

**Submission
No 11**

INQUIRY INTO ELECTRICITY SUPPLY, DEMAND AND PRICES IN NEW SOUTH WALES

Organisation: Essential Energy

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Inquiry into Electricity Supply, Demand and Prices in New South Wales

Submission by Essential Energy



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Introduction

Essential Energy

Essential Energy is a NSW Government-owned corporation with responsibility for building, operating and maintaining one of Australia's largest electricity networks – delivering essential electricity network services to more than 800,000 homes and businesses across 95 per cent of NSW and parts of southern Queensland.

With approximately 3,000 employees based in more than 100 local depots and regional offices, Essential Energy is one of the largest employers in regional NSW.

Our operating division, Essential Water, also operates services for approximately 20,000 customers (including 10,500 water services customers in Broken Hill, Menindee, Sunset Strip and Silverton and 9,500 sewerage services customers in Broken Hill).

Network pricing

As a monopoly business, Essential Energy's electricity distribution network is funded through a five-yearly distribution network revenue determination made by the Australian Energy Regulator (AER) in accordance with the National Electricity Law and National Electricity Rules economic regulatory framework.

The AER determines the revenue required to construct, maintain and operate Essential Energy's distribution network based on a 'building block' approach. Building block components approved by the AER include an allowance for:

- operating and maintenance expenditure
- a return of capital expenditure (depreciation)
- a return on capital expenditure (weighted average cost of capital), and
- the cost of tax.

The sum of the building block components equates to the allowed revenue stream.

The AER assesses and approves distribution network expenditure at a level it deems to be efficient and prudent. Prices are then set to allow recovery of these costs and are approved by the AER on an annual basis to ensure compliance with the revenue determination.

The AER determination process currently incorporates a revenue cap that ensures that Essential Energy is not able to recover unnecessary or inefficient costs.

Cost reflectivity

Under the National Electricity Rules, Essential Energy must transition to prices that reflect the efficient costs of providing network services to our customers. Most of the cost of delivering power to customers is fixed and does not change as customers adjust their usage, unless the change is very significant, over an extended period of time (i.e. the network is able to decrease the investment in infrastructure).

It will become increasingly important for Essential Energy to develop a business model and pricing mechanisms that maintain affordability as network pricing moves to cost reflective levels.

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Response to Inquiry

Summary

Retail electricity bills comprise:

- electricity wholesale costs (paid to generators by retailers in a competitive market)
- network costs (operating costs recovered by transmission and distribution network operators and independently reviewed and regulated)
- retail costs (operating costs recovered by electricity retailers, together with a profit margin)
- environmental policy costs and other government charges (eg: Renewable Energy Target).

However, this is generally not well understood by customers, as generation and network components are not currently itemised in retail bills for small customers (who comprise some two thirds of Essential Energy's customer base).

Pricing trends

Australian energy users have seen significant increases in residential retail electricity prices in recent years, due to:

- a trend in network component increases over the decade to 2015
- a trend in wholesale electricity cost increases since 2015.

Current forecasts indicate increasing volatility in the wholesale market due to retirement of ageing coal-fired power stations and changes to the generation mix, with increasing adoption of renewable energy sources at national market, community and individual customer levels.

At community and individual levels, increasing uptake of renewable energy systems is allowing customers to be less reliant on the electricity grid. However, the grid needs to be maintained to support and facilitate renewable energy connection and to service the majority of customers that remain connected.

Under the current regulatory framework, costs are shifted from customers who can afford to install renewable energy systems and / or adopt energy efficient appliances to those who cannot afford to and remain reliant on the grid, but have less capacity to pay increasing network charges.

Regulatory reform is required to enable energy generation, supply and storage flexibility and secure both long term market sustainability and energy affordability.

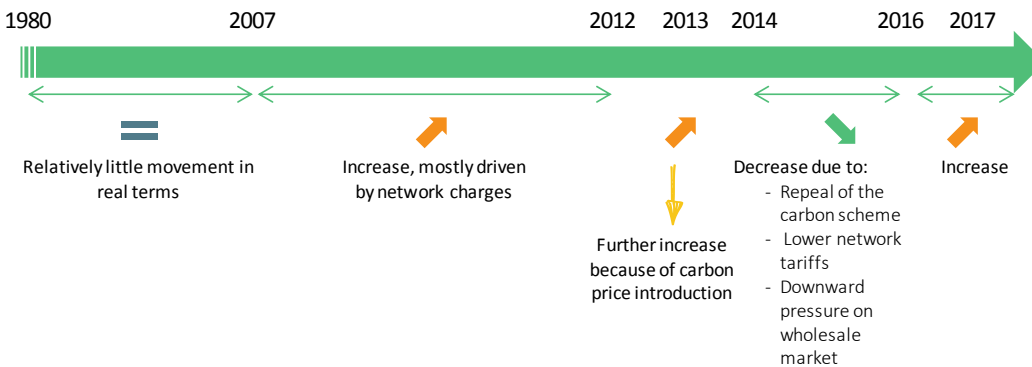
Response to the terms of reference

a) Reasons for recent large increases in the price of electricity

According to the Australian Energy Market Commission (AEMC) [1], the following three cost components have had the most significant impact on the residential price of electricity:

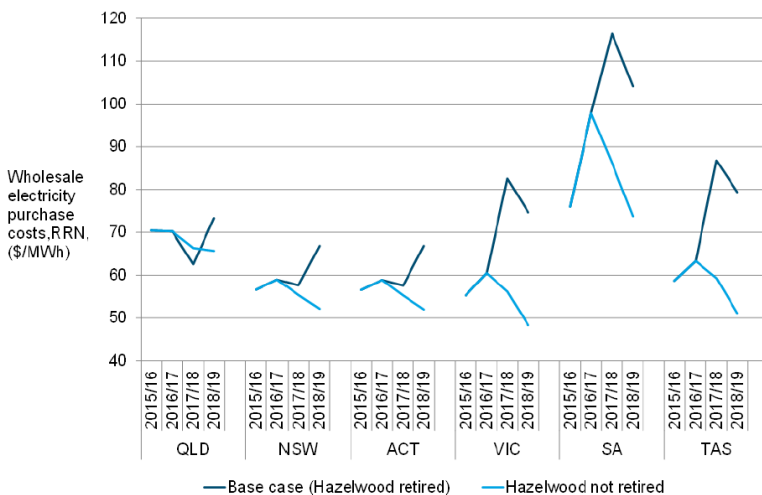
- Network costs, which account for around 40 to 55 per cent of the residential price
- Competitive market costs, comprised of wholesale costs and a retail cost component (40 to 50 per cent)
- Environmental and other policy costs (5 to 15 per cent).

Figure 1: Key changes in residential prices for electricity in Australia:



Over the past decade, network costs contributed to driving up residential prices. However, since 2015 network costs have been decreasing while an emerging upward trend in wholesale costs has emerged, progressively becoming the primary driver of residential price increases – particularly since the retirement of two large coal fired generators, Northern (546 MW) and Hazelwood (1,600 MW). Furthermore, those retirements are impacting all regions, as they modify energy flows between them¹.

Figure 2: Estimated annual wholesale electricity purchase costs with and without Hazelwood retirement[2]



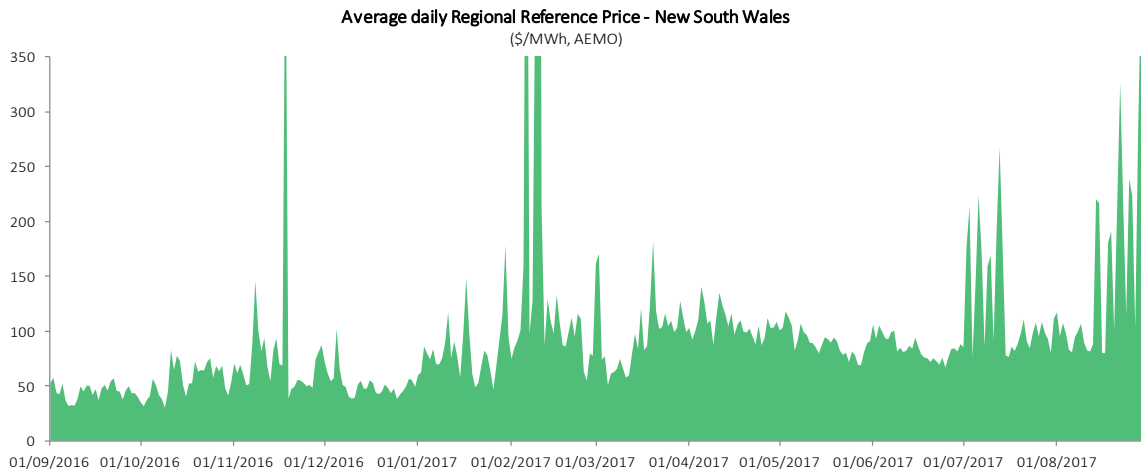
Wholesale spot pricing

Exceptional events can result in wholesale electricity spot price spikes. For example, on 10 February 2017, spot prices in NSW reached \$13,967/MWh at 5.30 pm and \$14,000/MWh at 6 pm. Analysis by the AER highlights the following contributing factors[3]:

¹ For instance, Victoria is expected to switch from being a net exporter of energy to New South Wales to a net importer from New South Wales over 2017-2018 [2].

- High temperature led to high demand for electricity
- Technical difficulties late in the day from a number of generators, leading to higher supply prices from generators and supply from other states.

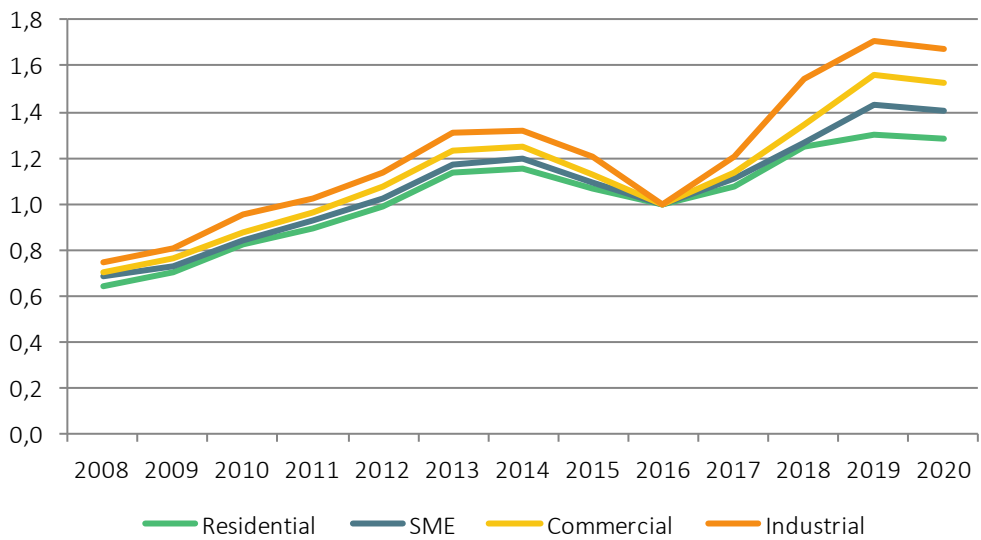
Figure 3: NSW regional average daily wholesale pricing



NSW electricity pricing

The key drivers described above impact pricing for the different NSW customer segments [1].

Figure 4: Average annual retail price index evolutions from 2008 to 2020 (2016 = 1)

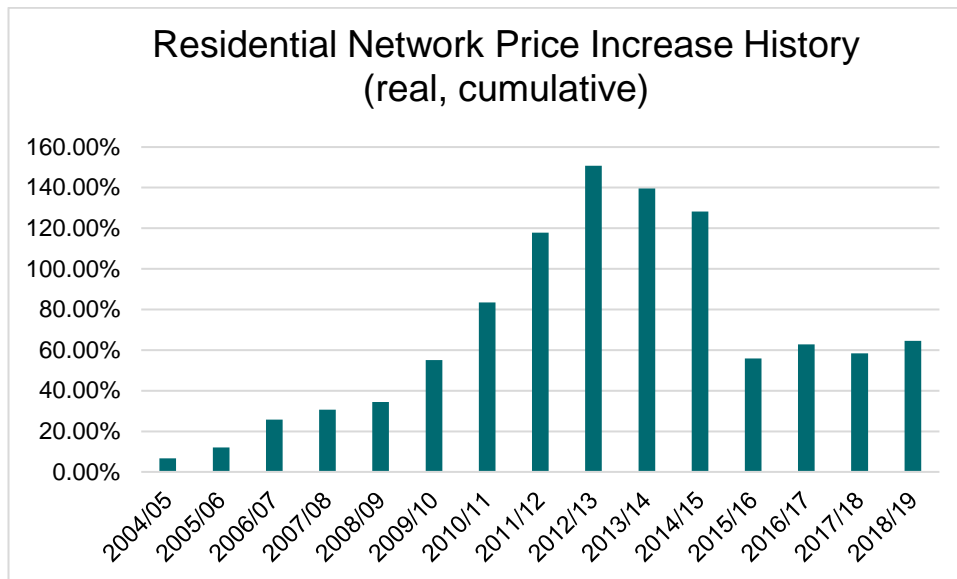


Evolution of Essential Energy’s prices

Increases in Essential Energy’s network prices for the period 2007/08 to 2012/13 (as shown in Figure 5 – page 7) were largely due to increased expenditure to comply with licence conditions imposed on NSW Distribution Network Service Providers (DNSPs) and a significant investment in the overall health and reliability of the network. These increases in network charges are cumulative, working from 2003/04 prices as a base, and indicating that 2018/19 network prices are lower than 2010/11 prices (excluding the impact of CPI).

Since 2012, expenditure has been reduced in a targeted program to reduce prices for customers. Essential Energy’s efforts to date have enabled it to deliver real average network price decreases for residential customers of 40 per cent from 2012/2013 to 2017/2018.

Figure 5: Evolution of Essential Energy residential network prices [1]



b) Impact of deregulation of electricity prices in 2014

As a monopoly business, Essential Energy’s distribution business is fully regulated by the Australian Energy Regulator (AER).

c) Alleged collusion and price gouging by energy retailers

Essential Energy has been advised by many customers that the price decreases it has achieved and passed through to retailers have not been evident in customers’ retail bills. This has been raised consistently in customer deliberative forums held by Essential Energy with a range of customer groups across NSW during 2017.

Much of the focus seems to be on affordability, whereas greater focus on supply / demand matching would lead to lower cost for consumers, albeit over the long term.

d) Effectiveness or impact of any current regulatory standards and guidelines

Essential Energy has concerns that current regulations and Rules are not keeping pace with, and may actively restrict, development of Australia’s energy industry to meet changing customer expectations and improve outcomes for all stakeholders.

Essential Energy strongly supports recommendations contained in Energy Networks Australia and CSIROs *Electricity Network Transformation Roadmap*, which states:

‘The agility with which networks connect, integrate and incentivise new, lower carbon energy choices will directly influence the cost, fairness, security and reliability of the electricity system for customers. Urgent regulatory and policy changes will be required to maintain power system security, while reducing customer costs by enabling the efficient use of distributed energy resources, stand-alone systems and micro-grids. Timely development of technical standards and new platforms will animate new distributed energy resource markets and permit more efficient customer services and participation.’

e) Options for future government oversight and responsibility in the re-regulation of electricity prices

Essential Energy’s distribution business is fully regulated by the AER.

f) Adequacy of planning to meet future electricity demand, including utilising high efficiency, low emissions coal technology as well as the use of nuclear, gas, solar and wind energies, and energy storage through batteries, pumped hydro and hydrogen, and improved transmission between regions

The energy industry is evolving rapidly, with emerging innovations and technologies leading to:

- more flexible and integrated network systems

- energy flows in different directions at different times of the day
- increased customer choice in electricity generation and usage
- virtual net metering and peer to peer trading
- novel demand management solutions for individual customers and whole communities

Renewable energy is diversifying the NSW energy industry's generation mix:

- the share of solar, wind and bioenergy generation in NSW has more than doubled over the past five years
- installed capacity is expected to continue to rapidly increase in the next decade
- battery storage connection is likely to follow the same trajectory as solar, enabling consumers to store their own generated energy
- consumers can also better manage their electricity consumption through the use of smart meters and energy management systems.

Essential Energy is responding by changing its business model and network operations to accommodate these changes.

Currently, we are in the early stages of supporting trials by industry proponents for:

- microgrids
 - at Byron Bay
 - Lockhart
 - working with NSW Farmers
- energy storage at Byron Bay
- peer to peer trading in conjunction with microgrids
- demand management with UTS and in our depots
- stand-alone power supply systems to improve reliability for edge of grid customers
- smart street lighting, using international technology solutions, and
- assessing demand management options for the NSW Office of Environment and Heritage 's Home Energy Action program (which delivers energy efficiency improvements to low-income households across NSW).

However, government assistance is required to commence discussions around a range of changes to the regulatory environment that will enable Essential Energy to trial and deliver new services, help fund alternative energy generation and supply mechanisms and support network investment and pricing affordability.

Additionally, facilitating better access to customer load data would help Essential Energy defer, avoid or minimise network investment and reduce network charges. Access to smart meter data – in particular, interval data – is an issue which needs to be discussed and resolved between DNSPs and retailers.

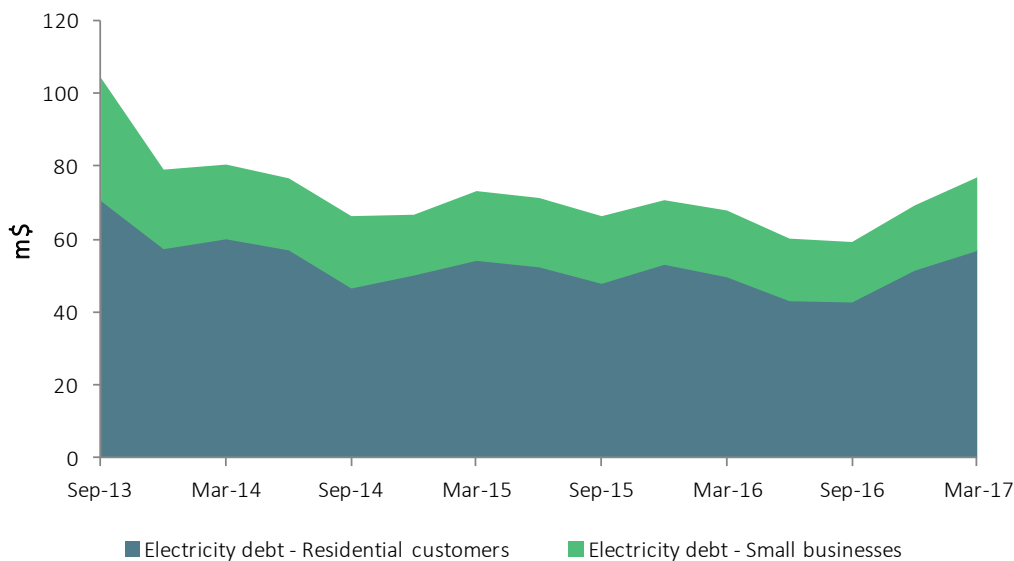
g) Adequacy of programs to assist low income earners, pensioners and senior card holders to afford electricity as well as the impact of additional fees, such as late payment fees, included in energy bills

Increasing uptake of rooftop solar allows customers to be less reliant on the electricity grid. However, the grid needs to be maintained to support and facilitate renewable energy connection.

Under the current regulatory framework, costs are shifted from customers who can afford to install renewable energy systems and / or adopt energy efficient appliances to those who cannot afford to and remain reliant on the grid but have less capacity to pay increasing network charges. Regulatory reform is required to secure long term market sustainability and customer affordability and equity.

Energy debt in NSW has decreased over the past few years due to an increasing number of customers with an energy debt entering a hardship program, leading to lower disconnection from the grid. However, the trend has reversed in 2017, possibly because of increasing retail prices.

Figure 6: Customer energy debt in NSW [4]



The NSW Government provides a range of electricity assistance (including Low Income Household Rebate, Family Energy Rebate, NSW Gas Rebate, Medical Energy Rebate, Appliance Replacement Offer and Energy Accounts Payment Assistance Scheme) but these do not align with higher regional network pricing associated with Essential Energy’s 80 per cent rural, largely radial, network which supplies sparsely populated areas and carries lower loads along very long distances. Higher rebates are need in regional NSW to more closely align with higher network costs and prices.

(h) Any other related matter

The majority of Essential Energy’s customers are charged for each kilowatt hour of electricity they use, regardless of what time of the day they consume it. This means that customers who use electricity more evenly throughout the day and night are, in effect, subsidising the true network costs of customers who use most of their electricity in periods of peak demand.

Smart meters with time of use capability benefit consumers by providing clear real-time price signals about their electricity usage, empowering them with the necessary data to seek competitive electricity retail offers. This also allows upstream generator markets to better match supply to demand.

Smart meters also provide Essential Energy with a better understanding of how customers use electricity, and design tariffs and tariff structures that reward customers whose consumption patterns help to minimise our network costs.

However, only around one per cent of Essential Energy customers currently have meters capable of recording time of use. Most NSW households and small business have basic accumulation meters that measure the total amount of electricity used over a period, but provide no detail as to what time of day the electricity was used, or how much was used at any given time. Without smart meters, or even an interval meter, most NSW customers currently lack the ability to make truly informed choices about their electricity use.

Challenges to be considered in implementing a more rapid change to smart metering and time of use pricing include:

- ability for electricity retailers to ramp up administrative capabilities to cope with a high volume of meter change requests
- availability of adequate meter supplies from manufacturers
- availability of appropriately qualified electrical contractors to manage a high volume of meter changes
- public perception that electro-magnetic fields emitted by ‘smart’ meters – those with remote communications capability – have dangerous health impacts.

References

- [1] AEMC, 2016 Residential Electricity Price Trends, 2016.
- [2] Jacobs, Retail electricity price history and projected trends, 2017.
- [3] AER, "Electricity spot prices above \$5000/MWh - 10 February 2017 (NSW/QLD)," 2017.
- [4] AER, "NSW - customer energy debt," 2017. [Online]. Available: <https://www.aer.gov.au/retail-markets/retail-statistics/nsw-customer-energy-debt>. [Accessed 26 September 2017].