJ). These savings can contribute to overall reduction in demand during periods of heavy use.

Increased energy efficiency by industry has the potential to reduce average electricity demand over time. It could also build knowledge and capacity within business to undertake additional demand response activities (eg load shifting, peak shaving) which reduce peak demand and costly investment in generation capacity and network infrastructure.

The following chart shows electricity use at various points during an average day.[53]



As shown above, the commercial and industrial sector account for a significant portion of electricity use at peak times. Incentivising a small number of large energy using companies to reduce their demand on the system during peak periods through

[52] Oakley Greenwood, *Stocktake and Assessment of Energy Efficiency Policies and Programs that Impact of Seek to Integrate with the NEM: Stage 2 Report*, August 2012 p3.
[53] Energex, Regulatory proposal for the period July 2010 - June 2015, Energex, Brisbane, 2009, p. 83.

methods such as switching to onsite generation or reducing operations, could help to minimise investment in generation capacity and network infrastructure. Working with industry on reducing their energy demand through implementing energy efficiency will also reduce overall demand for electricity in this sector.

National Smart Meter Framework

Electricity smart meters, or other advanced metering infrastructure, provide the capability to measure the time of electricity consumption, which can provide better information about electricity use as well as being the basis for time-varying charges. The presence of a communications link to the meter allows for service improvements or cost reductions for many electricity market transactions, such as meter reading, switching between electricity retailers, and re-connecting supply after moving house.

DRET is working with the states and territories to develop a national framework for smart metering. This is intended to provide a framework that accommodates all likely deployment scenarios. The primary focus of this work is on ensuring the arrangements are in place through which consumers could access the benefits of smart meters and other advanced metering infrastructure, rather than on the mechanisms for technology deployment. Early consumer access to benefits, as well as education and communication on what the benefits are, is important for consumer acceptance.

A roll-out of smart meters is underway in Victoria, and is expected to be completed by the end of 2013.

A head of power in the NEL gives Energy Ministers of other states and territories a legal mechanism to require that distribution businesses roll out or trial smart metering infrastructure in their jurisdiction. Indications are that no other state or territory government intends to mandate smart meters in the short term. Alternative deployment scenarios would involve the installation of smart meters where either a retailer or distributor has a business case to do so, including where a consumer signs up for a particular product that might require a new meter. SCER's June 2012 directions statement on smart metering identifies issues that are likely to be preventing such commercial or consumer-driven deployment, and supported the AEMC's intention to consider ways to address these issues in its *Power of Choice review.*[54]

One potential barrier to commercial deployment, particularly for retailers or alternative metering providers, is the bundling of metering costs with the Distribution Use of Systems (DUOS) charges for small customers in several states. Where metering charges are bundled with DUOS, customers would effectively be charged twice for metering if the retailer installs a smart meter – once through DUOS and again for the provision of the meter by the retailer. Unbundling the metering charges from DUOS would prevent this potential double charging for meters. The AER has the power to unbundle metering charges, but this needs to be done as part of the distribution determination process.

Other technologies

Other technologies are also available commercially that could provide greater information to consumers to assist them in managing their energy use.

[54] SCER directions statement on smart meters: www.scer.gov.au/workstreams/energy-market-reform/demand-side-participation/smart-meters

These include:

- Current detection devices that are clamped around the power cable of a home, giving information on the consumption of the whole home;
- Optical monitoring devices that stick over the visual indicator of an electronic meter, giving information on the consumption of the whole home; and
- Plug-in monitoring devices that can provide information about the consumption of a single appliance.

Terms of Reference D(iv) - The adequacy of current consumer information, choice, and protection measures, including the benefits to consumers and industry of uniform adoption of the National Energy Customer Framework

The NECF commenced in the Australian Capital Territory and Tasmania on 1 July 2012. New South Wales, Victoria and South Australia have committed to commencing the NECF as soon as practicable, while Queensland is yet to consider the matter. The Australian Government continues to urge these jurisdictions to apply the NECF as soon as possible.

To enable the commencement of the NECF the national Legislation, Rules, Regulations and Procedures were proclaimed to start on 1 July 2012 by the South Australian Governor in late June 2012 following the unanimous agreement of SCER. Together, these set out the key protections and obligations for energy customers and the businesses from which they receive their energy.

In addition, the three national market institutions, AEMO, AEMC, and AER, commenced their role under NECF as planned on 1 July 2012.

The NECF forms the final piece of the broader national energy reforms set out in the AEMA, working in tandem with the established legislative frameworks for other elements in electricity and gas supply chains. Therefore the NECF brings the whole energy supply chain – wholesale markets, transmission networks, distribution networks and retail markets – under one national regulation with the AER overseeing a robust compliance and enforcement regime across all participating state and territories and the AEMC overseeing the rules.

The NECF removes regulatory overlap and unnecessary divergence, which reduces compliance costs for energy businesses. The introduction of a national retailer authorisation decreases the current regulatory duplication involved in obtaining retail licences in each separate jurisdiction. Allowing retailers to benefit from easier access to a wider range of customers nationally is likely to lead to more effective competition for energy customers.

For example, Tasmania has already reported an instance of a new retailer entering the Tasmanian market as a direct result of the retailer acquiring a national retailer authorisation. As Tasmania does not yet have full retail contestability, this is an example of the increase in competition of energy services that consumers may enjoy from application of the NECF.

The NECF has introduced consistent protections for energy customers across jurisdictions. As such, the NECF supports a range of robust customer protections to benefit consumers by:

1. Ensuring customers get full details of the terms of their energy contract and have the contract explained in terms they understand before signing;
2. Providing minimum terms and conditions in a customer's energy contract;
3. Assisting customers through a customer hardship regime, requiring retailers to develop customer hardship policies that must be approved by the AER, with certain prescribed elements to assist residential customers experiencing longer-term payment difficulties;

4. Providing protection from poor marketing practices, unwanted calls or poor customer service; and
5. Protecting customers from disconnection if they are registered as having life support equipment at the premises; or for non payment of a bill.

The NECF has also seen the introduction of a price comparator website (www.energymadeeasy.gov.au) that is operated by the AER. The price comparator website will assist customers in comparing different prices offered by retailers in their area.

A further benefit of the NECF is that it requires retailers to provide customers with more detailed information on their bills. Electricity bills now contain a graph or table that will provide customers with the average electricity use for different sized homes in their area, and how their electricity use compares with homes that have a similar number of people. This knowledge will enable customers to compare their electricity use to similar households, which can help them to identify ways that they might be able to reduce the energy used in their home.

Therefore the NECF provides a range of benefits to customers by harmonising the regulations and consumer protections across the NEM that are enforced by a single national regulator, and providing customers with more information about their energy usage that can be used to reduce their energy costs, while also providing an easy and accessible way to look for a better priced service.

It is expected that together these benefits will enable industry to pass on the savings they realise from reduced compliance costs and barriers to market entry to customers through lower energy prices. Further, customers will be empowered through access to more information about their consumption and the services available to them.

However, given that the NECF does not currently apply across all participating jurisdictions and has only been in operation since 1 July, it is premature to make an assessment as to the adequacy of the obligations created by it.

Terms of Reference D(v) - The arrangements to support and assist low income and vulnerable consumers with electricity pricing, in particular relating to the role and extent of dividend redistribution from electricity infrastructure

The Australian Government supports arrangements to move towards more competitive retail markets in all jurisdictions, and for retail prices to be deregulated where it can be demonstrated that competition is effective. However, clear transitional paths to this goal must be set in place by jurisdictions, and those paths must ensure that adequate protections are in place of vulnerable customers. The below arrangements represent some of the protections which will assist in the move to more deregulated markets.

The arrangements to support and assist low income and vulnerable consumers with electricity pricing are:

Community Service Obligations

Energy is an essential service that plays an important role in maintaining Australians' living standards. As such it is important that consumers should have access on reasonable terms and conditions to a supply of energy in a competitive and deregulated market. In order to facilitate the provision of energy to vulnerable customers, state and territory governments have responsibility for maintaining a range of social policy initiatives, including Community Service Obligations (CSOs).

State and territory governments have established energy CSOs to both address concerns about possible market failures and pursue specific social policy objectives. For example, customers in areas with a dispersed population may be unable to meet the costs of investment in infrastructure. Recognising the needs of these customers, a government may require energy businesses to provide the infrastructure and supply on a non-commercial basis and compensate these customers by providing CSOs. Some customers may have characteristics, such as a need to use certain medical equipment at home, which cause them to have a higher usage than others. In this case, governments may require suppliers to support these customers with measures to reduce the cost of the energy consumed.

All jurisdictions in Australia have energy CSOs. The one policy that is common over all the jurisdictions is a pensioner rebate or concession. Most jurisdictions also provide life support concessions, for example, New South Wales provides a Life Support and Medical Energy Rebates Scheme for eligible customers who have an inability to self –regulate body temperature when exposed to extremes (hot or cold) of environmental temperatures. It is associated with certain medical conditions such as Parkinson's disease and multiple sclerosis.

In 2008 COAG agreed to an Energy Community Service Obligations National Framework (the Framework). The Framework is a non-binding 'best practice' guide containing nine principles to guide the development and implementation of CSOs by jurisdictions. The intent of the Framework is to bring about a consistent, efficient and transparent approach to CSOs to ensure they are delivered to those most in need with the least distortion of the market for energy. The achievement of a genuine National Electricity Market is dependent on competitive neutrality of CSOs across the market, which would be strongly aided by the application of nationally consistent principles. The Australian Government continues to urge jurisdictions to ensure that the

maintenance of their CSOs be compliant with this framework, but ultimately this is a decision for state and territory governments

Role and extent of dividend redistribution from electricity infrastructure

It is important to note that state and territory expenditure from consolidated revenue is at the discretion of individual governments and consumer support expenditure may not be directly linked to the dividends raised from electricity infrastructure on CSOs. These dividends may be redistributed to assist the community generally, beyond the energy sector.

Returns to state governments from their wholly-owned GOCs in the electricity sector include dividends and also corporate taxes diverted to the states by arrangement with the Australian Government. These returns are differentiated by the nature of the businesses. Transmission and distribution businesses are regulated and provide high dividend payouts. Generators and retailers are less regulated and returns reflect the more volatile market environment in which they operate. In addition, the states may also charge competitive neutrality fees.

State governments have intervened to offset the impact of increased electricity and other utility costs. For example, in 2011 the Queensland Government decided to forgo the NSP revenue that it was entitled to under the limited merits review process. In addition, the Queensland Government reinvested dividends the 2008-09 dividends of $108.9 million, which was provided to Energex as 'equity support'.

It is difficult to compare the CSO payments with dividends collected by state-owned electricity businesses. For instance, some CSOs are not specific to electricity, but broadly cover utilities including gas, electricity and water. Also, available information on CSOs is not always presented on a consistent basis. For instance, some information is available on the overall budget impact of CSOs while for other CSOs information is restricted to customer payments.

Targeted Australian Government assistance to households

The Australian Government is providing support to assist low and middle income earners and vulnerable consumers with the electricity price impacts of the carbon price through the Household Assistance Package (the Package).

The Package is part of the Australian Government's plan for a Clean Energy Future and is being funded through revenues received under the carbon price. The package includes:

- A Clean Energy Advance to help low and middle income households meet the impacts of carbon pricing on living expenses for the period from 1 July 2012 until the Clean Energy Supplement payments commence.
    - The Clean Energy Advance was paid to recipients of pensions, allowances and family payments in May and June 2012.
    - People who start to receive an eligible government payment after 1 July 2012 will not miss out on extra assistance. The amount of their Clean Energy Advance will be adjusted to reflect their later payment start date.
    - More than 6 million people received a Clean Energy Advance in May and June.
    - Single adult pensioners received $250 and each eligible member of a pensioner couple received $190.

- Families receiving Family Tax Benefit Part A received up to $110 for each child. Families receiving Family Tax Benefit Part B received up to $69 per family.
- Clean Energy Advance payment rates for other income support recipients vary according to payment type and individual circumstances.
- People receiving youth or student payments, or receiving Disability Support Pension and under the age of 21 without dependent children will receive a second Clean Energy Advance payment in July 2013 to cover an additional six month period to the end of December 2013.

- Tax cuts
  - The tax free threshold increased from $6,000 to $18,200 from 1 July 2012.
  - People with taxable incomes below $18,200 will no longer pay tax and individuals with a taxable income of less than $80,000 will receive a tax cut. Most will receive a tax cut of around $300 a year.
- Permanent increases to regular government payments through the Clean Energy Supplement for recipients of pensions, allowances and family payments. Clean Energy Supplements will be paid to:
  - Adult pensioners and jobseekers from March 2013;
  - Seniors Supplement recipients from June 2013;
  - Families from July 2013; and
  - Students and other young people from January 2014.

People in receipt of pensions, allowances and family payments will continue to benefit from regular increases to their main payment and their household assistance payments will also automatically rise in line with price changes in the economy, to keep pace with the cost of living.

Additional elements of the Package are outlined below:

Low Income Supplement

The Low Income Supplement is a payment for people in low-income households who miss out on the full benefit of tax cuts and increases to government payments delivered through the Package. The Low Income Supplement is an annual payment of $300. Applications need to be made each year through the Department of Human Services.

A person may be eligible to receive the Low Income Supplement if their adjusted taxable income in the 2011-12 financial year was below $30,000 if they are single, $45,000 combined if they are a member of a couple or $60,000 if they are single or a member of a couple and have a dependent child. In addition, the person's assessed tax payable, as determined by the Australian Taxation Office, needs to be below $300 in the 2011-12 financial year. Claims opened on 1 July 2012.

Essential Medical Equipment Payment

The Essential Medical Equipment Payment of $140 a year assists eligible people who experience additional increases in home energy costs under a carbon price as a result of the need to operate certain essential medical equipment, or medically required heating/cooling, at home. People who will benefit from this support include those

coping with disability or serious medical conditions at home, and their carers. To receive the Essential Medical Equipment Payment, the person with medical needs or their carer must:

- Be covered by a Australian Government concession card or a Department of Veterans' Affairs Gold or White Card;
- Use certain essential medical equipment, or have certain medical conditions that require the use of additional heating or cooling in their home; and
- Contribute to the payment of the energy account.

In the first instance, the Essential Medical Equipment Payment must be claimed. Qualification will remain ongoing unless the person's circumstances change. Payments commenced from 1 July 2012.

Single Income Family Supplement

The Single Income Family Supplement of up to $300 will be paid to families with one primary earner whose income is between $68,000 and $150,000. Payments will be available from 1 July 2013.

Household assistance is permanent and will increase in line with increases in the cost of living, as measured by the Consumer Price Index. The assistance will be reviewed annually over the fixed price period. This review will examine the real value of the assistance taking into account:

- Movements in prices for the household consumption baskets used to calculate the assistance;
- Indexation arrangements for the assistance; and
- Any new information about the composition of the goods and services that make up the average consumption basket.

In addition to the HAP, the Australian Government is providing assistance to low income and vulnerable consumers as part of the Clean Energy Future package.

Home Energy Saver Scheme

The Home Energy Saver Scheme (HESS) supports low-income households across Australia experiencing difficulty meeting and paying for their energy needs. Funding for the Scheme is $50.5 million over four years (until 2014-15).

HESS is provided through community organisations around Australia and can help by offering low-income households experiencing difficulty meeting and paying for their energy needs with:

- Information about easy and affordable ways to use less energy in the home;
- One-on-one budgeting assistance;
- Information on whether they are getting the right rebates and assistance;
- Help to understand their energy bills and the energy market;
- Advice, advocacy and support;
- Links to other services that may be able to assist them; and
- Help to access no or low interest loans to purchase energy efficient appliances.

Remote Indigenous Energy Program

The Australian Government has maintained its commitment to remote renewable energy through the $40 million four-year Remote Indigenous Energy Program (RIEP).

REIP will primarily provide clean and reliable power in smaller remote Indigenous communities across Australia through the installation of fit-for-purpose renewable energy systems. The program commenced on 1 July 2012 and will also provide energy efficiency education and training in basic system maintenance to community members and repairs and maintenance to existing systems.

Harmonised customer protections

The Australian Government is also supporting low income and vulnerable consumers by supporting the introduction of the NECF in participating jurisdictions. The NECF provides for a national customer hardship regime that supports customers by requiring retailers to develop policies that assist residential customers experiencing long-term payment difficulties. The Australian Government continues to urge participating jurisdictions to commence the NECF as soon as possible through SCER and its officials.

Terms of Reference D(vi) - The arrangements for network businesses to assist their customers to save energy and reduce peak demand as a more cost effective alternative to network infrastructure spending [55]

The broad incentives for network businesses to consider demand side options are established in the economic regulation framework. A number of reforms in place and underway affect how Distribution Network Service Providers (DNSPs) consider demand side participation (DSP).

For example, the current rules establish distribution expenditure objectives that DNSPs must consider when preparing operating and capital expenditure forecasts, the first of which is the need to meet or manage expected demand for their services. In assessing these forecasts, the AER must consider the extent to which DNSPs have considered and made provision for efficient non-network alternatives. The rules also enable the AER to develop a Demand Management and Embedded Generation Connection Incentive Scheme (DMIS) for each DNSP. The DMIS is in the form of an additional revenue allowance provided to the DNSP for investigations into efficient and viable non-network strategies.

In the *Power of Choice Review*, the AEMC has considered whether aspects of the economic regulation framework should be changed to improve the incentives for DNSPs to look for demand side options. The AEMC has proposed a number of options, including reforming the existing demand management incentive scheme and aligning the criteria the AER uses to judge efficient DNSP expenditure with the intention of the Regulatory Investment Test for Distribution to include wider market benefits.

A range of products and services could potentially be offered by network businesses either as part of an overall retail tariff product or, in some cases, directly to customers to achieve demand reductions. These have been discussed elsewhere in this paper, and include price based options such as cost reflective network tariffs (including critical peak prices or critical peak rebates) and contract based options such as direct load control. Governments are currently considering a range of issues applying to these products and services, such as how consumer protections are regulated and whether DNSPs should interact directly with a customer or via a retailer.

The AEMC is also consulting on a Rule change package to implement the National Framework for Distribution Network Planning and Expansion. These changes will improve the information on network constraints available to non-network providers, improve engagement between DNSPs and non-network providers, and set out the process for DNSPs to identify the most economically efficient, technology neutral solution to network constraints. Under the draft rules, DNSPs would be required to publish a range of information on the capacity of and constraints in their network, and develop and implement a Demand Side Engagement Strategy outlining their processes for considering non-network proposals and engaging with non-network providers.

The rule change package also includes a new Regulatory Investment Test for Distribution (RIT-D). This test establishes the framework through which a DNSP

55 Please also see the response for terms of reference C)

identifies and assesses investment options to address network issues. The proposed RIT-D process has been designed to ensure DNSPs consider investment options in a transparent, consultative and technology neutral manner. Subject to certain conditions, a DNSP must assess the costs and benefits of each credible investment option to address a network problem, including non-network options. Where non-network options are seen as credible, a DNSP must publish a 'non-network options report' for consultation, intended to provide information to potential non-network providers, and seek feedback on possible non-network options.

Terms of Reference D(vii) - The improved reporting by electricity businesses of their performance in assisting customers to save energy and reduce bills

Retail market performance reporting

The NERL that came into effect on 1 July 2012 makes the AER responsible for annual reporting on the performance of the retail energy market. The AER's Retail Market Performance Reporting will commence from 2013 and will include information on customer service and complaints, the handling of customers experiencing payment difficulties, prepayment meters, security deposits, concessions, disconnections and reconnections. The NERL also places an obligation on retailers and distributors to submit information relating to their performance against the hardship program indicators and distributor service standards.

The NERL stipulates that the AER's performance reports are to be published on an annual basis between 30 June and 30 November of each year and must contain the following:

- A retail market overview;
- A retail market activities report;
- A report on the performance of retailers by reference to the hardship program indicators;
- A report on the performance of distributors by reference to distributor service standards and associated Guaranteed Service Level schemes;
- A report on the performance of distributors in relation to the small compensation claims regime; and
- A report on any additional matters that the AER considers appropriate for inclusion.

To assist businesses in providing accurate information, the AER has published its Performance Reporting Procedures and Guidelines, which specify the manner and form in which businesses must submit information and data to the AER relating to their performance.

AEMC reports and reviews

The AEMC is currently undertaking the *Power of Choice Review*, which is looking at possible changes to the NEM to help consumers better manage their energy consumption. The review is exploring what changes can be made to help people make more informed choices about the way they use electricity and manage their bills.

The AEMC is also investigating as part of that review ways to encourage electricity companies to better facilitate consumer choice and to also invest more efficiently. The Australian Government's objective is to ensure that electricity is delivered in a way that balances the cost of supply with the value consumers receive and to ensure consumers are well equipped to make the best choice of retail energy product for them. The review is a combined state, territory and Australian Government initiative, with recommendations to be presented to the SCER in September 2012.

The electricity distribution network planning and expansion rule-change proposal currently being considered by the AEMC covers the distribution network annual

planning and reporting process. It includes a proposal for distribution businesses to develop a demand side engagement strategy, and to plan and report on aspects of their business including their consideration of non-network options such as demand side projects.[56]

[56] http://www.aemc.gov.au/Electricity/Rule-changes/Open/distribution-network-planning-and-expansion-framework.html

Terms of Reference E - Investigation of opportunities and barriers to the wider deployment of new and innovative technologies, including [57]:

I. **direct load control and pricing incentives,**
II. **storage technology,**
III. **energy efficiency, and**
IV. **distributed clean and renewable energy generation.**

While some aspects of new technology are well understood and have readily quantifiable benefits, others depend heavily on expected system operating behaviour, customer behaviour and or regulatory requirements to facilitate deployment and therefore are still debated within the industry. Technology being considered for deployment needs to demonstrate its capability to improve the efficiency and effectiveness of the generation, transmission, distribution and the broader uses of power.

The Australian Government is supporting a range of programs and initiatives that are investigating the business case for the efficient deployment of new technology to allow for appropriate analysis to consider and determine the most cost effective and beneficial deployment models. Integration of technology into the current market structure is a challenge in itself, as we operate in a highly competitive and disaggregated Australian energy market, where roles and responsibilities are not always clearly defined.

DRET acknowledges that the mandatory uptake of new technologies may increase prices in the short term, even where there are demonstrated long term benefits. It is on this basis that approaches in relation to the deployment of new technologies must be carefully considered.

<u>Direct load control and pricing incentives</u>

Direct load control of large electricity consuming appliances

With an appropriate demand response capability, appliances such as air conditioners and pool pumps can be turned on and off automatically, or in the case of air-conditioners run in a low-power mode, to reduce demand for electricity at the most expensive or critical times. Electricity businesses, particularly networks, are investigating how these capabilities can be used to support objectives such as reducing peak demand and supporting system security.

In a widespread rollout, appropriate business models would be needed to ensure that consumers are rewarded for providing this capability to business, and that the option is only exercised in line with consumer preferences. For example, consumers might be offered a rebate and agree to allow their air conditioner to be set to low-power mode for a certain number hours on a certain number of days each year.

To be effective, a critical mass of demand response capable appliances would need to be available in the market. An Australian and New Zealand standard, AS/NZS 4755, developed with input from appliance manufacturers and electricity utilities, provides the appliance capability to respond in similar and predictable ways when called during

[57] Please see D(iii) for more information regarding the response to this terms of reference

peak load events, but is not mandated in Australia at present. The Department of Climate Change and Energy Efficiency, with the Select Council on Climate Change, is developing a regulatory impact assessment to consider this option.

More cost reflective pricing structures

Tariffs in which a customer pays more for a unit of electricity at peak time, and less at other times, gives customers an incentive to reduce their energy consumption at peak times and an opportunity to benefit from lower costs at other times. Trials of such tariffs including critical peak tariffs have shown that customers do respond to these signals by reducing their consumption in the critical peak period.

The fact that customers are unfamiliar with these pricing options and may not be sure of their impact on customer bills may be a barrier to widespread adoption of cost reflective prices. Improved information about not only the amount of electricity consumed but also the time of consumption would allow customers or their agents to make these calculations and choose the best tariff option. Consumer education and engagement will also be important to increase consumer confidence in these options. During a transition to cost reflective prices, it may also be necessary to maintain a range of tariff choices for consumers, including flatter tariffs for consumers who prefer this option.

Some enabling technology, such as smart meters, would be needed to introduce more cost reflective pricing and to improve the energy consumption information available for consumers, which can be used to help identify opportunities to reduce peak demand.

In the *Power of Choice Review*, the AEMC has recommended a staged approach to introducing time varying tariffs in the NEM which recognises many of these issues[58]. The AEMC has proposed that these prices be introduced by focusing on introducing time varying prices for the network tariff component of consumer bills (retailers would be free to decide how to present these tariffs to consumers). Under the AEMC's proposal, initial focus would be on large consumers whose usage has the greatest impact on network costs – these consumers would be required to have a time varying network tariff. A second band of medium to large consumers would by default have a time-varying tariff, but could opt to have a flat network tariff, unless they chose to have a time varying network tariff. Small to medium consumers would remain on a flat network tariff but could opt in to a time-varying network tariff. The AEMC has not identified appropriate thresholds as yet. The AEMC suggests that this approach would allow for an orderly and coordinated pricing transition, which would need to be supported by consumer engagement and education to allow consumers to make the most of the new pricing options. SCER will consider these recommendations in its response to the *Power of Choice Review*.

Pilots and trials

A report by Futura Consulting prepared for the AEMC's *Power of Choice Review* identified around 50 demand side participation trials either completed, underway or in the planning stage across Australia.[59] These projects have involved pricing trials

[58] AEMC 2012, *Power of Choice Review Draft Report*, p. 99 http://www.aemc.gov.au/media/docs/Draft-report-6b3493db-395f-417e-ad09-112aff544120-0.pdf

[59] Futura Consulting (2011) *Investigation of existing and plausible future demand side participation in the electricity market*. http://www.aemc.gov.au/Media/docs/Futura%20Consulting-508587ea-32b3-42b1-9e8b-014c62231aff-0.PDF

including Time of Use, Seasonal Time of Use and Critical Peak Price tariffs, and Critical Peak Rebate incentives and direct load control including trials mainly involving air conditioners, pool pump and water heating, as well as a range of feedback, energy efficiency and embedded generation activities.

Although many of these projects are in their early stages, the results do tend to show that customers respond to the incentives provided in cost reflective tariffs, where there is sufficient consumer understanding of the benefits. Direct load control has the capacity to reach a large number of customers and can provide reliable peak load reduction, but can have large transaction costs to reach sufficient customers and install the required communications and control infrastructure.

The Solar Cities program has trialled a number of technologies and consumer products including concentrated take up of solar photovoltaics, smart metering, innovative electricity pricing and energy efficiency. One of the two objectives of the program was to identify barriers to the deployment of these measures and how these barriers could be overcome.

While the full results of the trials are not yet available, a significant achievement of the Townsville Solar City was the deferral of a third electricity supply cable to Magnetic Island for at least eight years. This was achieved by a combination of an energy efficiency program and the installation of solar photovoltaic on Magnetic Island, without any changes in the way electricity was priced to consumers. Ergon Energy has since successfully used very similar energy efficiency programs in other parts of Queensland, in both off-grid and on-grid situations.

Preliminary results from Adelaide Solar City indicate that customers do respond to price signals, and that different tariff products appeal to different consumer segments.

Preliminary results for the Perth Solar City indicate that it may be possible to accommodate higher penetration of solar photovoltaic in the network with reasonably straightforward changes to operating parameters without compromising the network.

A full assessment of the Solar Cities program against the original program objectives is expected to be completed by mid 2013, and is likely to identify measures that were effective, as well as barriers to deployment and options to remove these barriers.

Distributed generation

For consumers, installing distributed generation systems can offer advantages including offsetting the cost of electricity from the public grid and/or providing additional income from exporting electricity to the grid. Distributed generation may also offer system benefits. All electricity generated by distributed generators displaces the need for that same amount of electricity to be generated by a remote large scale generator *plus* there is the added benefit of avoided losses that are incurred when transporting electricity over large distances (on average 8 per cent) as distributed generation output is consumed at or close to the generation source. The presence of embedded generation can potentially reduce or increase network costs in a particular location, and this is highly dependent on the status of the distribution network and the level of penetration of distributed generation in a local area.

Many jurisdictional regulatory authorities (New South Wales, South Australia, and Victoria) have recently sought to determine the value of electricity produced form distributed generators, and particularly that from small scale solar photovoltaic systems. During the course of these reviews, little evidence has shown that increased

distributed generation (again particularly from small-scale solar PV) leads to reduced peak electricity demand which could flow through to lower network costs.

In the *Power of Choice* review, the AEMC has considered the incentives on distribution businesses to connect distributed generation as a demand side option. In the draft report, the AEMC considers that it is not necessary to implement a specific incentive for distributed generation connections. In the context of meeting the National Electricity Objective, the goal is to ensure that the incentive framework is in place for distribution businesses to find the most efficient solution to a network problem, with distributed generation one of a number of network and non-network options.

The SCER has been working to implement a connections framework which will support embedded generation connections. A new Chapter 5A in the NER streamlines the processes for many embedded generators working with distribution business to establish a network connection. The new rules address issues such as the process for seeking a connection, the timelines involved, the framework for negotiations between the parties, principles governing the cost of establishing a connection, and the minimum content needed in a connection contract. The new rules will come into force as each jurisdiction adopts the NECF.

This will be complemented by elements of the draft rules to implement the Distribution Network Planning and Expansion Framework. The planning requirements will make it easier to identify constraints in the network which might affect the opportunities and costs of connection to the grid. They will also require distribution companies to publish information about the process and requirements for connection of embedded generators.

Smart Grid, Smart City

The Australian Government is investing $100 million in the *Smart Grid, Smart City* (SGSC) demonstration project, which is running over 2010 to 2013.

The project is testing the capacity of smart grid technologies to deliver benefits for Australians. Key areas under examination are: the direct financial impacts including on operating and capital expenses; cost savings and the potential to lower bills for consumers; improvements to reliability and power quality; security; privacy and safety; environmental benefits; and identification of opportunities for skills development and job creation.

The key focal point of the project is Newcastle, NSW, but also includes the trialling of specific technologies and applications in Sydney, including in the CBD, Newington and Ku-Ring-Gai, and the rural township of Scone.

The key focal point of the project is Newcastle, NSW, but also includes the trialling of specific technologies and applications in Sydney, including in the CBD, Newington and Ku-Ring-Gai, and the rural township of Scone.

The SGSC project is investigating the direct impacts and opportunities associated with direct load control and linked pricing incentives. The objective of the direct load control trial is to undertake detailed analysis in assessing the material impact on peak demand and total energy use. The direct load control project will measure the benefits and outcomes of retail and network load control tariffs and rebates for both consumers and system operators. Smart appliances, including interfaces to allow control of air conditioner condensers, will be installed in households, which will allow

Ausgrid to remotely disable the appliance in response to peak load conditions. Customers are rewarded through rebates from the network operator if they choose to participate and they also have the ability to override the smart appliances.

The SGSC will integrate a real world demonstration of battery storage with fuel cells, small-scale wind turbines and photovoltaic systemss to analyse at commercial scale the benefits and impacts for distribution networks, retailers and consumers flowing from the integration of these technologies. A number of distributed storage and support systems have been installed to confirm the technical reliability and safe operation of battery storage systems. This includes a centrally administered control system to dispatch battery discharging within a specific localised grid area.

Early indications from this component of the trial are that storage systems have significant potential to reduce peak demand through active management by distribution networks. The final data, analysis and learning's from the SGSC trial will enable networks to more accurately assess the scope to use these technologies to meet system wide peak demand, which occurs at very few periods throughout the year, as an alternative to expensive expansion of the network's capacity.

The SGSC project also supports greater identification and adoption of energy efficiency opportunities by industry, vendors, governments and consumers. A key characteristic of smart grid technologies is the increased quantity and quality of data on energy flows and use. The delivery of more granular information and control over energy systems, can drive behaviour change by both consumers in their energy use and networks in their delivery of services through an increased ability to make more informed choices, change power usage patterns, and identify and realise energy efficiency opportunities.

Smart grids may be expected to facilitate the uptake of distributed generation. The SGSC project will offer insights into the extent to which:

- Smart network protection systems can allow local distributed generation penetration to reach a much higher level without undermining the grid's reliability or power quality.
- Smart billing and metering systems can stimulate the installation of distributed generation systems by improving the value proposition to end users. For example, the ability of smart meters to enable net metering allows excess power to be sold back to the grid.
- Customer applications, including in home displays, can increase customer visibility of the level/value of power their distributed generation system is producing.

The SGSC project is also implementing small-scale community wind turbine and battery storage projects to assess the impacts and opportunities within remote rural communities, larger scale grid side battery storage projects within an urban environment and the effects electric vehicles may have on system peak demand and their capacity to act as a demand side storage facility.

Addressing barriers to the wider deployment of new and innovative technologies

Energy Efficiency Exchange

A lack of relevant information is a major barrier to the uptake of energy efficiency opportunities. In addition to the EEO program, another initiative which provides

information to business is the Energy Efficiency Exchange website - www.eex.gov.au – which is a joint initiative of the Australian, state and territory governments and is designed to provide quality information on energy efficiency information in a central online location.

The site contains information on:

- Energy management, including details on how the energy market works and the impact of load profiles on energy procurement, the strategic case for energy efficiency, how to undertake energy efficiency assessments and developing business cases
- Energy savings opportunities for different sectors and technologies,
- Business support programs including information on grants, training and capacity building programs; and
- Links to best practice case studies, guidance materials, research and tools from Australia and overseas

The site has been designed to engage technical and non-technical employees, across a range of industry sectors. All content is peer reviewed to ensure accuracy and industry relevance and it is updated regularly.

In the household sector, a similar resource is available through the Living Greener website (www.livinggreener.gov.au).

Financing Barriers

Transitioning from conventional proven technologies to those that are new can often involve risks and challenges. Implementation of energy efficiency projects that involve high technology risk are often unattractive to organisations.

Access to capital for projects deemed beyond 'business as usual' or projects not closely linked to core business drivers can also be difficult. Developing a business case can also involve high transaction costs in proving feasibility or negotiating finance.

The Australian Government has a number of programs designed to address the financial barriers that companies may face.

Established on 1 July 2012 as part of the Government's Clean Energy Future plan, the $3.2 billion Australian Renewable Energy Agency (ARENA) is an independent statutory authority tasked with supporting:

- the research, development, demonstration, deployment and commercialisation of renewable energy and related technologies;
- the storage and sharing of knowledge and information about renewable energy technologies.

ARENA will also collect, analyse and share information and knowledge about renewable energy and related technologies.

In operation since 2010, Low Carbon Australia (LCA) works collaboratively with business, industry and government to develop and deliver innovative financial products which address known financing barriers to energy efficiency in the business sector including on bill financing, equipment leasing and flexible finance. LCA also facilitates (and, at times, provides the capital for) Environmental Upgrade Agreements (EUAs) which are financing agreements between a building owner, a financier and a local council to fund the up front costs of energy efficiency upgrades and other environmental improvements to existing non-residential buildings.

The $1.2 billion Clean Technology Program provides incentives for business to reduce emissions and invest in clean energy technologies. The program provides grants to support Australian manufacturers maintain competitiveness through investments in energy efficient capital equipment and low pollution technologies, processes and products. The Clean Technology Innovation Program will also support the research, development and commercialisation of clean technology products, processes and services including low emission and other energy efficient technologies.

The Clean Energy Finance Corporation (CEFC) is also targeted at addressing financing barriers. The CEFC will be a co-funding institution with access to $10 billion in capital to support:

- The commercialisation and deployment of renewable energy and enabling technologies; and
- The commercialisation and deployment of energy efficiency and low emissions technologies.