Preliminary Revenue Proposal 2024–2028

JULY 2021

ElectraNet

Contents

Welcome to ElectraNet's Preliminary Revenue Proposal

Steve Masters
Chief Executive

As the owner and operator of South Australia's electricity transmission network, ElectraNet plays a vital role in powering the homes, businesses, and communities of South Australia.

In this document you will read about our developing plans for South Australia's electricity transmission network and the essential services we provide for the period 1 July 2023 to 30 June 2028.

This Preliminary Revenue Proposal is the precursor to our formal Revenue Proposal, which we will submit to the Australian Energy Regulator in January 2022. It is a key part of our engagement with stakeholders and will help us gain insights into the views and preferences of our customers and other stakeholders. The primary purpose of this document is to give our stakeholders the information they need to make meaningful contributions to our Revenue Proposal.

Our values at ElectraNet are:

You can count on us

We support each other

We focus on what matters most

This Preliminary Revenue Proposal and the engagement that follows reflect these values. It is vital that you can count on ElectraNet to provide reliable and affordable electricity transmission services, to focus on what matters most to our customers as we plan for the future and to work with our customers to deliver on these outcomes.

This document sets out our indicative capital and operating expenditure programs to invest in, operate and maintain the transmission network in the five-year period ahead. We now invite your views on them.

Between now and January 2022 when we submit our Revenue Proposal, we will further develop and refine our plans and programs. As we do this we will consider the input of all our stakeholders. This is essential to ensure we produce a targeted and well-tested set of proposals that deliver the right outcomes for our customers and that satisfy our aim to prepare a proposal that is supported by our customers and the Australian Energy Regulator.

I encourage you to get involved through the opportunities outlined in this paper and we look forward to your input to help shape our plans for South Australia's energy future.

Steve Masters

Steve Masters
Chief Executive

Our proposal balances reliable and affordable supply in a rapidly changing power system

Electricity Bills

⬇20% ⬇$100

20% drop in wholesale prices with new SA-NSW interconnector leading to $100 fall in annual household electricity bills.[1]

Capital Expenditure

⬇41%

drop in capital investment in 2024 to 2028 to $832m.

Operating Expenditure

⬆13%

increase in operating expenditure in 2024 to 2028 to $583m.

Regulated Asset Base

⬆0.5%

no material growth in RAB of $3,664m after 2024.

We are driving down electricity costs while preparing for our energy future

The power system is changing. Transmission's role is growing as supply diversifies and system complexity increases.

Transmission costs remain a small part of household electricity bills – about 10%. South Australians will see a small rise in transmission costs in 2024, equivalent to an $11 increase in annual household bills. This is driven by Australian Energy Market Operator Integrated System Plan projects we are currently delivering – namely Project EnergyConnect and the Main Grid System Strength project.

However, this increase will be more than offset by wholesale electricity price reductions. Project EnergyConnect is expected to drive down annual electricity bills by $100 per household.

Transmission Revenue

⬆5%

real increase in annual revenue in 2024 to $360m. No real growth for the next 4 years.

Transmission Prices

⬆5%

increase in real transmission prices in 2024 to 3.3 c/kWh.

⬆$11

increase in transmission component of household electricity bills in 2024.

Rate of Return

⬇18%

decrease in the regulated rate of return from 5.43% to 4.47% based on current market data and parameters.

All figures in this document are presented in real terms (expressed in $2022-23) unless otherwise indicated.

[1] ACIL Allen Consulting, September 2020, available here.

Our Role

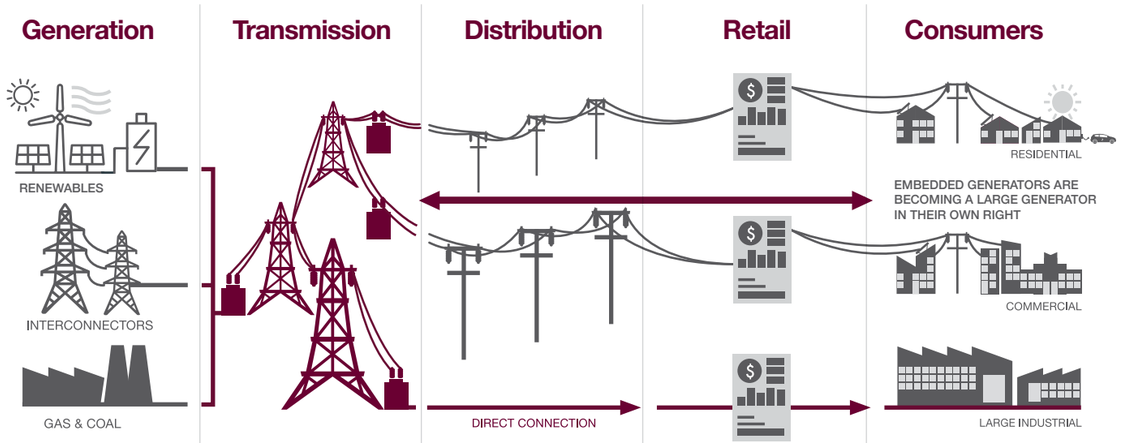
Operating within the National Electricity Market (NEM), ElectraNet's activities are governed by the National Electricity Objective.

We are committed to keeping our customers at the heart of our decision-making and to earning and retaining their trust to deliver reliable and affordable energy solutions.

Consistent with this commitment we are consulting on this Preliminary Revenue Proposal as part of a broader process of ensuring that we focus on what matters most to our stakeholders. This approach is in line with our Vision and Aspirational Goals, shown opposite.

The National Electricity Objective 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 and reliability and security of supply of electricity**
- **the reliability, safety, and security of the national electricity system.**



Electricity is generated from traditional and renewable energy sources such as wind, solar, gas and coal.

Electricity enters ElectraNet's network where it is converted to higher voltages, for efficient long-distance transport to cities and towns around South Australia. The voltage is then lowered so it can enter the distribution network or be supplied directly to some large industrial customers.

The distribution network, operated in South Australia by SA Power Networks, transports low-voltage electricity to residential and commercial customers.

Retailers are the primary point of contact for residential and commercial customers. They coordinate connections and manage billing and payments.

The traditional flow of electricity supply is changing. Over one in three South Australian homes now combines the electricity they draw from the network with power generated by rooftop solar panels, and also contributes surplus electricity back to the network.

Our Vision and Aspirational Goals

Customers First
Our customers are at the heart of our decision making and we are trusted to deliver affordable and reliable energy solutions.

Powered by People
We keep our people safe from harm every day. We employ great talent and invest in their future by helping them reach their potential.

Our Vision
By 2025 we are an Australian leader in enabling the transition to a low carbon economy by expanding our role as a provider of network solutions.

Driving Value
Our business is efficient, innovative and sustainable. We deliver value for our customers shareholders and community.

Operational Excellence
We are Australia's leading asset and network manager, delivering for the long-term. Continuous improvement and quality underpin all that we do.

Enabling Communities
We proudly support communities in which we operate. We value landholder relationships and respect both the natural and cultural environments.

Hornsdale Battery

South Australia's transmission network has over 5,800 circuit kilometres of transmission lines, supported by 14,742 structures, including 27 circuit kilometres of underground transmission cable.

Transmission Network Assets

The network extends from Mount Gambier in the south to Leigh Creek in the north to Port Lincoln in the west. It covers a service area of more than 200,000 square kilometres.

97
substations and switchyards

3518
voltage and current transformers

159
power transformers

653
circuit breakers

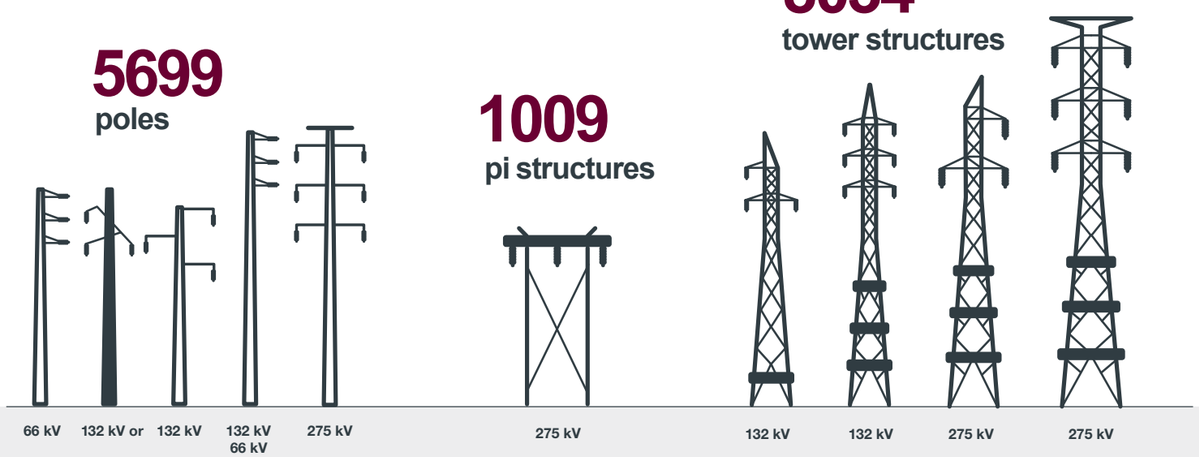
127
telecommunications sites including 45 stand-alone towers

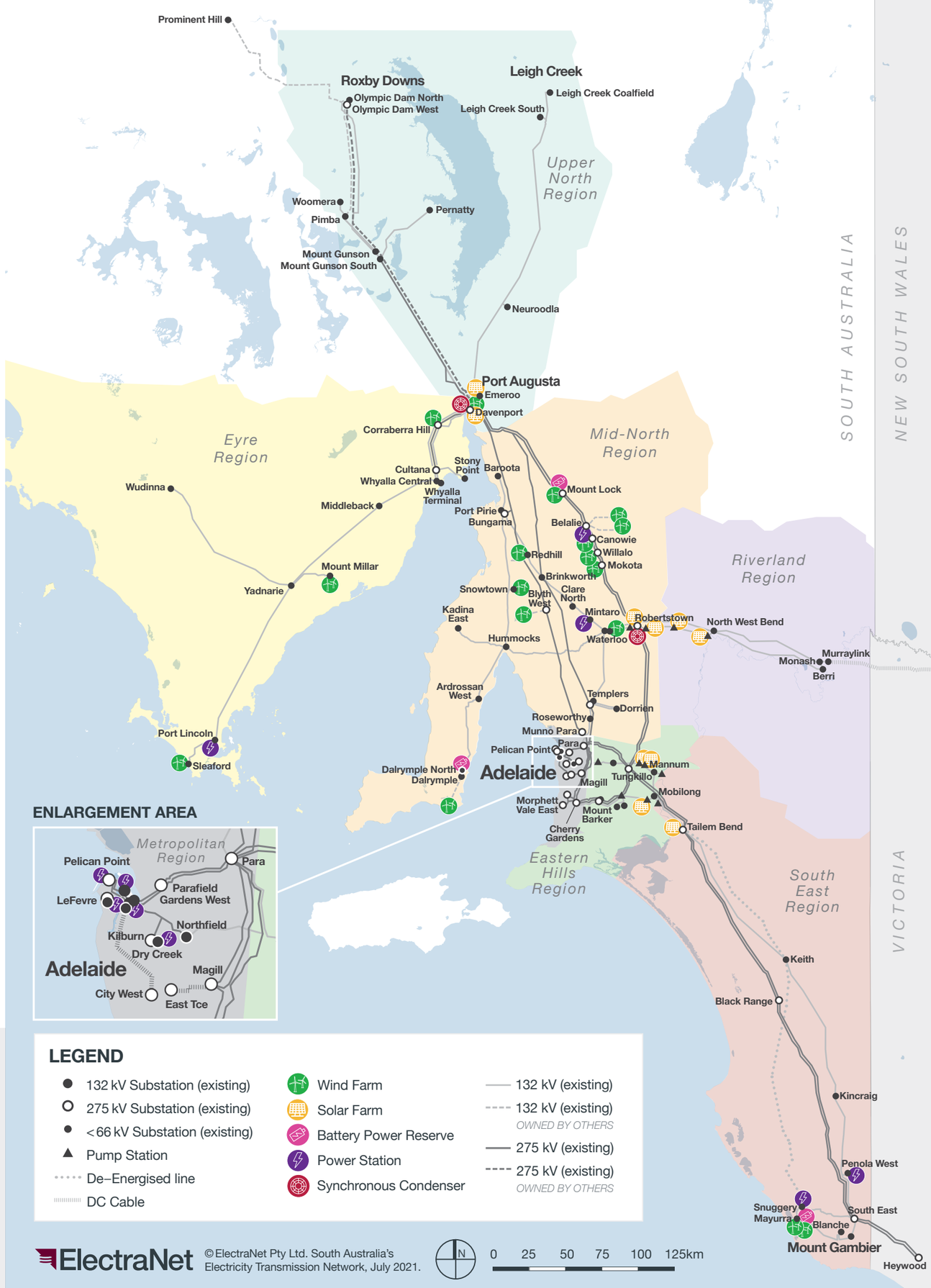
1400 km
of optical fibre (approx)

5699
poles

1009
pi structures

8034
tower structures





ENLARGEMENT AREA

LEGEND

- 132 kV Substation (existing)
- 275 kV Substation (existing)
- <66 kV Substation (existing)
- Pump Station
- De–Energised line
- DC Cable
- Wind Farm
- Solar Farm
- Battery Power Reserve
- Power Station
- Synchronous Condenser
- 132 kV (existing)
- 132 kV (existing) *OWNED BY OTHERS*
- 275 kV (existing)
- 275 kV (existing) *OWNED BY OTHERS*

ElectraNet © ElectraNet Pty Ltd. South Australia's Electricity Transmission Network, July 2021.

N 0 25 50 75 100 125km

ElectraNet Frome Street Office

1

How To Get Involved

This Preliminary Revenue Proposal underpins our engagement with our stakeholders

This Preliminary Revenue Proposal should provide you with the information you need to make a meaningful contribution to our final Revenue Proposal, which we will submit to the AER in January 2022.

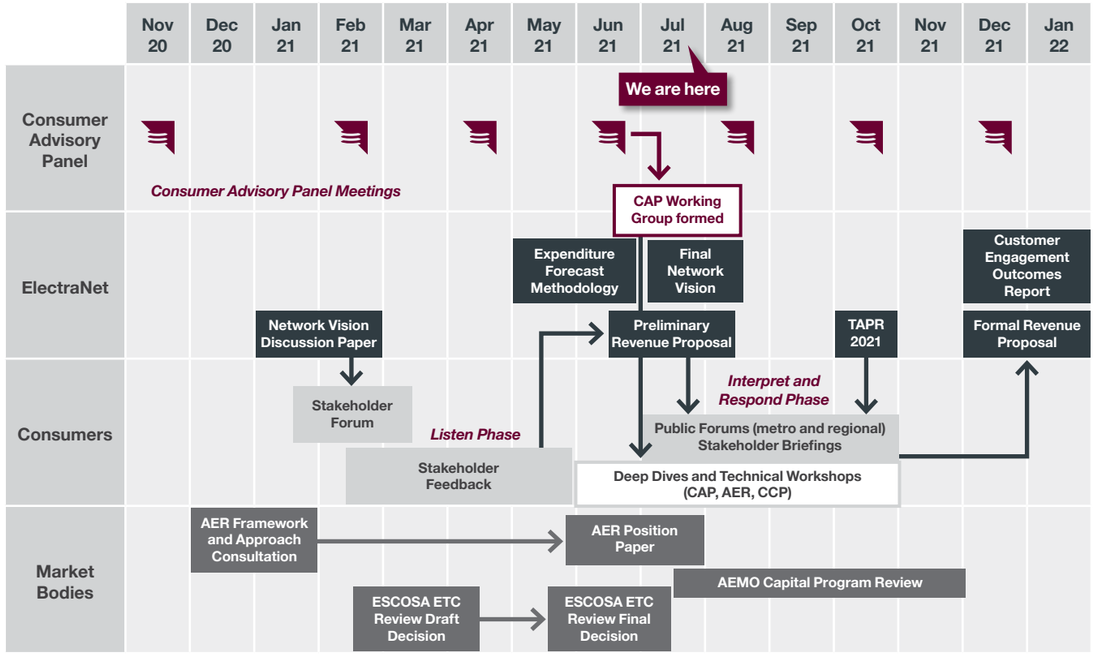
This Preliminary Revenue Proposal builds on the input we have received from stakeholders as we reviewed and updated our Network Vision. Developing the Network Vision allowed us to test our thinking on the key issues impacting transmission services and to identify the most important directions and priorities for the management and operation of the network into the future. This informed the plans, programs, and indicative forecasts contained here.

Our overall engagement program is summarised below. It will include:

- a series of stakeholder meetings to discuss the information provided in this document and to hear stakeholder feedback
- a series of interactive 'deep dive' technical workshops with members of our Consumer Advisory Panel and representatives of the Australian Energy Regulator (AER) to work through the details of our proposals
- an opportunity to provide written feedback and comment on our Preliminary Revenue Proposal.

Our approach to stakeholder engagement has been guided by the (AER's) Framework for considering public engagement as set out overleaf.

Stakeholder Engagement Program



CAP - Consumer Advisory Panel
CCP - Consumer Challemge Panel
ESCOSA - Essential Services Commission of South Australia
ETC - Electricity Transmission Code
TAPR - Transmission Annual Planning Report

AER Framework for Considering Public Engagement

	AER - How This Could Be Assessed	ElectraNet - Our Engagement Approach
Nature of engagement	• Customers partner in forming the proposal rather than asked for feedback on the proposal. • Relevant skills and experience of the customers, representatives, and advocates. • Customers provided with impartial support to engage with energy sector issues. • Sincerity of engagement with customers. • Independence of customers and their funding. • Multiple channels used to engage with a range of customers across ElectraNet's customer base.	• This Preliminary Revenue Proposal contains indicative expenditure forecasts as the basis of engagement. The engagement approach itself is co-designed with the CAP. • CAP Members have a diverse range of skills and experience and will continue meeting on a regular basis throughout. • AER technical representatives and CCP members will be involved to directly support impartial engagement. • Engagement is intended to be genuine, evidenced by 'no surprises' outcomes. • Customer representatives are self-funded, with expenses met where required. • Engagement opportunities will include forums, webinars, interviews, submissions, and a series of 'deep dive' workshops.
Breadth and depth	• Clear identification of topics for engagement and how these will feed into the Revenue Proposal. • Customers consulted on broad range of topics. • Customers able to influence topics for engagement. • Customers encouraged to test the assumptions and strategies underpinning the proposal. • Customers were able to access and resource independent research and engagement.	• The co-design approach provides guidance and direction on the areas of most interest to customers. • The formation of a working group gives customer representatives the opportunity to review and 'deep dive' into topics of most interest, with the level of engagement informed by the IAP2 spectrum. • Customer representatives will have access to AER technical advice to support testing of key assumptions and strategies underpinning the proposal. • Direct customers will be invited to participate in the engagement process. • Access to independent resourcing will also be considered as needed to support effective engagement.
Clearly evidenced impact	• Proposal clearly tied to expressed views of customers. • High level business engagement (e.g. customers given access to ElectraNet's Chief Executive and/or Board). • ElectraNet has responded to customer views rather than just recording them. • Impact of engagement can be clearly identified. • Submissions on proposal show customers feel the impact is consistent with their expectations.	• A summary of feedback received and how we have responded in our final proposal will be published as a transparent record of engagement outcomes. • An Executive led process will be followed with engagement from key Executives, including the Chief Executive. • The working group will be invited to brief the CAP on the outcomes of the engagement process. • Submissions will also be used to evaluate the success of the engagement approach.
Proof point	Reasonable opex and capex allowances proposed, for example: • In line with, or lower than, historical expenditure. • In line with, or lower than, the AER's top-down analysis of appropriate expenditure. • If not in line with top-down, can be explained through bottom-up category analysis.	• Information will be provided in the Preliminary Revenue Proposal and final proposal to support robust and reasonable expenditure forecasts, including historical trends, AER forecasting approaches and relevant metrics. • Stakeholder confidence in the final expenditure forecasts on a 'no surprises' basis will be a key success measure of the engagement approach.

We welcome your input and feedback on our Preliminary Revenue Proposal

You can provide feedback up to 10 September 2021 by:

consultation@electranet.com.au

1800 890 376

electranet.com.au

City West Substation

2

Our Growing Role

South Australia's electricity transmission network is playing an increasingly important role

ElectraNet powers people's lives by delivering safe, affordable, and reliable solutions to power homes, businesses, and the economy.

South Australia remains at the forefront of changes sweeping electricity systems worldwide.

Renewable electricity sources such as solar, wind, and batteries, and small-scale renewables in homes and businesses, are displacing thermal generation such as gas. Collectively, they are the largest generator in South Australia. As Australia moves to reduce greenhouse gas emissions, their role will only continue to increase.

This is creating greater variability in electricity generation and demand, and is pushing the power system beyond its technical limits. This presents new challenges to reliability, affordability and system security.

We have an increasing role to play in addressing these challenges. While the grid was once used to 'deliver' electricity from large remote generators to customers, it is increasingly being used to move electricity back and forth between regions and local areas, and to provide essential system services that were once provided by thermal generators.

We have installed four synchronous condensers to supply essential system services that are being lost as conventional generators operate less and ultimately retire and are implementing special protection schemes to protect the power system from disturbances in an increasingly complex operating environment.

With the ever-increasing uptake of variable renewable generators, we will be called on to provide even more of these services in the future.

We are also implementing the South Australian component of the new electricity interconnector between South Australia and New South Wales (Project EnergyConnect) to support the transformation of the power system and drive down energy costs.

While these strategic investments, identified as priorities by the Australian Energy Market Operator (AEMO) in its Integrated System Plan, will add to the cost of transmission services, they will deliver much greater benefits to customers through overall savings in their electricity bills. Project EnergyConnect alone is projected to deliver net savings of $100 per annum to a typical South Australian household.[2] The synchronous condensers will provide further savings.

While transmission is a small part of the overall cost of electricity, typically less than 10 per cent, the network will continue to play a key role in the safe and reliable supply of electricity and in supporting the ongoing transformation of the system.

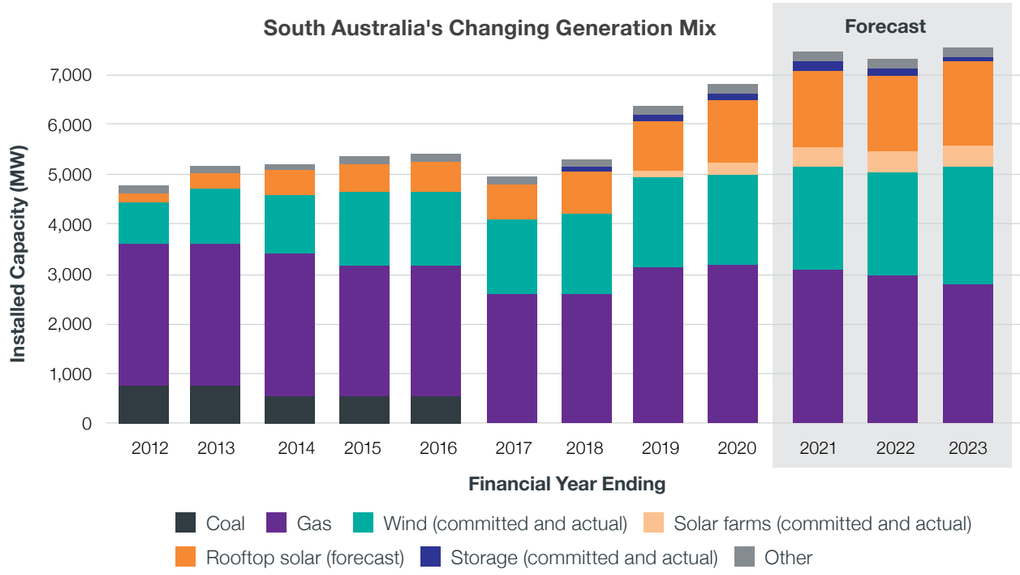


Chart Data: AEMO.

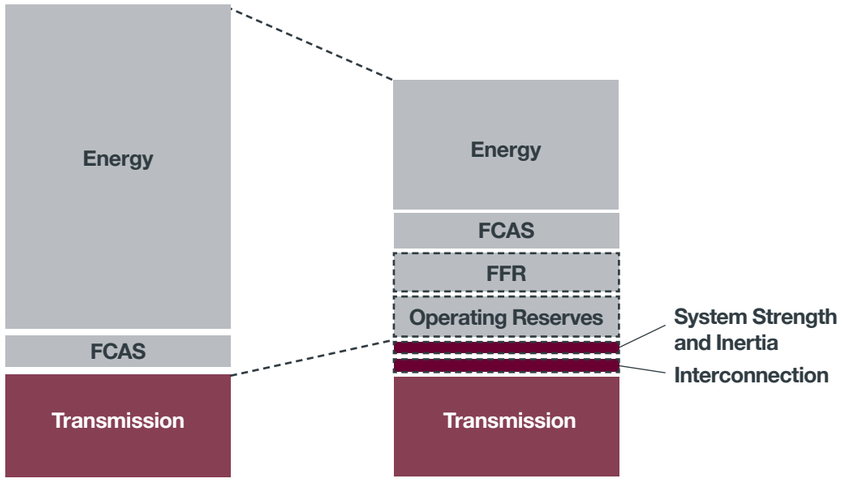
[2] ACIL Allen Consulting, September 2020, available here.

The Changing Energy Market

The changing generation mix has, and will continue to have, major implications for the transmission network.

As traditional generators retire, the system services required to run the power system are increasingly being 'unbundled' from the wholesale energy market. Services such as system strength and inertia that once came from traditional generators are increasingly being sought from transmission businesses, which adds to ElectraNet's role and the cost of running South Australia's transmission network but helps drive lower overall costs.

The Evolving Role of Electricity Transmission



FCAS - Frequency Control Ancillary Services
FFR - Fast Frequency Response

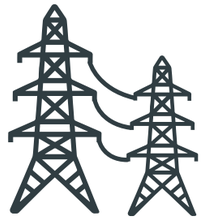
Dalrymple Battery

Network Vision

South Australia's electricity transmission network will support customer choice and deliver affordable and reliable power supplies for a sustainable future.

THEME 1

The network will continue to provide an important role into the future



Maximum Demand

↑158 MW

is forecast to increase by 158 MW to 3,475 MW by 2030.

THEME 2

The ongoing uptake of distributed energy resources by customers is changing the role of the network

Rooftop PV

3,700MW

Rooftop PV to exceed 3,700 MW by 2030.

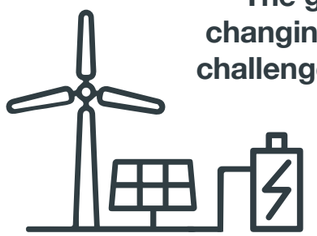
Electric Vehicles

10%

Electric Vehicles to consume 1,400GWh of energy by 2030 adding more than 10% to demand.

THEME 3

The generation mix is changing creating ongoing challenges for the operation of the grid



Renewables

100% by 2030

Renewables displacing fossil fuels with net 100% renewables targeted by 2030.

Grid Scale Storage

600MW

Grid scale storage to reach 600 MW by 2030.

THEME 4

New technologies are creating opportunities to change the way network services can be delivered

Virtual Power Plants

420MW

Virtual power plants to reach 420 MW by 2030.

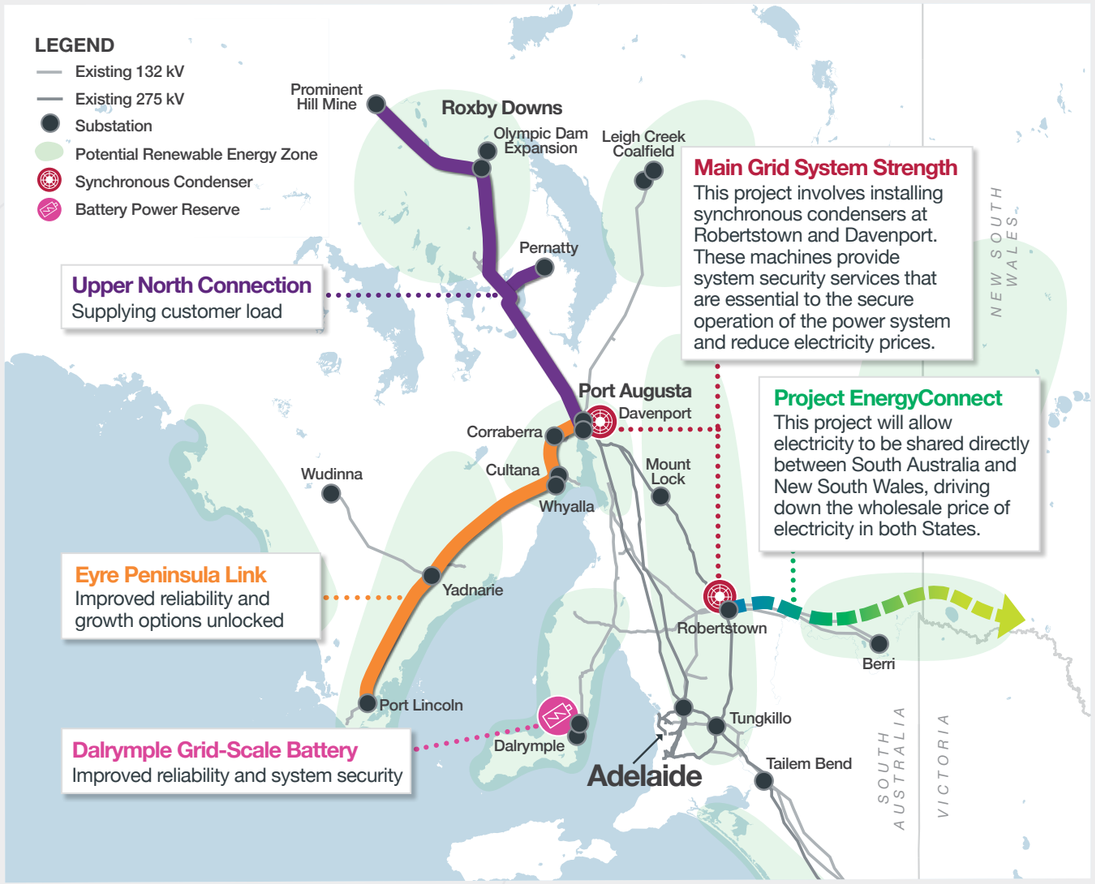
We are currently delivering two landmark projects that were identified in the Australian Energy Market Operator's Integrated System Plan as essential projects to support the transformation of the power system.

Project EnergyConnect and the Main Grid System Strength project make important contributions to Australia's interconnected National Electricity Market. They will allow the power system to operate safely and efficiently with world leading levels of rooftop and grid scale solar, wind and energy storage that is replacing traditional generation sources.

These two projects are scheduled to be completed in the current regulatory period. In the coming period our capital program will return to 'business as usual', focusing on the underlying investment needed to maintain secure and reliable network services. It will be dominated by refurbishing and replacing network assets.

The capital investment required for our two landmark projects will increase transmission charges. This will be more than offset by reductions in wholesale electricity prices. Project EnergyConnect is expected to deliver net reductions of about $100 per year in South Australian household electricity bills.[3]

Major network investments in the current regulatory period



[3] ACIL Allen Consulting, September 2020, available here.

Main Grid System Strength - Robertstown Synchronous Condenser

South Australia's Unique Challenges

In addition to the impacts of the energy transformation, South Australia faces unique challenges in managing the efficient delivery of its power supply. Seventy seven per cent of South Australia's population and the associated customer load is centred in the Greater Adelaide area, while the network extends across a vast area to serve one of the least densely populated areas of the country.[4]

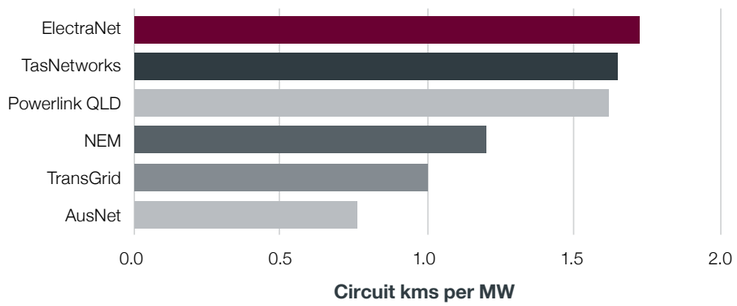
The unique challenges of South Australia's transmission network can be expressed across three key metrics:

1 Age Profile **2 Geographic Spread** **3 Peakiness of Demand**

These factors mean that the efficient costs of South Australia's transmission network are higher compared to other States.

1 South Australia has one of the oldest transmission networks in the NEM. Over 40% of transmission towers, 30% of conductors and 20% of transformers are beyond their standard asset life and require increasing maintenance.

2 South Australia has the longest network per unit of peak demand in the NEM. It requires more assets to supply a thinly spread population.



3 South Australia has the highest ratio of peak demand to average demand in the NEM. This leads to higher costs per unit of energy transmitted. With average demand declining, this effect is increasing.

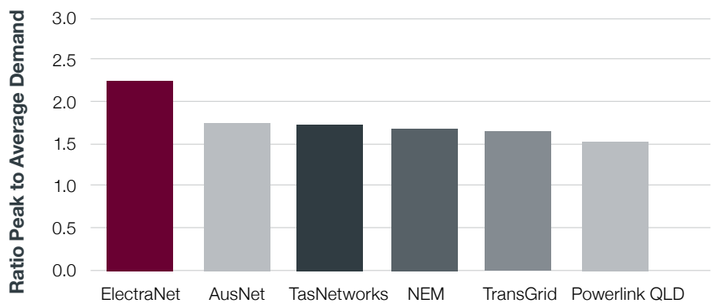


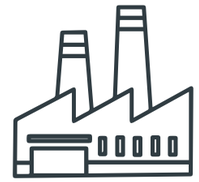
Chart Data: AER RIN Data.

[4] PlanSA: https://plan.sa.gov.au/state_snapshot/population

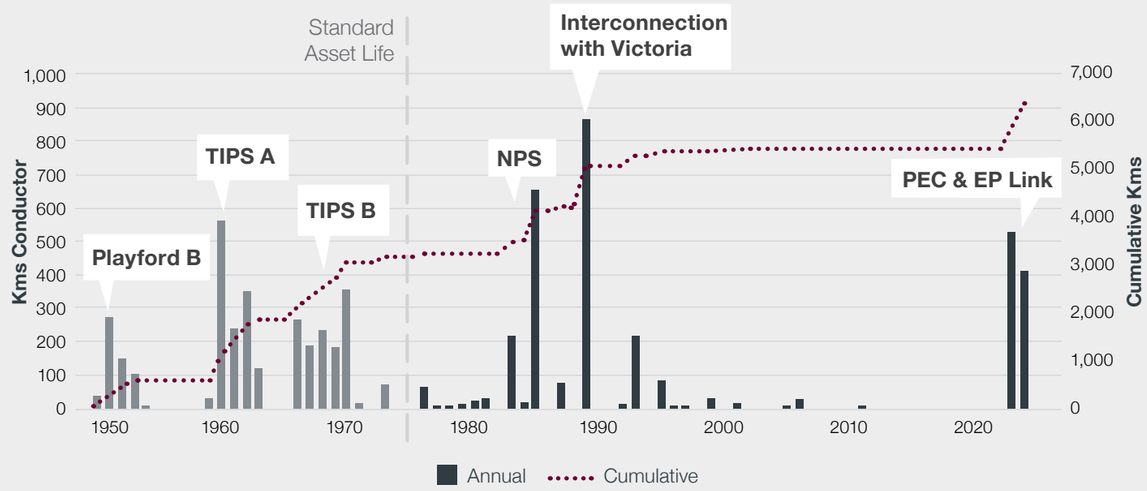
The condition of South Australia's transmission network will be the dominant driver of our expenditure requirements over the coming regulatory period.

Two thirds of South Australia's current electricity transmission network was in place when the Northern Power Station (NPS) was commissioned in 1985. Nearly all the network was in place when South Australia was first interconnected with Victoria and New South Wales in 1990.

By comparison in the fast growing state of Queensland the transmission network has roughly doubled in circuit length in that time.



Age Profile of South Australia's Electricity Transmission Network



The standard life of a transmission line in South Australia is 55 years. By the end of the coming regulatory period, nearly two thirds of South Australia's existing transmission lines will have exceeded their standard life, or around half of the total line fleet once new line projects under construction are completed.

Transmission Line Refurbishment

3

Reduced Capital Program

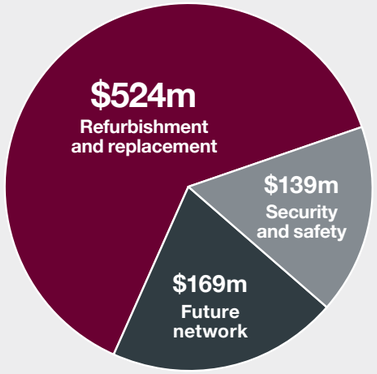
We are proposing a reduced capital program focused on maintaining reliability and security

Our indicative capital investment program includes a range of projects currently under consideration.

We look forward to engaging with stakeholders as we further develop and refine this program over the coming months to a final estimate of our capital expenditure requirements for our Revenue Proposal in January 2022.

Our indicative investment program sees a significant reduction in spending and a return to underlying investment levels needed to maintain reliable and affordable supply in a changing power system.

This reflects three main drivers:



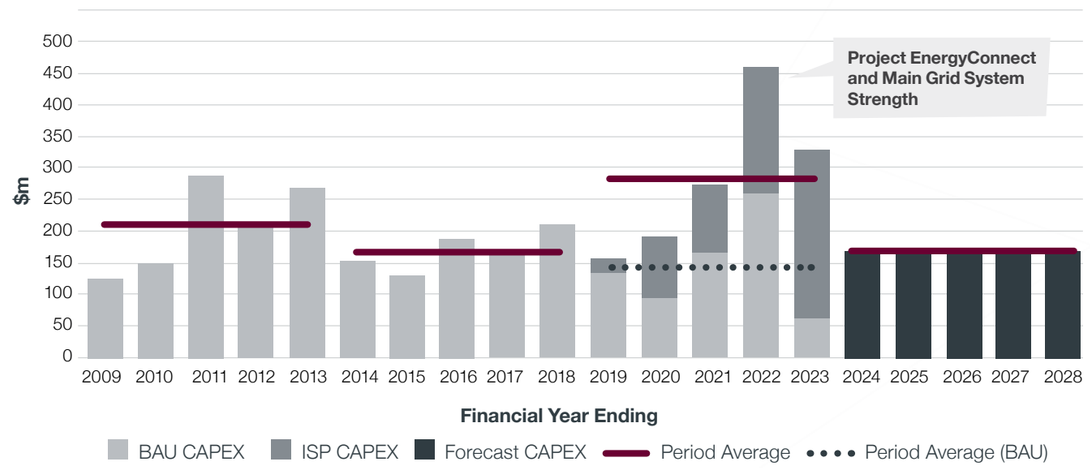
1. **Refurbishment and replacement** – the majority of our indicative investment program focuses on replacement of deteriorating high risk assets on South Australia's transmission network
2. **Security and safety** – changes to Commonwealth legislation and a host of other factors mean that we need to continue to invest in the physical and cyber security of the South Australia's transmission network to protect public safety
3. **Future network** – the power system will continue to transform over the coming regulatory period. We are proposing to make investments to support the ongoing uptake of renewable energy, both grid scale and distributed, and to harness new technology.

We welcome stakeholder feedback to help shape the investment program to ensure our final plans are targeted to the needs of customers.

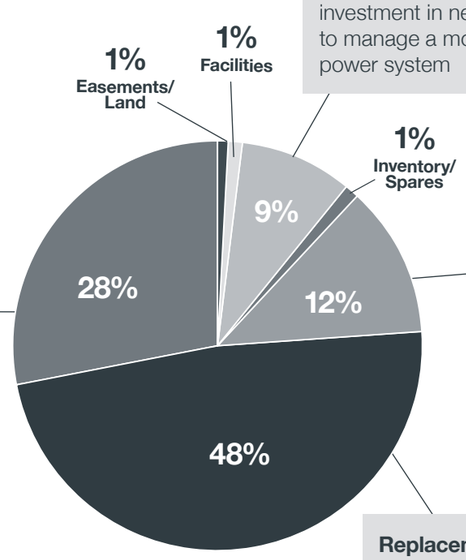
Our capital program will be smaller as we return to underlying investment needs.

The figure below shows the level of capital investment in South Australia's transmission network over 20 years, including our indicative forecast to 2028. The annual profile from 2024 is to be developed and is currently assumed to be flat for illustration purposes only. Our forecast capital expenditure for the coming regulatory period is similar to expenditure in the current period in underlying terms and is substantially lower than actual expenditure including ISP projects.

Our past and future capital program



Indicative Capital Expenditure Forecast by Category



Information Technology

Recurrent IT spend and investment in new capability to manage a more complex power system

Security/ Compliance

Investments to maintain system services

Control schemes to maintain secure power supply

Physical security works to maintain network safety

Refurbishment

Transmission line refurbishments to extend asset life (conductors, insulators, towers)

Replacement

Targeted substation asset replacements based on condition and risk

Telecommunication network replacements

Category	2019-2023 ($m)	2024-2028 ($m)	Driver
Augmentation	**513**	**0**	No demand driven investment
Connection	**7**	**0**	
Easements/ Land	**0**	**5**	Minimal strategic land acquisition requirements
Replacement	**487**	**399**	Most of our capital expenditure program is focused on refurbishing and replacing ageing assets
Refurbishment	**96**	**96**	
Security/ Compliance	**237**	**233**	Significant investment requirements to maintain physical, cyber, and power system security and network safety
Information Technology	**51**	**77**	Investments to maintain capability and harness modern technology
Inventory/ Spares	**13**	**11**	Ongoing investment requirements to maintain spares and facilities
Facilities	**6**	**11**	
TOTAL	**1,410**	**832**	

South Australia has one of the oldest transmission networks in the country. Ninety per cent of the network has been in place for more than 30 years, with around half of the line assets exceeding their standard life in the coming period.

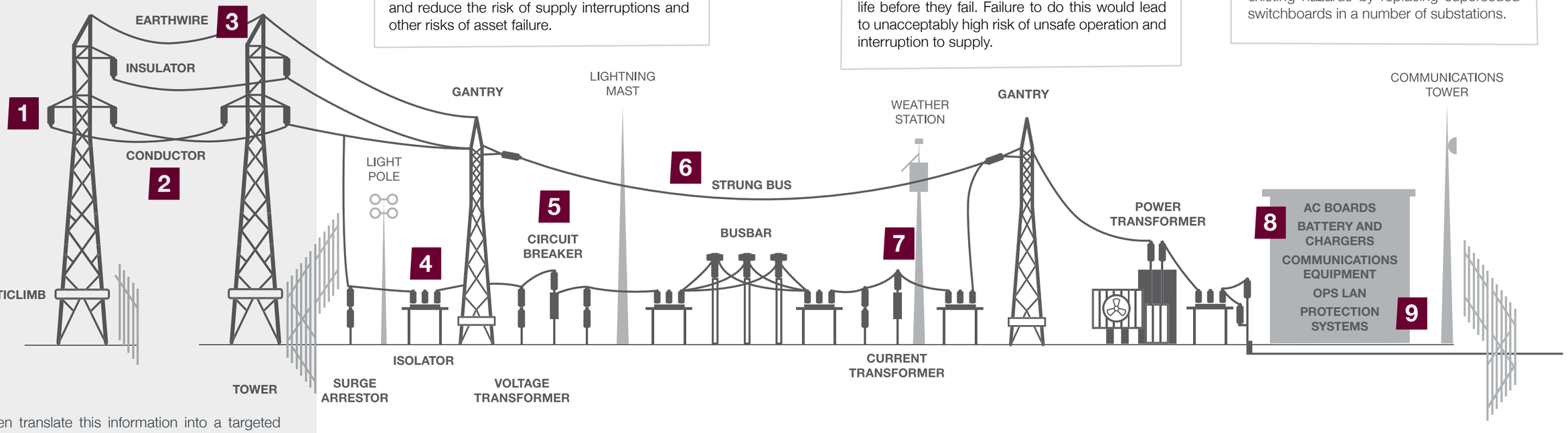
Therefore, over half of our investment program is focused on replacing and refurbishing deteriorating high-risk assets. The remainder represents investment in safety and security and in the future of the network.

Para Substation – Strung Bus Insulators

Our replacement program is designed to extend asset life and defer major investment.

South Australia's transmission network is older than many others. Our replacement and refurbishment plans are based on our assessment of the condition, risk and performance of the relevant assets. We assess the condition of the various components of each transmission line and substation asset on an ongoing basis through routine inspections and patrols.

This information is used to assess how much longer the component can be expected to keep functioning before it fails. In doing this, we consider other information such as failure rates observed elsewhere and environmental conditions surrounding the asset – for example exposure to salt spray from proximity to a coastline.



We then translate this information into a targeted plan to replace and refurbish individual assets before they fail, thus preventing supply interruptions, safety hazards and other risks. These decisions are taken on a risk basis. Rather than replace whole substations, this allows us to focus on the assets at greatest risk.

Consequently, our major line refurbishment projects and substation asset replacement projects focus on the key components of these assets on the network.

Our replacement and refurbishment program represents 63 per cent of our total capital program or $524m. The top nine projects are shown on this page.

1 Line Insulation System Refurbishment $33m

Insulators separate a transmission conductor from its tower and hold the conductor in place. In this project we will replace transmission line insulators on specific lines across the network based on their condition. This will extend the life of the transmission line to avoid the need for full rebuild and avoid supply interruptions and other risks of asset failure.

2 Lines Conductor Systems Refurbishment $40m

The conductor is the component of the transmission line that carries electrical current. We will replace various conductors that are deteriorating to extend the overall life of the transmission line to avoid the need for full rebuild and reduce the risk of supply interruptions and other risks of asset failure.

3 Brinkworth-Waterloo Bearer Replacement $18m

The telecommunications network provides essential communications to enable the safe and secure operation of the network. This project replaces radio links used to provide data services to four substations in the Mid North to provide the necessary data transfer capacity in that region.

4 Isolator Unit Asset Replacement $39m

Isolators are mechanically operated switches that isolate a part of an electrical circuit under no-load conditions, allowing for work to be performed safely. This project will replace a range of isolators that are near the end of their useful life and select others as a source of spare parts for future replacements.

5 Circuit Breakers Unit Asset Replacement $18m

High-voltage circuit breakers are the essential switches required to interrupt high voltage transmission circuits in response to a fault or so plant can be worked on safely by our maintenance personnel. This project replaces a number of circuit breakers reaching the end of their technical life before they fail. Failure to do this would lead to unacceptably high risk of unsafe operation and interruption to supply.

6 Substation Strung-Bus Insulation Replacement $19m

Strung-bus insulators provide insulation to substation gantry structures. In some cases, porcelain insulators are in place, which are prone to failure without warning. Replacing a number of these with equivalent glass insulation systems will reduce the risk of harm to personnel, unplanned outages and damage to other equipment.

7 Instrument Transformer Unit Asset Replacement $20m

Instrument transformers measure high-voltage parameters so we can safely operate the transmission system. Instrument transformers are critical for protection and metering systems. We will replace a number of units that are deteriorating to reduce the risk of failure, thus limiting the risk of unplanned outages and other problems in future.

8 AC Board Unit Asset Replacement $17m

AC boards provide low-voltage power supplies within substations to control a range of essential equipment. This project addresses various potential and existing hazards by replacing superseded switchboards in a number of substations.

9 Protection Systems Unit Asset Replacement $25m

Protection systems monitor the state of the high-voltage equipment in substations and transmission lines and operate automatically to isolate and protect affected equipment in response to an electrical fault. This project replaces a number of assets that are reaching the end of their technical life before they fail. Failure to do this would lead to unacceptably high risk of unsafe operation and interruption to supply.

We continue to ensure a safe and secure network

Our safety and security projects encompass physical and digital security and safety. Our safety and security program represents 17 per cent of our indicative capital expenditure program, or around $139 million.

The top five safety and security projects in our capital expenditure forecast and their estimated cost are shown below.

Top Five Safety and Security Projects

Name	Value ($m)	Description
Tower Anti-Climb Installation	**36**	Retrofit anti-climb equipment on 3,500 transmission towers that were constructed before this equipment was standard and which are located near population centres or otherwise have increased climbing risk.
Substation Perimeter Intrusion and Motion Detection Security	**17**	This project will reduce the following risks of substation intrusion: • Public safety risk – unauthorised entry may result in electrocution • Staff and contractor safety risk - Equipment damage not detected may result in electrocution • Loss of supply risk – unauthorised entry may result in outage • Equipment damage risk – unauthorised entry may result in equipment damage and potential loss of supply • Loss of control – unauthorised entry and access to networks/ technology assets may result in denial of use
Substation Local Area Network Replacement and Cybersecurity Uplift	**16**	Planned replacement of high-risk substation LAN assets and cyber uplift of networks and intelligent devices. ElectraNet has numerous intelligent devices, interconnected over a range of private and public telecoms/data networks. These interconnected devices form the data systems that perform functions of protection, Supervisory Control and Data Acquisition (SCADA), remote fault diagnosis, remote service restoration, site security management and others for the high voltage transmission and telecommunications networks.
Substation Security Fencing Replacement	**12**	Replace security fencing and gates located at a number of substations where fences are in poor condition and require replacement to prevent unauthorised assess.
Telecommunications Asset Replacement	**11**	The telecommunication network carries critical protection and SCADA data, in addition to other operational and security data. To maintain the levels of service required, high-risk assets will need to be replaced. This includes assets that are no longer supported by the manufacturer, and those where there is a shortage of spares and/or skills to operate and maintain the asset.

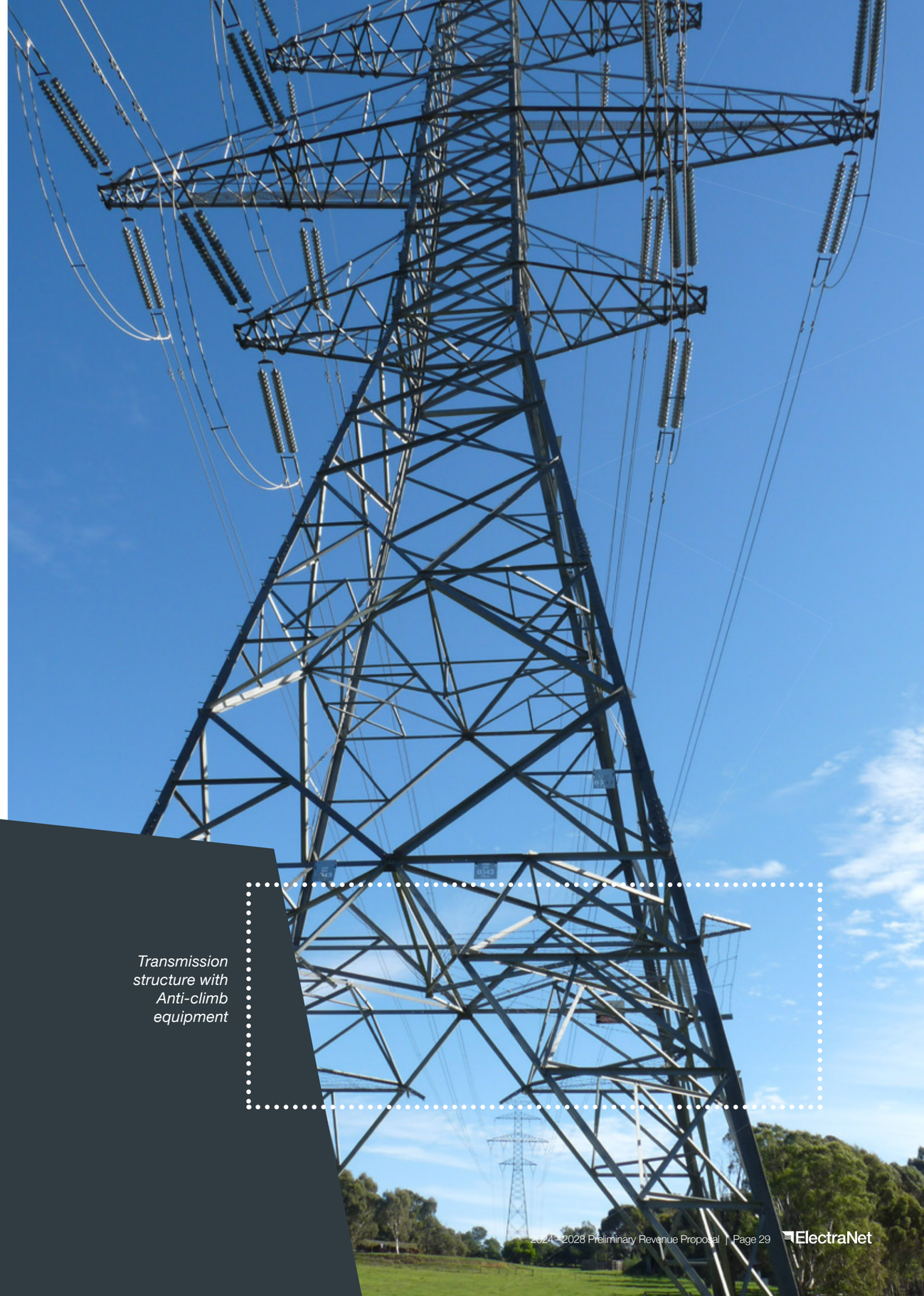
Transmission Tower Anti-climb

South Australia's electricity transmission network consists of about 15,000 transmission structures, more than half of which are lattice-tower structures.

New towers are fitted with anti-climb devices to prevent unauthorised access. However, 60 per cent of our towers were built before the late 1960s when this was not standard practice.

A 2019 review of our assets identified the towers without effective anti-climb equipment and considered their proximity to towns/ population centres, dwellings, points of interest and/or main roads.

Our current capital investment proposal includes an allowance of $36 million for installing anti-climb equipment on the towers assessed to be at greatest risk.



Transmission structure with Anti-climb equipment

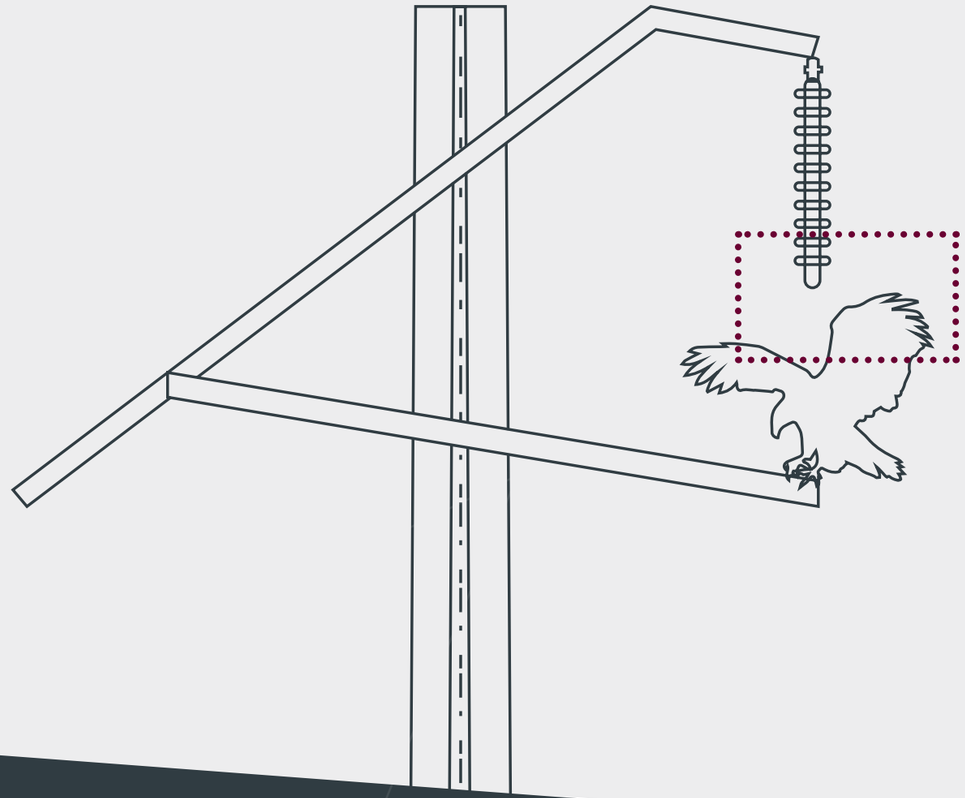
Avian Fire Start Mitigation

Birds are known to land or nest on transmission towers. When they do, they can cause ‘flashovers’ by infringing the minimum distances around conductors. This is invariably fatal for the bird involved, which dies of electrocution. However, it is also possible for the bird to be ignited and to cause a fire start when it falls to the ground.

A recent review of this issue on ElectraNet’s network revealed 20 bird-related flashover events have occurred between 2008 and 2019. Four of these started fires. Fortunately, none of those fires was particularly serious. However, we are aware that a substantial fire occurred after a bird came into contact with high-voltage powerlines in the ACT, in January 2017.

ElectraNet’s review showed that the highest risk of avian flashover exists on 132 kV wishbone structures such as shown below. There are about 3,500 of these structures in bushfire risk areas of which 423 are in *High* bushfire risk areas.

There are two broad ways to reduce the risk of birds starting fires by landing on transmission towers, either prevent them from landing in the first place or insule the part of the tower where they land to prevent electrocution from occurring. Our preferred solution is to install insulating covers on the cross arms of the 423 towers identified in high bushfire risk areas, reducing the risk of avian fire starts. We have included approximately $4.5 million for these works.



132 kV Wishbone Tower near North West Bend

We will invest in the future of the network, and in the network of the future.

The ongoing transformation of the power system is pushing the transmission network to its limits and expanding its role. To keep pace with these changing demands and requirements we are planning investments to maintain performance requirements and extend the capabilities of the network, while harnessing the benefits of new and emerging technology.

This includes an increasing focus on better using technology to improve the collection and analysis of asset condition and performance data to effectively manage network and asset risk and limit increases in maintenance costs. We are also mindful of the need to manage physical and cyber security in an increasingly challenging environment.

Our investment in the future of the network program accounts for 20 per cent of our total capital program or $169 million. The top five projects in the program are shown below.

Top Five Future Network Projects

Name	Value ($m)	Description
Maintain Dynamic Reactive Capacity	**47**	The increasing use of electronic devices and falling minimum demand levels with the ongoing growth in solar PV output increases line capacitive charging as the network operates at lower power transfer levels. As a result, existing dynamic reactive power devices on the network are reaching the limits of their ability to control voltage fluctuations, placing the secure operation of the power system at risk. Additional reactors are required at a number of locations on the main grid to ensure adequate capability of existing reactive power devices to maintain voltage control and power quality for customers.
Harmonic Filter Banks	**21**	The changing nature of the power system with the changing generation mix and increase in inverter-based devices is impacting on power quality, with emerging issues associated with harmonic distortions and voltage fluctuations. Additional statcoms, harmonic filter banks and compensation devices are required to maintain power quality for customers.
Local High Voltage Management	**14**	Falling demand levels across the network are driving a need for additional voltage management capability at various locations. Additional reactors are required in a number of local areas to maintain voltage control and power quality for customers.
Wide Area Monitoring Scheme	**13**	The rapidly changing power system is becoming increasingly complex to manage. This project will improve operational situational awareness and provide data to improve dynamic system modelling through increased monitoring capability on the power system.
Energy Management System Functional Enhancements	**9**	This project is part of an ongoing program of upgrading and enhancing the control room systems used to operate South Australia's electricity transmission network in an increasingly complex operating environment. It will enable efficiencies through improved switching arrangements, integrating fault investigations and event reporting into network operation systems, and better integrating data into asset management systems to enhance asset performance reporting and asset lifecycle decision-making.

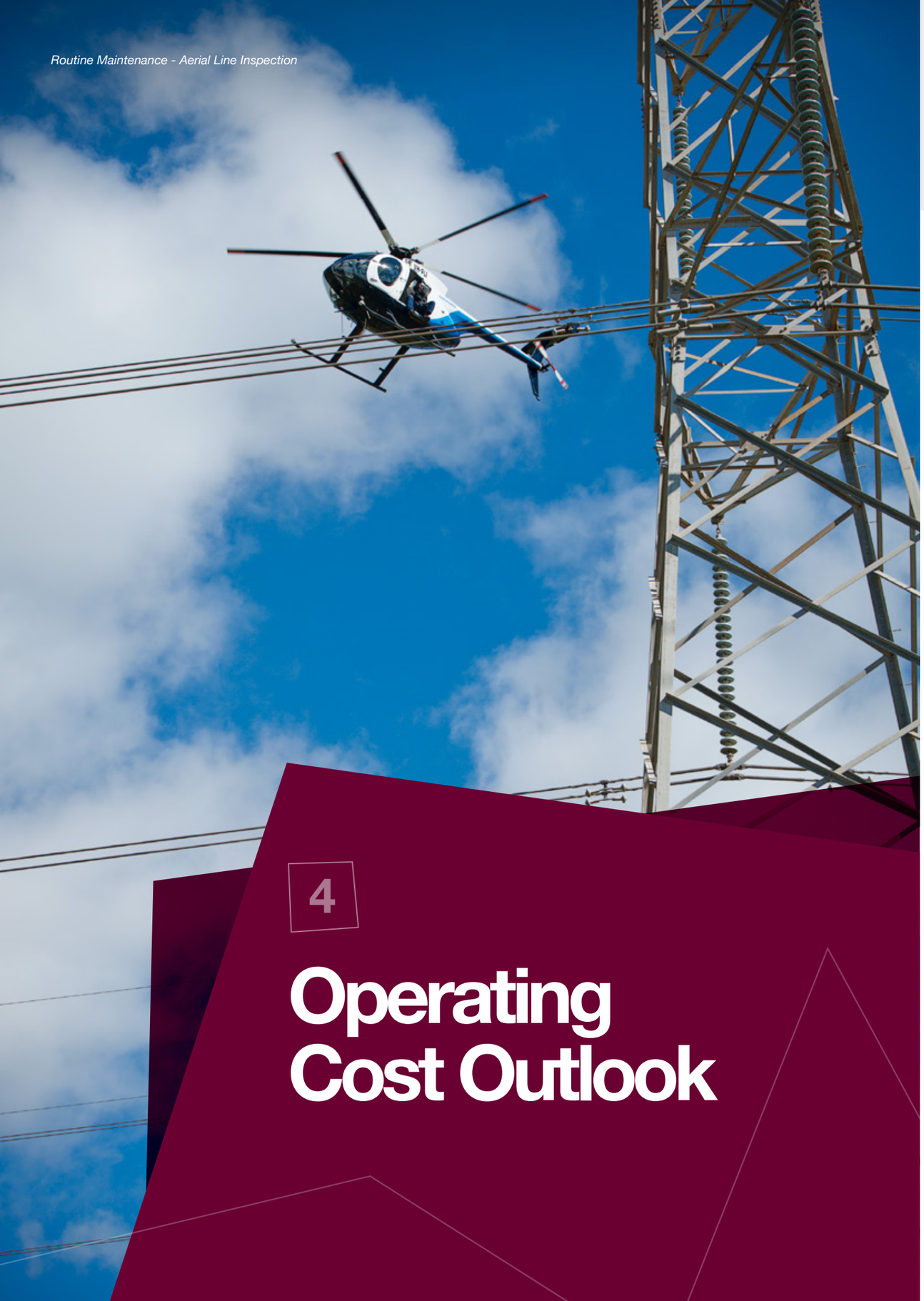
Contingent Projects

Contingent projects are significant network augmentation projects that may arise during a regulatory period but their need and or timing is uncertain.

The table below lists potential contingent projects that are under review. Unlike at the start of this regulatory period none of these are advanced or considered highly likely to be progressed in the next regulatory period.

Indicative Contingent Projects

Project	Description	Trigger	Indicative cost ($m)
Upper South East Network Augmentation (ISP project)	This project would increase transfer capacity between Tailem Bend and Adelaide to allow for greater imports and exports of renewable energy.	The ISP has identified a possible timing in the 2030s triggered by renewable investment. Renewable developments around the South East Renewable Energy Zone of around 400 MW may trigger this project earlier than identified in the ISP.	**30-50**
Eyre Peninsula Upgrade	This project allows for the upgrade of the northern section of the Eyre Peninsula line from 132 kV to 275 kV to serve higher loads, which is accommodated in the design.	A load increase of 50 MW, most likely from mining operations, would require an upgrade in the capacity of the line. The ISP may also identify a need for the upgrade if there is substantial renewable or hydrogen development in the region.	**50-90**
Main Grid System Strength Support	This project allows for the delivery of additional system strength and/ or dynamic voltage control capability on the transmission network.	The ongoing growth in non-synchronous generation coupled with higher proposed system strength standards may trigger the need for this project.	**80-120**
Project EnergyConnect Upgrade	This project allows for an increase in the effective transfer capacity of Project EnergyConnect through control schemes and/ or frequency response capability.	Sufficient renewable generation development would trigger the need for the upgrade based on expected market benefits from lower dispatch costs.	**100-150**
Robertstown to Mid North Transfer Capacity Increase (ISP Project)	This project would increase transfer capacity between the Mid North (Robertstown and Davenport) and Adelaide to allow for delivery of increased renewable generation from the Mid North.	The ISP forecasts that augmentation in the Mid North is required once around 1,000 MW of new solar or wind generation is connected north of Adelaide.	**200-250**



Routine Maintenance - Aerial Line Inspection

4

Operating Cost Outlook

Our operating cost outlook reflects the growth and complexity of the network

We maintain a strong focus on efficiency and on keeping operating costs down.

The ongoing transformation of the power system is driving increasing operational challenges and an increasing need for specialist technical resources and systems.

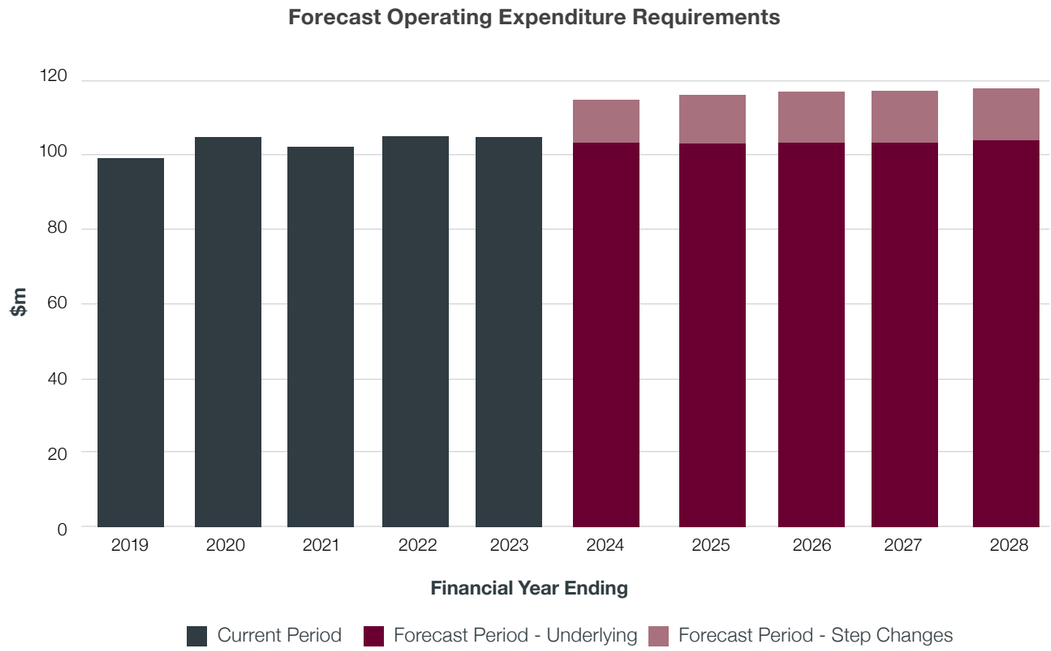
After the completion of the Main Grid System Strength Project, Project EnergyConnect and Eyre Peninsula Link, South Australia's electricity transmission network will have grown by about 17 per cent driving an increase in operating and maintenance expenditure, balanced by avoiding the need for ongoing network support expenditure.

While our underlying operating cost outlook remains stable, in the coming regulatory period we face cost pressures from a range of external factors driving increased operating costs.

These include:

- bushfires and other global events in recent years causing projected insurance and self-insurance costs to increase substantially
- new critical infrastructure requirements regarding cyber and physical security
- new obligations driving a need for increased resourcing in areas such as network planning
- the requirement to migrate some of our information technology systems to the Cloud in order to maintain and enhance functional capabilities brings with it increasing licensing costs.

These external factors are driving a step increase in operating costs from otherwise stable levels to address these new requirements. As shown below, our total operating expenditure is forecast to be $117.5 million in 2024 and to remain stable thereafter.



Applying the AER's base step trend forecasting methodology

1 Base Year

2020–21 is the proposed Base Year. Our forecast operating expenditure was $102.5m.

Our indicative operating expenditure forecast was prepared using the AER's base step trend method. This is a revealed cost-approach in which our operating expenditure for the next period is based on current expenditure levels adjusted for the growth in our network (rate of change) and for other costs not captured in either the base year or the rate of change.

2 Adjustments for one off items

- Remove capitalisable leases of $0.8m per annum (approx.)
- Remove network support allowance of $10.8m per annum (approx.)

3 Rate of change (average 2024–2028)

Output change:

- energy throughput 0.6% decrease per annum
- maximum demand 0% change per annum
- customer numbers 0.8% growth per annum
- network circuit length 15.6% growth in 2024.

Real prices:

- labour and commodity price increases as forecast by BIS Oxford Economics, currently 0.7% per annum.

Productivity growth:

- 0.3% per annum (1.5% total)

4 Step changes

New cyber security obligations and material increases in insurance costs following recent bushfires are among the step changes we propose. Details are shown opposite.

Forecast Opex 2024–2028

Step Changes

The incentive arrangements under the regulatory framework drive businesses to reveal their efficient operating costs. Our forecasts are based on the level of expenditure we have incurred in 2020–21.

In addition to these costs, we face a number of new costs that will apply to us in future years which are too material for the business to simply absorb. Consistent with the AER's forecast methodology, we have included our best estimates of these costs as step changes (or category specific forecasts) as outlined below.

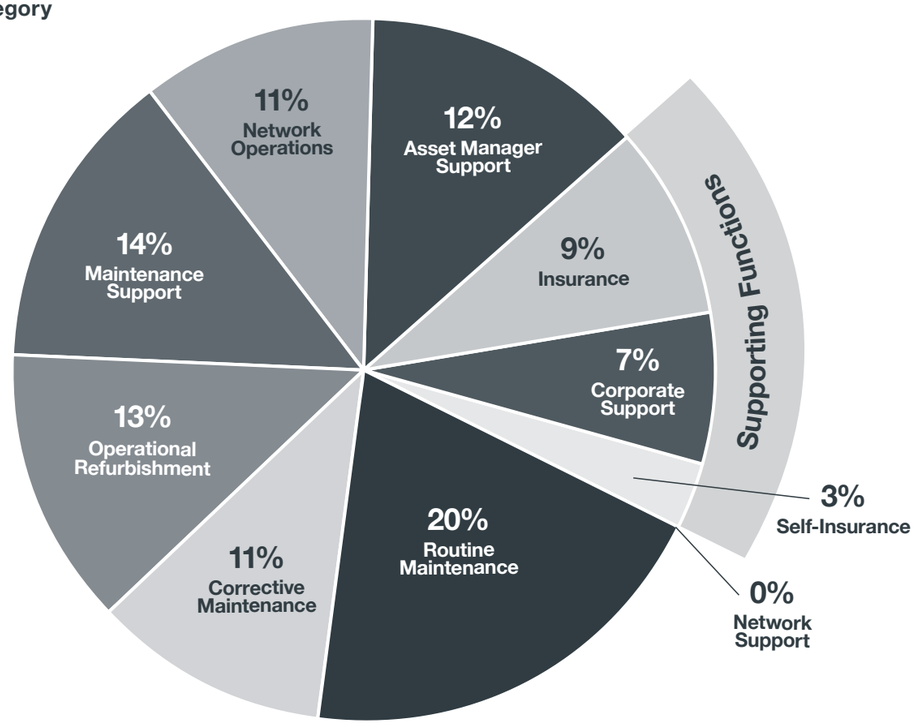
Indicative Step Changes

Area	Indicative Forecast ($m)	Description
Insurance/ Self-Insurance	**6 – 8**	Since 2018 the global insurance market has experienced significant volatility, with ongoing premium increases and a contraction in available insurance cover capacity. This ongoing market volatility continues to drive substantial ongoing increases in ElectraNet's insurance premiums.
Cyber	**2.5 – 3.5**	New Critical Infrastructure legislation to implement the Australian Energy Sector Cyber Security Framework is expected to require additional expenditure during the coming regulatory period.
Cloud	**1 – 2**	We have identified a requirement to migrate part of our IT infrastructure to the Cloud in order to maintain and enhance operational capabilities moving forward. This avoids capital expenditure and unlocks significant benefits, while requiring new licence fees to be paid.
Rule changes	**0.5 – 1.5**	Recent rule changes will give us additional responsibilities in planning and managing an increasingly complex electricity network, requiring additional specialist resources.
TOTAL	**10 – 15**	

Our operating expenditure program is focused on operating and maintaining the network efficiently.

Approximately 81 per cent of total operating costs are directly associated with the maintenance and operation of the network, with the balance comprising various supporting functions.

Indicative operating expenditure forecast by category



Mount Barker Substation

Operating Expenditure Categories

Routine Maintenance	This involves maintenance tasks and activities undertaken on a scheduled basis including asset testing, inspections, line patrols, vegetation clearance.	
Corrective Maintenance	This work involves short-term responses to unplanned events to restore assets to an operational state. Examples include mechanical breakdown, storm damage and other weather events, equipment malfunction and deterioration.	
Operational Refurbishment	This includes maintenance project activities to address medium-term risks identified though asset condition assessments.	
Maintenance Support	Functions include management of maintenance activity, environmental and safety management, asset-condition monitoring, supporting business systems and direct charges including land taxes and council rates.	
Network Operations	Includes real-time control-room functions, offline support, maintenance of operational control systems, monitoring of asset performance and condition and fault diagnosis.	
Asset Manager Support	The functional activities that support the strategic development and ongoing management of the network. Includes network planning, asset strategy, network support, customer and regulatory support and IT support.	
Supporting Functions	Includes remaining operating expenditure categories comprising: • Insurance • Corporate Support • Self-insurance.	

City West Substation

5

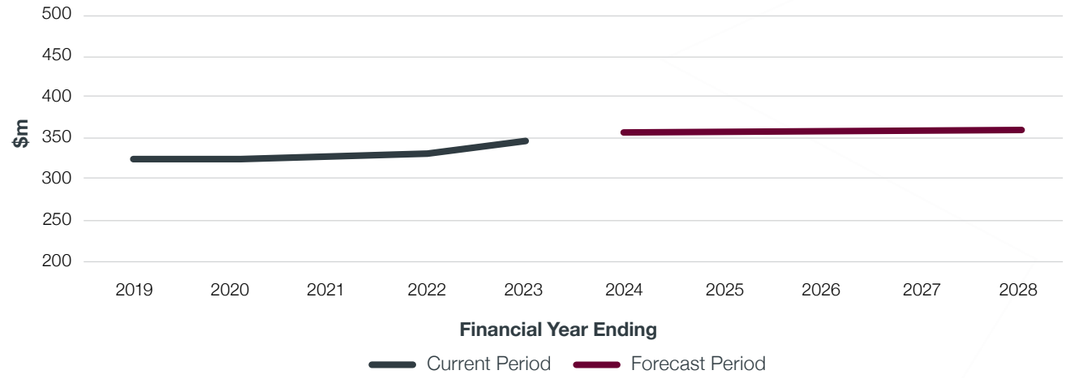
The Bottom Line

This Preliminary Revenue Proposal will see revenue and pricing remain stable over the period

Based on the indicative forecasts set out in this Preliminary Revenue Proposal, our revenue is expected to increase by 5 per cent in 2024. We expect no real increase thereafter.

The initial increase arises from the projects driven by the AEMO's Integrated System Plan in the current regulatory period – namely Project EnergyConnect and the Main Grid System Strength project. Revenue requirements would otherwise be around $30 million per annum lower in the coming period.

Indicative Change in ElectraNet's Regulated Revenue

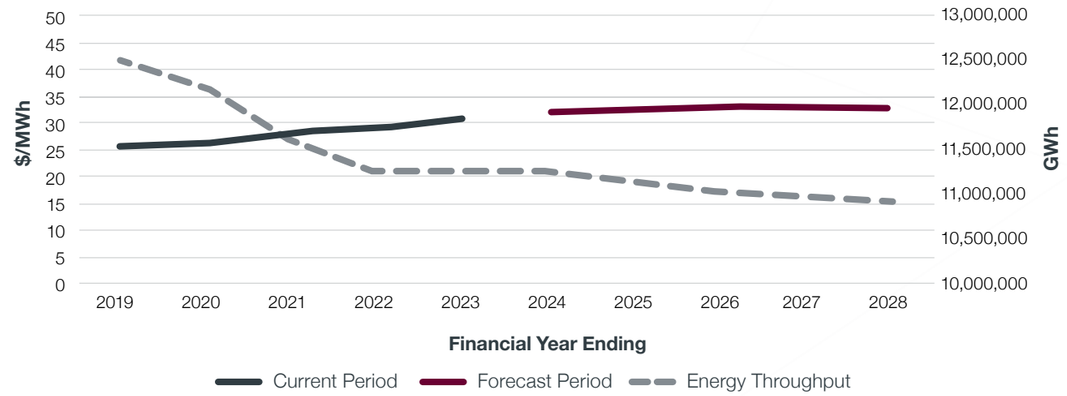


Transmission costs remain a small part of household electricity bills – typically around 10%. Transmission prices are projected to increase by 5 per cent in the first year of the next regulatory period.

Prices are expected to remain fairly constant in real terms over the remainder of the period, with a small upward movement driven by declining energy usage.

The initial increase in transmission costs will have a modest impact on household electricity bills of about $11 per annum. This will be more than offset by reductions in wholesale electricity prices made possible by Project EnergyConnect, which is expected to reduce South Australian annual household electricity bills by $100 per customer.

Indicative Change in Transmission Prices



We will follow the AER's standard approaches to the remaining revenue building blocks. This chapter covers the following parameters needed to complete our Revenue Proposal.

Rate of Return on Capital

Forecast Inflation

Depreciation

Incentive Arrangements

Tax Allowance

Revenue Building Blocks

Building Block	2019-2023 Allowance ($m)	2024-2028 Forecast ($m)	Comment
Return on Capital	**802**	**803**	Reflects lower WACC applied to higher RAB
Return of Capital (regulatory depreciation)	**307**	**391**	Reflects the size of the RAB
Operating Expenditure	**500**	**598**	Reflects opex determined by base step trend forecast
Revenue Adjustments	**-4**	**10**	Projected EBSS and CESS payments based on current spend profile
Net Tax Allowance	**41**	**0**	Reflects new AER methodology
Annual Revenue Requirement (unsmoothed)	**1,646**	**1,802**	

WACC - Weighted Average Cost of Capital
RAB - Regulated Asset Base
EBSS - Efficiency Benefit Scheme
CESS - Capital Expenditure Sharing Scheme

Near Tungkillo Substation

The rate of return is the return expected by investors to reward them for investing their capital in a business. The rate of return provides a business with the money to pay the interest on its loans and give a return on equity to shareholders.[5]

For ElectraNet and other network businesses, the AER determines the rate of return we are allowed to earn. It does this using a rate of return guideline updated every four years.

In our formal Revenue Proposal we propose to adopt the rate of return set in the relevant rate of return instrument. However, at the time of writing this Preliminary Revenue Proposal we do not know what that is because the AER guideline will not be updated until 2022.

Therefore, in this Preliminary Revenue Proposal we have estimated the rate of return by using the AER's methodology and values that apply now. These may change before our actual revenue determination is made.

For now, the rate of return we propose is 4.47 per cent, based on the assumptions shown in the table below. This represents an 18 per cent reduction in the rate of return from our current 5.43 per cent.

Rate of return

⬇ 18%

decrease in the regulated rate of return from 5.43% to 4.47% based on current market data and parameters.

Rate of Return Parameters

Parameter	2019-2023	2024-2028	Basis
Risk free rate*	**2.87%**	**1.73%**	Reflects prevailing market rates
Equity beta	**0.7**	**0.6**	Reflects prevailing AER Rate of Return Guideline (to be reissued in December 2022)
Market risk premium	**6.50%**	**6.10%**	
Return on Equity	**7.40%**	**5.40%**	Reflects parameters above
Return on Debt*	**4.12%**	**3.85%**	Reflects trailing average cost of debt based on market rates
Gearing Ratio	**60%**	**60%**	Reflects prevailing AER Rate of Return Guideline (to be reissued in December 2022)
Nominal Vanilla WACC*	**5.43%**	**4.47%**	Reflects parameters above
Gamma	**0.40**	**0.585**	Reflects prevailing AER Rate of Return Guideline (to be reissued in December 2022)

*As at 31 March 2021.

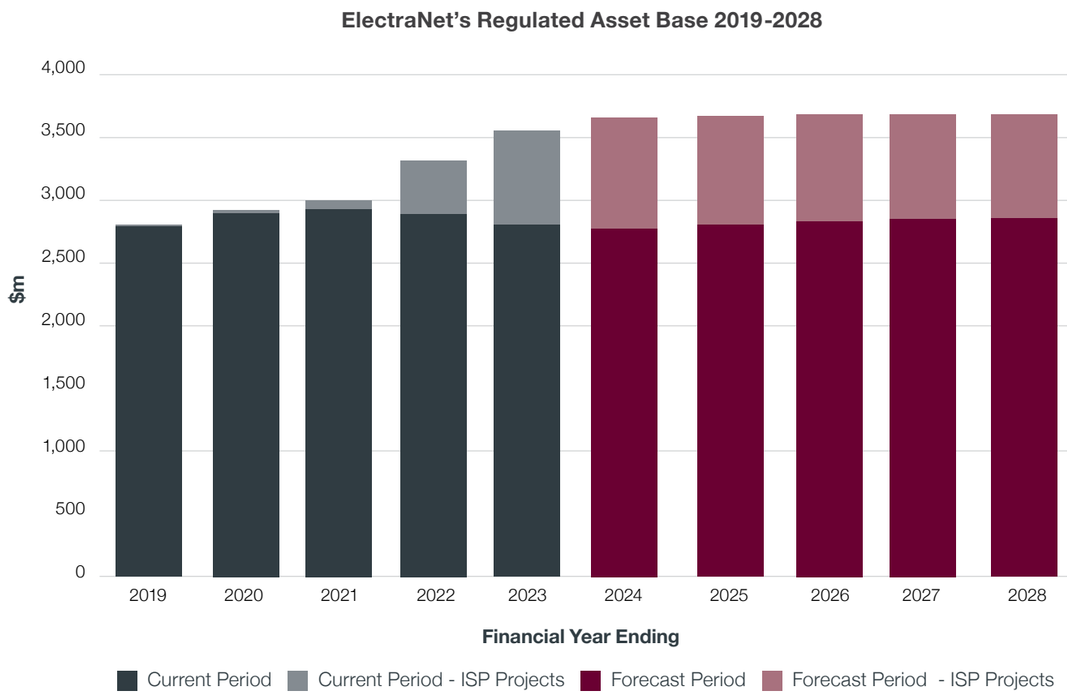
WACC - Weighted Average Cost of Capital

[5] AER, 'Pathway to the 2022 rate of return instrument Position paper', May 2020.

Regulated Asset Base

A significant portion of ElectraNet's revenue requirement is driven by the size of the Regulated Asset Base (RAB).

ElectraNet's RAB has grown significantly in the current regulatory period, due in large part to the major investments driven by the AEMO's Integrated System Plan. We expect no material increases to the RAB in the coming regulatory period based on our indicative expenditure forecasts, as shown below. We also propose to remove from the opening RAB a number of assets that will no longer be providing a prescribed service.



Para Substation

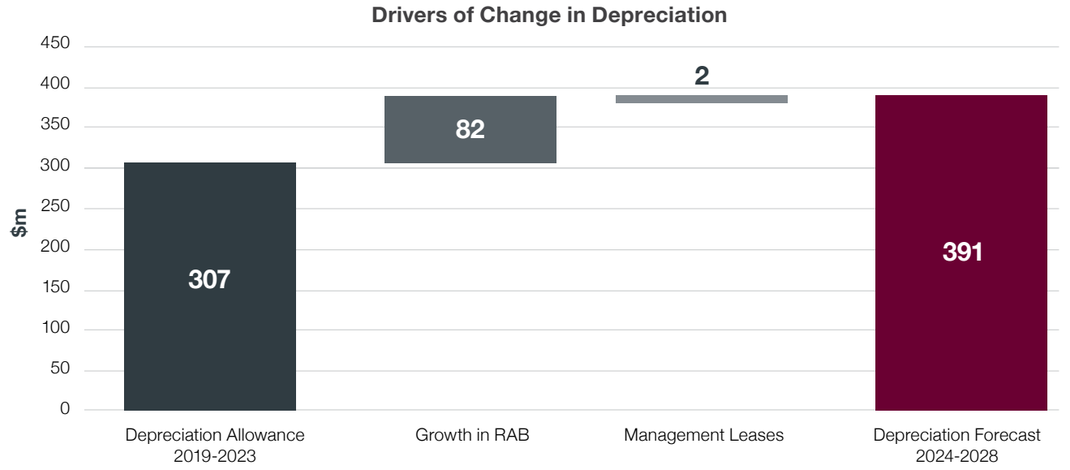
Depreciation

Depreciation is applied to recover or write down the value of an asset over its expected life. ElectraNet proposes to apply the AER's standard approaches to the calculation of regulatory depreciation, continuing our current practice.

Our proposed approach includes:

- Using the AER's Post Tax Revenue Model to calculate regulatory depreciation
- Continuing to apply the accepted year-by-year tracking method
- No changes to regulatory asset lives
- A new asset class for capitalisable leases, arising from recent changes in accounting standards
- The immediate write down of assets no longer in use or scheduled to be replaced in line with the current practice.

The figure below shows a comparison between our indicative depreciation forecast for the coming regulatory period and our allowance for the current period. It shows the large majority of the difference arises from the increase in our Regulated Asset Base during the current regulatory period due to large investments such as Project EnergyConnect and the Main Grid System Strength project.



Tax allowance

The AER updated its method for the calculation of expected tax payments in future revenue determinations in late 2018.

This involves applying the diminishing value method to the depreciation of assets for tax purposes and the expensing of capital refurbishment expenditure for tax purposes.

We propose to apply this new method in our Revenue Proposal. As shown in our indicative revenue forecasts, this reduces the tax allowance to minimal levels.

Forecast inflation

At various points in our proposal we must include a forecast of inflation during the regulatory period. Under the National Electricity Rules, the AER is responsible for determining the "method that is likely to result in the best estimates of expected inflation" for this purpose.

In December 2020, the AER published the outcome of its review of its approach to inflation. It will continue to use the RBA's forecasts for the first two years of a forecast and will then take a 'glide path' approach where it assumes that inflation will reach the mid-point of the RBA's target band for inflation in year five.

We propose to adopt this approach in our Revenue Proposal. Therefore, the values in this Preliminary Revenue Proposal are based on an average inflation rate of 2.28 per cent over the regulatory period. The values will probably change between now and January 2022 when we submit our Revenue Proposal because the RBA will release fresh forecasts. However, we do not propose to change our approach.

Incentive arrangements

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

- 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 continue applying these schemes in the forthcoming regulatory period in accordance with the AER's guidelines.

A network capability incentive is a component of the STPIS scheme, involving the development of a Network Capability Incentive Parameter Action Plan (NCIPAP). Its purpose is to incentivise transmission businesses to fund low cost works to improve network use and release additional capacity to benefit customers.

We remain focused on cost-effective measures to improve the capability of the network and our efforts to identify relevant projects will continue as we develop our formal Revenue Proposal.

Projects currently under review include:

- trialing new ways of developing plant and transmission line ratings to release power transfer capacity
- increasing the export limit on Project EnergyConnect if warranted in the future
- installing control schemes to allow more efficient use of distributed renewable resources, including leveraging battery storage at Dalrymple on Yorke Peninsula
- upgrading line and circuit breaker capacity on Eyre Peninsula.

The AER has recently finalised a Demand Management Innovation Allowance Mechanism (DMIAM) to provide funding for low-cost initiatives to research and develop demand-management projects with the potential to reduce future transmission costs. We remain committed to developing and pursuing demand side and other non-network solutions and will consider initiatives and measures that may qualify for this funding.

Cost pass through

The Rules allow the AER to approve the pass through of additional material costs imposed on ElectraNet by events beyond our control, such as changes in regulations, service standards, taxes or insurance costs. We may also propose further pass-through categories for other major cost events beyond our control.

We will consider the cost pass-through events that should apply to us in the coming regulatory period to account for material events that may impact on our costs.

For illustrative purposes, the cost pass-through events that apply to us in the current regulatory period comprise:

Insurance cap event	Major out-of-pocket costs incurred in relation to an insurance claim.
Insurer credit risk event	Material insurance costs arising if an insurer becomes insolvent.
Natural disaster event	Costs related to a major fire, flood or earthquake.
Terrorism event	Costs related to a terrorist attack, outside insured events.

Other cost pass though categories reflecting recent Rule changes might be expected to include:

Preparation of Renewable Energy Zone design reports	If triggered by AEMO's Integrated System Plan.
System strength services	if increased system strength requirements are declared by AEMO.

ElectraNet

We welcome your input and feedback on our
Preliminary Revenue Proposal. You can provide feedback by:

✉ Email **consultation@electranet.com.au**

Phone **1800 890 376**

Visit us online **ElectraNet.com.au**