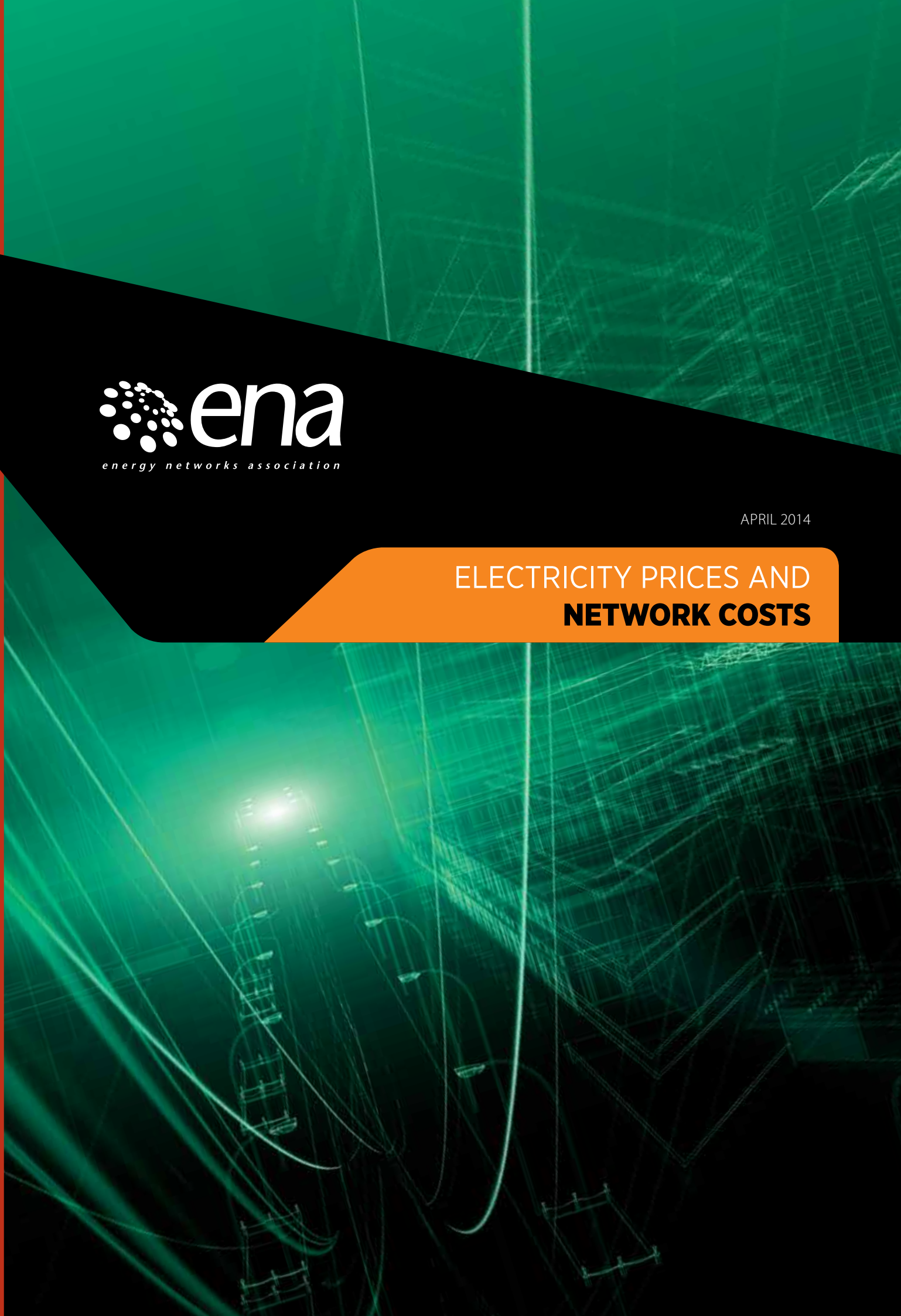


energy networks association

APRIL 2014

ELECTRICITY PRICES AND **NETWORK COSTS**

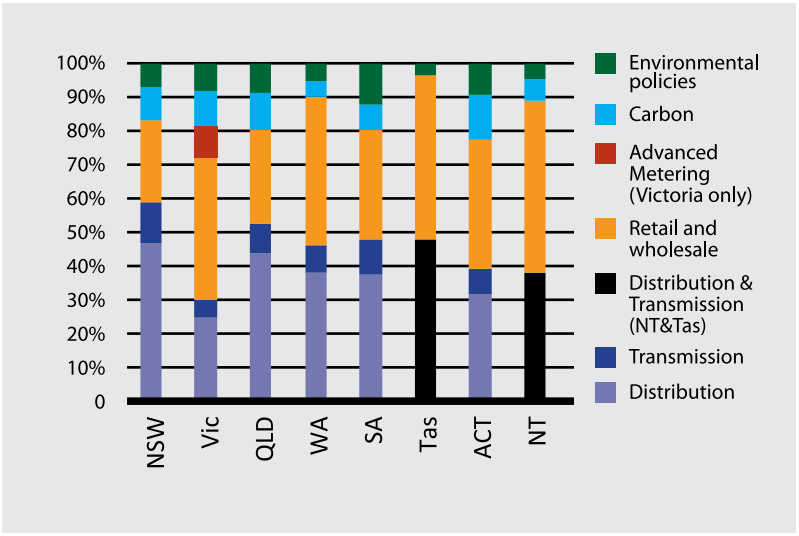
WHAT MAKES UP THE RETAIL ELECTRICITY BILL?

Retail electricity bills are made up of a number of components:

- Wholesale costs reflecting electricity generation costs and purchased by retailers in competitive markets;
- Network costs reflecting the cost of the transmission and distribution networks that are regulated by the independent economic regulator;
- Retail costs including operating costs such as billing and marketing and a profit margin for risk in providing retail services; and
- Environmental policy costs mandated by Commonwealth, State and Territory governments, such as the Renewable Energy Target; and
- the Carbon Tax currently in place.

Changes in any one of these components can flow through into retail electricity bills.

FIGURE 1 COMPONENTS OF RETAIL ELECTRICITY BILL



Source: *AEMC, 2013 Residential Electricity Price Trends* modified to separately identifying advanced metering infrastructure costs in Victoria based on analysis by Oakley Greenwood.

THE OUTLOOK FOR ELECTRICITY PRICES IS MODERATING

Australian energy users have seen significant increases in prices in recent years due to a range of factors. Since 2007, electricity prices have risen faster than the rate of inflation, with real increases averaging 10% annually for households and 9% annually for businesses.

The key factors influencing retail electricity bill have been growth in transmission and distribution network costs; environmental policies, including the Renewable Energy Target and Carbon Tax, and retail operating costs.

Higher network costs have overwhelmingly being driven by the demands of the market and government policies including:

- the rising demand for electricity at peak times;
- the need to replace ageing infrastructure;
- the need to meet government mandated reliability standards; and
- the higher costs of borrowing after the global financial crisis.

The outlook for retail electricity costs is moderating in most jurisdictions, with recent analysis by the Australian Energy Market Commission (AEMC) suggesting price increases could average 1.2 % annually over the next three years.

While recent increases have been significant, real electricity prices are slightly less at 28 cents per kilowatt hour than the level of 30 cents per kilowatt hour which was the price 50 years ago.

Some key pressures which have increased network costs are reducing, particularly improvements in the cost of borrowing and lower growth in peak demand. Network businesses have also undertaken major saving initiatives in operating and capital expenditure.

Some factors will continue to put pressure on network charges such as the need to replace ageing infrastructure. Non-network solutions such as demand side participation and embedded generation can help improve network efficiency.

Network tariff structures can also be reformed to reward customers who reduce pressure on the network to meet peak demand. The central grid will continue to provide strong value to customers, enabling new choices in their energy supply and lifestyle.

NETWORK COST DRIVERS

Network costs can account for between 40 to 60 per cent of a customer's electricity bill, depending on the jurisdiction. The annual total of investment approved by the Australian Energy Regulator (AER) rose from $4.3 billion in [2006-07] to a peak of $7.8 billion in 2012 -13, and falling to $7.3 billion in 2013 -14.[1]

This growth in the approved level of investment was based on peak demand forecasts, the need to replace ageing network infrastructure assets and the need to meet higher reliability standards in some jurisdictions to lower the risk of potential major blackouts. In NSW for example, increased investment by Ausgrid resulted in the average number of blackouts being cut by about 12 per cent between 2003-04 and 2010-11, while the number of significant failures at major zone substations was cut from 8 to 2.[2]

THE PEAKINESS OF DEMAND

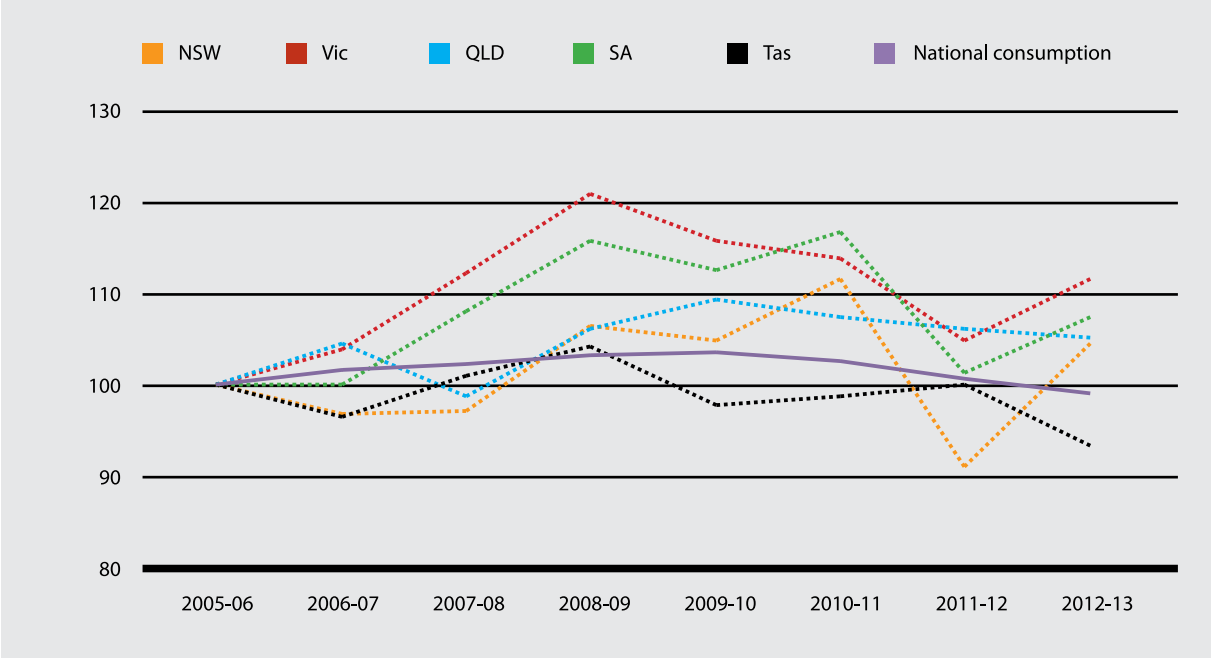
As the use of energy intensive appliances such as air-conditioners and dishwashers has grown, the electricity network has had to invest in additional capacity to accommodate growing demand for electricity at peak times.

Much of this expanded capacity to meet the maximum possible demand lies idle other than for short periods. One distribution network business has estimated that $11 billion in network infrastructure is used for the equivalent of 4 or 5 days a year.[3] Another distribution network business has estimated that around 20 per cent of network capacity is used for the equivalent of 23 hours per year.[4]

Since 2007 (Figure 2) peak demand has grown across the mainland regions of the National Electricity Market since 2007, with the exception of 2011-12, and has become increasingly 'peaky' (ie. a [wider gap between peak demand and consumption]). On average peak demand was between 5 and 12 per cent higher by the end of the period compared with 2007. By contrast average consumption fell by 1 per cent per annum over the same period. This increase in the peakiness of demand has put upward pressure on electricity prices.

Networks costs will continue to be impacted by the need to meet growth in peak demand. This underlines the need for tariff reforms which encourage customers to shift their use of the network from peak times.

FIGURE 2 GROWTH IN PEAK DEMAND



1 Excludes customer contributions
2 Oakley Greenwood, Possible Future Trends in Residential Electricity Prices 2013-14 through 2015-16:Network Cost Drivers, 2013, p 46
3 Ausgrid, Supply and demand:our five year network plan 2011-12, p.10
4 ENA Submission to Senate Committee Inquiry on Electricity Prices, 2012,p. 8. Refers to SA Power Networks.

ASSET REPLACEMENT CYCLE

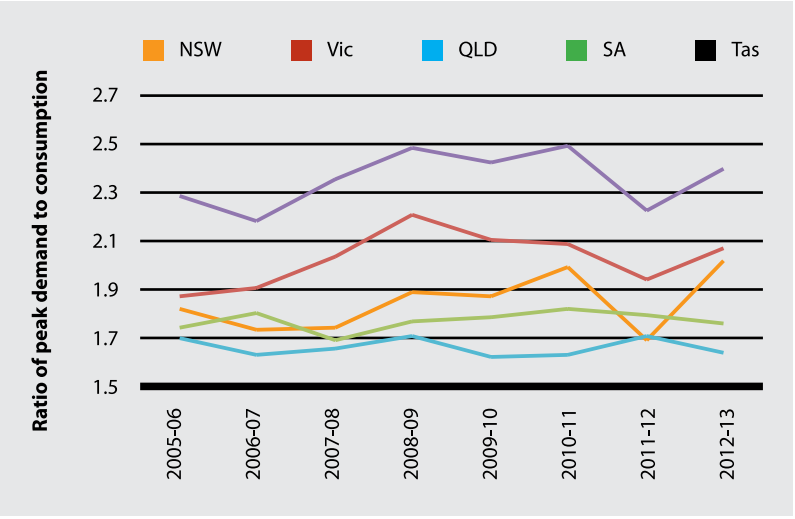
While peak demand is a major driver of network expenditure, the AER has recognised that there is also a cyclical need to replace ageing infrastructure. Given that much of Australia's electricity network was built 50 or more years ago with a working life of 30 - 40 years, the need to replace ageing electricity network assets will continue to be a major driver of network costs for another decade.

GROWTH OUTCOMES WILL BE SIGNIFICANT FOR BILLS

The official forecasts from the Australian Energy Market Operator (AEMO) are for annual consumption growth on average of 2 per cent annually for the next five years, under a medium growth scenario. Estimates suggest that for every 2 per cent increase in residential consumption, the average residential bill will fall by between $12 to $20 annually on an electricity bill of $1200.[5]

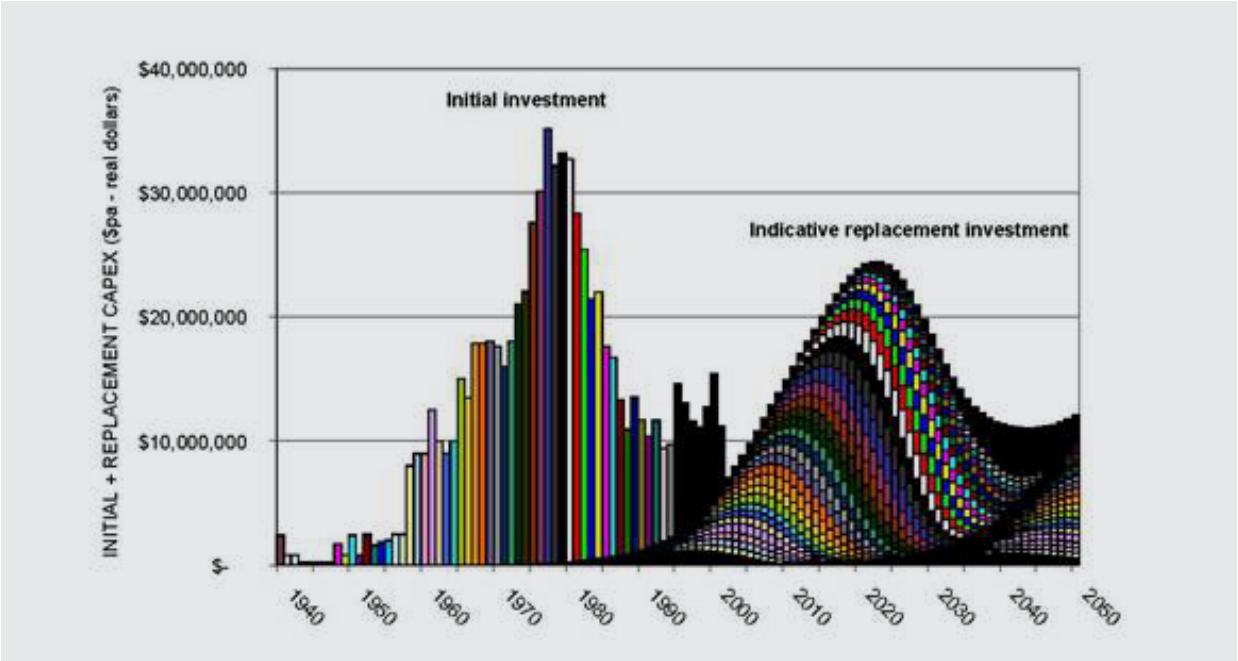
Customers could save considerably more if as a result of tariff reform the peakiness of demand could be reduced. One estimate is that an average electricity bill in 2015 could be reduced by $245, which is the equivalent of saving $1.6 billion across the NEM.[6]

FIGURE 3 INCREASING 'PEAKINESS' OF DEMAND



Source: AEMO, National Electricity Forecasting Report 2013

FIGURE 4 REPLACEMENT CYCLE OF AUSTRALIA'S ELECTRICITY NETWORK ASSETS



Source: AER, Andrew Reeves, Presentation to the Asia Pacific Partnership on Clean Development and Climate, 4 November 2010

5 AEMC, 2013 Residential Electricity Price Trends, p.24; ENA analysis
6 Productivity Commission, Inquiry Report, Volume 2, Electricity Network Regulatory Frameworks, p. 346

PRESSURES ON KEY NETWORK COSTS MODERATING

After recent increases in network costs, growth in some key network costs is expected to stabilize, and possibly fall, in the next few years. This reflects the outlook for moderate growth in peak demand and electricity consumption and a turnaround in the costs of financing new and existing network investments. These finance costs are particularly significant, making up between 50 - 70 per cent of the revenue of networks. Other costs, such replacement capital expenditure requirements discussed earlier, labour and raw material costs, are likely to put upward pressure on prices.

The most recent proposals submitted to the AER by Networks NSW show projected savings of $4.3 billion over the five years commencing July 2011 that will result in lower distribution network charges for customers. A return to less prescriptive reliability standards is one factor contributing to the projected savings across all three distribution networks in NSW.[7]

RESPONSE TO FALLING DEMAND

Changes in peak demand and consumption growth have significantly reduced pressure on network investment in the next few years.

Networks have already responded to the changing demand environment. Figure 4 compares the reduction in peak demand with the reduction in actual investment expenditure for three years from 2009 -10. In the two years following the fall in peak demand, actual investment expenditure fell by a greater amount than the fall in peak demand.

It is important to recognise that network expenditure in a particular year won't reflect demand growth in that year. This is because:

- network companies must build their infrastructure to meet the forecast peak demand for energy. To meet customer reliability expectations, Networks must have sufficient capacity to meet maximum possible demand in extreme weather conditions and if it's a mild summer, the system will have surplus capacity.
- capital expenditure for networks is driven by factors other than just growth, including maintenance and replacement expenditure.

However, networks have commercial incentives under the regulatory framework to tailor actual capital expenditure on an ongoing basis to meet changes in demand over each regulatory period. These have recently been strengthened through the introduction of a new capital expenditure efficiency sharing scheme.

FIGURE 5 PROJECTED NATIONAL RETAIL PRICE TRENDS

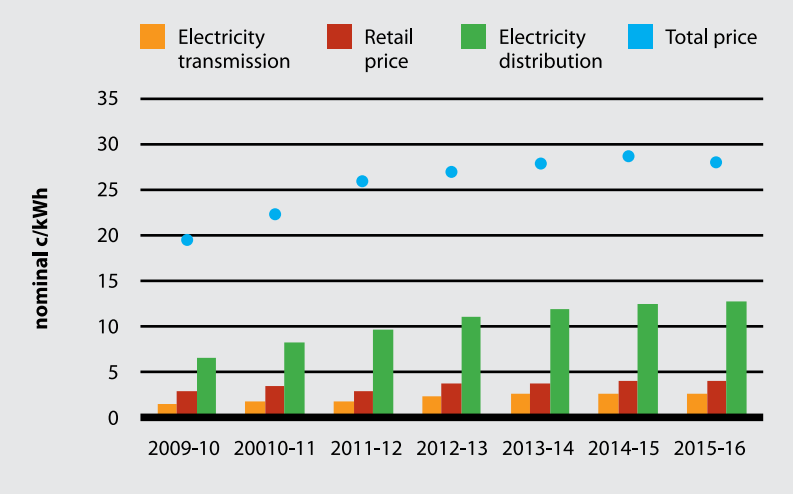
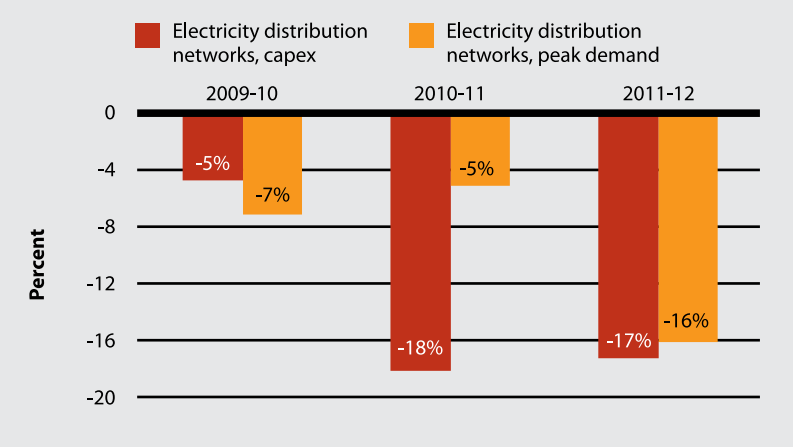


Figure 5: Source; AEMC 2013 Residential Electricity Price Trends

FIGURE 6 UNDERSPEND OF ALLOWED CAPITAL EXPENDITURE



Source: ENA data and analysis

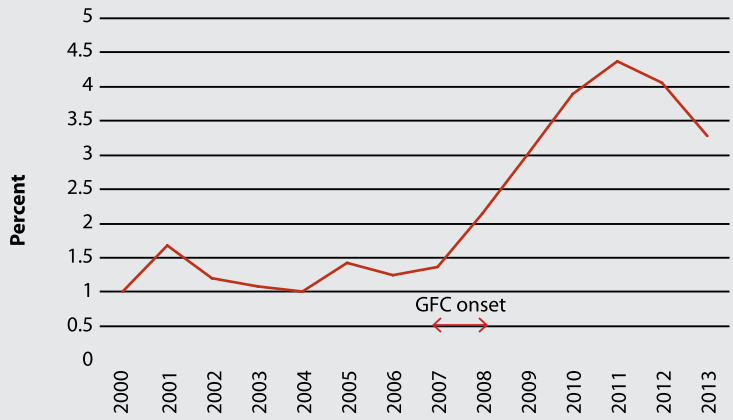
7 Ausgrid, Transitional Regulatory Proposal for 1 July 2014 to 30 June 2015, p. 3

CHANGES IN THE RATE OF RETURN

Ensuring efficient financing costs for network infrastructure is essential to minimize pressure on network prices. The Global Financial Crisis in 2007 resulted in a doubling of debt risk margins with significant impacts on financing costs. These debt margins have fallen substantially as capital markets improved and long-term debt costs have recently been at historic lows.

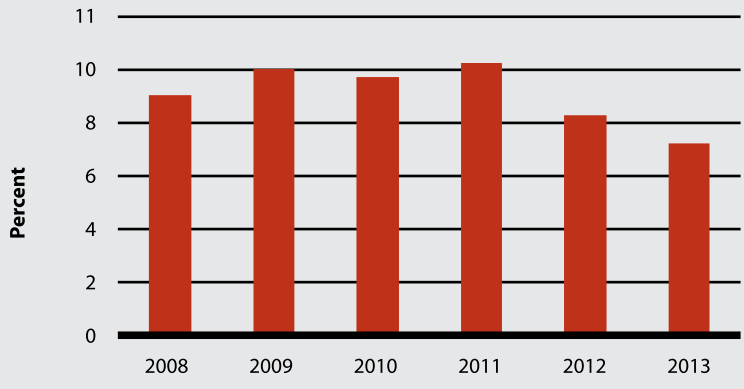
With debt margins high, the rates of return (the weighted average cost of capital) reached a peak of 10.3 per cent in 2011, before dropping back to levels as low as 7.2 per cent in the most recent year. As these lower costs of financing flow through into coming AER decisions, network costs could also be expected to be lower.

FIGURE 7 DEBT RISK MARGINS



Source: ENA data and analysis

FIGURE 8 ANNUAL MEDIAN APPROVED COST OF CAPITAL



Source: ENA data and analysis

THE GRID REMAINS VITAL TO EFFICIENT SUPPLY

While the proportion of electricity flows through the electricity grid will be lower as distributed energy resources, demand management and battery storage increasingly play a greater role, the grid will still remain vital to efficient supply. A number of studies in Australia and overseas have concluded that distributed energy resources such as solar and storage can generate more value and have better economics for both customers and society if they are connected to the grid.

There are a number of services that customers with distributed energy resources obtain from being connected to the electricity grid:

- balancing supply and demand, allowing for start up power and efficient running of rotating engine based generation (voltage and frequency regulation);
- access to wholesale energy markets to enable selling of surplus power or purchasing of additional required energy (market access); and
- provision of backup energy services during periods of equipment failure or low power output (backup power).

In a recent study the USA's Electric Power and Research Institute (EPRI) found that the costs to the customer of obtaining these services from the grid are considerably cheaper than from alternative suppliers.[8]

5 EPRI, The Integrated Grid, Realising the Full Value of Central and Distributed Energy Resources

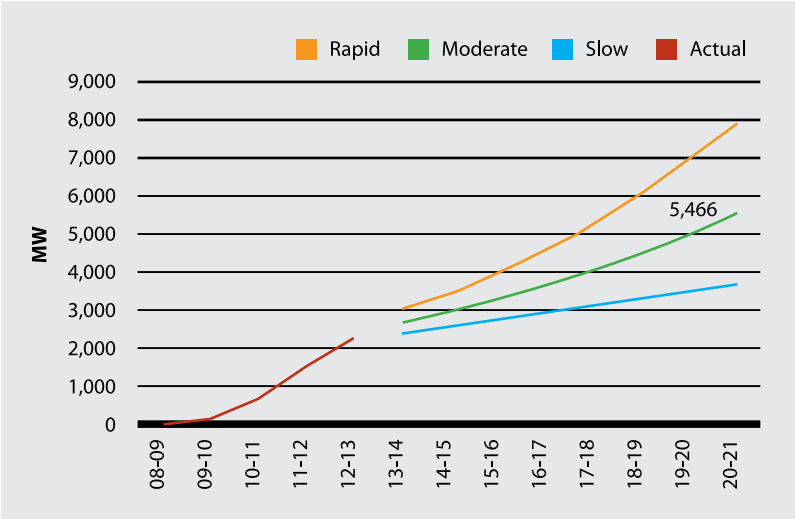
OTHER FACTORS IMPACTING CUSTOMER BILLS

PICKING WINNERS ON CARBON REDUCTION

The costs of environmental policies include the renewable energy target, the carbon tax (until it is repealed) and various State and Territory government 'feed-in' tariffs and energy efficiency schemes. Together these policies make up 17 per cent of the national average residential electricity price.[9] The Small Scale Renewable Energy Scheme (SRES) is a high cost form of abatement. It has been estimated that the costs of abatement are between $150 - $500 per tonne of CO2-equivalent abated.

As Figure 8 shows, recent forecasts from AEMO indicate that solar PV capacity is likely to double by 2020. Indeed, while the SRES sought to achieve 4,000 GWh of output from solar PV by 2020, this is now expected to be achieved by 2015 - five years early. With the fall in solar PV costs, the technology is both highly competitive and mature. There is clearly no longer a market failure requiring further subsidies at the expense of other electricity consumers.

FIGURE 9 ROOFTOP PV - INSTALLED CAPACITY - NEM



Source: AEMO, National Electricity Forecasting Report 2013

In this context, the ENA considers the design of the Million Solar Roofs program should be approached with caution. This program is intended to provide a further $500 federal government subsidy for solar roof-top panels or solar hot water heaters.

If implemented, it is vital that new programs such as the Million Solar Roofs, Solar Towns and Solar Schools are targeted at pressure points in the network system including fringe of grid locations which are expensive to serve and emerging network constraints.

If subsidies for solar embedded generation are to be provided, a targeted approach can help to reduce the pressures on electricity network costs to consumers and defer future network augmentation costs.

Apart from being unnecessary and expensive the SRES also distorts the hot water appliance market subsidising some forms of abatement but not others.

A TARGETED APPROACH CAN HELP TO REDUCE THE PRESSURES ON ELECTRICITY NETWORK COSTS TO CONSUMERS AND DEFER FUTURE NETWORK AUGMENTATION COSTS.

9 AEMC, 2013 Residential Electricity Price Trends,p.12

RETAIL COMPETITION LOWERS ELECTRICITY BILLS

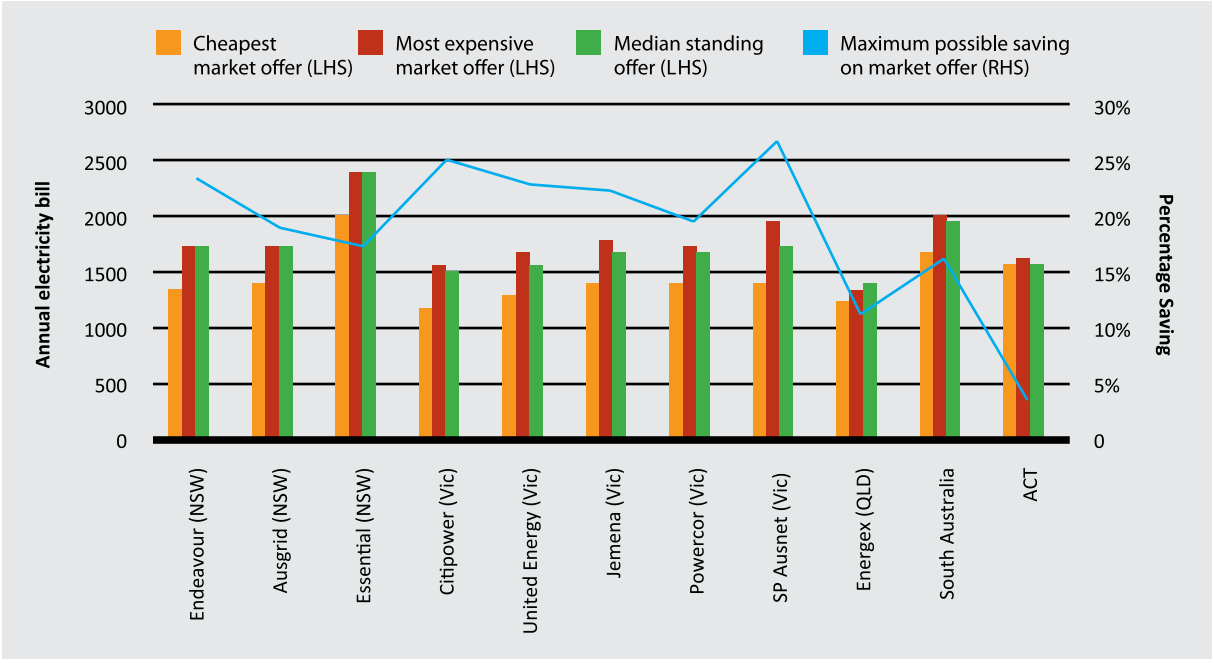
One of the other significant factors impacting a consumer's bill is whether they shop around for a better deal. This can mean a saving of hundreds of dollars per year.

Retail margins may only account for 15 per cent of the retail price of electricity, but customers stand to gain significantly from competition amongst retailers.

Full retail competition applies in all jurisdictions in the National Electricity market except Tasmania and regional Queensland, where it will apply from 1 July 2014. Customers have a choice of a market offer or a standing offer. Standing offers are regulated in all jurisdictions except Victoria and South Australia.

That customers can benefit from shopping around is evident in the AER's Annual Report on the Performance of the Retail Energy Market which shows that standing offers are close to the most expensive market offer. The gap between the most expensive and cheapest market offer is widest in Victoria, but there are potential savings of around 15 to 25 per cent off the annual electricity bill in almost all jurisdictions. In Victoria, for example customers can save up to $525 dollars by taking up the cheapest competitive market offer.

FIGURE 10 MAXIMUM POTENTIAL SAVINGS ON LOWEST MARKET OFFERS



Source: AER, Annual Report on the Performance of the Retail Energy Market, ENA analysis