Submission No 6

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

Organisation: Transgrid

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Select Committee on Electricity Supply, Demand and Prices in New South Wales
C/o Clerk of the Parliaments, NSW Legislative Council
Parliament House, Macquarie Street
Sydney NSW 2000

Submitted online at www.parliament.nsw.gov.au

Dear Select Committee

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

TransGrid welcomes the opportunity to make a submission to the New South Wales (NSW) Legislative Council's Select Committee *Inquiry into Electricity Supply, Demand and Prices in NSW*.

TransGrid is the operator and manager of the high voltage transmission network connecting electricity generators with major end users and distributors to service more than 3.5 million homes and businesses across New South Wales and the Australian Capital Territory. TransGrid's network is also interconnected to Queensland and Victoria, and is central to interstate energy trading.

TransGrid is a strong supporter of increasing stability, reliability of supply and putting downward pressure on prices. It supports the implementation of an overarching energy strategy from Government to deal with the issues facing the sector in order to achieve these policy objectives.

Recent increases in price of electricity in NSW have mainly been driven by the competitive sectors of the market, those being the wholesale and retail sectors. Following the closure of Northern Power Station in South Australia and Hazelwood Power Station in Victoria, the size of generator bids into the market have appeared to increase and wholesale prices have risen significantly.

To address shortcomings in the National Electricity Market (NEM), TransGrid supports an overarching energy strategy which facilitates implementation of the Finkel review recommendations. In particular, the recommendation of an integrated grid plan would provide better coordination of generation and network planning and investment, and allow the efficient development and connection of new renewable energy zones.

TransGrid is actively developing options for the development of new energy zones, to provide cost-effective solutions for future development of the transmission network, and allow greater competition in the wholesale market, in the long-term interests of consumers.

If you would like to discuss any matter raised in this submission, please do not hesitate to contact me on (02) 9284 3300. TransGrid looks forward to engaging further with the Committee on this issue.

Yours faithfully,

Anthony Meehan
Executive General Manager Regulation

TransGrid submission – Inquiry into Electricity Supply, Demand and Prices in NSW

16/10/17

1. Introduction

TransGrid welcomes the opportunity to make a submission on the Inquiry into Electricity Supply, Demand and Prices in NSW.

This submission sets out:

- reasons for recent large increases in the price of electricity
- the adequacy of planning to meet future electricity demand, and
- a way forward.

2. Reasons for recent large increases in the price of electricity

2.1 Recent electricity price trends

2.1.1 2015-16 to 2016-17

The AEMC's most recent price trends report highlighted the increase in the price of electricity in NSW over the past year. It showed that the representative total price per kilowatt hour of a residential customer on a market offer has risen from 20.21 c/kWh in 2015-16 to 22.19 c/kWh in 2016-17. This is an increase of 9.8% over the period.

Analysis of the cost components show that these increases were mainly driven by the competitive sectors of the market, those being the wholesale and retail sectors. Between 2015-16 and 2016-17, the price of electricity in these sectors of the market combined increased by 19.3%.

The AEMC attributes these price increases as a result of:

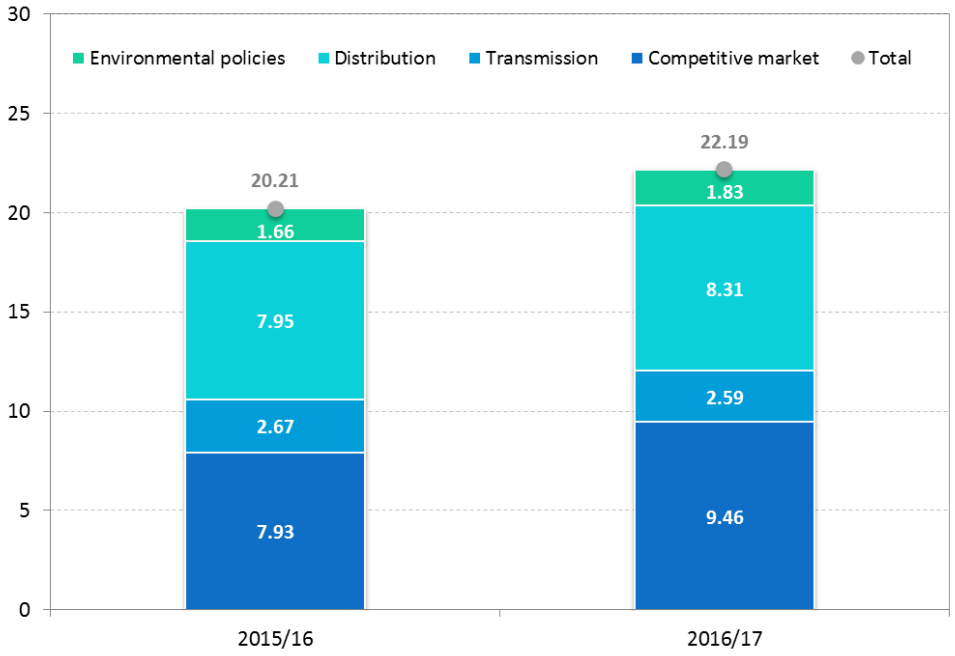
- expected average annual consumption increase over the period from 2015-16 to 2017-18, leading to a short-term tightening of the supply-demand balance, placing an upward pressure on wholesale electricity costs in the NEM; and
- higher gas prices across east coast jurisdictions, increasing the costs for gas-fired generators, contributing to rising wholesale electricity costs. Increasing gas prices may also lead to temporary or permanent retirement of gas-fired generators, leading to a reduction in supply in the NEM and further placing upward pressure on wholesale electricity costs.[1]

[1] AEMC 2015, 2015 Residential Electricity Price Trends, Final report, 4 December 2015, version updated 23 February 2017, Sydney. Report, 25 November 2011, Sydney

By comparison, the transmission component of the electricity price in NSW decreased by 3.0% from 2015-16 to 2016-17.

Figure 1 sets out the break-up of the electricity price of a "representative" residential customer on a market offer by cost component for 2015-16 and 2016-17.

Figure 1: Electricity price for a NSW "representative" residential customer by supply chain cost components in 2015/16 and 2016/17 (c/kW in 2012/13 and in 2016/17)



Sources: AEMC, 2016 Residential Electricity Price Trends, final report, 14 December 2016, Sydney

The AEMC reports that transmission currently makes up 11.7% of the NSW "representative" residential customer electricity price. This has gone down from 13.2% in 2015-16. TransGrid estimates that TransGrid's transmission network accounts for 10.3% in 2015-16 and 8.9% in 2016-17 of the average NSW "representative" residential customer electricity price[2].

2.1.2 2012-13 to 2016-17 (five year period)

An increase in the price of electricity in the competitive parts of the sector is also observed when looking back over the last five years. The competitive cost components increased by 40% from 6.74 c/kWh to 9.46 c/kWh from 2012-13 to 2016-17 in NSW.

Similarly, competitive market prices accounted for 42.6% of the total NSW "representative" residential customer price in 2016-17, up from 24.2% in 2012-13.[3]

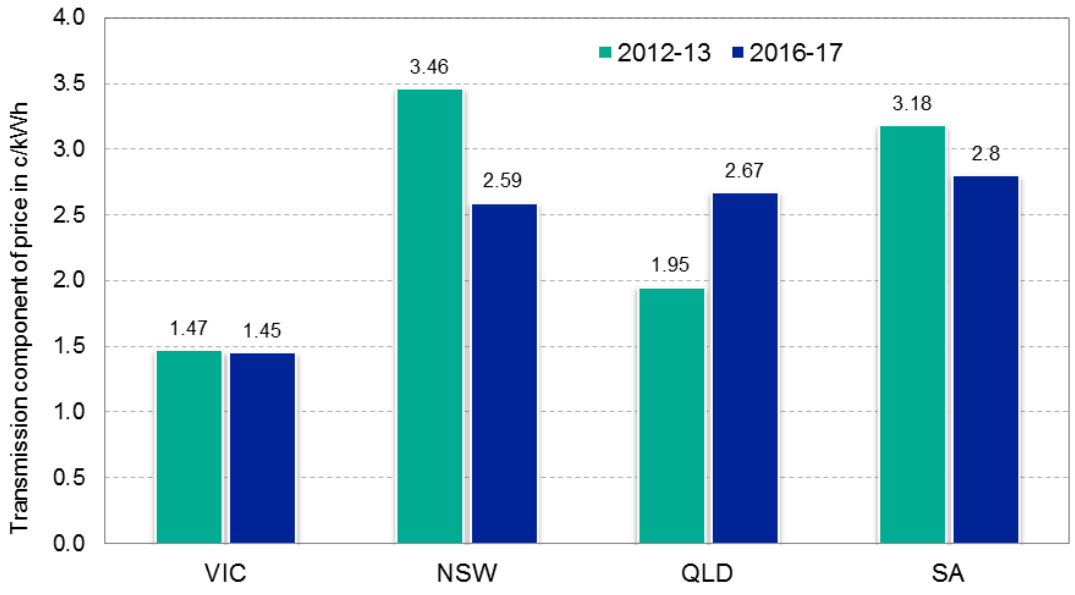
By comparison, the transmission cost component of the electricity price fell from 3.46 c/kWh in 2012-13 to 2.59 c/kWh in 2016-17 in NSW, representing a decrease of more than 25% over the period.

[2] Transmission charges in NSW also include other network provider charges. This includes Ausgrid, primarily a Distribution Network Service provider (DNSP), but also registered as a Transmission Network provider. Ausgrid's assets include dual function assets with a voltage 66kV and above, which are owned and operated in parallel with TransGrid's transmission network.

[3] AEMC, 2016 Residential Electricity Price Trends, final report, 14 December 2016, Sydney; AEMC, 2013 Residential Electricity Price Trends report, 13 December 2013, Sydney.

Transmission prices in NSW are the second lowest in c/kWh when compared to other large NEM states, as set out in Figure 2.

Figure 2: Transmission component of representative[4] residential customer transmission prices in large NEM states (c/kW in 2012/13 and in 2016/17)



Sources: AEMC, 2016 Residential Electricity Price Trends, final report, 14 December 2016, Sydney; AEMC, 2013 Residential Electricity Price Trends report, 13 December 2013, Sydney.

2.1.3 Impact of bidding behaviour by generators on the price of electricity

The exchange of electricity between generators and retailers is facilitated by the NEM and coordinated by the Australian Energy Market Operator (AEMO). The NEM allows supply and demand to be balanced instantaneously and determines the spot price for electricity. To determine the spot price, generators submit offers to AEMO, who dispatches energy from least to most expensive bid offers. As such, electricity wholesale prices are influenced by both the level of demand in the market and the price of supply, as determined by generator bids.[5]

Recent electricity wholesale prices throughout the NEM have changed significantly following the closure of Northern Power Station in South Australia and Hazelwood Power Station in Victoria. Following these closures, on a typical daily bid stack in the NEM the market price peaked above $100/MWh and averaged $100/MWh for the day - above the long-run marginal costs of the majority of generation ($45/MWh)[6].

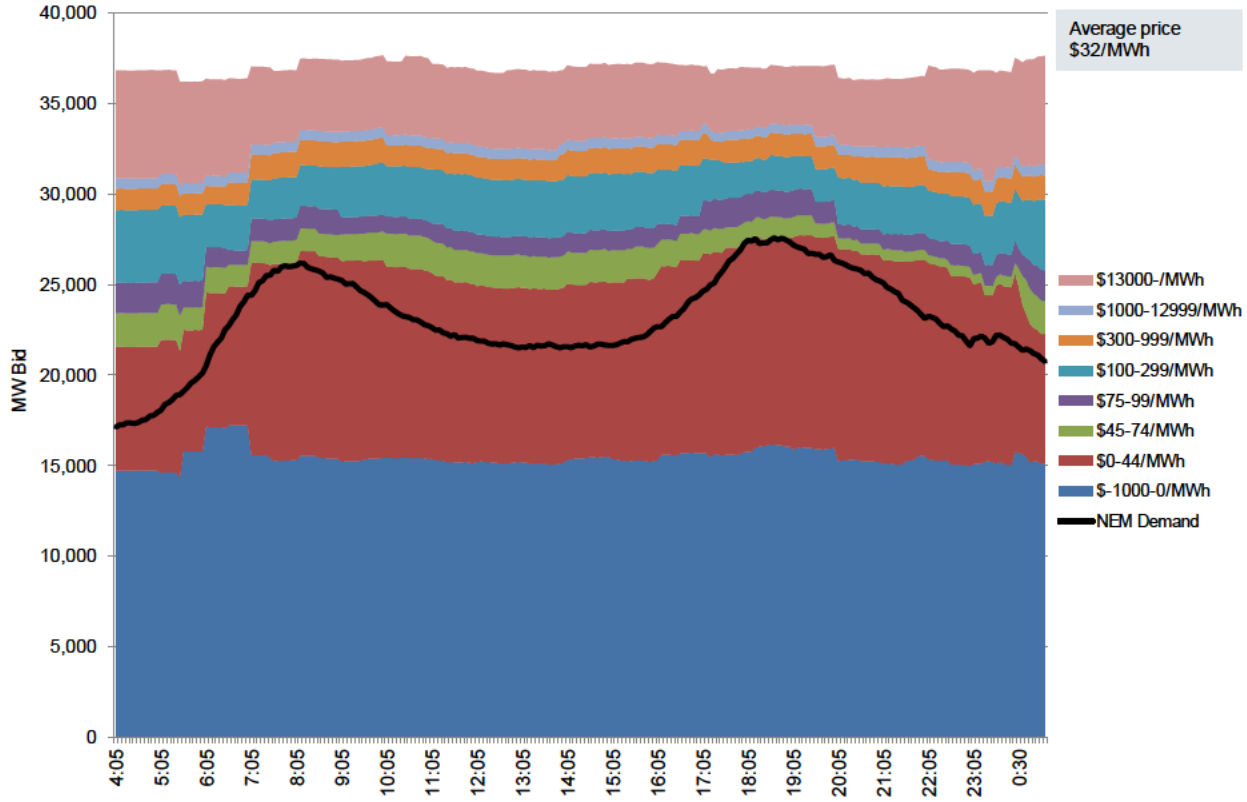
This is illustrated by changes in the bid stack over this time as shown in Figures 3.1 to 3.3.

[4] The representative residential customer, as determined by the AEMC, differs between years and states.

[5] AEMC, Fact sheet: How the spot market works, 11 April 2017, Sydney.

[6] Frontier Economics, Estimates of Long-run Marginal Cost (LRMC) of Energy and Cost of LGCs, *A Report Prepared for Sydney Desalination Plant*, October 2016.

Figure 3.1 – Typical Daily Bid Stack in the NEM in Winter 2015

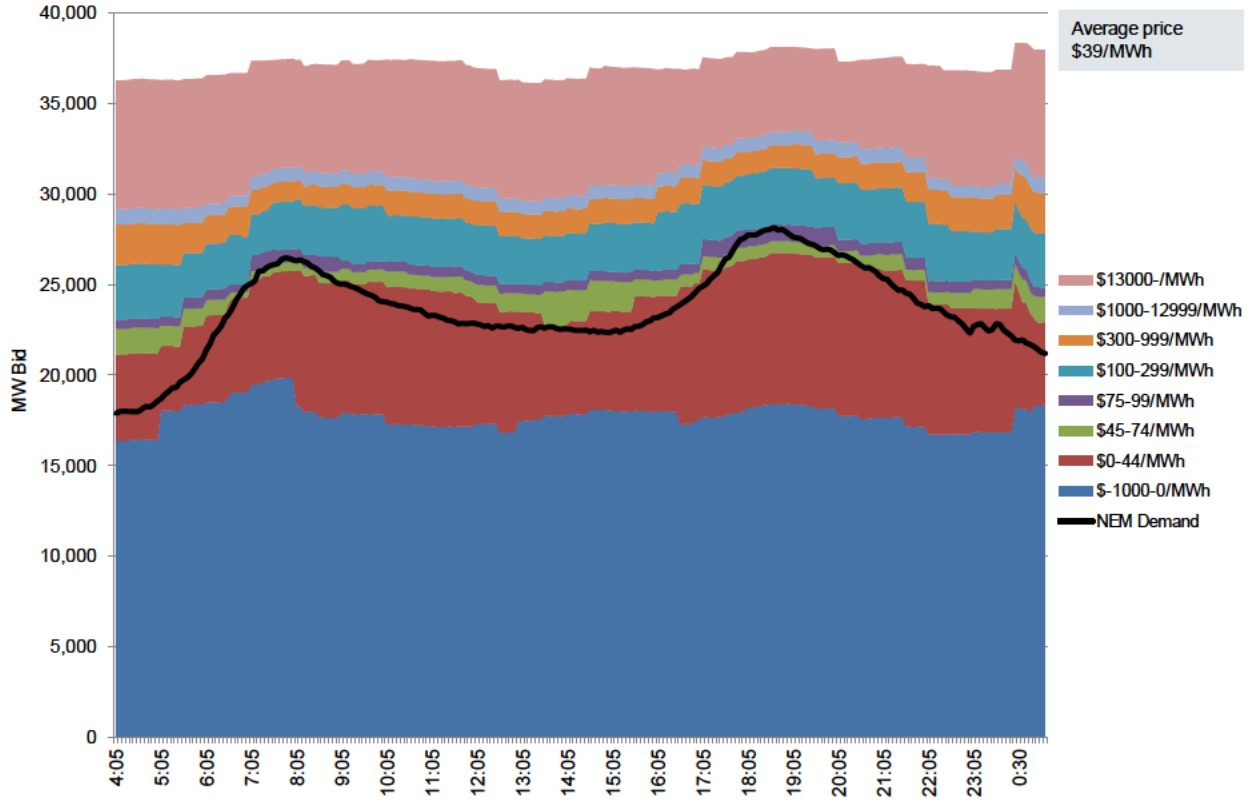


Source: AEMO Electricity Market Management System

A typical bid stack in the NEM in winter 2015 is shown in Figure 3.1. This is before the closure of either Northern Power Station or Hazelwood Power Station was announced. The market price remained below $45/MWh, which is the long-run marginal cost of coal-fired generation, all day.

Figure 3.2 shows a typical bid stack in the NEM in winter 2016. This is after the closure of Northern Power Station was announced and the power station was closed. In this bid stack, the market price peaked at up to $100/MWh during morning and afternoon peaks, due to the dispatch of more expensive generation to meet peak demand, and remained below $45/MWh at other times.

Figure 3.2 – Typical Daily Bid Stack in the NEM in Winter 2016



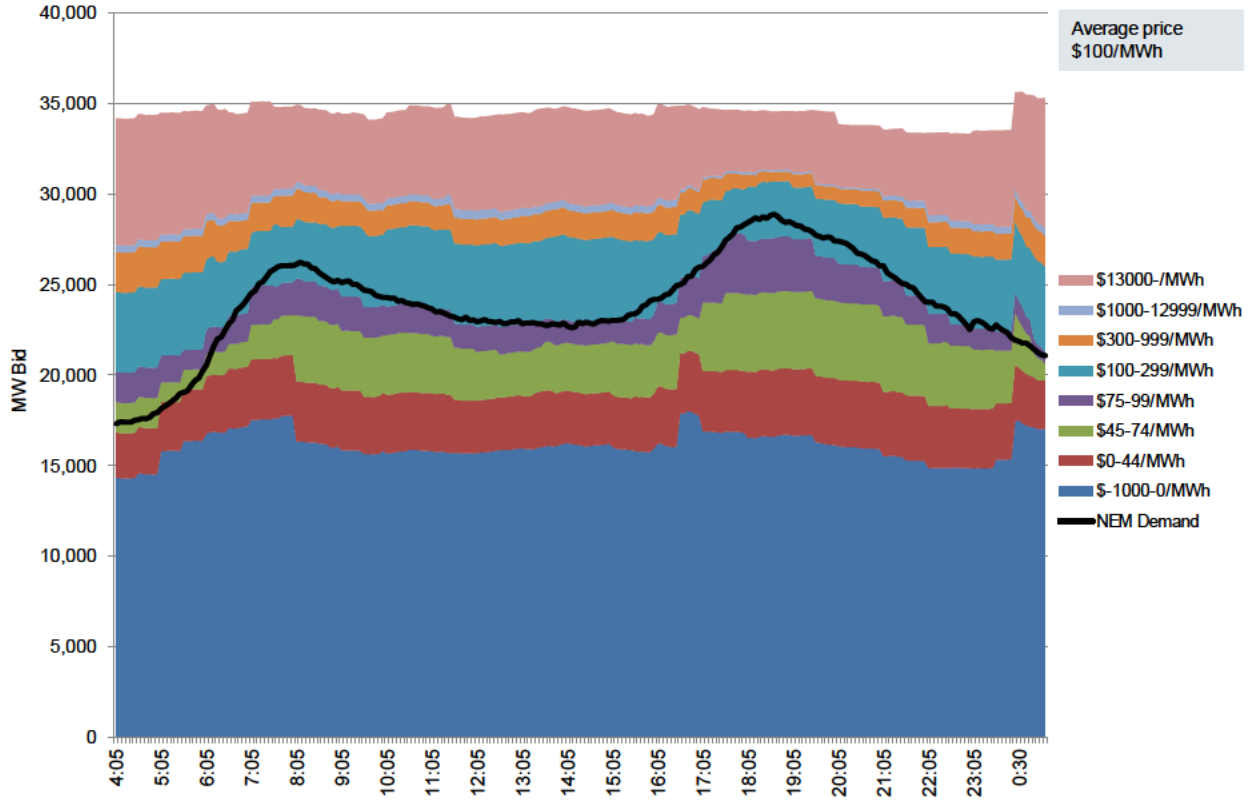
Source: AEMO Electricity Market Management System

A typical bid stack in the NEM in winter 2017 is shown in Figure 3.3. This is after the closure of Hazelwood Power Station.

As well as the closure of 1,600 MW of generation, around 5,000 MW of generation that had bid below $45/MWh before the closure appeared to change to bid up to $100/MWh. The market price peaks above $100/MWh and averages $100/MWh for the day. This is above the long-run marginal costs of the majority of generation[7].

[7] Frontier Economics, Estimates of Long-run Marginal Cost (LRMC) of Energy and Cost of LGCs, *A Report Prepared for Sydney Desalination Plant*, October 2016.

Figure 3.3 – Typical Daily Bid Stack in the NEM in Winter 2017



Source: AEMO Electricity Market Management System

2.2 Expected future electricity prices

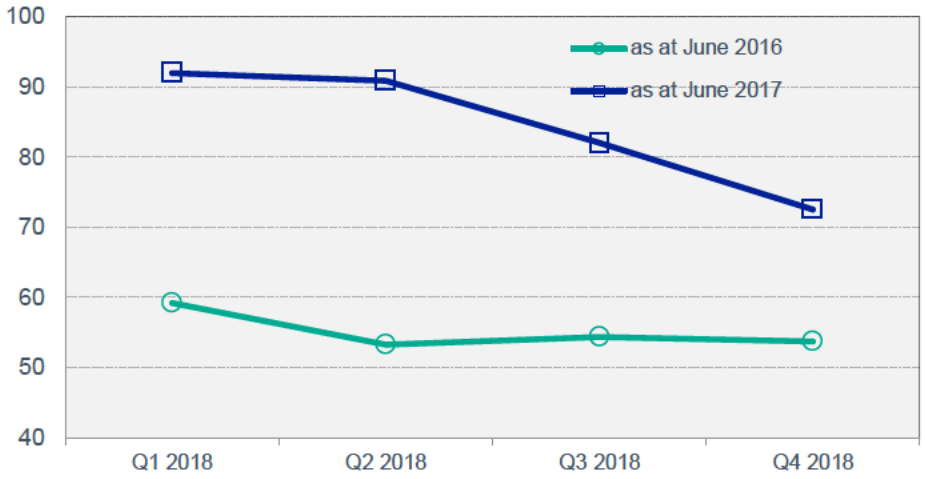
Going forward, the AEMC estimates that electricity prices for the average NSW "representative" residential customer will increase by 7.9% between 2016-17 and 2018-19, to reach 23.94 c/kWH[8].

It expects this increase to be driven by increasing wholesale costs, particularly due to the closure of the Hazelwood power station. For a representative NSW household, power bills are expected to be about $74 higher in 2018-19 than they would have been if Hazelwood was still operating.

This is consistent with TransGrid's assessment of baseload future prices. Quarterly prices for 2018 baseload contracts increased significantly from June 2016 to June 2017 in all of the main NEM States, including NSW (Figure 4). They have increased by 53% in NSW (on average).

[8] AEMC, 2016 Residential Electricity Price Trends, final report, 14 December 2016, Sydney.

Figure 4: Comparative baseload futures prices for 2018 in NSW ($/MWh)

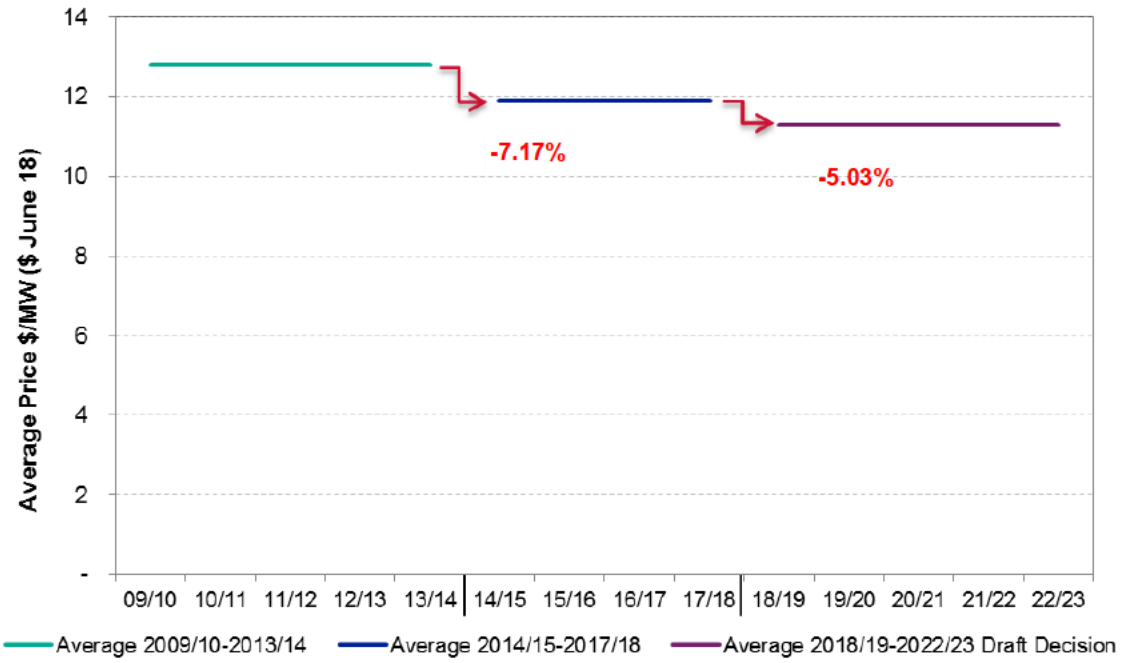


Sources: AER, 'Wholesale markets', Wholesale statis ic, found at: https://www.aer.gov.au/wholesale-markets/wholesale-statistics?f[0]=

The AEMC expects the regulated network cost component of total prices to stay relatively constant between 2016-17 and 2018-19, with transmission prices expected to increase at an average annual rate of 0.8% over the two years to June 2019.

Based on the Australian Energy Regulator's (AER's) Draft Decision on TransGrid's transmission revenue proposal for 2018-23, TransGrid expects that there will be an average price reduction of 5.0% in the next regulatory period from 2018-19 to 2022-23. This is shown in Figure 5. Figure 5 also shows that the average TransGrid price has reduced consecutively in recent regulatory periods.

Figure 5: Indicative real price change in TransGrid's proposed Maximum Allowed Revenue (MAR)



Source: AER, Draft Decision TransGrid transmission determination 2018 to 2013, *Overview*, 28 September 2017

3. Adequacy of planning to meet future electricity demand

3.1 Existing arrangements

Coordinated and integrated jurisdictional and national network planning is important in delivering and maintaining an energy system that is secure, efficient and reliable. Coordinated network planning also plays a central role in promoting the lowest cost of system-wide investment for the long term interests of consumers.

TransGrid, in shaping NSW's transmission network of the future, continues to undertake comprehensive planning processes to assess network capabilities and identify the areas of the network where limitations are expected to emerge. These limitations could be addressed with non-network solutions, network solutions or a combination thereof.

Under Chapter 5 of the National Electricity Rules (NER), TransGrid is required to undertake an annual planning review and publish the results by 30 June each year, known as the New South Wales Transmission Annual Planning Report (TAPR). The purpose of the review is to identify an optimum level of transmission investment to enable us to deliver required services at an efficient cost, and includes NSW energy demand projections, as well as information on current and proposed expansions and network developments. In June 2017, TransGrid published its TAPR 2017, which provides an assessment of the capabilities and constraints facing the transmission network within NSW and ACT for the upcoming ten year planning horizon[9].

[9] TransGrid, New South Wales Transmission Annual Planning Report 2017, 30 June 2017, Sydney

Under the NER, TransGrid is also required to undertake a regulatory investment test (RIT-T) for investments with an expected capital cost threshold above $6 million. The purpose of the RIT-T is to identify the most efficient option to address a network requirement. Regulatory investment test application guidelines are developed and published by the AER, and their purpose is to provide guidance and worked examples on the use of the regulatory investment tests[10].

3.2 Problems with existing arrangements

The current framework results in incremental generation and transmission investment decisions. In the past, this did not lead to significant inefficiency because generator fuel sources were generally close to the existing network. In the future, this incremental approach will not lead to the lowest overall system cost. These problems arise from a range of factors including the lack of any locational signal for generators[11] and deficiencies in the current RIT-T.[12]

In the future, the best locations for new (renewable) generation are likely to be further from the existing network. Providing customers with the lowest cost long term solutions will require greater coordination of generation and transmission planning.

Network businesses, including TransGrid, have started considering the development of 'renewable energy hubs' that would allow jointly funded transmission investment by groups of generators for more efficient transmission investment. A hub for renewables would have the potential to provide cost-effective network connections for multiple projects in a common geographic location. However, such jointly funded arrangements have had limited success to date, and TransGrid contends that current planning arrangements under the NER present challenges where the lowest cost 'delivered energy' option involves a strategic transmission investment that will service a number of generators into the future. In a contestable market, new and existing generators are reluctant to participate in a coordinated process, as they are unwilling to share information or work with other new entrants to get the best network solution. Furthermore, new entrant generators are at different stages of development so may not be in a position to negotiate transmission investment jointly with other generators.

The 'integrated grid plan' to enable efficient development of renewable energy zones, as recommended by the Finkel review, would advance this objective and help overcome problems with current planning arrangements. To support the transition to renewables and reconfiguration of our current network, TransGrid is actively developing options for the development of renewable energy zones. This includes identifying potential geographic area that meet the required criteria, such as availability of cost-effective renewable energy resources; suitable topography; and market interest.

TransGrid also considers renewable energy zones as a way towards better connectivity in our network. At present, our electricity system is comprised of a series of electricity 'nodes', however these electricity nodes are not well-connected and create connectivity constraints.

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[10] AEMC, Replacement expenditure planning arrangements, Rule determination, 18 July 2017, Sydney

[11] Under Chapter 6A of the National Electricity Rules (NER), costs of shared transmission networks relating to prescribed transmission services are exclusively recovered from customers (either directly or indirectly through retailers). Alternatively, generators are only charged according to the cost of their immediate connection to the network and do not pay any transmission use of system (TOUS) charges, as they do not receive any guaranteed access to the network. As such, they do not receive any pricing signals to reflect the cost associated with their locational decisions.

[12] AEMC 2017, Coordination of generation and transmission investment, Approach Paper, 22 August 2017, Sydney

Despite Australia having some of the highest levels of dispatchable energy[13] in the OECD, the current configuration of our transmission network impedes the flow of reliable energy supply and reduces wholesale market competition.

4. Way forward

Global trends in energy production and consumption are being driven by community expectations and the availability and cost of new technology. Transmission network operators around the world are evolving and adapting their businesses to ensure the efficiency and sustainability of the electricity system in this rapidly changing environment.

We understand that a reliable, secure and affordable transmission network provides a foundation for economic growth, opens opportunities for investment, and is a platform for grid innovation. With over 60 years' infrastructure excellence, strong technical capabilities and a location at the heart of the NEM, TransGrid is well positioned to respond to the changing energy landscape.

In particular, TransGrid can advance the long term interests of consumers by:

> supporting reliability and security of supply as the level of intermittent and widely dispersed generation increases to unprecedented levels; and

> actively enabling the integration of new technology such as energy storage.

TransGrid is a strong supporter of increasing stability, reliability of supply and putting downward pressure on prices. We support the implementation of an overarching energy strategy from Government to deal with the issues facing the sector in order to achieve these policy objectives.

Coordinated and integrated jurisdictional and national network planning is important in delivering and maintaining an energy system that is secure, efficient and reliable. Coordinated network planning also plays a central role in promoting the lowest cost of system-wide investment for the long term interests of consumers. In this regard, TransGrid supports the implementation of the Finkel review recommendations. This includes a recommendation for the COAG Energy Council to implement an 'integrated grid plan', allowing for the efficient development and connection of new renewable energy zones, and for better coordination of generation and network planning and investment.

TransGrid expects renewable energy zones to provide cost effective solutions for future development of the transmission network, whilst also allowing greater competition in the wholesale market, in the long-term interests of consumers.

[13] Dispatchable energy is guaranteed to be available when consumers need it. It includes dispatchable generation (e.g. coal, gas, hydro) and storage (e.g. batteries, pumped hydro), as well as dispatchable load (e.g. an aluminium smelter reduces its consumption when required or other types of demand response). This is opposed to variable, intermittent generation sources e.g. wind and solar), that are not dispatchable as they may rely on certain weather conditions to be available.