

REVENUE PROPOSAL OVERVIEW 2019–2023

28 MARCH 2017

In our Revenue Proposal Overview, unless otherwise indicated, forecast and historical expenditure is expressed in real terms (excluding inflation) in 2017–18 dollars to enable comparison of trends, while the Regulated Asset Base (RAB) and revenue ‘building blocks’ are presented in nominal terms (including inflation) consistent with the Australian Energy Regulator's (AER) Post-Tax Revenue Model (PTRM). The reference date for escalation is 31 December (i.e. mid financial year values) unless otherwise indicated.

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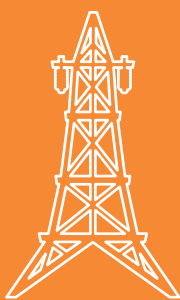
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OVERVIEW



1. ElectraNet's Revenue Proposal responsibly balances security, reliability and affordability

Our forecasts¹

Electricity transmission prices²

↓ **10%**

drop in average transmission prices in the first year of the 2019–2023 regulatory period to around 2.5c/kWh.

↓ **\$14&\$28**

in annual savings from the transmission component of the average residential bill of \$125 household and small business customer bill of \$250 respectively.³



Maximum allowable revenue

↓ **11%**

lower in the first year of the 2019–2023 regulatory period at \$312m.



Capital expenditure⁴

↓ **39%**

lower than anticipated expenditure in the 2014–2018 regulatory period at \$458m.

Operating expenditure

↓ **11%**

lower than trend expenditure allowance⁵ in the 2014–2018 regulatory period at \$435m.



Rate of return

7.50%

in the 2014–2018 regulatory period

↓ **to 6.02%**

Indicative rate based on current market data.

¹ Revenue and price figures are presented in nominal terms (including inflation) while expenditure figures are presented in real terms (\$2017–18) (excluding inflation). These do not include the potential for contingent projects, which are subject to a separate cost-benefit test and revenue approval by the Australian Energy Regulator.

² Based on projected energy consumption as per the 2016 *National Electricity Forecasting Report: For The National Electricity Market*, published by AEMO (neutral case) available at <http://www.aemo.com.au/Electricity/National-Electricity-Market-NEM/Planning-and-forecasting/National-Electricity-Forecasting-Report>.

³ Based on published data on average residential and small business electricity usage, namely \$1767 per annum for average annual household bill and 5000 kWh annual household consumption as per ESCOSA, Energy Retail Offers Comparison Report 2015–16, August 2016 available at <http://www.escosa.sa.gov.au/ArticleDocuments/534/20160831-Energy-2016RetailOffersComparisonReport.pdf.aspx?Embed=Y>. Transmission costs are projected to fall to around 8% of an average household electricity bill by the end of the period based on current market projections, assuming annual price growth of 1.1% p.a. as per the *Jacobs Retail Electricity Price History and Projections - Public Report*, 23 May 2016, prepared for AEMO, available at https://www.aemo.com.au/-/media/Files/Electricity/NEM/Planning_and_Forecasting/NEFR/2016/Retail-electricity-price-history-and-projections.pdf.

⁴ Does not include the potential for contingent projects, which are subject to a separate cost-benefit test and revenue approval by the Australian Energy Regulator.

⁵ Trend expenditure allowance refers to the projected expenditure allowance from the current regulatory period.



THE REVENUE PROPOSAL



2. We're playing our part to ensure the future security of electricity supply for South Australia

We are submitting a Revenue Proposal to the Australian Energy Regulator (AER) outlining our expenditure plans, performance targets and revenue requirements for the five year period commencing on 1 July 2018, building on the extensive early engagement we have undertaken with our stakeholders. The AER will undertake a detailed review and invite further stakeholder feedback.

This document provides an overview of our Revenue Proposal. It also explains how we have engaged with electricity customers in developing our proposals and in finalising our plans since the publication of our Preliminary Revenue Proposal on 6 September 2016. Our plans, expenditure and Revenue Proposals are designed to deliver on the long-term interests of customers, consistent with the National Electricity Objective.

In finalising our Revenue Proposal, we have also considered the implications of the extreme weather event which led to a 'system black' (i.e. total loss of supply) on 28 September 2016, which put security and reliability of supply at the forefront of everyone's mind.

Specifically, we have looked closely at options to strengthen the resilience of the network and ensure supply can be restored quickly in the event of an emergency. As a result, a modest amount of additional investment in the transmission network has been included in our capital expenditure forecast (a 13% increase) compared to the indicative forecasts contained within our Preliminary Revenue Proposal. This will help improve security of supply in the face of risks from future extreme weather events and the changing patterns of generation and customer demand in South Australia.

The National Electricity Objective as set out in the National Electricity Law (Section 7) is to promote efficient investment in, and efficient operation and use of, electricity services for the long-term interests of consumers of electricity with respect to price, quality, safety, reliability and security of supply of electricity, and the reliability, safety and security of the national electricity system.

2.1 South Australia remains at the forefront of global change in the energy sector

Each part of the electricity supply chain contributes to a safe, secure, reliable and affordable supply. While only a small proportion of the total electricity cost, currently around 9% per average household⁶, the transmission network plays a major role in South Australia's electricity supply, at a time when the forces of change are unprecedented.

Power system security is a challenge being tackled across the National Electricity Market (NEM), and around the world. In October 2016, the COAG Energy Ministers agreed to an independent review (the Finkel Review) to take stock of the current state of the security and reliability of the NEM and provide advice to governments on a coordinated, national reform blueprint⁷. This review draws together and builds on the work of the Australian Energy Market Operator (AEMO), the Australian Energy Market Commission (AEMC), the AER and gas market reforms.

Energy Ministers met on 14 December 2016 to consider the future security of the NEM and recognised the need to guide the transition of the market from a system of centralised, synchronous generation to a more distributed, low-emissions, flexible electricity system driven by new technologies and changing customer preferences⁸.

South Australia is at the forefront of this energy transformation with world-leading levels of renewable energy penetration through large-scale wind generation developments and rooftop solar photovoltaic (PV) installation.

Approximately 45% of South Australia's electricity comes from these renewable energy sources with the combined installed capacity of wind and solar generation (around 2,200 MW) far exceeding average demand levels (around 1,500 MW). South Australia also has limited interconnection to the rest of the NEM, and so has greater exposure to the system security challenges posed by high levels of renewable generation, unlike other parts of the world such as Denmark which have greater interconnection to other networks⁹.

For these reasons, the challenges of energy transformation are nowhere more evident or pressing than in South Australia today.

More broadly, the longer-term implications of climate change for Australia's electricity networks are potentially significant, including the potential for increased frequency and severity of extreme weather events and related risks, such as drought, heatwaves, bushfires and extreme rainfall.

In addition to the Finkel Review, a range of other reviews and inquiries are currently under way by state and national bodies into the implications of the recent extreme weather event of 28 September 2016, and wider system security issues facing the NEM.

These include the following:

- a number of Parliamentary inquiries, including the Senate Select Committee Inquiry into the Resilience of Electricity Infrastructure in a Warming World and SA Legislative Council Select Committee Inquiry into the State-Wide electricity blackout of Wednesday, 28 September 2016 and subsequent power outages

⁶ AEMC, 2016 Residential Electricity Price Trends, 14 December 2016, p148, available at <http://www.aemc.gov.au/getattachment/be91ba47-45df-48ee-9dde-e67d68d2e4d4/2016-Electricity-Price-Trends-Report.aspx>.

⁷ The Independent Review into the Future Security of the National Electricity Market, led by Chief Scientist Alan Finkel, published a Preliminary Report in December 2016, available at www.environment.gov.au/energy/publications/energy-market-preliminary-report highlighting that the shift from coal-fired generators to wind and solar PV generators has implications for security and reliability.

⁸ Further information is available at www.coagenergycouncil.gov.au.

⁹ Denmark also generates more than 40% of its electricity from intermittent (wind) energy but can meet more than 80% of its peak demand via interconnectors with Norway, Sweden and Germany.

- the AEMC's Review of the System Black Event in South Australia on 28 September 2016, which will be considering the need for any changes to the regulatory frameworks to address any systemic issues that contributed to the system black event
- the AEMC review of various Rule changes and its System Security Market Frameworks Review, which is considering the regulatory frameworks that affect system security in the NEM
- the AEMO Future Power System Security program, which is examining operational challenges arising from the generation mix, and technical options to address these challenges
- the Essential Services Commission of South Australia's (ESCOSA) investigation into how electricity companies can improve power reliability on the Eyre Peninsula
- ElectraNet's South Australian Energy Transformation RIT-T process (as discussed in Section 4).

On 12 October 2016, the South Australian Government introduced measures¹⁰ to improve the security and reliability of the power system and reduce the risks of a system black event. On 14 March 2017, it announced further reforms to the operation of the NEM in South Australia to address the immediate electricity supply and security challenges facing the state, including the installation of Australia's largest grid scale battery, the establishment of a Government owned standby generator to provide inertia and emergency capacity, and an energy security target requiring more energy to

be sourced locally from synchronous generating plant. Implementation of these measures will progress over the coming months¹¹.

Against this backdrop, the information contained in this Revenue Proposal Overview reflects our current service requirements, standards and obligations for safety, security and reliability and is based on the best information available to us at the time of submission.

However, we are mindful that the various inquiries underway may conclude that more should be done to improve network security. For example, our role may change to include additional responsibilities. Equally, updated information may come to hand through the outcomes of ongoing internal analysis and investigations on the risks facing the network and the most cost effective actions available to improve network security.

The revenue determination process, therefore, needs to be flexible enough to respond to any updated information, requirements or obligations that impact on our expenditure programs for the transmission network, and to take into account the funding required for any increased investment needs that may emerge.

ElectraNet will share with stakeholders and the AER any new or updated information that becomes available as a result of these developments during the course of the revenue determination process, so that these can be taken into account in the AER's final decision.

¹⁰ Electricity (General) (Provision of Limit Advice) Variation Regulations 2016, available at http://www.governmentgazette.sa.gov.au/sites/default/files/documentstore/2016/October/2016_064.pdf.

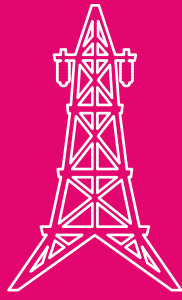
¹¹ Government of South Australia, Our Energy Plan, available at <http://ourenergyplan.sa.gov.au/>.



2.2 This document provides an overview of our plans

The Revenue Proposal Overview provides a summary of our plans for the five year period commencing on 1 July 2018 and outlines:

- **our role** in providing a strong, reliable and more interconnected transmission network (Section 3)
- **the outcomes of recent events** that have reinforced the importance of the transmission system and security challenges as we transition to a low carbon economy (Section 4)
- **our customer engagement process** and how it has helped shape our plans for the forthcoming regulatory period (Section 5)
- **the expected revenue and price** outcomes of our proposals, our pricing methodology and negotiating framework (Section 6)
- **our capital and operating expenditure** plans for the 2019–2023 regulatory period (Sections 7 and 8)
- **the remaining revenue** ‘building block’ components – being depreciation, rate of return, taxation and inflation, as well as AER incentive schemes (Section 9)
- **a summary of the key benefits and risks** for electricity customers, including our nominated pass through events (Section 10)
- **next steps**, including how you can respond to the Revenue Proposal, and further information available on our plans (Section 11)



A STRONG AND RELIABLE NETWORK



3. A strong, reliable and more interconnected transmission network is more important than ever

3.1 ElectraNet powers people's lives

As the owner and operator of South Australia's electricity transmission network, ElectraNet powers people's lives by delivering safe, secure, reliable and affordable transmission services to power homes, businesses and the economy.

We are planning for the future – preparing the network for the changing way that electricity is being produced and consumed.

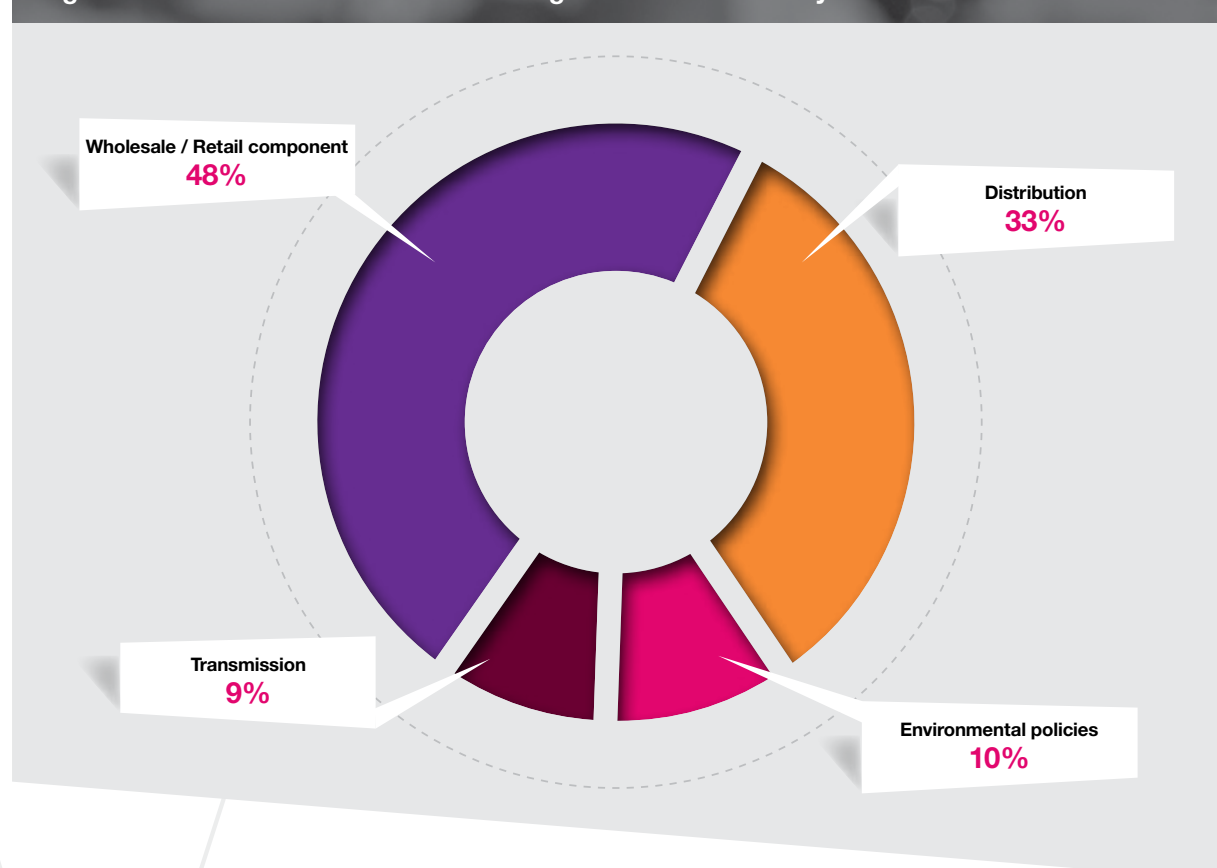
Our direct customers include power generators, South Australia's electricity distributor, SA Power Networks, and large industry. Our regulated revenue

is independently set by the AER, and is recovered by charging customers for their use of the transmission network.

The services we provide benefit all customers, including those connected to SA Power Networks' distribution network.

The cost of transmission services is currently around 9%, and is the smallest component of the average household electricity bill in South Australia, as shown in Figure 1.

Figure 1: Estimated breakdown of the average household electricity bill¹²

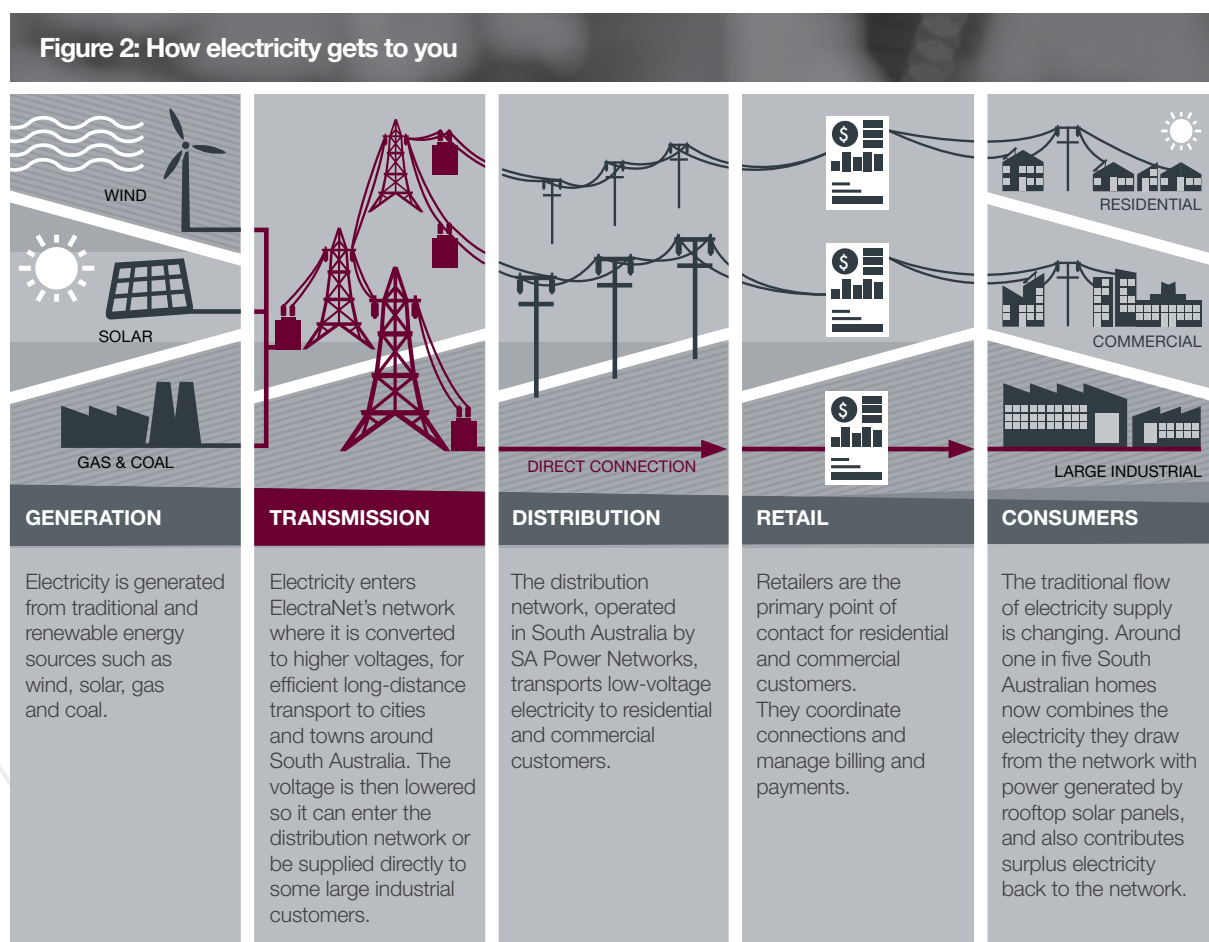


¹² AEMC, 2016 *Residential Electricity Price Trends*, 14 December 2016 available at <http://www.aemc.gov.au/getattachment/be91ba47-45df-48ee-9dde-e67d68d2e4d4/2016-Electricity-Price-Trends-Report.aspx>.

3.2 The transmission network plays a critical role in electricity supply

South Australia's electricity transmission network operates as part of the NEM and is an essential part of how customers get their electricity.

ElectraNet's role in the electricity supply chain is shown in Figure 2.



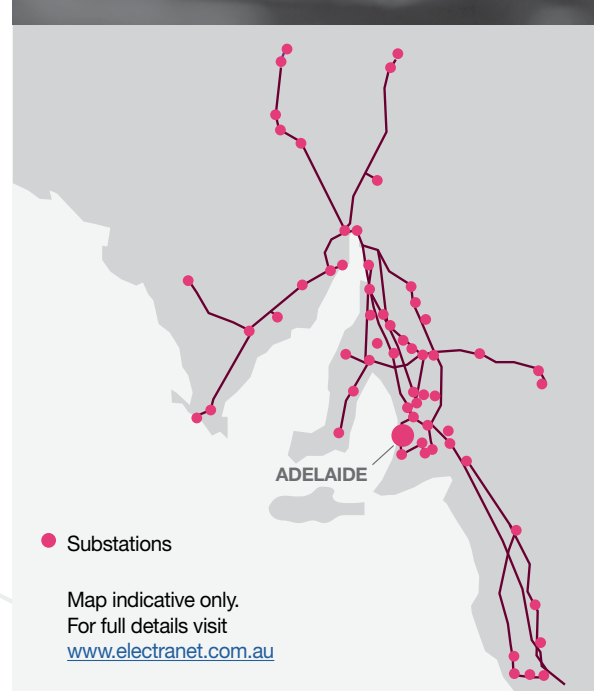
The South Australian transmission network covers an area of over 200,000 square kilometres and is made up of over 5,600 circuit kilometres of transmission lines and cables and over 13,700 towers, as well as 91 high-voltage substations with modern centralised monitoring, control and switching facilities.

The South Australian transmission network:

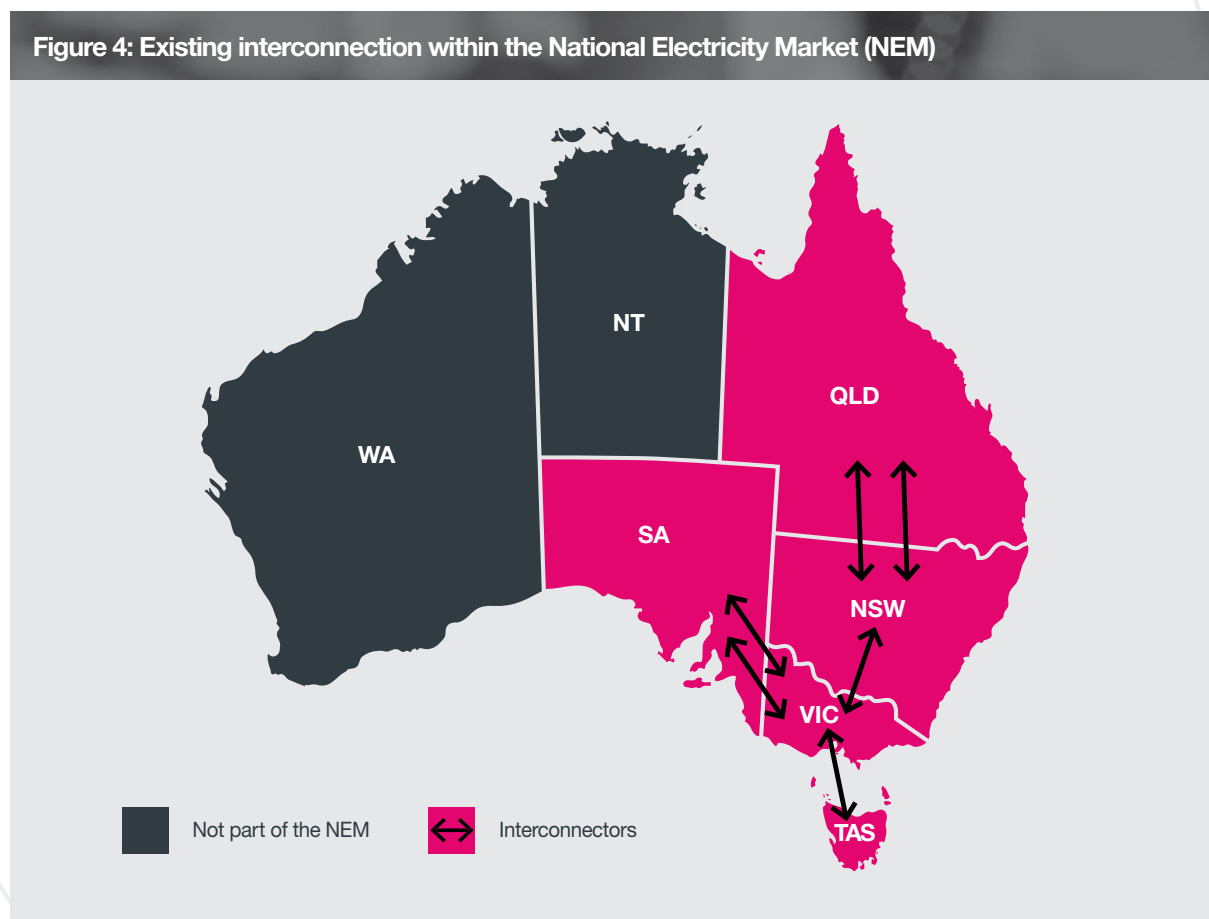
- **transports** electricity over long distances from traditional and renewable generators – both local and interstate – to where it is needed to power homes, businesses and communities across metropolitan, regional and remote areas
- **facilitates market competition** between generation sources both within South Australia and across the broader NEM, placing downward pressure on wholesale energy costs
- provides **security of supply** through access to a diverse range of supply sources and sharing of reserves across interconnected regions
- supports the **safe, secure and reliable** operation of the power system, including power quality, and allows for the changing ways electricity is being produced, consumed and traded by customers

The transmission network continues to evolve to address the new challenges that are emerging from the changing generation mix, which is being driven by climate policies and changing customer choices. This includes ensuring that system security and reliability expectations continue to be met.

**Figure 3:
The South Australian transmission network**



The National Electricity Market



The NEM operates across an interconnected power system, incorporating Queensland, New South Wales and the Australian Capital Territory, Victoria, South Australia and Tasmania. The NEM has around 51,000 km of transmission lines and cables and serves over nine million customer connections. The system combines and coordinates outputs from all generators in real-time to meet customers' electricity demand. The interconnectors between state networks allow electricity to be transferred between areas of low and high demand or price, and assist in providing system security and diversity of supply.

We discuss the case for more interconnection in Section 4.



3.3 We perform well, despite the unique challenges of our network

Our performance continues to compare favourably with other transmission networks in the NEM. We continue to identify ways of improving how we do things, so that customers can benefit from the lowest sustainable costs.

In addition to the new challenges posed by the changing generation mix in South Australia, the transmission network faces a number of factors that drive costs higher than other networks in the NEM. These include:

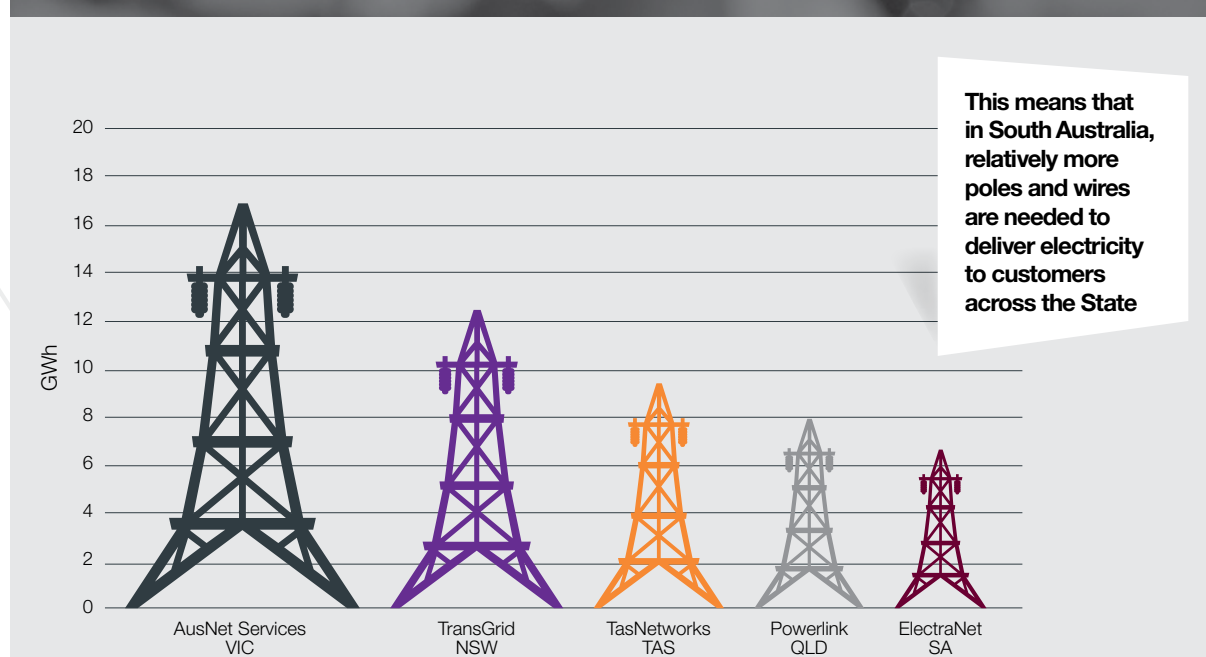
- **age** – having among the oldest assets in the NEM, resulting in relatively higher maintenance and asset replacement costs to maintain a reliable network
- **scale** – being the smallest transmission-only network means lower economies of scale relative to others

- **load factor** – having the ‘peakiest’ demand of all states (as measured by the ratio of maximum electricity demand to average electricity demand) driven by hot summer days and air-conditioning demand, which means a relatively higher unit cost of electricity

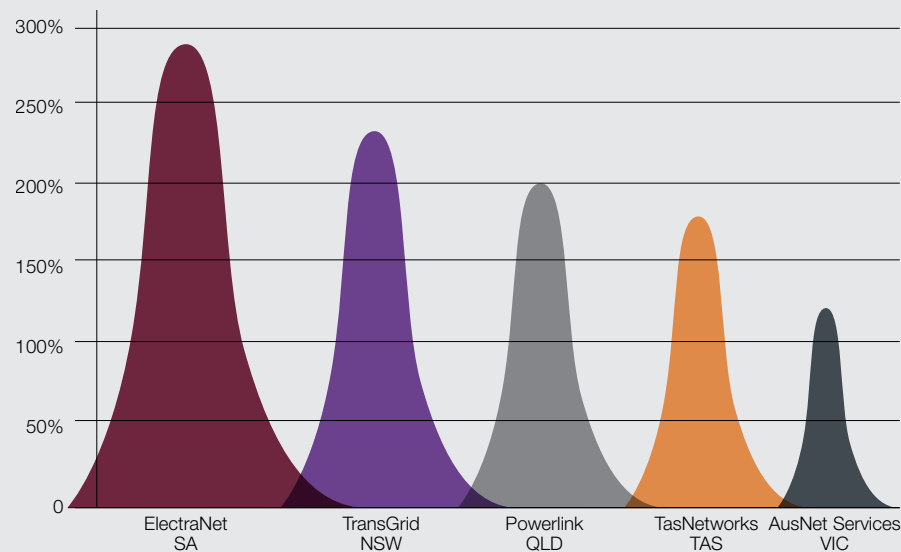
- **customer density** – having the lowest customer density of mainland transmission networks in the NEM, due to the large geographic spread of the customer base, which means a long ‘stringy’ network with relatively more infrastructure (such as lines and substations) is needed to serve the customer base

Overall, these cost factors mean that efficient costs on the South Australian network are relatively higher compared to other states, as illustrated in Figures 5 to 7.

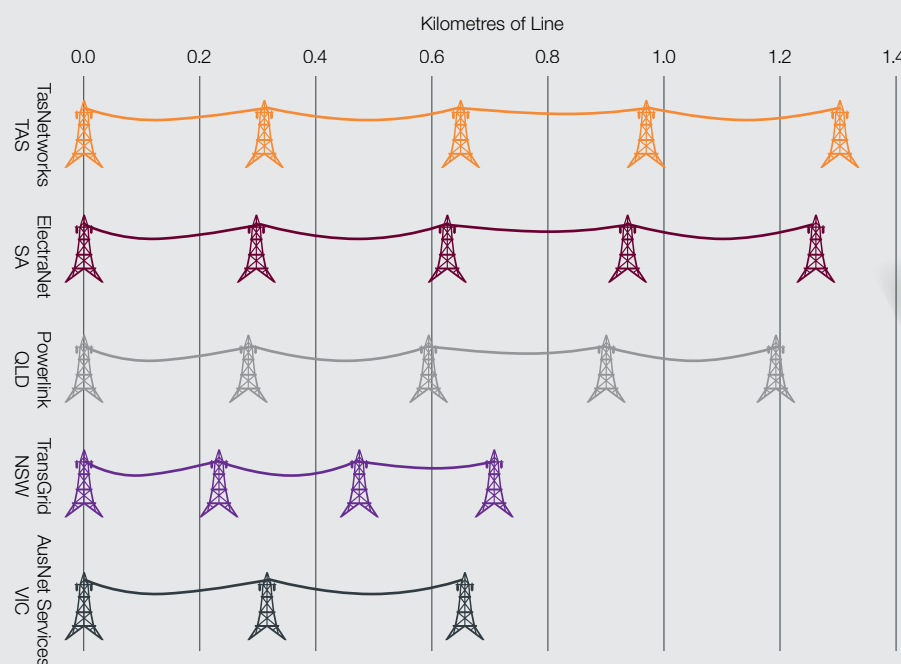
Figure 5: Electricity transmitted per \$1 million of transmission assets¹³



¹³ Annual Regulatory Information Notice data 2015–16, Australian Energy Regulator, November 2016, available at <http://www.aer.gov.au/networks-pipelines/network-performance>.

Figure 6: Ratio of historic peak demand to average electricity demand¹⁴

A higher peak to average demand ratio requires more network capability and thus increases the unit cost of electricity in South Australia

Figure 7: Circuit kilometres required to supply each MW of peak demand¹⁵

This means more poles and wires are needed to deliver each unit of electricity in South Australia at times of peak demand

¹⁴ Annual Regulatory Information Notice data 2015–16, Australian Energy Regulator, November 2016, available at <http://www.aer.gov.au/networks-pipelines/network-performance>.

¹⁵ Annual Regulatory Information Notice data 2015–16, Australian Energy Regulator, November 2016, available at <http://www.aer.gov.au/networks-pipelines/network-performance>.

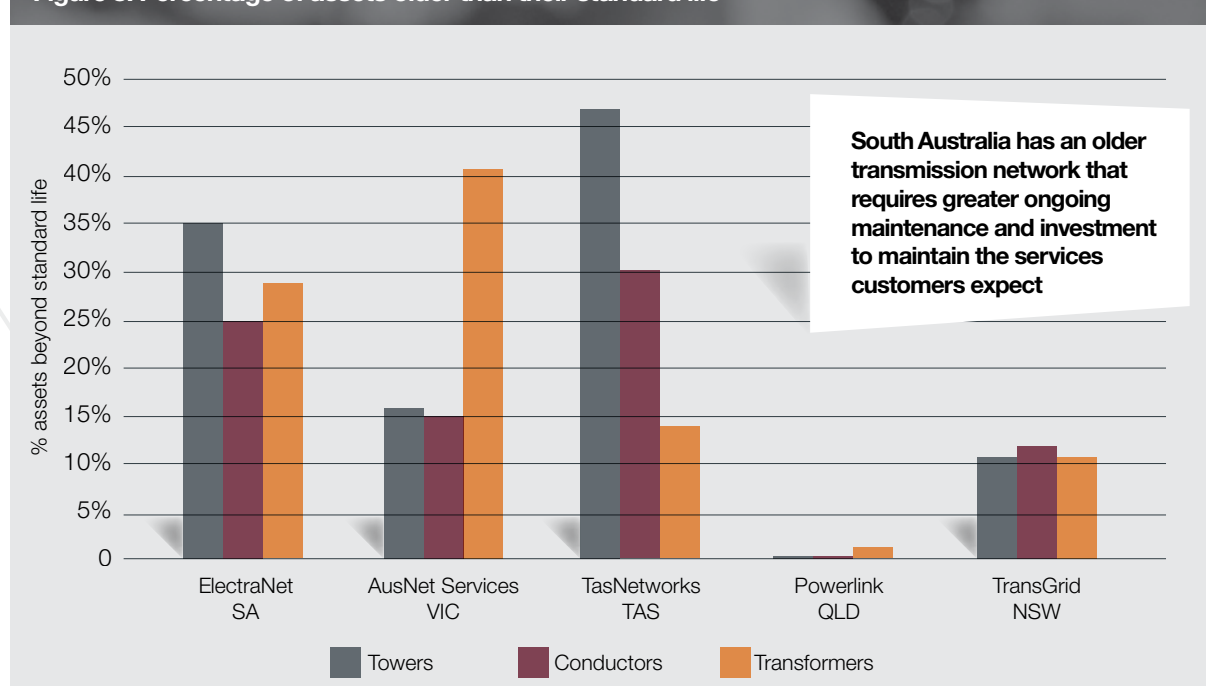
3.3 We perform well, despite the unique challenges of our network continued

ElectraNet does not replace assets based on age, but on condition and risk. We carefully monitor the condition and operational effectiveness of our assets, and only replace assets to meet or manage expected demand where it is cost effective to do so, and when necessary to meet our regulatory obligations or otherwise to maintain safety, security and reliability. We apply a risk based approach, and undertake works to extend the useful lives of assets wherever possible, thereby deferring replacement costs. This translates into cost savings for customers.

As shown in Figure 8, the South Australian transmission network has relatively old assets. In the three major asset categories – towers, conductors and transformers – we have the second highest percentage of aged assets in the NEM.

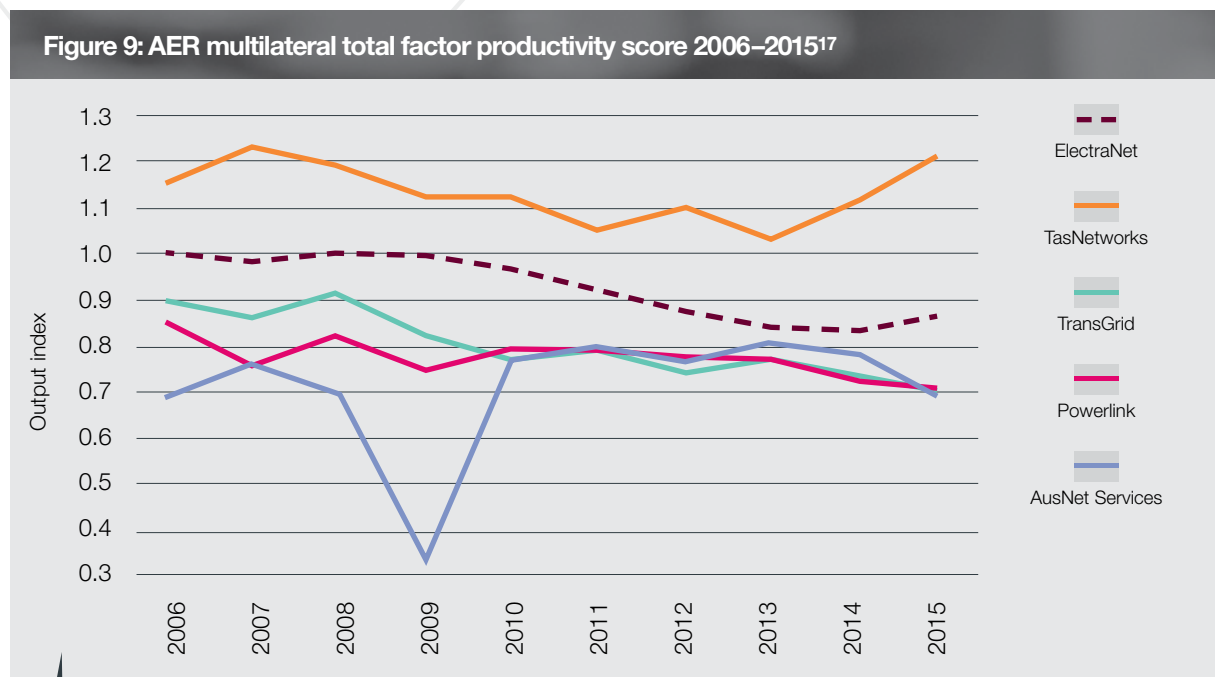
Old assets require increased maintenance or refurbishment costs, and can drive higher life extension and replacement capital expenditure. It is therefore important we continue to work hard to efficiently maintain the network, and extend asset life safely and reliably.

Figure 8: Percentage of assets older than their standard life¹⁶



¹⁶ Annual Regulatory Information Notice data 2015–16, Australian Energy Regulator, November 2016, available at <http://www.aer.gov.au/networks-pipelines/network-performance>. Shown as at 2023, the final year of the forthcoming regulatory period.

Our overall efficiency performance compared with other networks is shown in Figure 9, which is reproduced from the AER's 2016 *Benchmarking Report*.



Our overall efficiency performance compares very favourably with other networks, especially given the external factors that drive up efficient costs in South Australia

We continue to work hard to deliver the best possible outcomes for our customers in balancing safety, security, reliability and cost, despite the cost impacts of these characteristics that are unique to South Australia. As shown in Figure 9 above, according to the AER's benchmarking analysis we are the second best performer, despite our operating conditions being less favourable than those of our peers.

¹⁷ AER, *Annual Benchmarking Report - Electricity transmission network service providers*, November 2016, page 8, available at http://www.aer.gov.au/system/files/Final%20TNSP%20annual%20benchmarking%20report%202016%20-%20for%20release_1.pdf.



PRELIMINARY REVENUE PROPOSAL
















4. Recent events have changed some of the assumptions contained in our Preliminary Revenue Proposal

4.1 What's changed since the Preliminary Revenue Proposal?

On 6 September 2016, we published our Preliminary Revenue Proposal, which presented our indicative expenditure plans ahead of our formal Revenue Proposal. This enabled us to promote effective early engagement with customers and stakeholders, develop shared understanding, and provide customers and stakeholders an opportunity to give feedback.

Since that time, we have seen the impacts of the extreme weather event of 28 September 2016, the announcement of major energy policy reforms by the South Australian Government, and an increased focus on supply security through a range of reviews and inquiries.

The following provides an overall summary of the changes in our final forecasts from the indicative forecasts published in our Preliminary Revenue Proposal.¹⁸ The only material change in our expenditure programs is the addition of a modest level of targeted investment to improve the security of the transmission network and increase its resilience to extreme weather events, informed by these more recent events.

Revenue Proposal	Preliminary Revenue Proposal	Description		
Electricity transmission prices				
 10% drop in average transmission prices in the first year of the 2019–2023 regulatory period to around 2.51c/kWh	 \$14&\$28 in annual savings in transmission prices for the average residential household and small business customer respectively	 13% drop in indicative transmission prices in the first year of the 2019–2023 regulatory period to around 2.47 c/kWh	 \$19&\$38 in annual savings for the average residential household and small business customer respectively	The change mainly reflects an increase in the regulated Rate of Return, driven by market forces (see below)
Maximum allowable revenue				
  11% lower in the first year of the 2019–2023 regulatory period at \$312m	 14% lower in the first year of the 2019–2023 regulatory period at \$306m	The change mainly reflects an increase in the Rate of Return, and increased capital expenditure requirements		
Capital expenditure				
  39% lower than anticipated expenditure in the 2014–2018 regulatory period at \$458m	 46% lower than anticipated expenditure in the 2014–2018 regulatory period at \$407m	Relates to increases in storm and network security related investments, and timing delays in current projects due to the impact of network restoration works		
Operating expenditure				
  11% lower than trend expenditure allowance in the 2014–2018 regulatory period at \$435m	 11%* lower than trend expenditure allowance in the 2014–2018 regulatory period at \$434m	No material change, despite projected real increases in insurance costs		
Rate of return				
7.50% in the 2014–2018 regulatory period	 to 6.02% Indicative rate based on current market data	7.50% in the 2014–2018 regulatory period	 to 5.75% Indicative rate based on current market data	Approach remains based on AER standard methodology. Rate has increased based on market movements outside of our control

Further details on the key drivers of these changes and information on the nature of these changes are provided in the following sections.

¹⁸ The key assumptions applied in these comparisons are as explained in Figure 1.

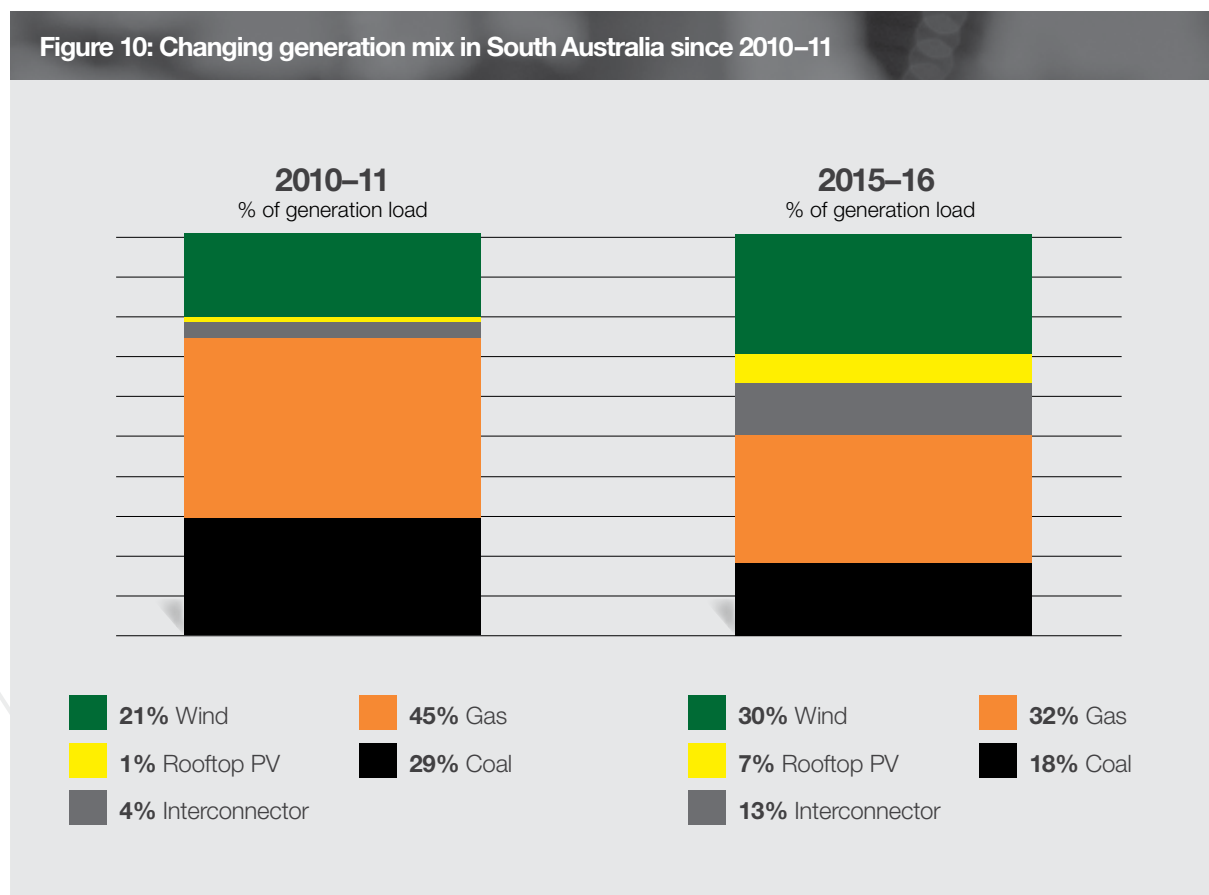
*Revised estimate from 10% published in Preliminary Revenue Proposal

4.2 We are responding to the implications of the recent storm event and growing system security challenges

Driven by renewable energy policies, rapidly evolving technology and changing customer needs, South Australia has reached world-leading levels of renewable energy penetration through large scale wind generation developments and rooftop solar photovoltaic (PV) installation. Federal and state government policies are expected to continue to drive this increasing uptake. Overall, the generation mix has changed substantially in South Australia, as shown in Figure 10.

The proportion attributable to renewables continues to grow in 2016–17, with approximately 45% of energy generated in South Australia now coming from renewable energy sources since the commissioning of the Hornsdale Wind Farm and the closure of Northern Power Station¹⁹.

Figure 10: Changing generation mix in South Australia since 2010–11



¹⁹ Northern Power Station, South Australia's last coal fired generation closed in May 2016.

In total, there are currently 18 wind farms in operation in South Australia, with a total capacity of around 1,500 MW. More commitments are under way and there is a likely emergence of large scale solar generation in the coming years. More than a quarter of the state's homes have installed solar power with a total capacity of around 700 MW. The combined capacity of wind and solar generation (around 2,200 MW) far exceeds average (by 47%) and minimum (by 175%) demand levels in South Australia, which are around 1,500 and 800 MW respectively.

The higher levels of intermittent renewable energy and less conventional thermal generation operating on the power system give rise to a number of significant challenges, including more volatile wholesale market prices and growing system security and reliability challenges. Successfully integrating this changing

supply mix, while maintaining safety, security, reliability and affordability of supply for customers is a key priority for ElectraNet and the wider energy sector.

In September 2016, shortly after the Preliminary Revenue Proposal was published, electricity supply in South Australia was lost following an extreme weather event resulting in a state-wide blackout.

The detailed circumstances of this event remain the subject of ongoing investigations and inquiries.

The experience of a major loss of supply – while in exceptional circumstances – is a reminder of the importance of system security and the challenges arising from the changing generation mix and the occurrence of unprecedented extreme weather events.

System security



Managing system frequency is vital to the security and stability of an interconnected power system, and is increasingly challenging in the face of growing levels of renewable generation that is generally 'asynchronous', or unable to control frequency.

On 12 October 2016, the South Australian Government introduced frequency control measures to improve the security of the power system and reduce the risks of a system black event. These measures took the form of a new obligation in the Electricity (General) Regulations (SA) 2012. It required ElectraNet to provide advice to AEMO on the limitations of the Heywood Interconnector for the purposes of AEMO's power system security responsibilities so as to maintain the expected rate of change of frequency (RoCoF) in relation to the potential non-credible

loss of the interconnector. Separately, AEMO has introduced a requirement for two generators to be online in South Australia at all times to provide sufficient system strength to support the stability of the system. The Government announced further measures on 14 March 2017 to improve energy security, including the provision of grid scale storage, emergency generation and an energy security target.

These immediate measures were introduced pending longer-term solutions expected to flow from current reviews, such as the System Security Market Frameworks Review and associated Rule changes being progressed by the AEMC. Options being considered include new technical standards for generators, provision of new services by network businesses such as ElectraNet, the procurement of additional control services by AEMO, and the establishment of new markets for services such as inertia.

The recent events and increasing system security challenges have caused us to revisit our expenditure plans and review some of the assumptions that underpinned our Preliminary Revenue Proposal. Our thinking has also been informed by our customer engagement, which is discussed in detail in Section 5.

A small number of prudent and targeted investments designed to improve the security of the transmission network and increase the ability to withstand or recover more quickly from the impact of extreme weather events, such as what occurred on 28 September 2016, have been added to our capital expenditure forecast. While this means a smaller reduction in our capital program than indicated in our Preliminary Revenue Proposal, this investment is more than offset by the benefits of improved network security. At this time, the detailed investigations into the event and its future implications remain ongoing.

Network resilience



Transmission lines throughout the world are not designed to withstand the most extreme weather conditions they may possibly experience. This is largely due to the prohibitive cost of building infrastructure to withstand very low probability events within an economic regulatory framework focused on efficient outcomes.

Rather, it is recognised that infrastructure may be damaged and customer supply interrupted under the most extreme and unlikely events, and emergency response measures are put in place to minimise the extent and duration of this resulting disruption.

Unprecedented extreme weather events such as what occurred in South Australia on 28 September 2016 provide an opportunity for everyone to take stock of the security and reliability of the NEM. In this regard, we are looking at whether there are any prudent actions that should be taken to improve network resilience to extreme weather events and/or to improve emergency response capabilities. As a result, a small number of prudent and targeted investments designed to improve the security of the transmission network and increase its ability to withstand or recover more quickly from the impact of extreme weather events have been added to our capital expenditure forecast, as discussed further in Section 7.

In addition to these new projects, we have also examined the scope for further targeted and cost effective options aimed at further improving the resilience of the network to withstand the impacts of extreme weather events. Such measures could include for example, larger scale works to strengthen, reinforce or 'harden' existing transmission line structures at the most vulnerable and critical points of the network to reduce the risk of multiple tower failures leading to potential widespread and extended loss of customer supply during extreme wind events.

We engaged an independent expert to assist in identifying such options with a focus on mitigating the risk of loss of supply to customers in the north of South Australia, that would result from extreme wind damage to all three 275 kV transmission lines between Adelaide and Davenport (near Port Augusta)²⁰.

The independent expert developed models for predicting failures of one or more of the 275 kV transmission lines in a single weather event.

The models showed that the highest likelihood of failure of three lines in one storm event arises in the 22.5 km zone immediately south east of Davenport substation, where the three lines are close together, and thus where a tornado could impact all three lines.

²⁰ ElectraNet notes that the measures implemented by AEMO since September 2016 for the management of generation dispatch and operation should reduce the potential impact of multiple line failure in the north of the network to the loss of local customer supply.

These studies also included cost benefit analysis consistent with the established regulatory frameworks for networks, which assess potential benefits in the context of both the predicted economic impacts on customers of network outages and the (very low) likelihood of occurrence of extreme weather events, balanced against the cost of mitigating options.

Specifically, the estimated economic cost to customers of a high impact network outage is multiplied by the statistical likelihood of occurrence of the causal extreme weather event to give annual economic loss predictions. The analysis included a range of assumptions regarding likelihood of transmission line failure, the expected statistical frequency of future storm events, the expected time to restore supply, and the locational value of customer reliability.

More than 20 project options were identified that could potentially reduce either the probabilities of failure of the transmission lines or the impact of these failures. The costs of these options were estimated by the expert using standard cost estimation techniques and knowledge of transmission project costs in Australia.

These costs were then compared with the estimated potential economic benefits arising from each project through the reduction of outage risk.

The cost-benefit assessment included identifying the sensitivity to variations of the key input variables or assumptions over a reasonable range, applying probabilities to these variations, calculating the weighted potential benefits for each project and comparing these with the estimated capital cost of the project options.

The analysis undertaken concluded that the weighted outcome over all reasonable sensitivities did not show an economic case for investment within the current economic regulatory framework for any of the identified project options. An economic case could possibly only be made for some highly improbable sensitivity cases: e.g. by assuming a significantly

higher frequency of extreme wind events in the future than the historically-derived frequency.

ElectraNet also sought advice from independent experts specialising in fields of wind engineering, aerodynamics, structural dynamics and risk analysis, on the likely impact of climate change on the future frequency of extreme wind events. The independent experts concluded that, based on both past observational data and modelling of the forward-looking impacts of climate change, there is presently no evidentiary basis for assuming a higher than historical frequency of extreme wind events in South Australia.

Based on these analyses and conclusions, and given the regulatory framework for assessment of proposed capital expenditures, we have not included any of the project options identified by the independent expert in our proposed capital expenditure forecast.

Investigations remain ongoing, and cost effective options for improving the resilience of the network to withstand the impacts of extreme wind events may emerge in the light of new or updated information, or analysis that becomes available after our Revenue Proposal has been submitted. In these circumstances, we will provide any such updated information to stakeholders and the AER at the earliest opportunity.

In order to respond to security and reliability challenges facing the power system, we are separately examining additional measures to accelerate proof-of-concept projects, such as the application of battery storage technology at a grid scale and the potential for investment in synchronous condensers. These initiatives are discussed further on the following page.

Energy storage project



Consistent with the State Government's recent commitment to provide South Australia with large scale battery storage, we have for some time been pursuing a proof-of-concept project to trial a grid scale battery storage solution as an option to improve the security of the power system.

This initiative, known as the Energy Storage for Renewable Integration South Australia (ESCRI-SA) Project, is being undertaken by a consortium of ElectraNet, AGL and Advisian (WorleyParsons). Subject to successful part funding from the Australian Renewable Energy Agency (ARENA), this project involves installing a 30 MW, 8 MWh energy storage device to provide fast frequency response that can address rate of change of frequency (RoCoF) concerns as well as provide other benefits to the power system.

The need for such projects has also been identified in reviews such as the Finkel Review and AEMO's Future Power System Security work program, and by the COAG Energy Council. Successful deployment of this facility in the next one to two years would help establish battery storage as a viable technical solution to assist in meeting the system security challenges facing South Australia, consistent with the State Government's energy plan²¹.

Capital expenditure of \$6m has been included in our forecasts for the next period to fund the delivery of this project²².

Further information on these plans and proposals is provided in Section 7.

²¹ Following a successful expression of interest process, ElectraNet was invited by ARENA to proceed to a formal application for funding for the project which was lodged on 22 February 2016. The review and assessment process continues at this time.

²² This equates to the value of the prescribed network services to be delivered by this project.





4.3 A more decentralised power system must be a more interconnected power system

In December 2016, AEMO published its latest National Transmission Network Development Plan (NTNDP)²³ which included the following important observations on the the future direction for transmission networks:

- the NEM is moving into a new era for transmission planning:
 - transmission networks designed for transporting energy from coal generation centres will need to transform to support large-scale renewable generation development in new areas.
 - transmission networks will increasingly be needed for system support services, such as frequency and voltage support, to maintain a reliable and secure supply.
- high level modelling suggests positive net benefits for potential interconnection developments, including a new interconnector linking South Australia with either New South Wales or Victoria from 2021.

AEMO observed that local network and non-network options, such as synchronous condensers or similar technologies, are also needed as part of the solution to maintain a reliable and secure supply by providing local system strength and resilience to frequency changes.

Clearly, a strong, secure electricity transmission network is now more important than ever.

Increased interconnection within the NEM is vital to achieving safe, affordable, and reliable electricity supply, while enabling the increasing choice and long-term sustainability valued and desired by electricity customers. Increased interconnection will deliver system security benefits by reducing the likelihood of a system disturbance leading to a major disruption to electricity supply. It will also facilitate greater competition between sources of generation and thus deliver better prices for customers, by allowing increased access to a range of power sources, as well as opening up access to the market for more renewable generation developments.

ElectraNet is therefore exploring potential solutions to these challenges and is investigating options that include new transmission lines between South Australia and the eastern states, as well as non-network options that provide benefits to the market and system security. This involves applying the established Regulatory Investment Test for Transmission (RIT-T) as the cost benefit test applied to major network investments under the Rules, overseen by the AER. This process formally commenced with the release of an initial consultation report in November 2016.²⁴

The work undertaken to date has identified four credible network options, all of which involve constructing a new interconnector between South Australia and the eastern states, together with a range of potential non-network solutions, and will be analysed further in the first stage of the RIT-T process. The RIT-T process is currently scheduled to conclude in late 2017. If ultimately approved, an integrated solution including a new interconnector and alternative or accompanying non-network solutions could be operational as early as 2022.²⁵

A new interconnector project would only proceed if sufficient benefits to customers can be demonstrated. If this proves to be the case, then it would be subject to separate AER approval as a contingent project at that time. Due to the uncertainty around if and when this contingent project might proceed, the costs are excluded from our expenditure forecasts. For illustration, as discussed in Section 6, a new interconnector to New South Wales at an indicative cost in each state of \$250m would add approximately \$8 per annum to a typical residential customer bill in South Australia at the time of completion, which would be expected to be towards the end of the forthcoming 2019–2023 regulatory period.

²³ Available at http://www.aemo.com.au/-/media/Files/Electricity/NEM/Planning_and_Forecasting/NTNDP/2016/Dec/2016-NATIONAL-TRANSMISSION-NETWORK-DEVELOPMENT-PLAN.

²⁴ Available on our website at <https://www.electranet.com.au/projects/south-australian-energy-transformation/>.

²⁵ To allow for the possibility of future investment in non-traditional network assets such as synchronous condensers, if found to be economic, ElectraNet is introducing a new asset class to cater for these types of assets.

4.4 We are investigating the most cost effective ways to improve supply reliability to the Eyre Peninsula

ElectraNet understands the importance of a reliable electricity transmission supply to the regional areas of South Australia such as the Eyre Peninsula, and the contribution it makes to the ongoing economic development of the wider South Australian economy. The extreme weather event of 28 September 2016 and other recent events have highlighted the importance of supply reliability to these areas and the impacts of extended outages on these communities.

The Eyre Peninsula is served by a radial 132 kV transmission line which runs from Cultana to Yadnarie to Port Lincoln. A radial 132 kV line also extends to Wudinna to supply the West Coast. The original line to Port Lincoln was established in 1967. We have in recent years been rebuilding and reinforcing the Cultana and Whyalla substations.

Supply to Port Lincoln is supported by a network support agreement between ElectraNet and Engie, which expires on 31 December 2018. Under this agreement, ElectraNet is able to call upon the services of three diesel-fired gas turbines connected at Port Lincoln when needed. The reliability standards require that ElectraNet provide "N-1" equivalent line capacity to the Port Lincoln exit point, so that back-up supply is available for Port Lincoln when supply from the 132 kV line is interrupted.

ElectraNet has been actively exploring options to replace or upgrade the transmission lines serving the Eyre Peninsula. Our most recent assessment of the condition of the line assets indicates that components of the line are nearing the end of their functional life²⁶ and will require replacement in the next few years.

To enable this work, we have included in our plans an allowance for the replacement of major transmission line components on the Eyre Peninsula. This is the largest single project included in our capital expenditure forecast, at a cost of

approximately \$80m, and involves replacing the line conductor in high priority sections of the lines.

Alternatively, the full replacement of the line (for example as a double circuit line) may be more cost effective and deliver greater benefits to Eyre Peninsula customers through potentially improving supply reliability and avoiding the ongoing costs of generation support at Port Lincoln. The cost of fully replacing the line as a separate project is currently estimated at approximately \$200m, being \$120m more than the approximate cost of the replacement of major line components mentioned above. The additional \$120m has been excluded from our forecasts, as the case for this investment has not yet been established. However, we have included in our Revenue Proposal a contingent project for the full replacement of the line, which would be subject to separate approval by the AER if a full replacement was demonstrated to deliver greater net benefits to customers.

To take this forward, we are currently exploring the economic case for a full line replacement and alternative options in more detail. This involves undertaking the RIT-T, which will assess the costs and benefits of alternative network and non-network solutions²⁷.

We will continue to actively monitor and maintain the condition of our lines on the Eyre Peninsula through our ongoing maintenance program, to ensure the safety, security and reliability of transmission supply while the RIT-T process is undertaken. We will also continue working closely with ESCOSA as the body responsible for setting reliability standards for South Australia's transmission network as it reviews the reliability standard for the Eyre Peninsula following a recent request by the South Australian Treasurer and Minister for Energy²⁸.

²⁶ ElectraNet's standard asset life for transmission lines is 55 years.

²⁷ An Eyre Peninsula Electricity Supply Reinforcement Project Specification Consultation Report (PSCR) is expected to be published in April 2017, as the initial consultation report under the RIT-T, and will be available on our website at <https://www.electranet.com.au>.

²⁸ ESCOSA is to investigate how electricity companies can improve power reliability on the Eyre Peninsula. ESCOSA will investigate and make recommendations on what measures can be taken to incentivise ElectraNet and SA Power Networks to upgrade current infrastructure and reconnect supply quicker after damaging storm events. The Office of the Technical Regulator will provide advice on the technical aspects of the investigation. ESCOSA will also investigate and report on the costs associated with each potential reliability measure they recommend. Hon. Tom Koutsantonis News Release, 24 January 2017, available at <http://www.premier.sa.gov.au/index.php/tom-koutsantonis-news-releases/1707-energy-minister-meets-mayors-over-eyre-peninsula-power-issues>.



CUSTOMER ENGAGEMENT



5. Our customers tell us they value affordability, reliability and choice

5.1 Our Consumer Advisory Panel has shaped our engagement

ElectraNet has made a genuine commitment to engage with electricity customers, to ensure we understand their views and priorities, following a best practice early engagement approach. This approach is an ElectraNet initiative, and a first for the industry and the AER, that forms part of our ongoing commitment to genuine engagement with customers and promoting a more collaborative approach to

regulatory decision making. It has the support of our Consumer Advisory Panel²⁹ and the AER.

The customer engagement program we embarked on places emphasis on using consumer and customer representative groups as the most effective way to engage.

Our customers are illustrated in Figure 11.

Figure 11: ElectraNet's stakeholders



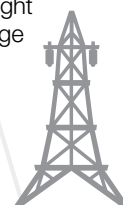
²⁹ Details of ElectraNet's Consumer Advisory Panel including composition and minutes of meetings are available on our website at <https://www.electranet.com.au/our-approach/community/consumer-advisory-panel/>.

Our customer engagement journey



Consumer Advisory Panel convened

We established a Consumer Advisory Panel which brought together 12 peak organisations representing a wide range of customer interests. The panel provides a dedicated vehicle for our ongoing engagement and collaboration with customer representatives, and helps us to better understand their needs and interests.



Aug 2015

Wider stakeholder feedback sought



The key themes of affordability, reliability and customer choice had become evident, and were tested in public forums and a wider program of in-depth interviews conducted with customer representatives, direct and indirect customers and industry bodies.

Mar – Jul 2016

Early engagement approach proposed

We proposed a different and more collaborative early engagement approach, which both the panel and the AER supported as the preferred way of proceeding.



Key directions and priorities workshopped



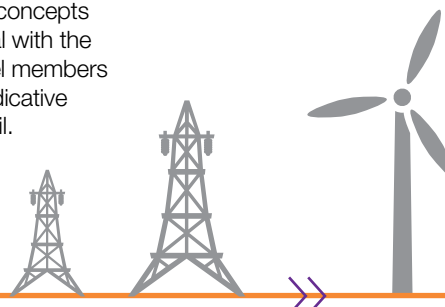
We then began discussing the key concepts of the Preliminary Revenue Proposal with the panel, and a working group of panel members was formed to work through our indicative expenditure proposals in more detail.

Jul - Aug 2016

Sept 2016

Preliminary Revenue Proposal published

We published our Preliminary Revenue Proposal, reflecting feedback on the issues and priorities identified by the panel, and balancing network safety, security, reliability and cost. We invited submissions from customers, representatives and other stakeholders, and held metropolitan and regional forums with stakeholders to discuss our proposals.



Customer Engagement Program developed

We made sure our customer engagement process was more effective by having the panel help us identify the range of different organisations, companies and individuals that are interested in the services we provide. With the assistance of the panel, we designed an engagement process to give each group a voice.



Aug – Dec 2015

Network Vision developed



Based on the feedback received, we refined our Network Vision, which states that the transmission network will deliver affordable and reliable power supplies that support customer choices for a sustainable future. This is supported by key directions that address the way customer priorities and feedback will continue to be incorporated in our business in the future.

Aug – Dec 2015

Issues and priorities identified

The panel then identified, refined and ranked the issues and priorities that should shape our planning and the areas of engagement with wider groups of stakeholders.



Dec 2015 – Jul 2016

Technical workshops



We convened a series of technical 'deep dive' workshops to explain our approach to transmission planning and our Preliminary Revenue Proposal. These workshops were attended by Consumer Advisory Panel members and the AER. Members of the AER's Consumer Challenge Panel also attended these sessions.

Final directions and plans workshopped

We briefed the Consumer Advisory Panel on the outcomes of our consultation and convened a further technical workshop to explain the proposed changes to our capital expenditure program, attended by panel members, the AER and representatives of the AER's Consumer Challenge Panel.

Sept – Oct 2016

Jan – Feb 2017

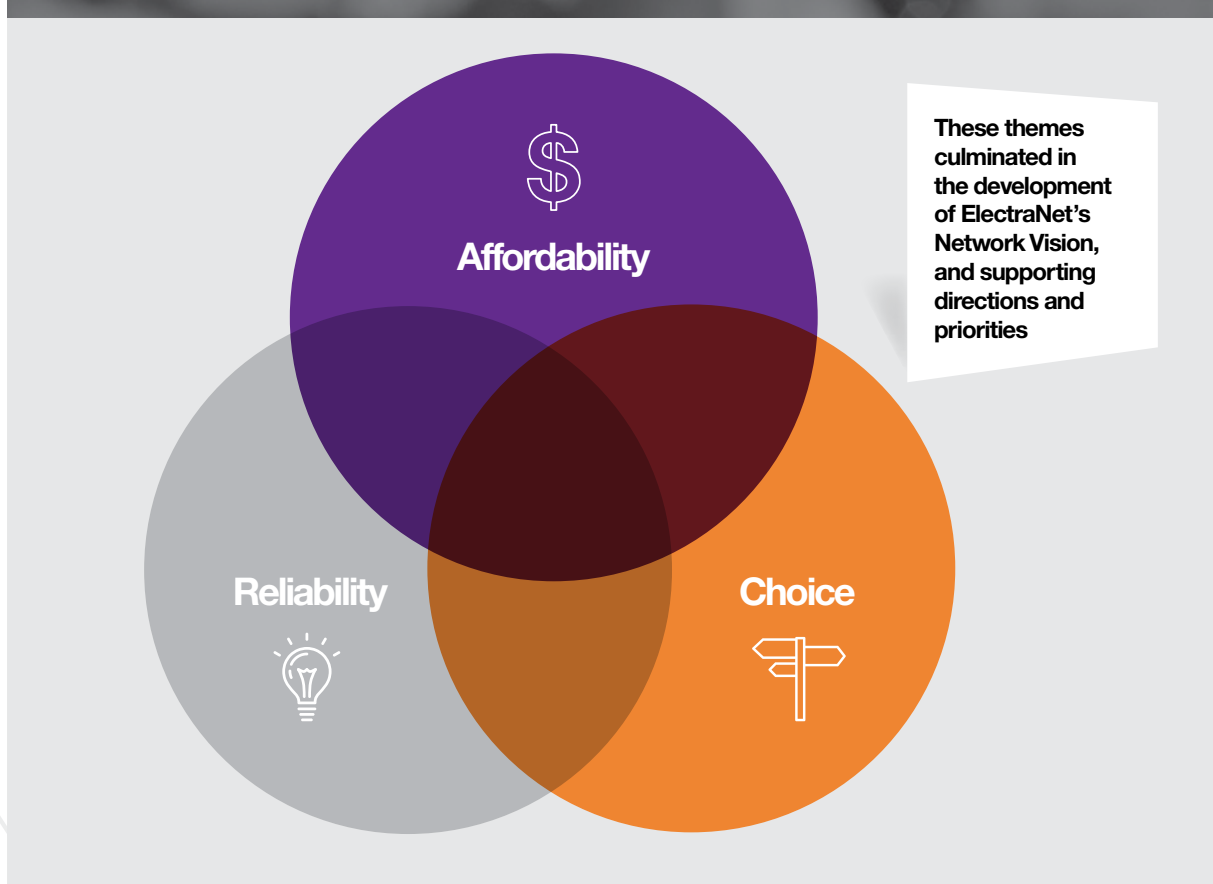
NOW

5.2 Customer feedback has informed our directions and approach

While safety, security and reliability of supply is paramount, customers also remain concerned about prices. We have taken this message on board in our Revenue Proposal and as we've finalised our expenditure plans to deliver on the long-term needs of customers.

The feedback gathered throughout our customer engagement process has been summarised into key insights, which have three common themes: **Affordability, Reliability and Choice.**

Figure 12: Customer feedback themes



ElectraNet's vision for South Australia's transmission network is that it will deliver affordable and reliable power supplies that support customer choices for a sustainable future.

The overall challenge for the transmission network into the future will be balancing:

- a continuing need for high levels of operational and investment efficiency to reduce cost
- managing more complex power system security and network reliability issues arising from the changing generation mix

The key directions and priorities reflected in our Network Vision and which we developed in conjunction with our customers and stakeholders are detailed below. These are intended to provide detailed guidance on the practical ways we will go about planning for the future of the network, grouped under the following key themes:

- The transmission network will continue to play an important role into the future to support safe, reliable and affordable electricity supply
- The ongoing uptake of distributed energy resources by customers is changing the role of the grid
- The generation mix is changing, creating new challenges for the secure and reliable operation of the grid
- New technologies are changing the way some network services can be delivered

Consistent with this, our key priorities are to:

- create a sustainable network for the long-term by seeking to deliver the most cost effective solutions for customers
- maintain network reliability as safely and efficiently as possible through a risk-based approach
- focus on efficiently prolonging asset life wherever possible and deferring major replacement while maintaining reliability
- build trust by undertaking ongoing, genuine engagement with customers, customer representatives and other stakeholders

- actively monitor and respond to trends, developments and expectations to ensure ElectraNet is ready to meet the needs of customers as distributed energy technology is adopted
- develop efficient solutions to maintain a secure and reliable network with less conventional generation
- investigate further interconnection opportunities which enhance benefits to customers by facilitating market competition and supporting competitive, secure and stable power supplies and renewable generation exports
- continue to investigate the application of grid scale energy storage, and gain experience in the deployment and operation of this emerging technology

Further information on these feedback themes, directions and priorities can be found in ElectraNet's Network Vision³⁰.

The further engagement with stakeholders following the release of our Preliminary Revenue Proposal reinforced the following key themes:

- The level of total electricity prices remains of concern to customers
- The growing importance of managing the security of South Australia's transmission network, as illustrated by the recent extreme weather event of 28 September 2016
- The importance of balancing the reliability levels expected of the transmission network against cost outcomes for customers

We understand the importance of getting the balance right between price relief and delivering the level of supply reliability and security customers expect. Our proposals are aimed at responsibly balancing safety, security and reliability of supply and affordability.

The following summarises some of the key matters raised during consultation on our Preliminary Revenue Proposal and the manner in which these have been taken into account in this Revenue Proposal Overview.

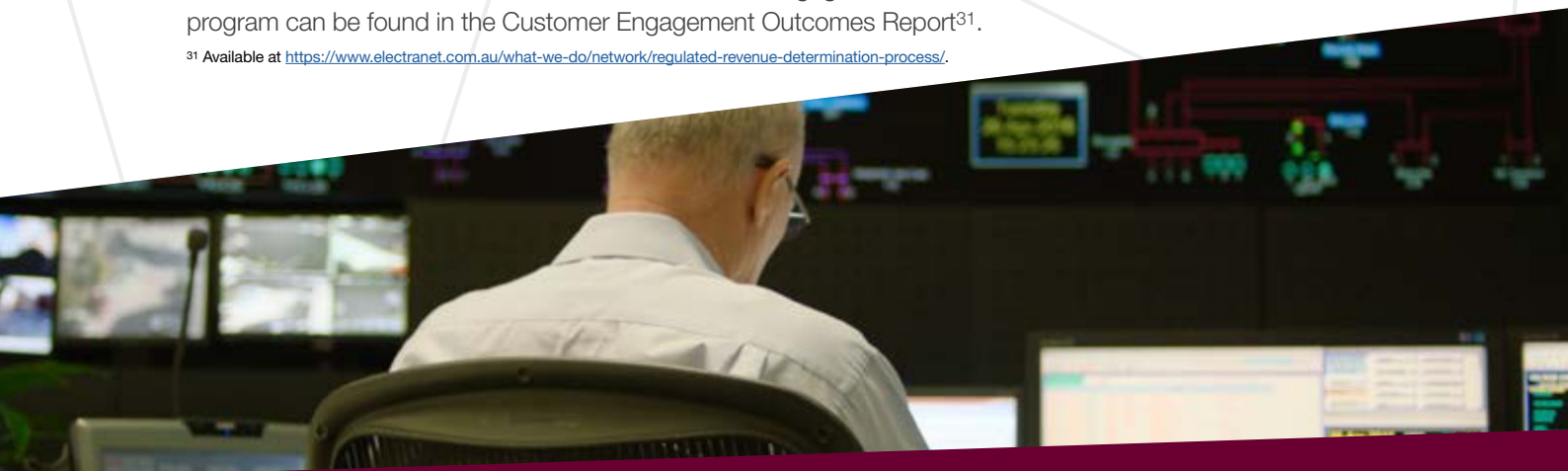
³⁰ Available on our website at <https://www.electranet.com.au/what-we-do/network/vision-for-our-network/>.

What we heard	Our response
<p>South Australia's blackout on 28 September 2016 crystallised the importance of reliability to business and once the exact causes and their relative contributions to the system failure are determined by relevant inquiries, it will be important for ElectraNet to take reasonable steps at appropriate costs to mitigate future impacts of similar events.</p>	<p>We have carefully examined these risks and adopted measured and targeted proposals to address these risks on a cost effective basis, based on the best information available at this point in time, as discussed in Section 4.2.</p> <p>We will continue to efficiently operate and maintain the network to maintain safety, security and reliability in the face of growing system security challenges as outlined in Section 8.</p> <p>We are continuing to monitor the multiple ongoing investigations into this event and will continue to assess whether any further expenditure is required.</p>
<p>The blackout events on 28 September 2016 highlighted the vulnerability of Port Lincoln customers.</p>	<p>We are actively investigating cost effective solutions to improve the reliability of supply to the Eyre Peninsula, as discussed in Section 4.4.</p> <p>The blackout event is the subject of multiple investigations which are ongoing.</p>
<p>After labour, electricity costs are the most significant concern for small business.</p>	<p>We will continue to focus on driving costs down while maintaining the reliable network expected in a modern society, and pursue broader measures to reduce the delivered cost of energy, such as interconnection options and network capability improvements, as discussed in Section 9.5.</p>
<p>There is limited reference in the Preliminary Revenue Proposal to any projects that focus on maintaining frequency reliability in the transmission system.</p>	<p>The Revenue Proposal explains in further detail the measures being undertaken in the short and medium-term to address the security and reliability of the transmission network, including the implications from the recent extreme weather event of 28 September 2016 and the management of system frequency, as discussed in Sections 4.2 and 7.</p>
<p>It's welcoming that ElectraNet is exploring solutions that provide for greater interconnection and it should consider including non-network options.</p>	<p>We will continue to investigate the feasibility of new interconnection options and non-network solutions through our SA Energy Transformation RIT-T process, which is now underway, as discussed in Section 4.3.</p>
<p>General support for the two contingent projects proposed in the Preliminary Revenue Proposal, however, if approved, this may significantly increase the capital expenditure on the transmission network.</p>	<p>The potential price impacts of these two projects - a full Eyre Peninsula line replacement and new interconnect project - are detailed in Section 6. These projects can only be approved by the AER if sufficient net benefits to customers can be demonstrated. Details of the contingent projects we have identified are set out in Section 7.</p>
<p>There is mention of two contingent projects in the Preliminary Revenue Proposal – but there is no mention of other major projects for other regions, such as the Upper North Region.</p>	<p>The Revenue Proposal details five contingent projects being proposed to cater for potential capital expenditure requirements across the network in the coming period as set out in Section 7, including two projects in the Upper North Region which are contingent on potential mining developments.</p>

What we heard	Our response
Support the year 2015-16 as being a reasonable base year for the opex forecasts.	We have continued to base our operating expenditure forecasts on 2015-16 as a representative and efficient base year, as discussed in Section 8.
Support for the headline reduction rate of 10%* which seems reasonable from a customer perspective. * Estimate subsequently revised to 11%	The final operating expenditure forecasts maintain a projected reduction of 11% as discussed in Section 8.
Local wage price drivers remain depressed, and labour cost growth should be capped at CPI	We have sourced independent expert advice on forecast labour costs movements and applied the AER's standard approach to labour costs based on the average of expert opinions, which shows a minor real forecast cost increase across the period, as discussed in Section 8.
Welcome the proposal to adopt rate of return parameters in line with recent AER determinations and subsequent court rulings.	We have maintained our approach to the rate of return parameters as outlined in the Preliminary Revenue Proposal, as discussed in Section 9.
Acknowledge that the early engagement process has been a learning exercise for both ElectraNet and the Consumer Advisory Panel, ElectraNet have shown a genuine degree of openness with customer representatives which has helped to instil a sense of confidence in the processes behind construction of its 2019-2023 Revenue Proposal.	We remain fully committed to our early engagement process and to ongoing meaningful customer engagement that will continue beyond the lodgement of our Revenue Proposal and AER final determination.
Gamma should be 0.5 rather than 0.25 as proposed in the Preliminary Revenue Proposal – but recognise that this is a contentious issue.	We have continued to adopt a gamma value of 0.25 given the current uncertainty over the prevailing approach, pending the outcomes of ongoing appeals by other networks, as discussed in Section 9.3.
A more appropriate forecast inflation figure of 2.4% is suggested for the period, which is just below the mid-point of the Reserve Bank of Australia's target range of 2%-3% rather than the 2% proposed in the Preliminary Revenue Proposal.	We have adopted a market based inflation forecast in the Revenue Proposal to provide the most accurate CPI outlook possible. We will be working with the AER, which has recently commenced a review of its prevailing inflation forecast methodology, to determine the appropriate approach moving forward. Our current forecast is subject to ongoing change based on prevailing market conditions, as discussed in Section 9.4.

Further information on the outcomes of our customer engagement program can be found in the Customer Engagement Outcomes Report³¹.

³¹ Available at <https://www.electranet.com.au/what-we-do/network/regulated-revenue-determination-process/>.





TRANSMISSION PRICES

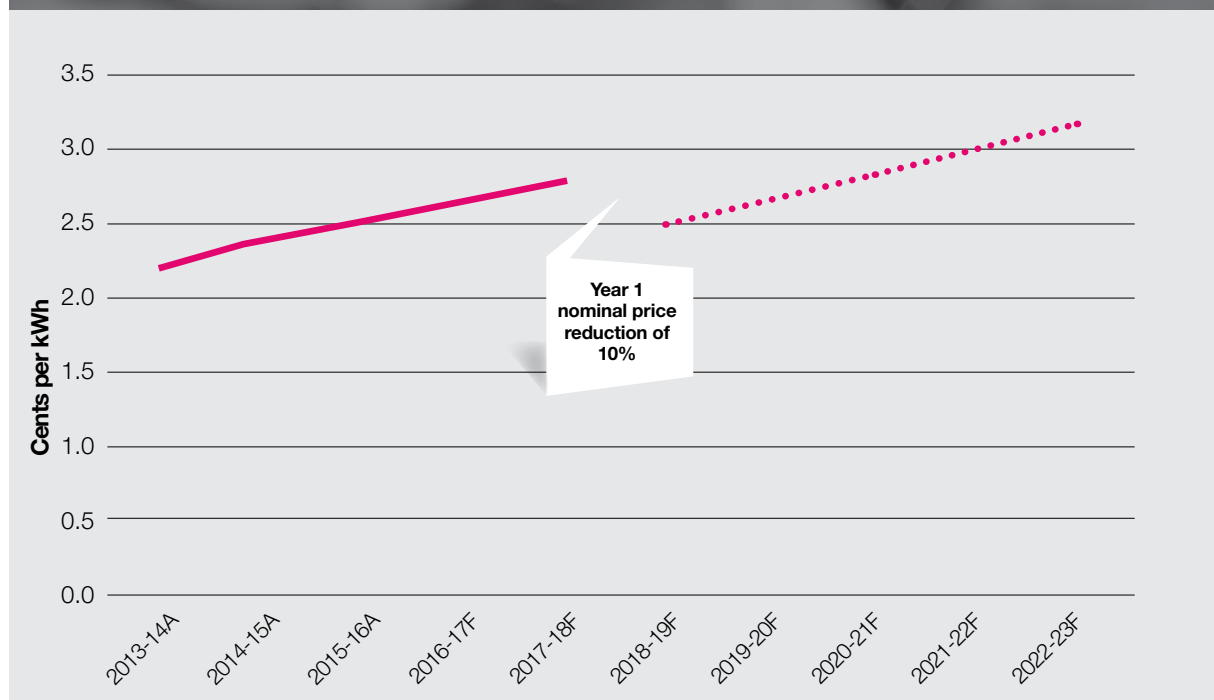
6. Transmission prices are forecast to go down by 10%

6.1 We are working to deliver the reliability our customers expect while reducing prices

We are working to deliver the levels of reliability expected across our network while delivering price reductions for our customers. While the relationship between our revenues and network prices paid

by customers is complex, we estimate that the transmission component of electricity prices will fall by 10% in the first year if our proposal is accepted by the AER.

Figure 13: Average transmission price path (nominal cents per kWh)³²



³² Based on South Australian energy forecasts (neutral case) published by AEMO in its annual *National Electricity Forecasting Report: For The National Electricity Market*, June 2016 available at <http://www.aemo.com.au/Electricity/National-Electricity-Market-NEM/Planning-and-forecasting/National-Electricity-Forecasting-Report>.

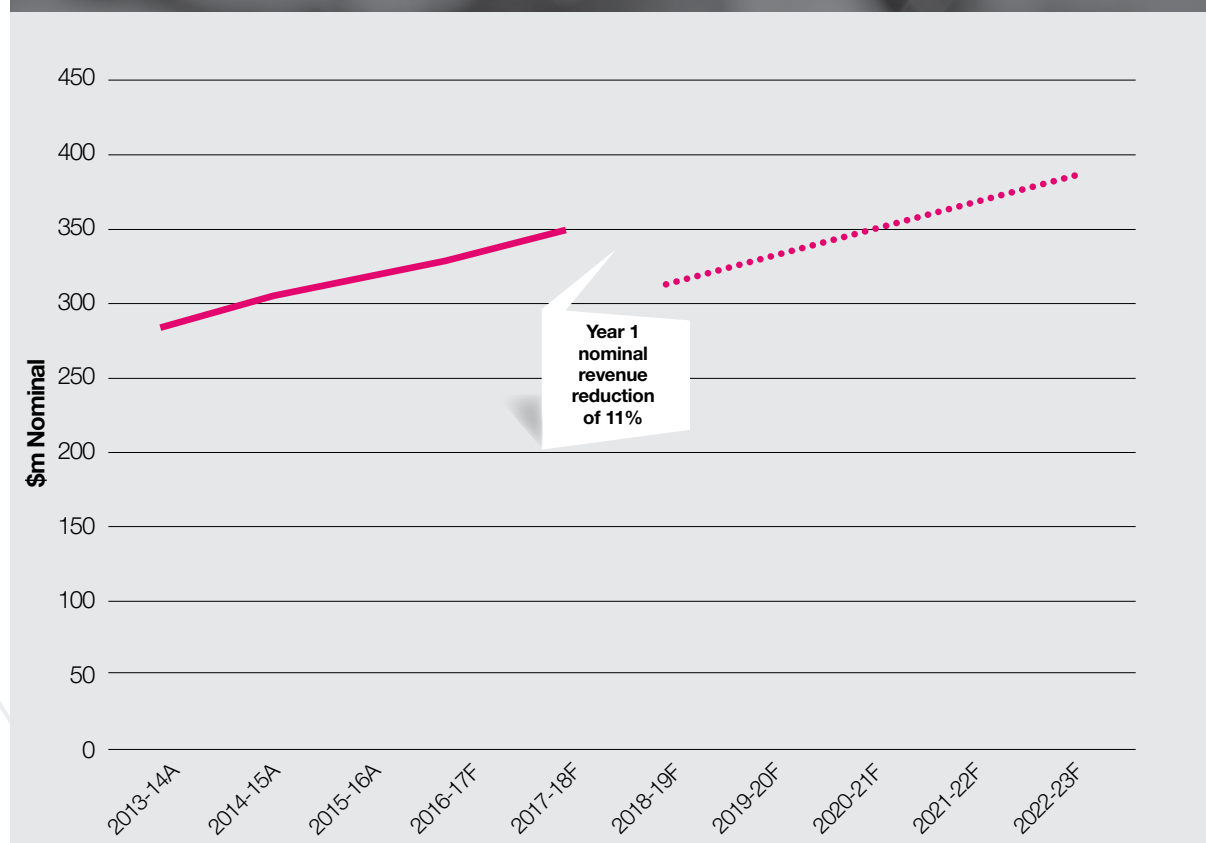
In aggregate, this price outlook would result in an initial price decrease of \$14 per annum for an average residential customer and \$28 per annum for the average small business customer.³³

Transmission costs are projected to fall to around 8% of an average household electricity bill by the end of the coming period based on current market projections.³⁴

This price outlook is based on the revenue forecast shown in Figure 14.

Our annual revenue³⁵ is expected to fall by 11% in the first year of the coming regulatory period commencing in 2018–19³⁶.

Figure 14: Transmission revenue path - smoothed (nom \$m)³⁷



³³ Based on published data on average residential and small business electricity usage, including \$1,767 per annum for average annual household bill and 5000kWh annual household consumption as per ESCOSA, *Energy Retail Offers Comparison Report 2015-16*, August 2016 available at <http://www.escosa.sa.gov.au/ArticleDocuments/534/20160831-Energy-2016RetailOffersComparisonReport.pdf.aspx?Embed=Y>. Note that transmission prices for large customers are determined annually under ElectraNet's Transmission Pricing Methodology, and individual price movements will not correspond exactly to the overall movements shown here.

³⁴ Based on published data on average residential and small business electricity usage, including \$1,767 per annum for average annual household bill and 5000kWh annual household consumption as per ESCOSA, *Energy Retail Offers Comparison Report 2015-16*, August 2016 available at <http://www.escosa.sa.gov.au/ArticleDocuments/534/20160831-Energy-2016RetailOffersComparisonReport.pdf.aspx?Embed=Y>. Assuming annual price growth of 1.1% p.a. as per the Jacobs *Retail Electricity Price History and Projections - Public Report*, 23 May 2016, prepared for AEMO, available at https://www.aemo.com.au/-/media/Files/Electricity/NEM/Planning_and_Forecasting/NEFR/2016/Retail-electricity-price-history-and-projections.pdf.

³⁵ Our total smoothed revenue across the five year period commencing 1 July 2013 is forecast at \$1589m compared with a forecast of \$1738m for the five year period commencing 1 July 2018.

³⁶ This is equivalent to a real reduction of 12%.

³⁷ ElectraNet data.

The average price reduction is slightly lower than the fall in total revenue due to the continued fall in expected energy consumption over the next period, projected to decline by 0.6% per annum, placing upward pressure on unit prices.

Actual revenue and price outcomes by the end of the period will be influenced by annual movements in energy consumption, inflation and the weighted average cost of capital (WACC) as the actual cost of debt is updated annually throughout the period (in accordance with the AER Guideline approach).

These revenue and pricing outcomes exclude the impact of additional capital projects that may separately be approved by the AER if certain trigger events are met, as contingent projects. We are actively investigating two such projects at present through the RIT-T process, namely a new interconnector to the eastern states and a full rebuild of the transmission lines on the Eyre Peninsula (as discussed in Section 4). This involves assessing the benefits and costs of these projects to determine if they are economically

justifiable and therefore deliver net benefits to customers.

By way of illustration, were either of these potential projects found to be economic and later approved by the AER then:

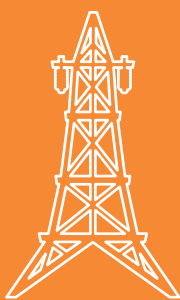
- a full rebuild of the transmission line serving the Eyre Peninsula at an additional cost of approximately \$120m would add approximately \$4 to the average annual residential customer bill from the time of commissioning, which would be expected to be towards the end of the forthcoming 2019–2023 regulatory period
- the development of a new interconnector to New South Wales at an indicative cost for the South Australian portion of the link of \$250m would add approximately \$8 to the average annual residential customer bill from the time of commissioning, which would be expected to be towards the end of the forthcoming 2019–2023 regulatory period.

Further information on our proposed contingent projects is provided in Section 7.

6.2 We're proposing no material changes to our pricing methodology or negotiating framework

We recover our maximum allowed revenue through transmission prices, which must comply with detailed principles set out in the Rules. Our current methodology remains appropriate and we are not proposing any material changes for the forthcoming regulatory period. For connection services and associated services provided to individual network

customers and generators, our revenues and prices are determined through our negotiating framework. Similar to the transmission pricing arrangements, our negotiating framework must satisfy principles set out in the Rules. We do not propose any material changes to our current negotiating framework.



CAPITAL EXPENDITURE

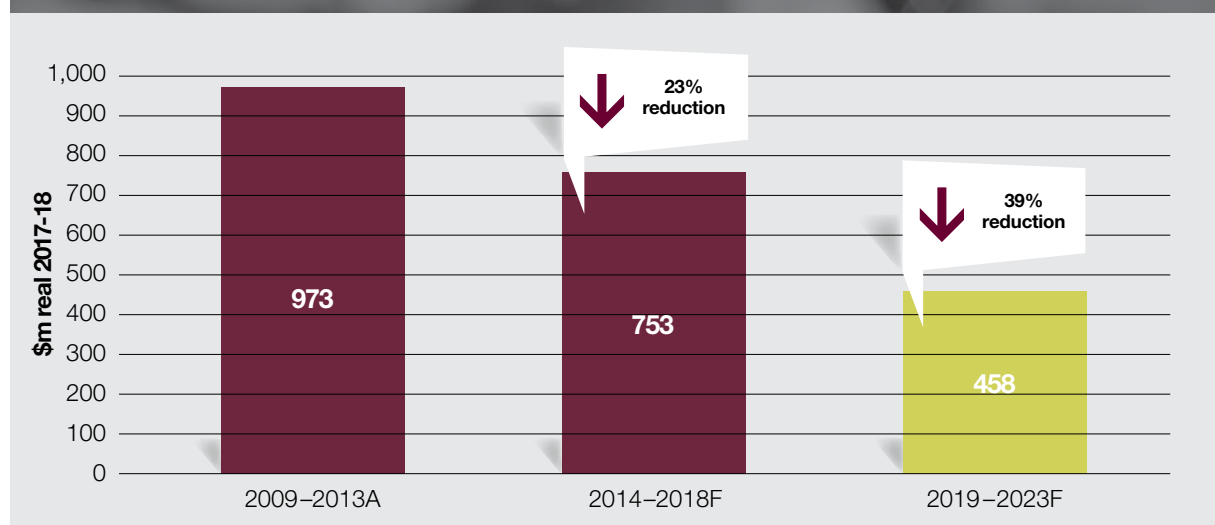


7. We're proposing a 39% reduction in our capital program, while investing in network security and reliability

We are investing to maintain South Australia's transmission network to support the safe, secure and reliable and secure supply of electricity into the future. Our investment plans reflect the feedback we have received through our customer engagement process.

Total capital expenditure is forecast to reduce by 39% to \$458m over the 2019–2023 regulatory period (with an average annual range of \$60–110m) compared with an estimate of \$753m for the current period (and historical annual levels of \$150–200m), as shown in Figure 15.

Figure 15: ElectraNet's actual and forecast capital expenditure (\$ million real 2017–18)³⁸



Since the publication of our indicative capital expenditure forecast in our Preliminary Revenue Proposal, a small number of new investment needs have been identified. In particular:

- Unanticipated works to repair damaged parts of the network following the extreme weather event of 28 September 2016, and associated works, resulted in the delay of a number of existing projects from the current period into the next period due to resource constraints and the difficulty in obtaining network outages to complete these projects.
- A small number of targeted and prudent measures have been identified in the next period to improve the ability of the transmission network to withstand the impact of extreme weather events, and improve the security of the network, in the most cost effective manner.

We have also settled the scope, cost and timing of the remaining projects included in our forecast.

These movements from the indicative forecasts contained in the Preliminary Revenue Proposal are illustrated in Table 1 overleaf.

³⁸ Data excludes NCIPAP expenditure.

Table 1: Movements in the capital expenditure forecast for 2019–2023 (\$m real 2017–18)

Change	Cost (\$m)	Description
Indicative capital expenditure forecast contained in the Preliminary Revenue Proposal	407	Represented a reduction of 46% from the current period
New projects undertaken in the current period in response to the extreme weather event, including network restoration works and preventative measures, have diverted scarce resources and reduced the ability to secure outages, delaying the timing of existing projects into the next period	17	Includes delays in completion of various transmission line and telecommunication projects
Additional expenditure requirements driven by targeted measures to increase the resilience of the network and improve network security	32	Includes targeted works to improve restoration times following major system disturbances and improve the security and resilience of the network (refer to Table 2)
Other net changes in forecast based on project movements, including refinement and updating of project scopes and cost estimates	2	Includes increased cost estimate for Eyre Peninsula partial line replacement project (from \$55m to \$79m) largely offset by project deferrals, efficiencies and scope reductions
Final capital expenditure forecast contained in Revenue Proposal	458	Represents a reduction from current expenditure levels of around 39%

While this results in a slightly smaller reduction in our capital program than indicated in our Preliminary Revenue Proposal, this investment is more than offset by the benefits of improved network security.



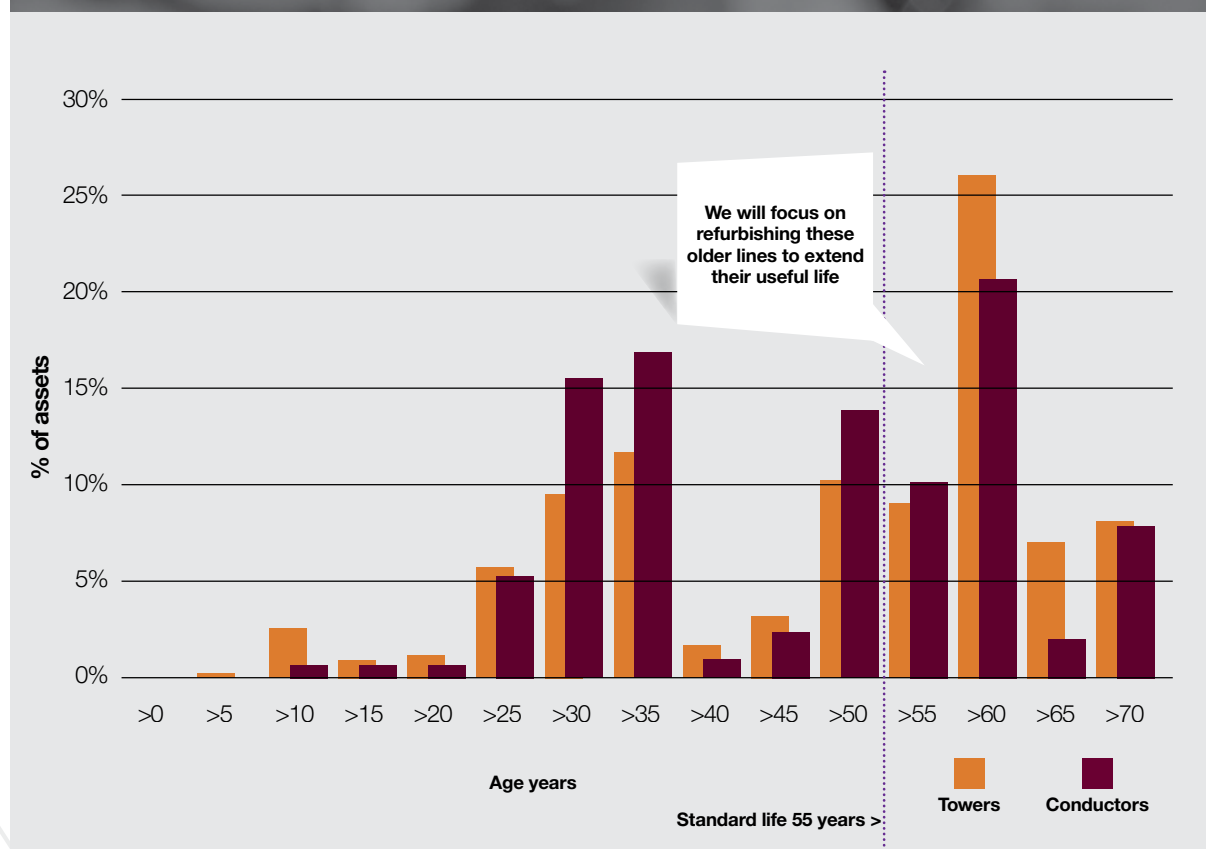


As growth in electricity demand has decreased and is projected to fall further, there is currently no demand-driven need to augment the network (i.e. no need to increase the capacity). This means the focus of the bulk of our future investment program is on replacing individual network assets where condition signals that they are at the end of their useful lives, and refurbishing other assets in order to extend their life. Overall, our forecast total capital expenditure for the forthcoming regulatory period is \$458m in real

(constant dollar) terms, which is 39% lower than our projected expenditure level in the current period.

South Australia has among the oldest assets of transmission networks in the NEM. While significant investment has been made in recent years in replacing aged substation assets, a key focus of the next regulatory period is to address transmission line condition and risk to ensure reliability of the network for South Australian households and businesses.

Figure 16: ElectraNet's transmission line predicted asset age profile in 2023³⁹



³⁹ Annual Regulatory Information Notice data 2015–16, AER, November 2016, available at <http://www.aer.gov.au/networks-pipelines/network-performance>.

Between 30% and 45% of major line assets on the transmission network will have exceeded their standard economic lives by the end of the next regulatory period (see Figure 16). We do not replace assets based on age. We carefully monitor the condition of our assets, and apply a risk based approach such that we only replace assets to meet or manage expected demand, where it is cost effective to do so, and when necessary to meet our regulatory obligations or otherwise to maintain safety, security and reliability.

The majority of the investment program relates to risk based asset replacement and line refurbishment,

with the remainder relating to initiatives designed to improve network security, along with the recurrent and other capital expenditure required to maintain the systems and facilities needed to efficiently run the network.

We are forecasting a significant decrease in virtually all categories of capital expenditure.

Table 2 provides a summary of the forecast capital program, including a breakdown by type and investment driver, compared to the current regulatory period, with greater detail on the refurbishment and replacement elements outlined in Table 3.

Table 2: Current and Forecast Capital Expenditure Program (\$m)

CATEGORY	TOTAL EXPENDITURE			COMMENT
	2014–2018	2019–2023	CHANGE	
Augmentation	102	16	↓ 86	Minimal new load driven capital investment requirements in declining demand environment
Connection	39	6	↓ 33	
Easement/land	26	0	↓ 26	
Replacement	349	167	↓ 182	Focus on component asset replacements with reduced need for large scale rebuilds – key expenditure drivers are to manage safety, security and reliability risks and contain escalating maintenance costs
Refurbishment	75	159	↑ 84	Key expenditure drivers are to extend the useful life of ageing transmission lines and manage safety, reliability and fire start risk
Security/compliance	74	46	↓ 28	Reduced requirements based on work undertaken in current period, with a focus on targeted network security measures
Inventory/spares	14	12	↓ 2	Ongoing replenishment program
Information technology	58	47	↓ 11	Reduced program largely focused on ongoing replacement requirements
Facilities	14	6	↓ 8	Ongoing minor asset replacement
TOTAL	753	458	↓ 295	Reduction of 39%

*Totals may not add due to rounding

Table 3: Replacement and refurbishment forecast for 2019–2023 (\$m Real 2017–18)

Type	Program	\$ million	Driver
Network replacements	Telecommunications	24	Manage reliability and contain escalating maintenance costs
	Operational IT	12	
	Other	43	
Unit asset replacements	Protection systems	29	Manage reliability and safety risks and contain escalating maintenance costs
	Isolators	11	
	Circuit breakers	5	
	Transformer bushings	7	
	Transformers	8	
	Other	28	
Subtotal		167	
Line refurbishment	Conductors	92	Extend line life and manage safety, reliability and fire start risk
	Support systems	59	
	Insulators	9	
Subtotal		159	

*Totals may not add due to rounding

Examples of the additional investments that are being undertaken in the current period in order to improve the ability of the network to withstand extreme weather events and improve security are summarised in Table 4 below.

Table 4: New projects in the current period to address network security risks (\$m real 2017–18)

Project	Driver	Cost (\$m)
Line restoration works	Following the installation of temporary towers to restore immediate supply, the completion of permanent repairs to the major towers damaged in the storm event of 28 September 2016	6
Temporary transmission structures acquisition	Improved restoration times following storm damage by procuring additional temporary structures to reduce reliance on emergency response structure kits held by other transmission networks	3
Re-deployable telecommunication site	Improved network security by providing containerised telecommunication sites suitable for rapid deployment to the field, to replace radio sites or provide a temporary radio link to bypass a failed overhead optical ground wire	1
Telco DC power systems upgrade	Improved outage restoration times through battery backup on telecommunication sites that service substations critical to the restoration of supply in the event of a major extended outage, and provide for back-up generation to be connected safely, securely and rapidly if needed	1
Special protection scheme	Improved network security through developing, validating and implementing a special protection scheme to maintain system security and protect against the islanding of the South Australian power system during non-credible events (commencement of project)	2
Spencer Gulf crossing bypass preparation	Improved restoration times for the Eyre Peninsula following storm damage to the Spencer Gulf Crossing towers by pre-installing anchors and readying footings to enable rapid deployment of temporary structures	3
Subtotal		16

Examples of the additional investments to be undertaken in the next period in order to improve the ability of the network to withstand extreme weather events and improve security are summarised in Table 5 below.

Table 5: New projects in the next period to address network security risks (\$m Real 2017–18)

Project	Driver	Cost (\$m)
Special protection scheme	Completion of current period project (as described above)	3
Substation improvements for system black conditions	Provide alternative diesel generator supplies to critical substations (where not already provided) and connection points for mobile generators to non-critical substations, to enable quicker restoration of the network for both short-term and prolonged outages	8
Transmission line access track upgrade	Improved outage restoration times through better access tracks at vulnerable tower locations across the network (e.g. swamp locations) and improved readiness to replace damaged towers in adverse conditions (e.g. for use of heavy vehicles in inclement conditions)	4
Line design manual	In light of recent events, the review and update of the transmission line design manual to ensure it remains appropriate to address the future security of the network to extreme weather risks	2
South East SVC computer control system replacement	Improved network security and management of interconnector flows through replacement of control systems for voltage control equipment, nearing end of life	5
Para reactor	Improved network security through installation of additional equipment to maintain voltages under more complex power flows	4
Blyth West reactor	Improved network security through installation of additional equipment to maintain voltages under more complex power flows	4
Torrens Island north substation tie bus	Improved network security through installation of additional equipment to facilitate a faster and more reliable black start	2
Subtotal		32

We are committed to delivering a safe, secure and reliable network and to meeting our compliance obligations at an efficient cost.



Table 6 explains how we ensure that our capital expenditure forecasts are efficient and prudent.

Table 6: Development of prudent and efficient capital expenditure forecasts

Inputs and analysis	Our approach
Demand forecasts and reliability	Forecast demand is an important driver for reliability driven capital expenditure. We have adopted AEMO's latest demand forecasts ⁴⁰ and estimates of the Value of Customer Reliability (VCR) ⁴¹ . Adopting these independent values provides confidence in these inputs.
Project cost estimates and efficiencies	An efficient capital expenditure forecast relies on accurate project cost estimates. To ensure that our project cost estimates are accurate, we have updated our estimates for the latest actual project costs and market rates. We have also incorporated efficiencies expected to arise as we combine the delivery of related projects. This ensures that our project cost estimates are accurate and reasonable.
Economic assessments	For all large projects, we conduct an economic assessment to determine whether the benefits of undertaking the project exceed the costs, and review all available options. We also examine the optimal timing of the project, so that customers obtain the maximum net benefit from the proposed expenditure, and projects are deferred when this is more economic.
Risk and reliability analysis	<p>Our decision to replace an asset is driven by asset condition, risk and reliability considerations, not asset age, balanced against cost. Our risk analysis considers the:</p> <ul style="list-style-type: none"> ■ probability of an asset failure ■ likelihood of adverse consequence(s) ■ likely cost(s) of the consequence(s) <p>Balancing the expected risk reduction against the costs of the proposed expenditure ensures that we deliver the safe and reliable network that customers expect at the lowest cost.</p>

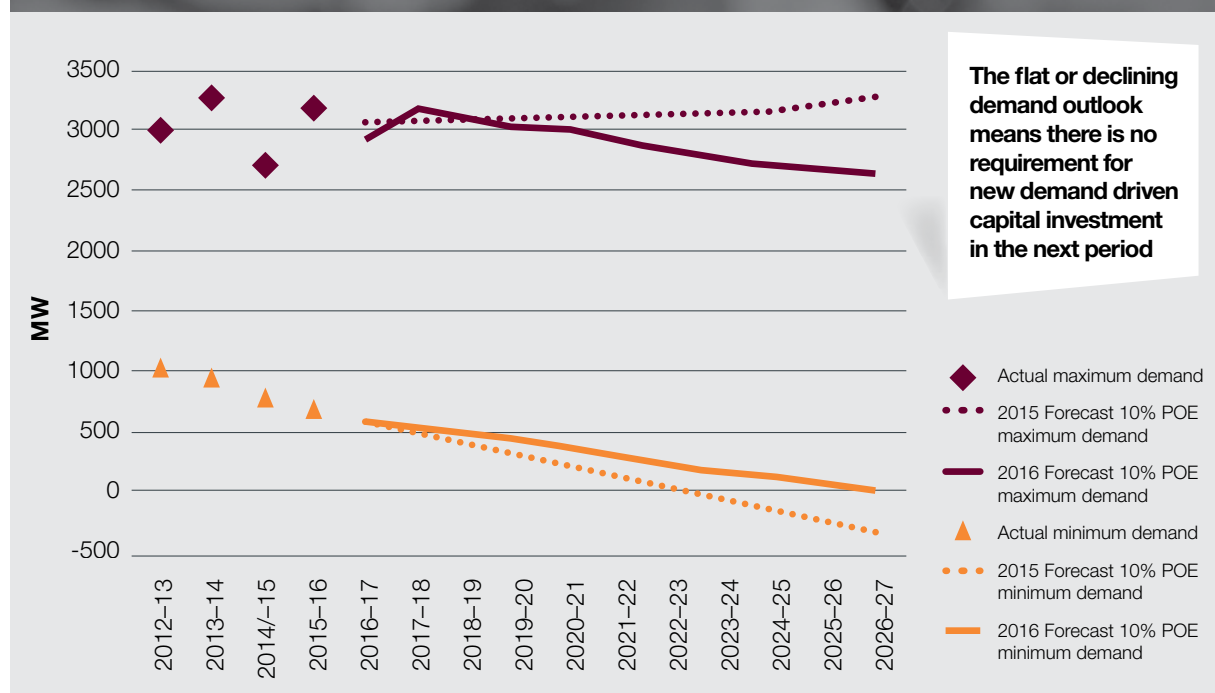
⁴⁰ AEMO, *National Electricity Forecasting Report: For The National Electricity Market*, June 2016 available at <http://www.aemo.com.au/Electricity/National-Electricity-Market-NEM/Planning-and-forecasting/National-Electricity-Forecasting-Report>

⁴¹ AEMO, *Value of Customer Reliability Review Final Report*, September 2014, available at <http://www.aemo.com.au/Electricity/National-Electricity-Market-NEM/Planning-and-forecasting/Value-of-Customer-Reliability-review>.

At the request of ElectraNet and the South Australian Government, AEMO has conducted an independent technical assessment of the emerging transmission network investment requirements in South Australia over the 2019–2023 regulatory period. The scope of AEMO's work included a review of our proposed contingent⁴² projects and our Network Capability Incentive Parameter Action Plan (NCIPAP)⁴³. AEMO is expected to publish its conclusions by early April 2017.

Historically, growth in customer peak electricity demand has been a major driver of investment in the transmission network. The forecasts of maximum demand⁴⁴ are now materially lower than actual historical levels on the transmission network, removing the need for investment to increase or maintain the same level of network capacity, as reflected in the forecast capital expenditure.

Figure 17: Actual and forecast demand on the South Australian transmission network⁴⁵



Falling minimum demand levels on the grid are now revealing some network limitations that need to be addressed in order to maintain reliable supply. These are addressed in a number of relatively minor projects included in the security/compliance program, including voltage control equipment.

We remain committed to delivering our capital program as efficiently as possible, while maintaining the reliability of the network in the face of the increasing challenges as high levels of renewable energy are integrated into the network.

The capital expenditure forecast included in our Revenue Proposal has been calculated based on information current at the time of publication including but not limited to data, prevailing market estimates, methodologies, legislation, regulatory guidance, assumptions, assessments, standards, and other factors. Our key assumptions are set out in Table 7 overleaf.

⁴² Contingent projects are excluded from the capital expenditure allowance in a revenue determination because of uncertainty around requirement, timing or cost. Under Clause 6A.8.2(d) of the NER, the TNSP can apply to the AER to amend their revenue determination to include the revenue required for a contingent project if the project is deemed economic.

⁴³ The NCIPAP was designed by the AER to support improved usage of existing network assets through low-cost projects.

⁴⁴ 10% Probability of Exceedance (POE) forecasts have a 10% probability of being exceeded. Similarly, 90% POE forecasts have a 90% probability of being exceeded.

⁴⁵ AEMO, *National Electricity Forecasting Report: For The National Electricity Market*, June 2016 available at <http://www.aemo.com.au/Electricity/National-Electricity-Market-NEM/Planning-and-forecasting/National-Electricity-Forecasting-Report>.

Table 7: Key assumptions underpinning our capital expenditure forecast

Assumptions	Description
Demand forecasts	To forecast our capital expenditure requirements, we have adopted AEMO's demand forecasts.
Asset condition data and risk assessments	We apply a systematic process for collecting, recording and analysing detailed information on the condition of our network assets, and we apply a risk-based approach in our asset management decision making.
Planning standards	We have adopted the current planning standards in our Revenue Proposal as published by ESCOSA, including the amendments to the Electricity Transmission Code that come into force in July 2018. ESCOSA has announced that it will review these standards for the Eyre Peninsula exit points. We will monitor these developments, but have not included any expenditure in our forecasts for additional costs related to any further changes to the planning standards.
Network Model	We use the Siemens Power Technologies International PSS/E suite of power system analysis programs as the platform for identifying both operational and future network limitations.
Economic assessments	We conduct an economic assessment to review the costs, benefits, available options and optimal timing for all large projects to ensure that any investment we make maximises the net benefit to customers. The outcomes of these assessments reflect current information, and are updated as further information and analysis becomes available.
Project scopes and cost estimates	Project cost estimates are derived from our internal estimating system, based on a range of information from internal and external sources. These estimates are subject to ongoing change and review as new information becomes available.
Cost escalation	We have forecast real labour and no real material cost increases, as explained in our Revenue Proposal. These estimates are subject to change as updated information becomes available. Our inflation assumptions are explained in Section 9.4.
Project timing and delivery	We prioritise the delivery of our capital program to ensure that the capital expenditure objectives are met as efficiently as possible. Our capital expenditure forecasts reflect the latest information on the timing of current projects, which is continually updated as projects proceed.

Further information on our forecasting approach and categories of capital expenditure is provided in our Expenditure Forecast Methodology⁴⁶.

As already noted, ElectraNet has identified a number of contingent projects in its Revenue Proposal. Contingent projects are excluded from the capital expenditure allowance in a revenue determination

because of uncertainty around requirement, timing or cost. ElectraNet can separately apply to the AER to amend the revenue determination to include the revenue required for a contingent project if and when the project satisfies certain defined trigger events and is demonstrated to be economic. ElectraNet's proposed contingent projects are as follows.

Table 8: ElectraNet's proposed contingent projects

Contingent project	Drivers	Indicative cost (\$m)
Eyre Peninsula reinforcement	Sufficient benefits to customers to justify the full replacement of the Cultana to Port Lincoln transmission line. The total cost of this project is estimated to be approximately \$200m, but if this project goes ahead it would replace the approximately \$80m of expenditure in our current forecasts for conductor replacement, resulting in a net \$120m increase in capital expenditure.	200 ⁴⁷
South Australian energy transformation	Sufficient benefits to customers from addressing network limitations and system security challenges due to changing generation mix.	200–500
Upper north west line reinforcement	Mining load increases triggering the need for augmentation to address network limitations on the Davenport – Pimba 132kV line.	110
Upper north east line reinforcement	Mining load increases triggering the need for augmentation to address network limitations on the Davenport – Leigh Creek 132kV line.	60
Main Grid System Strength Support	Confirmation by AEMO of the existence of a Network Support and Control Ancillary Services (NSCAS) gap relating to system strength, or other requirement for ElectraNet to address a system strength requirement, in the South Australian region.	60–80

These proposed contingent projects are based on current information. Should the need for further contingent projects emerge during the course of the revenue determination process due to updated information or subsequent developments, ElectraNet will share this information with stakeholders and the AER, and identify any additional contingent projects required.

⁴⁶ Available on our website at <https://www.electranet.com.au/wp-content/uploads/report/2016/09/20160630-Report-ElectraNetExpenditureForecastMethodology.pdf>.

⁴⁷ Noting that the differential cost over the alternative partial replacement option included in the ex ante forecast would be around \$120m, for which funding would be sought should the contingent project be triggered.



OPERATING EXPENDITURE



8. We will continue our drive for efficiency through a 11% reduction in our operating costs

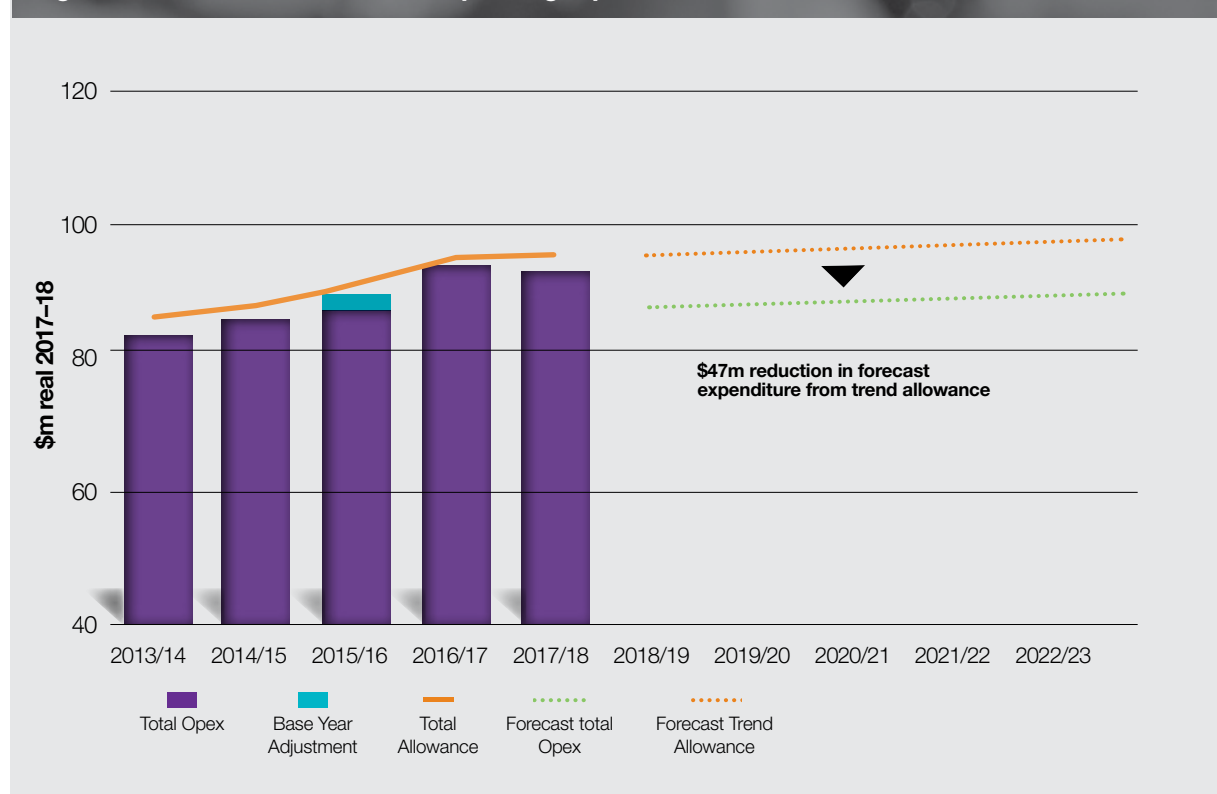
We are working hard to manage and operate South Australia's transmission network as cost effectively as possible, to support the safe, secure and reliable and secure supply of electricity. In the current period, our initiatives to reduce operating costs include:

- right-sizing the organisation to match an environment of lower demand growth and lower capital expenditure
- more targeted and cost effective maintenance planning through a reliability centred maintenance approach

- reduced maintenance costs through more efficient procurement and delivery strategies, allowing reinvestment of savings in the maintenance program
- challenging property value assessments to reduce our land tax costs

Overall, cost savings of 11% or \$47m are built into our total operating expenditure forecast relative to the trend allowance⁴⁸, as shown in Figure 18. There has been no material change in our operating expenditure forecast from that presented in the Preliminary Revenue Proposal.

Figure 18: Actual and forecast total operating expenditure⁴⁹



⁴⁸ Trend allowance refers to the projected expenditure allowance from the current regulatory period.

⁴⁹ ElectraNet data.

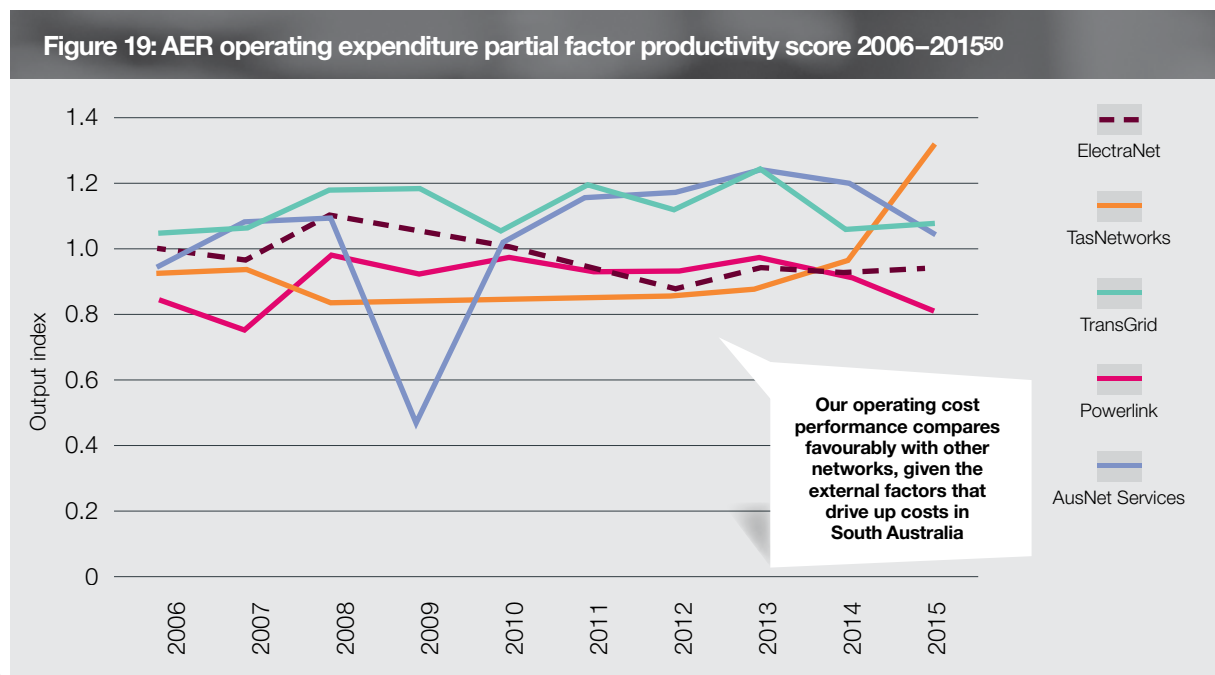
This equates to ongoing projected, savings of around \$9m per annum. We need to work hard to achieve these savings, particularly given the increasing importance of maintenance expenditure due to aging network assets.

These savings reflect both efficiencies achieved to date, and ongoing efficiencies yet to be delivered.

The operating cost performance of our network compared with other networks is shown in Figure 19, which is reproduced from the AER's benchmarking report. This chart has been adjusted to remove

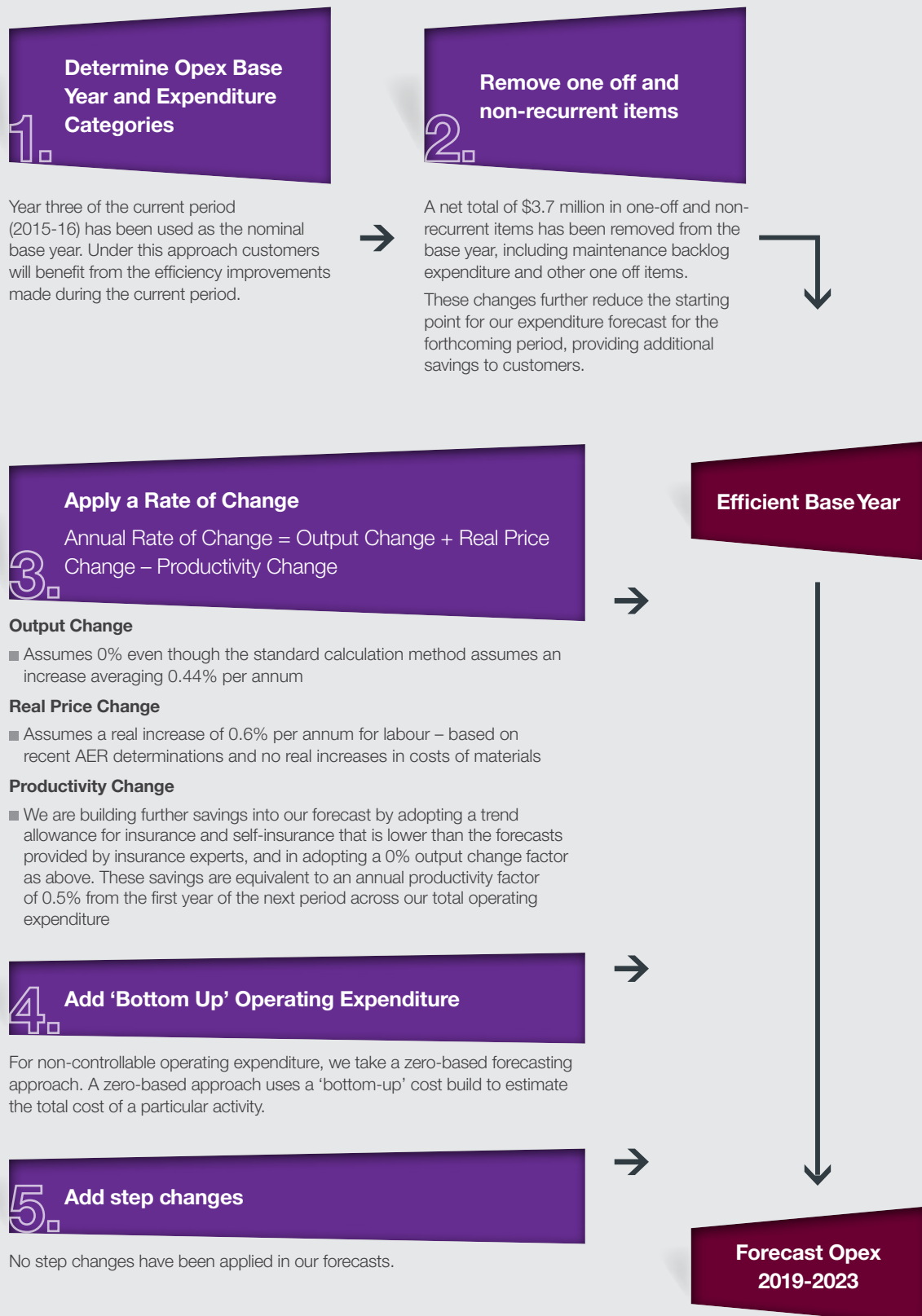
energy throughput as an input measure (which has no bearing on operating expenditure) and network support payments (which is a non-standard cost incurred by ElectraNet as an alternative to network augmentation).

Our total operating expenditure is forecast using the AER's standard base-step-trend approach. The detailed assumptions and inputs applied in this approach are outlined in Figure 20.

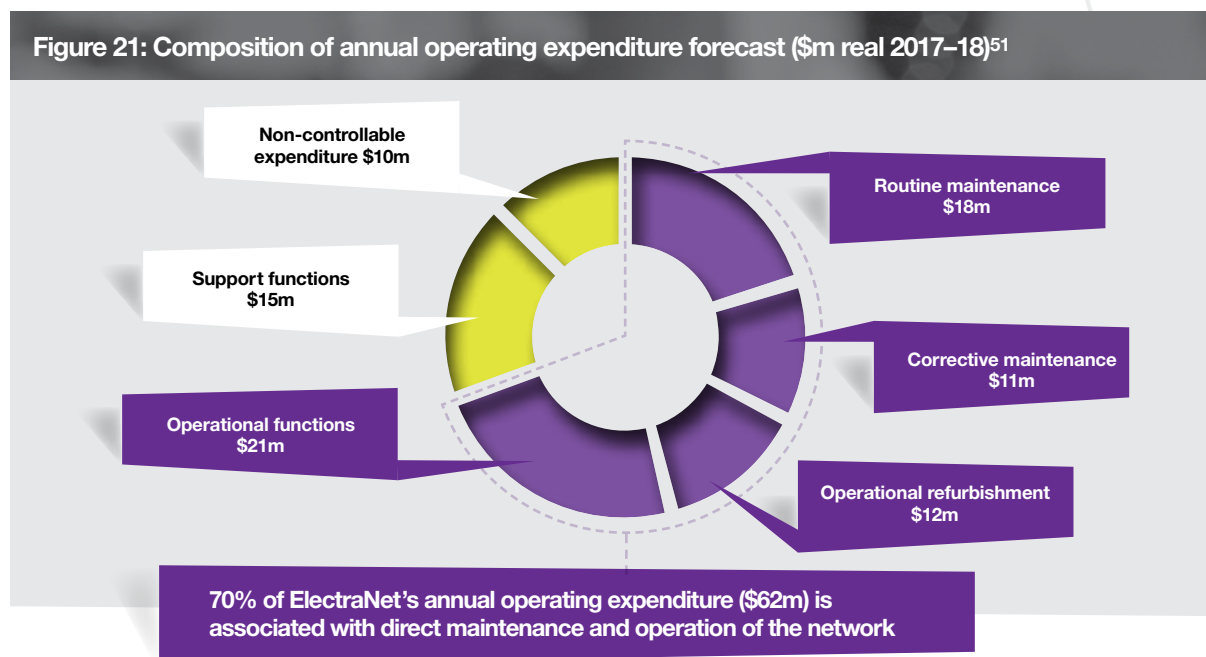


⁵⁰ AER, Annual Benchmarking Report - Electricity transmission network service providers, November 2016, page 18, available at http://www.aer.gov.au/system/files/Final%20TNSP%20annual%20benchmarking%20report%202016%20-%20for%20release_1.pdf.

Figure 20: Application of the AER's base step-trend forecasting methodology



The composition of the annualised operating expenditure program in the next period is shown in Figure 21.



The program focuses on routine maintenance and support functions that drive efficient planning and network performance. These programs are explained further in Table 9.

Table 9: Overview of operating expenditure programs

Program	Description
Routine maintenance	Field inspections and maintenance activities completed to predetermined schedules and scopes
Corrective maintenance	Field activities to mitigate short-term risks, restoring a transmission system asset or component to a satisfactory operational state
Operational refurbishment	Planned activities to mitigate risks identified in asset condition assessments, and manage compliance with legal obligations and good electricity industry practice
Operational functions	Maintenance support activities to ensure the efficient delivery of the maintenance program, and network operations activities including control centre
Support functions	IT support, asset strategy, network planning and corporate support activities
Non-controllable expenditure	Network support, debt raising costs and self-insurance

⁵¹ ElectraNet data.

We are forecasting expenditure reductions in the majority of categories. These ongoing savings give us confidence that our operating expenditure forecasts reflect prudent and efficient costs.

Our key assumptions in developing our operating expenditure forecast are set out in Table 10 below.

Table 10: Key assumptions underpinning our operating expenditure forecast

Assumptions	Description
Efficient base year	The most recent complete financial year 2015–16 has been adopted as an efficient base year for estimating operating costs, as adjusted for one-off and non-recurrent expenditure.
Rate of change assumptions	Our operational expenditure forecasts are based on assumptions which reflect current information on projected growth in the size of the network, real cost movements and productivity levels. Our inflation assumptions are explained in Section 9.4.
Insurance and self-insurance forecasts	We have obtained forecasts of insurance costs and self-insurance exposures from independent experts which were higher than our trend allowance. However, we have proposed a lower amount, consistent with our historical trended costs. In effect, this approach means that we have assumed an efficiency adjustment in our operating costs.

Further information on our forecasting approach and categories of operating expenditure is provided in our Expenditure Forecast Methodology⁵².

⁵² Available on our website at <https://www.electranet.com.au/wp-content/uploads/report/2016/09/20160630-Report-ElectraNetExpenditureForecastMethodology.pdf>.





FINANCIAL BUILDING BLOCKS



9. We're following well established approaches to determine the building block components of our Revenue Proposal

The following section sets out the remaining revenue building blocks, which have been prepared in accordance with the AER's established guidelines, with the exception of corporate tax and inflation, for which we have applied an alternative approach.

There has been no material change in our forecasts for these revenue components from those presented in our Preliminary Revenue Proposal, with the exception of the Rate of Return which has risen due to market movements outside of ElectraNet's control, as explained below.

In order to invest in the network and maintain a safe, reliable and secure supply, it is necessary for revenue to be set at a level that enables us to recover our efficient costs, which includes an adequate return to investors.

The Rules establish a building block method for determining our revenue requirements. The building block method recognises the different types of costs that we need to recover through our network charges, namely:

- operating expenditure
- return of capital or depreciation
- return on capital
- corporate tax

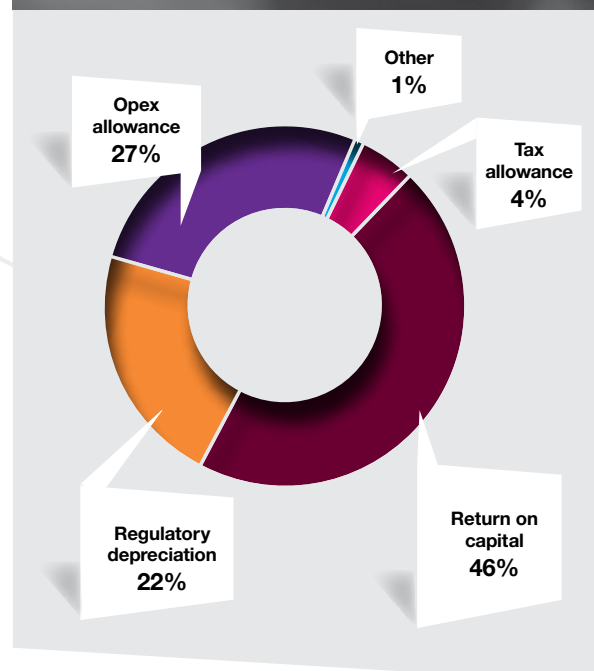
The first of these relates to our operating requirements. We refer to the remaining three components as 'financial' because they are only slightly influenced by our expenditure plans (including capital expenditure). The financial building blocks are driven by factors that are largely beyond our control, such as:

- the value of the existing asset base, reflecting historical investment in the network

- the remaining life of our assets
- financial markets data, which is used to assess the current cost of capital
- corporate tax rate

Our forecast capital and operating expenditure therefore contribute to our total revenue requirement in the next regulatory period, but most of our revenue is determined by these financial factors based on historical expenditure. Our total (smoothed) revenue across the five year period commencing 1 July 2013 is forecast at \$1589m compared with a forecast of \$1738m for the five year period commencing on 1 July 2018.

Figure 22: Major revenue components and drivers 2019–2023⁵³



⁵³ ElectraNet data. Other minor components include incentive payments, comprising NCIPAP payments (1.5%) and EBSS carry forward payments (<1%). Equity raising costs are forecast at \$0 based on the standard methodology applied by the AER.

9.1 Depreciation

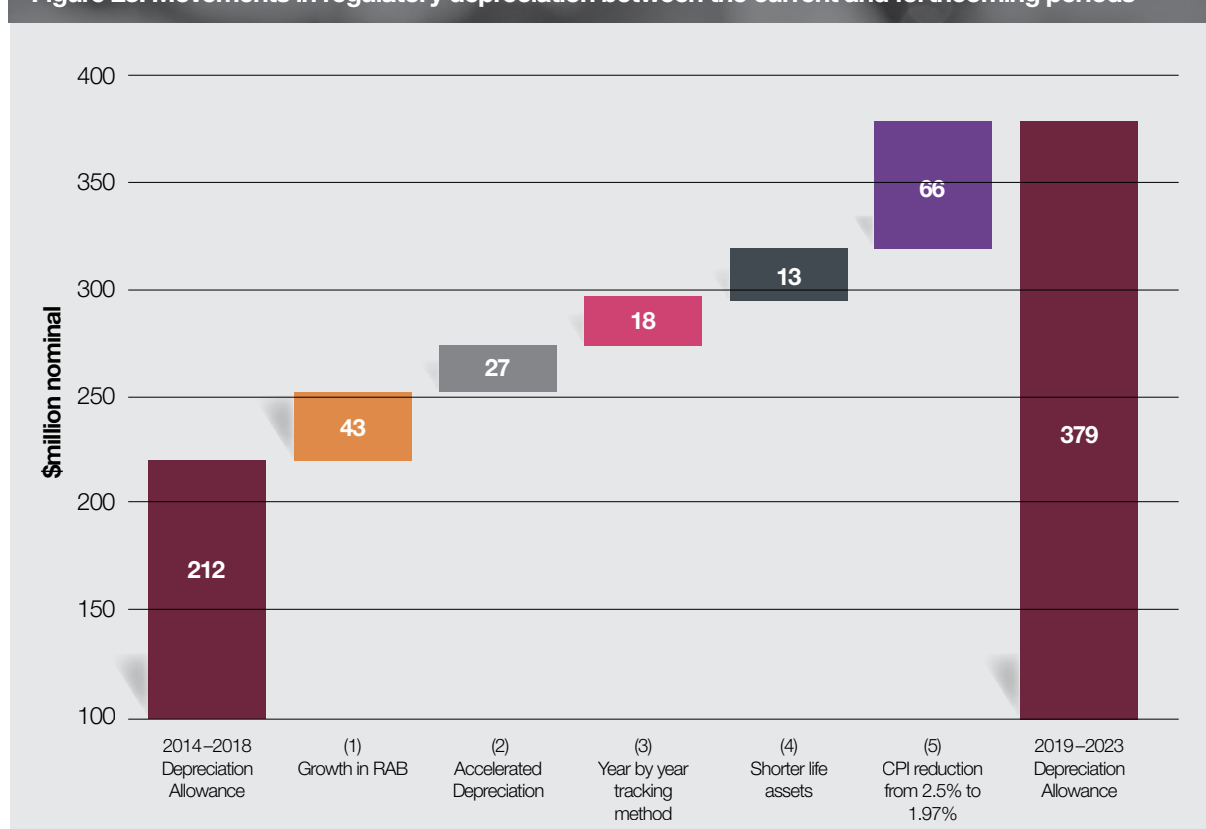
Depreciation is designed to return capital investment to investors over the expected useful life of the assets.

We have applied the standard approaches approved by the AER to the calculation of the depreciation

forecast, and have not sought to apply any acceleration in depreciation that departs from this.

This results in a depreciation forecast that is materially higher than current depreciation levels due to a number of factors as shown in Figure 23.

Figure 23: Movements in regulatory depreciation between the current and forthcoming periods⁵⁴



Each of the movements in depreciation shown above are explained as follows:

1. As the Regulatory Asset Base (RAB) is expected to increase in nominal terms in the next regulatory period (2019–2023) compared with the current regulatory period (2014–2018), the level of depreciation will also increase.
2. Asset write downs have been applied to recover the cost of assets no longer in use following the closure of Northern Power Station.

In addition, the residual value of assets scheduled for decommissioning and replacement in the forthcoming regulatory period will also be written down, consistent with normal regulatory practice.

3. The accepted year-by-year tracking approach to depreciation has been applied, which provides a more accurate depreciation charge for existing assets because it recognises the actual year that assets are commissioned. This more accurate depreciation treatment is neutral in present value terms.

⁵⁴ ElectraNet data.

4. Our investment plans, focused on component asset replacement and life extension, rather than large scale rebuilds, has the effect of changing the mix of the asset base, increasing the percentage of assets with shorter asset lives. As a result, the depreciation charge will recover the value of these assets more quickly compared to historical levels. Based on expert advice, we have also adopted a shorter asset life for our new telecommunication assets of 10 years rather than 15 years, more accurately reflecting the economic life of these assets based on current technology and contemporary practice across transmission networks⁵⁵. This results in the earlier write down of these assets. These factors, together with other net movements, result in a minor depreciation increase.
5. We have adopted an inflation forecast of 1.97%, as explained in Section 9.4. This is lower than historical inflation assumptions of around 2.5%.

This results in two offsetting movements:

- a lower inflation adjustment being applied to the RAB (i.e. RAB indexation) under the AER's Post Tax Revenue Model (PTRM)
- a corresponding increase in regulatory depreciation, which is the net amount of straight line depreciation less RAB indexation⁵⁶

These changes increase the depreciation charge from \$212m over the current regulatory period to \$379m in the forthcoming regulatory period.

This increased level of depreciation also has the compensating effect of reducing the value of the closing regulated asset base at the end of the forthcoming regulatory period (2019–2023) which would reduce future revenue funded by customers in the following regulatory period (2024–2028).

9.2 Return on capital

We have calculated a rate of return based on the AER's standard approach to applying its Rate of Return Guideline.

The rate of return is made up of a weighted average of the return on equity and return on debt. A reasonable rate of return that meets the requirements of the Rules will:

- enable us to attract debt and equity funding to undertake necessary investment in South Australia's transmission network
- contribute to the achievement of the national electricity objective to promote efficient investment in, and efficient operation and use of, electricity services for the long-term interests of electricity customers

In recent decisions, the AER has applied its Rate of Return Guideline to estimate the return on equity and the return on debt. A number of networks have sought merits and judicial review of the AER's decisions. The AER has also sought judicial review of the Australian Competition Tribunal's decisions handed down in

February 2016. The outcomes of these proceedings are not yet known.

We have assessed different methodologies for calculating the cost of debt component of the WACC and we support the notion of a 10 year trailing average. However, the mechanism and timing in which the trailing average approach is implemented remains the subject of significant debate in the industry. For the purposes of our Revenue Proposal, we have applied the AER's prevailing approach to the return on equity and return on debt. Our current forecast is subject to ongoing change based on prevailing market conditions, and is expected to be updated by the AER prior to its final determination.

If, after submitting this proposal, there are changes to the AER methodology or accepted alternative methodologies, or application approaches, we reserve the right to apply a different approach to the calculation of these parameters. Our proposed rate of return on capital or weighted average cost of capital (WACC) is set out in Table 11.

⁵⁵ This results in an increase in depreciation of approximately \$4m over the forthcoming regulatory period.

⁵⁶ Where: Regulatory Depreciation = Straight Line Depreciation – RAB Indexation. Therefore, as RAB indexation falls, regulatory depreciation increases.

Table 11: Our proposed rate of return

Component	Proposal	Description
Risk free rate	2.83%	This is the average annualised yield on 10-year Commonwealth bonds (CGS) over the month of December 2016.
Equity beta	0.7	This is consistent with the AER's Rate of Return Guideline.
Market risk premium	6.5%	This is consistent with the AER's Rate of Return Guideline.
Return on equity	7.4%	This point estimate is derived from the application of the above parameters using the capital asset pricing model. It is rounded to a single decimal point in accordance with the Rate of Return Guideline.
Return on debt ⁵⁷	5.1%	This is consistent with the AER's Rate of Return Guideline, based on full 10-year transition to trailing average approach.
Gearing ratio	60%	This is consistent with the AER's Rate of Return Guideline.
Nominal vanilla WACC	6.02%	This reflects the above parameters.

9.3 Corporate tax

Under Australia's tax system, dividends that are paid out of company profits that have been taxed in Australia have imputation credits attached to them. The cost of the tax building block is reduced to account for the value shareholders place on imputation credits (gamma), reducing the required return to those shareholders.

For the purpose of our Revenue Proposal, we have applied a gamma value of 0.25, which is an estimate that reflects the best available data and expert evidence.⁵⁸ In recent decisions, the AER has maintained its view that the best estimate of gamma is 0.4.

Other networks have commenced merits and judicial review of the AER's decisions in relation to gamma.

9.4 Forecast inflation

For the purposes of our Revenue Proposal, we have applied a market based inflation forecast of 1.97%.

It is important that a reasonable inflation forecast is applied in determining forecast revenues. While some components of the forecast will be subject to a 'true-up' for actual inflation at the end of the regulatory period, other components are not. If actual inflation turns out to be materially different to the forecast, this can result in a material revenue variance over the period.

ElectraNet believes that a market based estimate is the most representative and appropriate estimate in the prevailing low inflation environment. Our inflation forecast therefore reflects a market based estimate

calculated by applying the Fisher Equation (break-even) approach for this purpose to reflect market information as at the end of December 2016. Our current forecast is subject to ongoing change based on prevailing market conditions, and is expected to be updated by the AER prior to its final determination.

ElectraNet also notes the recently announced review of expected inflation to be undertaken by the AER⁵⁹. ElectraNet believes that the PTRM should be amended to adopt a market based approach, and intends to work with the AER during the course of this review to confirm the most appropriate approach moving forward.

⁵⁷ Based on a simple average of the 10 year yield estimate from the RBA data series and the Bloomberg Valuation Service, over the indicative averaging period from 1 to 31 December 2016. Under the AER's Guideline transition approach, this would reflect the year 1 return on debt and is updated each year.

⁵⁸ *Applications by PIAC and Ausgrid* [2016] ACompT1 (Ausgrid).

⁵⁹ Information on this review is available at <http://www.aer.gov.au/communication/2017-review-of-expected-inflation>.

9.5 Incentive arrangements

The AER has developed the following incentive arrangements in accordance with the Rules:

- the Service Target Performance Incentive Scheme (STPIS), which provides incentives to maintain or improve operational performance
- the Efficiency Benefit Sharing Scheme (EBSS), which provides incentives to achieve and maintain operating expenditure efficiency improvements
- the Capital Expenditure Sharing Scheme (CESS), which provides incentives to make capital expenditure efficiency gains

We propose to apply these schemes in the forthcoming regulatory period in accordance with the AER's prevailing guidelines. Further information on the

calculation of the applicable targets and measures for these incentive arrangements is provided in the relevant supporting attachments.

A network capability incentive is a key component of the STPIS scheme. Its purpose is to incentivise transmission businesses to fund low cost works to improve network use and release additional capacity to benefit customers. In accordance with this component of the STPIS, we have developed a range of projects to improve network capability. AEMO has undertaken an independent assessment of the program to ensure it will deliver the most efficient outcomes for customers. Our program is summarised in Table 12.

Table 12: Network capability improvement program

Proposed project (priority order)	Timing	Expenditure (\$nom m)	Payback period (years)	Benefit
1. South East dynamic line ratings	2018–19	0.1	0.1	Increased capability of the Heywood Interconnector to import power from Victoria
2. Robertstown - Davenport Plant ratings	2018–19	1.9	0.3	Alleviating mid-north congestion on renewable generation, lowering generation costs
3. Robertstown transformer management relay uprating program	2020–21	0.4	1.2	Increased inter-regional power flows and reduced network congestion
4. Constraint formulation investigation	2021–22	0.4	2.0	Increased capability of the transmission network including the Heywood Interconnector
5. South East capacitor bank	2019–20	3.3	3.3	Increased capability of the Heywood Interconnector to import power from Victoria
6. Smart Wires Powerline Guardian trial (Waterloo - Templers)	2018–19	5.9	4.7	Reduced congestion on the mid-north network to improve power transfers to Adelaide and the Heywood Interconnector, though trial technology that can be rapidly deployed to other circuits
7. Tailm Bend to Cherry Gardens line tie in	2022–23	5.0	6.3	Improved interstate transfers through more consistent operation of the Heywood Interconnector to the nominal 650 MW capability
Total		17.0		

These projects will assist in reducing constraints and improving flows across the network, putting downward pressure on wholesale energy costs and driving greater value from the network for customers.



**FOR OUR
CUSTOMERS**



10. What are the key risks and benefits for electricity customers?

The Rules require us to describe the key risks and benefits from our Revenue Proposal for electricity customers. The key benefits and risks are summarised below.

10.1 Benefits

The following principal benefits to customers flow from our Revenue Proposal:

- **Safety** – Our capital and operating plans aim to deliver services that are safe for the communities we serve and the environment.
- **Network security and reliability** – Our programs are aimed at delivering a secure and reliable network. We have expanded our proposed capital expenditure program from the indicative forecast presented in our Preliminary Revenue Proposal to include additional measures to improve network security and maintain reliability of supply.
- **Efficiency** – We will continue to drive improvements in our cost performance, building on the significant

achievements to date.

- **Affordability** – We are proposing a significant reduction in our revenue, which will feed through to lower prices to our customers.
- **Choice** – Our plans to manage the challenges of an increasingly complex power system support the differing choices being made by customers over the way energy will be produced and consumed in the future.
- **Long-term sustainability** – We are planning the transmission network to accommodate the changing nature of generation and demand as we move to a low carbon economy, and to deliver the outcomes sought by customers into the future.

10.2 Risks

We are aiming to efficiently manage the following risks to customers through our Revenue Proposal:

- **Additional investment requirements** – we are managing the potential cost impact to customers of uncertain events that may trigger the need for additional capital expenditure through identified contingent projects. If and when further investment is required, our revenue requirement and transmission prices would be higher than set out in our proposal, but only if the benefits to customers can be shown to exceed the costs.
- **New obligations** – following the conclusion of the current reviews, new security obligations may be imposed on us to further improve network security. While such obligations would provide customer benefits, they could also require increases in transmission prices.
- **Nominated pass through events** – we have proposed the following cost ‘pass through events’ to most efficiently manage the risk to customers of rare and extreme events outside our control that

could lead to higher costs for customers if one or more of these events occurred:

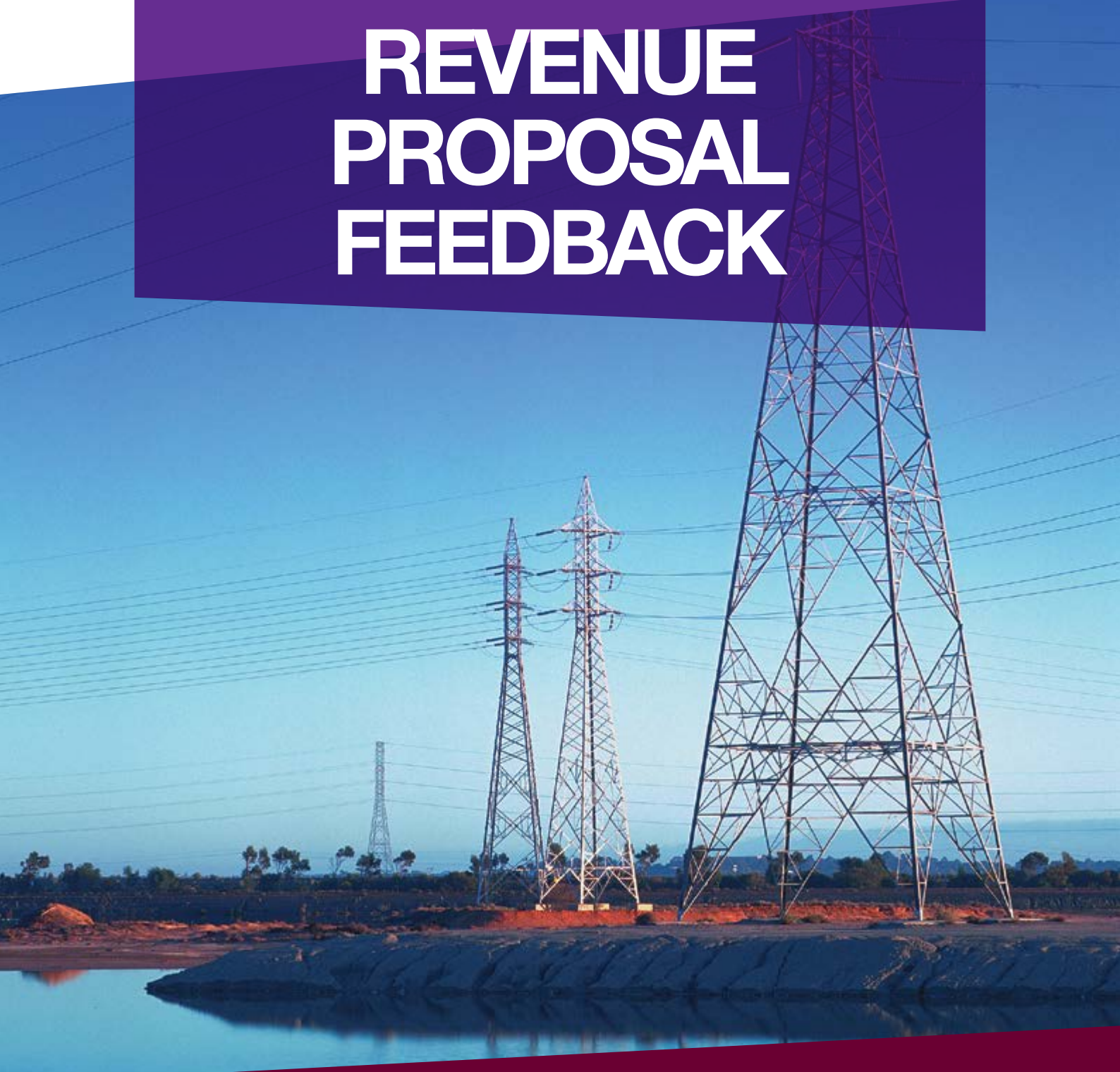
- insurance cap event
- terrorism event
- natural disaster event
- insurer credit risk event

While the occurrence of such rare events is a risk for customers, it is preferable to providing an upfront allowance in our building block costs. A detailed explanation of our proposed pass through events is provided in our Revenue Proposal.

While our plans are based on the best available information at the time of submission in relation to the expenditure requirements for the next period, including the issues and implications raised by the 28 September 2016 extreme weather event, there remains a possibility that new information may come to light following further internal analysis and external reviews and investigations that results in a need for additional unforeseen expenditure requirements.



REVENUE PROPOSAL FEEDBACK



11. Where to from here?

We welcome your feedback on our Revenue Proposal, either directly to us or through the AER's consultation process. Our proposal is subject to review by the AER and its final decision will influence how much we spend on the network over the next five year regulatory period.

Your feedback will be taken into account by the AER in its review of our Revenue Proposal. In addition, we will also reflect your feedback in our response to the AER's Draft Decision. The expected timeframes for the revenue determination process are as follows.

Milestone	Timing
AER publishes Issues Paper	May 2017
AER holds Public forum	June 2017
AER issues Draft Decision	September 2017*
ElectraNet Revised Revenue Proposal (if required)	December 2017*
AER issues Final Decision	April 2018

*Subject to AER confirmation

You can provide feedback on our Revenue Proposal by:

Email	Emailing your feedback to: consultation@electranet.com.au
Online	Visit us online at: www.electranet.com.au and complete the online form
Post	Sending your feedback, marked "Revenue Proposal Feedback" to: Simon Appleby Senior Manager Regulation and Land Management PO Box 7096 Hutt St Post Office Adelaide SA 5000

We look forward to receiving your feedback.

Alternatively, should you wish to discuss any aspects of our Revenue Proposal, please feel free to contact us as above, or toll free on: **1800 243 853**.

11.1 Further information

Further information on our detailed plans and proposals can be found in the following attachments, and supporting documents that are listed in Attachment 15.

Attachment 1 –	Maximum allowed revenue	Attachment 10 –	Capital expenditure sharing scheme
Attachment 2 –	Regulatory asset base	Attachment 11 –	Service target performance incentive scheme
Attachment 3 –	Rate of return	Attachment 12 –	Pricing methodology
Attachment 4 –	Value of imputation credits	Attachment 13 –	Pass through events
Attachment 5 –	Regulatory depreciation	Attachment 14 –	Negotiated services
Attachment 6 –	Capital expenditure	Attachment 15 –	List of supporting documents and associated material
Attachment 7 –	Operating expenditure		
Attachment 8 –	Corporate income tax		
Attachment 9 –	Efficiency benefit sharing scheme		

11.2 Glossary

Glossary

AEMC	Australian Energy Market Commission	NER, Rules	National Electricity Rules
AEMO	Australian Energy Market Operator	NERA	NERA Economic Consulting
AER	Australian Energy Regulator	NPV	Net Present Value
APR	Annual Planning Report	NTNDP	National Transmission Network Development Plan
BOM	Bureau of Meteorology	OTR	Office of the Technical Regulator
CESS	Capital Efficiency Sharing Scheme	POE	Probability of Exceedance
COAG	Council of Australian Governments	PSC	Power Systems Consultants
CPI	Consumer Price Index	PTRM	Post Tax Revenue Model
DNBP	Distribution Network Service Provider	PV	Photovoltaic
EBSS	Efficiency Benefit Sharing Scheme	RAB	Regulatory Asset Base
ESCOSA	Essential Services Commission of South Australia	RBA	Reserve Bank of Australia
ETC	Electricity Transmission Code	RFM	Roll Forward Model
IT	Information Technology	RIT-T	Regulatory Investment Test for Transmission
MAR	Maximum Allowed Revenue	STPIS	Service Target Performance Incentive Scheme
MRP	Market Risk Premium	TNSP	Transmission Network Service Provider
MW	Megawatt	TUOS	Transmission use of system
MWh	Megawatt hours	VCR	Value of Customer Reliability
NEL	National Electricity Law	WACC	Weighted Average Cost of Capital
NEM	National Electricity Market		
NEO	National Electricity Objective		





You can provide feedback on our Revenue Proposal to:



Emailing your feedback to:
consultation@electranet.com.au



Visiting us online at:
www.electranet.com.au
and completing the online form



Sending your feedback marked
"Revenue Proposal" to:
Simon Appleby
Senior Manager Regulation
and Land Management
PO Box 7096
Hutt St Post Office
ADELAIDE SA 5000

We look forward to receiving your feedback.

Alternatively, should you wish to discuss any
aspects of our Revenue Proposal, please feel
free to contact us as above, or toll free on:



1800 243 853.