Network Business Strategy FY 24 TO FY 29

November 2022



Contents

•

•

1.	Executive Summary	2
 2.1 2.2 2.3 2.4 	Introduction Purpose Scope Business Context Endeavour Energy's Regulated Asset Base	3 3 4 5
3.1 3.2 3.3 3.4	Operational context External drivers and key challenges Stakeholder expectations Our Corporate and Sustainability Strategies Our Network Objectives	6 6 7 10 11
4. 4.1 4.2	Investment performance and forecast expenditure Forecast System Capital Expenditure Forecast Non-System Capital Expenditure	13 13 17
5. 5.1 5.2 5.3	Performance of the Network Affordability Reliability Safety	18 18 19 20
6. 6.1 6.2 6.3 6.4 6.5 6.6 6.7	Appendix – Network ObjectivesNetwork SafetyEnvironmental SustainabilityNetwork-Initiated Bushfire RiskNetwork ConnectionsNetwork ReliabilityPower QualityNetwork Resilience	21 22 23 24 25 26 27 28
6.8 6.9	Future Grid Network Availability and Capacity	29 30



- •
- •
- •

- •
- •
- •
- •

Purpose statement

The Network Business Strategy (NBS) translates Endeavour Energy's Corporate Strategy into tangible and measurable Network Objectives that inform investment levels. Furthermore, it demonstrates the line of sight from the Corporate Strategy and other associated strategies to our investments.

Network Business Strategy



1. Executive Summary

Endeavour Energy has a commitment to transformation and delivery of long-term sustainable value to our customers and shareholders. Our Purpose is to power communities for a brighter future and our vision is to be among the best-performing networks in Australia. Network Business Strategy is the key Strategy translating the above from the top through to the implementation.

The Network Business Strategy provides direction and guidelines for several key asset investment strategies such as Growth Servicing Strategy, Future Grid Strategy and Asset System Strategies. In addition, it guides non-system asset investment strategies such as ICT, Fleet and Property. Within the NBS, nine network objectives have been identified to enable Endeavour Energy to deliver its Corporate and Sustainability Strategies and to meet customers, shareholders, and regulators' expectations. Each Objective is owned by a company executive, and they are further subdivided into measurable sub-objectives. The long-term investment trends, cycles and short-term investment adjustments are communicated to the investment owners through the Network Business Strategy. The objectives are not static and are expected to change over time, responding to changes of the needs of our stakeholders.

Our forecast Augmentation expenditure (Augex) is primarily driven by supporting the sustainable growth of our communities and is about 40% of system expenditure. Our forecast replacement expenditure (Repex) is primarily driven by meeting customer expectations for a safe, affordable, and reliable supply of electricity and is about 30% of system expenditure. The remaining system capex is for Network Connections and Future Grid / DER Integration.

Our forecasted capex for the upcoming regulatory period is \$1.882 Billion (Real \$FY24). The portions of capex costs by different expenditure categories are given below.

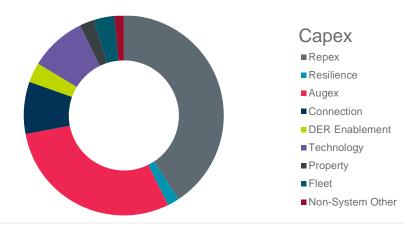
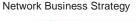


Figure 1 - Total Capex by Expenditure Category





- **Network Business Strategy**

2. Introduction

Endeavour's goal is to ensure our customers have reliable access to an electricity network that is affordable, safe, and sustainable, and that enables access to power in a way that suits them and their energy needs. We work to adapt quickly to the needs of our customers and continually strive to find better ways to power our communities. In 2021, Endeavour Energy was proud to be recognised as one of Australia's best-performing electricity distribution companies.

As we look to the future, the nature of the energy system and our role within it is changing. The net-zero ambitions of our community require fundamental changes to the way energy is generated and how our customers both generate and use electricity. At all levels, this will need investment, innovation, new technology, additional infrastructure and policy and regulatory reform.

For Endeavour Energy, the operation of a more intelligent, integrated, and dynamic network means we will transition from being a traditional 'poles and wires' business to a central platform, coordinating a clean and equitable energy system and enabling digital services for our customers. At the same time, we will be supporting unprecedented growth in Western Sydney and enhancing resilience to increasing risks from climate change, cyber security, and a more variable and decentralised generation mix.

2.1 Purpose

The Network Business Strategy (NBS) translates Endeavour Energy's Corporate Strategy into tangible and measurable Network Objectives that inform investment over the period FY24 to FY29.

Network Objectives define the goals and performance requirements for achieving either customer service outcomes (i.e., power quality, reliability, future grid, connections, etc.) or managing network risk (i.e., employee and public safety, bushfire, environment, etc.).

The NBS also aims to provide an understanding of the performance of the network as a system by reviewing the trend of key metrics and indicators.

It is not intended to detail the rationale that informs the positions taken to strategically invest in our network. For detailed information, the reader should look to the associated artefacts as part of the Asset Management Framework, see Figure 2.

2.2 Scope

The NBS covers Endeavour Energy's electricity network as well as non-system assets that support the delivery of network services, such as property, fleet and ICT.

The relationship between the NBS and other artefacts within the Asset Management Framework (AMF) is illustrated in the figure below.



- •
- •
- •
- •

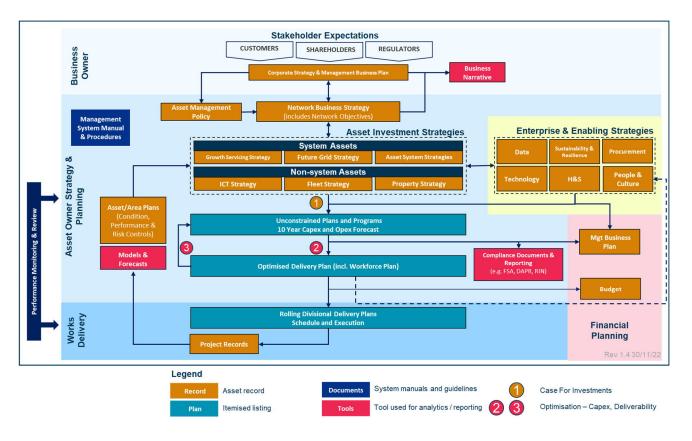


Figure 2 - Endeavour's Asset Management Artefact Hierarchy

2.3 Business Context

Endeavour Energy is subject to the National Electricity Law (NEL) and National Electricity Rules (NER) which regulate the National Electricity Market. Endeavour Energy is also subject to the statutory and other legal requirements applied to all businesses in NSW. Endeavour Energy operates in the National Electricity Market (NEM) as a licensed distribution network service provider (DNSP). Endeavour Energy is also subject to the Electricity Supply Act 1995 (NSW) and the associated Electricity Supply (Safety and Network Management) Regulation 2014 (NSW).

The distributors' licence conditions, including the Network Reliability and Performance Licence Conditions, are imposed by the NSW Minister for Energy. The Independent Pricing and Regulatory Tribunal (IPART-Electricity) is responsible for administering licensing within the energy industry in NSW. The Australian Energy Regulator (AER) is the economic regulator that ultimately adjudges and sets Endeavour Energy's network revenue and network service pricing within each regulatory control period and this to meet the National Electricity Objectives for economically efficient operation of the business.

We power the third largest economy in Australia. Our network area includes priority growth areas of Sydney, established in 2005 to provide residential, employment and conservation areas and related infrastructure within the North West and South West Growth Centres



2.4 Endeavour Energy's Regulated Asset Base



Our regulatory asset base (RAB) is valued at approximately \$7.5 billion and provides power to over one million customers, or approximately 2.6 million people in households and businesses.

Our network spans nearly 25,000 square kilometres covering densely populated and regional areas including Sydney's Greater West, the Blue Mountains, the Southern Highlands, Illawarra and the South Coast of NSW.

Figure 3 - Endeavour Energy's licenced franchise supply area

Our RAB is managed via discrete asset systems and subsequent classes within each system. These are described in the table below.

Asset System	Asset Classes						
Major Substations	 Civil Power Transformers Transmission Switchgear Instrument Transformers Major Substation Equipment 						
Overhead Network	 Access Tracks Conductors Services Overhead Structures (e.g., Poles and Towers) Pole Top Hardware (e.g., insulators and cross arms) Overhead Switchgear (e.g., Links, switches, etc.) Pole Transformers 						
Underground Network	 Cables Pits/Pillars/Cubicles Padmount Transformers Underground Switchgear 						
Secondary Systems	 SCADA Protection Systems Voltage Control Communications 						
Non-system	 Public lighting Metering Fleet Property Technology 						

Table 1 – Asset hierarchy breakdown



•

3. Operational context

To ensure Endeavour Energy delivers the right outcome for customers and other stakeholders, it is essential that this NBS is developed and maintained in conjunction with the current operational context. This requires appropriate stakeholder engagement and responding to the change in external drivers that shape our future network needs and our customer's expectations.

This is supported by our AMF, which recognises customers and key stakeholders must be engaged to understand and respond to their requirements to ensure outcomes are achieved that are in their long-term interests.

It is important that we consider and balance the competing interests of a range of customers, customer groups and other stakeholders, including:

- end users of the electricity network, including households and small, medium and large businesses;
- stakeholders and groups who represent our end user customers, including various consumer advocacy groups and business associations;
- employees and service providers;
- · local Governments who are customers of our public lighting services; and
- energy retailers, who collect revenue from small customers.

3.1 External drivers and key challenges

One of our straight-forward and long-standing objectives has been to deliver a safe and reliable electricity supply at an affordable price. We continue to strive to deliver this objective in the context of seven emerging trends shaping our current and future operational landscape. These are:

3.1.1 Customer Centricity

A focus on customers' needs and experiences from high energy users to pensioners to empowered prosumers means customers play a more central role in the operation of the network as networks evolve to be platforms of energy services. Underpinned by new technologies, customer expectations and service needs will evolve. Customers will expect to help shape the direction of the business through deep engagement on regulatory proposals and beyond.

3.1.2 Trust, Reputation and Purpose

The reliable delivery of an affordable crucial service underpins trust and is core to our purpose. Customers also increasingly expect organisations to align with personal and community values for environmental and social governance (ESG). Purposeful decision-making, with an emphasis on ESG outcomes, will be essential to retain social licence, attract investment and to establish and maintain a high-performance culture.

3.1.3 Western Sydney Regional Growth

The NSW Government is driving the substantial and rapid growth of Western Sydney, at a rate nearly 40% higher than the rest of Metropolitan Sydney. By 2036, half of Sydney's population will reside within the city's west, supporting 200,000 new jobs, a new airport, rail, new industries and manufacturing, and become a high-skill jobs hub. This plan is akin to building a new and smart interconnected city, from scratch.



3.1.4 Economic volatility and cost of living pressures

International and domestic developments have contributed to rapidly rising inflationary pressures, including in energy prices, with rising concerns about a possible slowdown in the Australian economy. Cost of living pressures are increasingly centre of mind now for all customers small and large. Transitioning the grid to ensure long term value for money services as customers make increasing energy choices in the most efficient way requires balancing in the short and long-term.

3.1.5 Climate change and extreme weather events

Climate modelling suggests that extreme weather events will continue to increase in both frequency and intensity over the coming decades. Climate change-related events damage, destroy and/or compromise the performance of infrastructure and increase risks to the reliable supply of electricity.

3.1.6 The evolving grid within a low carbon economy

The pursuit of a net zero economy will transform the way we generate and consume energy. As customers take up technologies such as solar, batteries and electric vehicles, the network will need to evolve to allow for two-way flows and active participation from customers and third parties. Over time, more sophisticated digital platforms will seek to interact with a more dynamic, integrated network that orchestrates the low carbon energy system.

3.1.7 Efficient and effective service in the digital age

Introduction of digital technologies and enhanced data capabilities create significant operational efficiencies while transforming the risk, roles, required skills and location of the future workforce. At the same time, cyberattacks become more frequent and sophisticated, targeted at the disruption of energy supply.

3.2 Stakeholder expectations

3.2.1 Customers

Our customers' needs and expectations continue to evolve in light of the seven external drivers. Some recent customer research conducted by SEC Newgate, identified five themes' customers felt were of the most importance. The table below describes each theme and how Endeavour Energy proposes to respond drawing line of sight to our Network Objectives which are described in detail in Section 3.4.

Whilst this strategy reflects recent customer engagement outcomes, it is worth noting that our customer engagement processes produce many data points, which we continuously interpret, translate and assess. This results in an evolution of our understanding of our customers' expectations, allowing Endeavour to continue to maximise alignment of our investments with their expectations.

For the most current understanding of customers' expectations please see the latest Engagement Summary Report.



Table 2 - Customer Expectations

• • •

Customer Theme and Priority	Endeavour Energy's Response	Network Objective				
Provide a reliable supply of electric	sity					
Providing a reliable supply of electricity to all customers by building, maintaining and managing the substations, poles and wires, underground cables and other equipment.	New threats and opportunities to network reliability are emerging from climate events, cyber security events and emerging technologies. An increased focus on network resilience, justified by appropriate evidence, is required as part of our continued focus on reliability.	 Network Reliability Network Resilience Power Quality 				
Responding to emergencies						
Responding to emergencies like storms which bring down power lines and poles to reduce the safety risk and restore power as quickly and safely as possible.	With current modelling indicating climate-related events are likely to occur more frequently and with greater intensity, we will invest to become more resilient against these threats, and ensure operational processes optimise our response as part of our trusted and reliable service.	 Network Resilience Network Safety Network-initiated Bushfire Environmental Sustainability 				
Efficiently manage the network to o	Efficiently manage the network to deliver the most affordable services					
Managing the network efficiently to deliver electricity services in the most affordable way.	As we continue to invest in the future network, community growth and resilience, we will need to balance the trade-offs between investment priorities, and offset investment with operational efficiencies to the extent possible. We will retain focus on our target of being a leading performer.	 Network Availability and capacity Future Grid 				
Researching, trialling, and installing	g new technologies					
Researching, trialling, and installing new technologies such as batteries to improve efficiency of infrastructure investment where possible, helping contribute to long-term affordability of electricity bills.	New commercial capabilities and stronger partnerships will be essential to unlocking the potential of new technologies and services on the network. Our innovation fund will trial new technologies, while we will work with partners and the regulator to optimise outcomes for customers.	Future Grid				



Customer Theme and Priority	Endeavour Energy's Response	Network Objective
Keeping customers informed		
Keeping customers informed (via SMS for all customers plus mailbox drops for life-support customers) of planned and unplanned outages to minimise disruption. Expectations around data access are important.	With the digital age and new platforms for communication increasing the complexity of the distribution system, we will need to provide customers with access to the tools and information they need, so they can manage their usage and stay informed through any medium.	 Network Connections Future Grid

Source: Business Narrative

Endeavour Energy is also committed to the delivery of its Energy Charter commitments which include:

- We will put customers at the centre of our business and the energy systems.
- We will improve energy affordability for customers.
- We will provide energy reliably, safely, and sustainably.
- We will improve the customer experience.
- We will support customers in vulnerable circumstances.



3.2.2 Shareholders

Endeavour Energy is 50.4 percent owned by an Australian-led consortium of long-term investors in the private sector operating the network under a 99 - year lease. The private sector consortium comprises of Australia's Macquarie Infrastructure and Real Assets, AMP Capital on behalf of REST Industry Super, Canada's British Columbia Investment Management Corporation and Qatar Investment Authority. The remaining 49.6 percent is held by the State of NSW via a corporation constituted under the Electricity Retained Interest Corporations Act 2015.

Our shareholders expect to deliver affordable, reliable and safe electricity to customers whilst receiving fair financial returns.

3.2.3 Regulators

Endeavour Energy is committed to achieving an optimum outcome for our customers and shareholders through each recurring five-year revenue regulatory determination process with the Australian Energy Regulator. We will respond to the evolving socio-economic and political landscape and changes in the regulatory framework when any NER changes occur or when the AER or the Independent Pricing and Regulatory Tribunal issues new regulatory guidelines or regulations. The table below lists the current matters currently under consultation by the AER and IPART and the NSW Department of Planning, Industry and Environment (DPIE).



•

Table 3 - AER and IPART Current Consultations

AER	IPART and DPIE
 Trial projects guidelines - Regulatory sandboxing How the AER will assess the impact of capitalisation differences on our benchmarking – Guidance note Customer export curtailment value methodology Export tariff guidelines Rate of Return Instrument 2022 Connection Charging Guidelines DER reporting and incentive scheme 	 Review of electricity network operators' licences Review of ASP scheme Promoting innovation for NSW customers Electricity Infrastructure Roadmap

3.3 Our Corporate and Sustainability Strategies

Endeavour Energy has a continued commitment to transformation and delivery of long-term sustainable value to our customers and shareholder across five strategic pillars in our Corporate Strategy as illustrated in the figure below.



Figure 4 - Endeavour Energy Corporate Strategy and Strategic Pillars

In support of the Corporate Strategy, Endeavor Energy has developed a Sustainability Strategy to focus on key sustainability pillar headline targets for customers and the company. These are illustrated in the figure below with a line of sight to the relevant Corporate Strategy pillars.



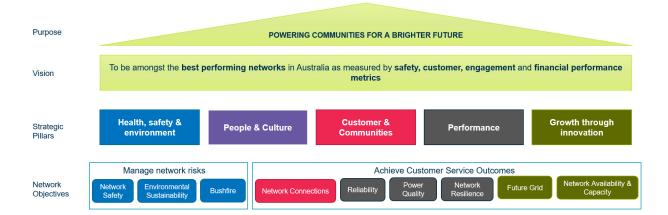
•

Safety & Environmental	People & Culture	Performance
Climate Support a renewable revolution Headline target 40% CO2 reduction by 2030 (excl line losses) Climate Positive by 2040 (incl line losses)* *Baseline FY21	Wellbeing Care for people and communities Headline target Empower healthy and well people and communities 71% employee engagement by 2025 Illness & injury rate < 5 by 2025	Resilience Help our communities stay connected Headline target Reliable energy for all our communities in times of crisis
Circularity Keep materials in use longer Headline target Waste neutral by 2030* 90% diversion from landfill by 2025 *excluding hazardous and contaminated waste	Inclusion Empower inclusion and opportunity Headline target Be employer of choice for a diverse workforce reflective of our customers and communities Women - 20% leadership, 50% apprentice program by 2025	
Nature Be nature positive & support biodiversity Headline target Become nature positive, restoring more nature than we remove by 2025		

Figure 5 - Sustainability Strategy Pillars Headline Targets

3.4 Our Network Objectives

Nine network objectives have been identified to inform prudent network investment with the aim of delivering against expectations set by our customers, shareholders, and regulators'. Monitoring performance against these objectives provides oversight against critical investments themes, allowing Endeavour to manage appropriate trends and levels of investment for the future ie. increase, decrease or maintain investment in key areas. As illustrated in the figure below, they have been aligned with our corporate strategic pillars, providing a clear line of sight to the Corporate Strategy. The objectives and performance measures of each Network Objective are described in detail in Appendix – Network Objectives.





3.4.1 Network Objectives Owners

The following table summarises the Network Objectives and the respective executive ownership. Under the executive leadership, several subject matter experts take responsibility for each Network Objective.



Table 4 - Network Objectives

Network Objective	Description	Executive Owner
Network Safety	Network Safety objectives address the worker and public aspects of network safety in line with corporate health and safety objectives.	GM Health Safety & Environment
Environmental Sustainability	Enhance our environmental sustainability performance and reduce our contribution to climate change	GM Health Safety & Environment
Network initiated Bushfire risk	Bushfire objectives address proactively managing public safety, employee risk, and business risk from bushfires initiated by Endeavour Energy's network assets.	Chief Asset & Operating Office
Network Connections Network connections objectives address meeting networ connection obligations in a manner that balances cost, risk, and customer needs.		Chief Asset & Operating Office
Reliability	Reliability objectives address achieving appropriate levels of reliability of electricity supply in alignment with the requirements and expectations of customers, regulators, and other stakeholders.	Chief Asset & Operating Office
Power Quality	Power quality objectives address minimising the variance of the voltage supply from specified characteristics in terms of waveform and magnitude.	Chief Asset & Operating Office
Network Resilience	Network resilience objectives address improving our ability to anticipate, withstand and quickly recover from disruptive events.	Chief Asset & Operating Office
Future Grid	To enable our customer's evolving energy choices and the energy transition.	Chief Asset & Operating Office
Network Availability & Capacity	Network capacity objectives address meeting existing and forecast customer demand (both generation and load) for network capacity, focussing on the optimal capacity utilisation of existing network assets while maximising the value of grid connection and addressing the challenges of DER integration.	Chief Asset & Operating Office



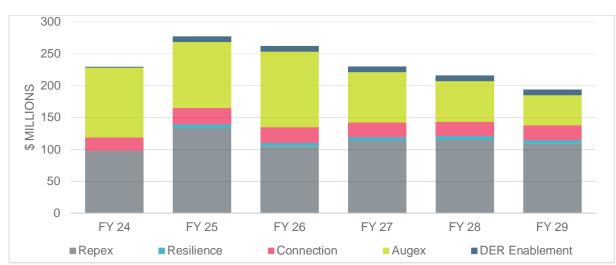
4. Investment performance and forecast expenditure

Capital expenditure (capex) is the investment required to maintain the safety, security and reliability of supply and to connect new customers to the network. Our capex involves:

- complying with safety, asset management and reliability obligations.
- replacing ageing assets in a timely and efficient manner.
- connecting new customers to the network and providing additional capacity to new and existing customers to meet their needs; and
- establishing, maintaining and upgrading the ICT and support systems, Buildings, Property and Vehicles our staff require to carry out their functions and activities.

Forecast system capex spend for the 2024-29 period is \$1,410 million (\$FY24). Our forecast capex seeks to maintain our current level of performance and risk appetite.

Endeavour uses an Investment Decision Support Tool (IDST) to facilitate value-based decision making. The Net Present Value (NPV) for each investment is calculated using a value function that incorporates a selected set of relevant value measures. A positive NPV is typically required to justify the business case. Additionally, the NPV of an investment is used to determine its standing among other investments competing for resources in a constrained optimization process. Additional details are available in the EE Value Framework. The capex forecast has been developed using this framework.



4.1 Forecast System Capital Expenditure

The following graph shows the proposed System related capital expenditure from FY24 to FY29

Figure 7 - System Capex FY24 - FY 29



4.1.1 Replacement expenditure

Replacement expenditure (repex) continues to be primarily driven by meeting customer expectations for safe, affordable, reliable electricity service. It involves replacing existing assets when (or before) they fail based on assessing the risk and impacts on supply or safety of failure. Repex is also driven by supporting resilience and enabling customers' energy choices. We do not simply conduct like-for-like replacements but test for innovative and alternative solutions that account for customer take-up of DER and can provide improved safety and resilience outcomes.

The detailed repex forecast considers various factors such as asset condition, reliability, safety and failure risk, cost of intervention, timing differences and customer benefits. Pole replacement program and Transmission switchgear replacement programs will continue as significant replacement programs in the future.

Key repex investments from FY24 - FY 29 include:

- Poles: A reactive program to reinforce or replace poles that no longer have a suitable safety factor.
- HV Distribution Switchgear Replacement: A planned program to address an increasing trend in assets functionally failing whilst still in service.
- Power Transformer Replacements: A planned program to replace targeted high-risk transformers based on individual asset health and risk data.

Table 5 - Replacement Expenditure Forecast (\$ Millions)

Financial Year	FY24	FY25	FY26	FY27	FY28	FY29
Total	97.7	133.1	104.2	113.4	115.1	108.7

4.1.2 Resilience

Resilience has been an emerging theme in the NEM, with natural disasters' increasing frequency and severity. Resilience refers to the ability to anticipate, withstand, quickly recover and learn from major disruptive events. A reliable electricity network is not necessarily a resilient one. This means our BAU repex may improve reliability but not resilience. This can be observed through the widening gap between our 'raw' and weather normalised reliability performance:

Resilience and reliability are not discrete concepts but are related, interdependent and overlapping. This means we have always invested in 'resilience' as part of our BAU repex, augex and opex through a mix of proactive (e.g. network hardening) and reactive (e.g. outage response and insurance) measures. Currently, Endeavour is not categorising much of resilience expenditure separately, but it is planned to have dedicated programs commence from FY25.

Key resilience investments from FY24 - FY 29 include:

Resilience - Flood management

Resilience - Bushfire management

Table 6 - Resilience Expenditure Forecast (\$ Millions)



lotal	-	5.6	5.6	5.6	5.6	5.6

4.1.3 Augmentation

The augmentation capex (augex) is primarily driven by supporting the sustainable growth of our communities. It involves expanding the network to new areas to cater for customer growth and increasing the capacity of the existing network to cater for demand growth from existing customers.

EE has experienced significant growth over the last decade and expects this to continue. However, much of the anticipated growth for this regulatory period has been delayed to later in the period. At the same time, investments not catered for in our current period allowance, such as the 132kV supply for the Aerotropolis, have been brought forward.

Augex is developed on a bottom-up basis that involves a probabilistic assessment of demand and customer growth assumptions to determine locations where the network needs to expand and/or how much additional network capacity is required and when. The majority of Endeavour Energy's augex is required to augment the sub transmission network, with almost all distribution system expansion undertaken by land developers – see 4.2.4 connections.

Key augex investments from FY24 - FY 29 include:

Western Sydney Aerotropolis:

The Western Sydney Aerotropolis (Aerotropolis) is an 11,200-hectare area surrounding the Western Sydney International (Nancy-Bird Walton) Airport in Western Parkland City. Key Endeavour Energy projects unlocking the Aerotropolis economic potential include:

- Aerotropolis 132kV Backbone feeder: This is critical infrastructure required to service the growth.
- Bradfield North Zone Substation: This is critical infrastructure required to service the growth.
- New Badgery's Creek (Bradfield City) Zone Substation. This is critical infrastructure required to service the growth.

Sydney's North West:

Sydney's North West is becoming an increasingly popular place to live. Within the North West Priority Growth Area, new communities will progressively develop with access to schools, parks, community facilities, jobs, roads and public transport.

Key Endeavour Energy projects supporting the critical growth of Sydney's North West include:

- o Riverstone East Zone Substation: This is critical infrastructure required to service the growth
- o Augment Westmead Zone Substation: This is to meet the increased demand

South West and Greater Macarthur:

Greater Macarthur is a Growth Area incorporating Glenfield to Macarthur urban renewal precincts and the land release precincts south of Campbelltown, including Gilead, North Appin and Appin.

Key projects supporting the sustainable growth of the South West and Greater Macarthur include:

• Establish West Appin Zone Substation: This is to meet the increased demand.



- Establish Mount Gilead Zone Substation: This is critical infrastructure required to service the growth.
- o Establish permanent Menangle Park Zone Substation: This is to meet the increase demand
- Establish Lowes Creek (Marylands) Zone Substation: This is critical infrastructure required to service the growth.

Table 7 - Augmentation Expenditure Forecast (\$ Millions)

Financial Year	FY24	FY25	FY26	FY27	FY28	FY29
Total	109.5	103.5	118.8	78.9	63.8	47.5

4.1.4 Connections

Connections expenditure relates to the expansion and augmentation of the distribution network (e.g. new distribution substations and lines and cables connecting to the customer).

The majority (around 87%) of these costs are funded by the connecting customer and delivered competitively in NSW. The remaining costs relate to network extensions and augmentations that provide a shared benefit to the network and other customers. We therefore fund this proportion of costs.

Like augex, our connections forecast is driven by our customer growth assumptions. As these costs are more predictable we use a model to forecast these costs based on forecast customer growth by connection type and historical unit costs.

Table 8 - Connection Expenditure Forecast (\$ Millions)

Financial Year	FY24	FY25	FY26	FY27	FY28	FY29
Total	20.6	26.0	24.5	23.0	22.5	23.1

4.1.5 Future Network / DER

Our DER expenditure is designed to prudently support the growth we expect in customer uptake of PV, BESS & EV's and in particular enable our customers to both import and export energy. We will need to evolve our operations and innovate as our network and our business will transform into a platform – connecting and coordinating a broader range of physical assets, technologies and management systems, with options to optimise the grid through better data, systems and operation approaches.

Our central case forecasts reflect the AEMO 2022 ISP "step change" scenario but will continue to consider other scenarios and pursue adaptive planning as we monitor and evaluate uptake Key DER investments will include, improving LV visibility, Transformer tap changes, customer investigations and network augmentation to improve hosting capacity. Investment in enabling technology will also be required, see the Future Grid Strategy for a detailed explanation.

Table 9 - DER Expenditure Forecast (\$ Millions)

Financial Year	FY24	FY25	FY26	FY27	FY28	FY29
Total	1.6	9.0	9.0	9.0	9.0	9.0



4.2 Forecast Non-System Capital Expenditure

To support network services, non-system capex is also required. Our non-system capex involves establishing, maintaining and upgrading the ICT and support systems, Buildings, Properties and Vehicles that our staff require to carry out their functions and activities.

The following graph shows the proposed Non-System related capital expenditure from FY24 to FY29.

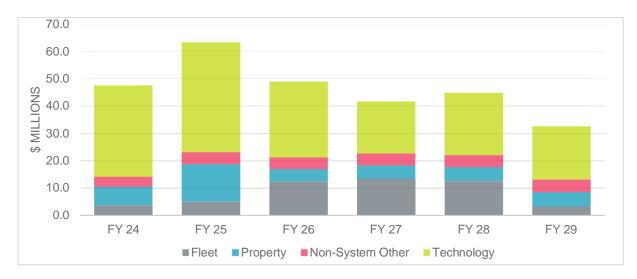


Figure 8 - Non-System Capex FY24 - FY29

4.2.1 Information and Communication Technology (ICT)

Information and Communications Technology (ICT) is a crucial enabler in improving how we do business to ensure that we strike the right balance between investing in the network and maintaining affordability. Our forecast ICT expenditure supports all of our investment themes and involves:

- Replacing and upgrading existing systems to maintain currency and support network operations.
- Better systems, technology and data capture to improve the efficiency of operations and quality of decision making to improve our affordability.
- Stronger and more sophisticated cyber security protections to maintain the resilience and security of operations.
- Smarter systems and data on the use of DER across network to better orchestrate and enable customers' energy choices.

After several years of underinvestment below industry benchmarks, we undertook a substantive ICT transformation program over the current period. Our focus for the next period will be in maintaining these new systems and making targeted improvements where justified.

Table 10 - ICT Expenditure Forecast (\$ Millions)

	\$ Millions					
Financial Year	FY24	FY25	FY26	FY27	FY28	FY29
Total	33.3	40.1	27.7	19.0	22.8	19.4



4.2.2 Property & Fleet

Other non-system capex categories relate to motor vehicles, buildings, property, furniture, fittings, plant and equipment. These investments are required to support our field and office staff in performing their jobs and therefore form part of the costs of building, maintaining, and operating our distribution network.

Table III Troperty and Treet Experiatore Forebast (# minoris)						
Financial Year	FY24	FY25	FY26	FY27	FY28	FY29
Property Total	6.7	13.7	4.5	4.8	5.1	5.2
Fleet Total	3.8	5.1	12.4	13.5	12.5	3.4
Non-System Other	3.6	4.2	4.2	4.3	4.3	4.6

Table 11 -	 Property and 	I Fleet Expenditu	ure Forecast (\$	Millions)
------------	----------------------------------	-------------------	------------------	-----------

5. Performance of the Network

The following section provides an overview of the trends related to key considerations of the performance network. In keeping with our main objective, we look to provide an assessment of affordability, reliability and safety.

Although investment decisions are not made based on the following trends, they are further data points, which influence decisions made in relation to our overall network business strategy.

5.1 Affordability

5.1.1 AER Benchmarking of our Capex performance

The graphs below display the past trend in RAB per customer compared to the NEM average and the Capital MPFP (Multi Partial Factor Productivity) over the period FY06 to FY21. These measures provide a high-level indication of the sustainability of our investment levels and our year-to-year capex efficiency. An increasing RAB/customer and declining Capital MPFP would suggest upward pressure on electricity prices in the future and vice versa.

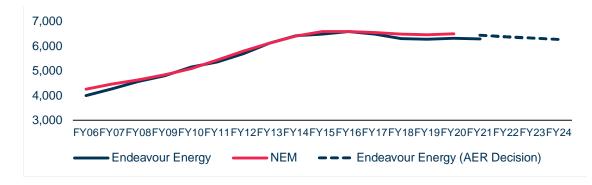


Figure 9 - RAB per customer (\$FY21)



- **Network Business Strategy**

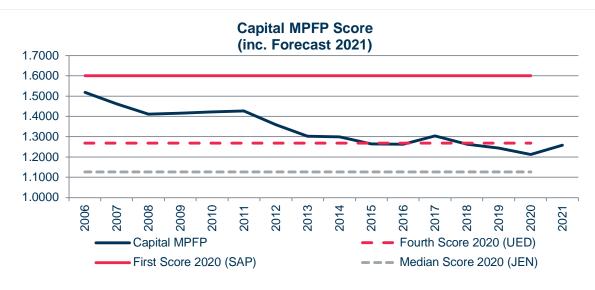


Figure 10 - Capital MPFP Score

Our RAB per customer is tracking slightly below the NEM average with no material real increases over the last several years. This reflects capex returning to more sustainable levels following the 2009-14 investment peak driven by NSW licence conditions. Whilst capital MPFP has been declining industry wide, Endeavour Energy's capital efficiency has improved in the most recent year and it remains amongst the efficient frontier. This follows increasing utilisation of our network from both customer growth and increasing demand from existing customers.

Over the last ten years, customers have benefited from a real decline of the RAB per customer in real terms.

5.2 Reliability

Reliability of supply is a key measure of the performance of the electrical network. System Average Interruption Duration Index (SAIDI) is the measure of the number of minutes on average that Endeavour Energy's customers are without electricity each year due to unplanned events (excluding storms, other major event days, and incidents that are eligible for exclusion).



•

Major Event Days are typically associated with adverse weather conditions and are excludable when reporting normalised reliability results. Below figure shows the total SAIDI trend (includes major event day reliability) as well as normalised SAIDI.

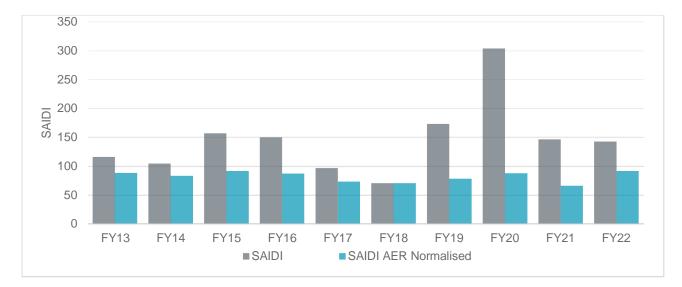


Figure 11 - SAIDI Trend (Total and AER Normalised)

5.3 Safety

The safety of our customers, employees and community is vitally important. We take great care to ensure that all our activities meet the highest standards of safety. Our High Potential Incident target for FY23 is less than 8 and we are aiming to reduce it to less than 4 by FY25.



•

•

•

6. Appendix – Network Objectives

Nine network strategies have been developed to enable Endeavour Energy to deliver its Corporate and Sustainability Strategies and to meet customers, shareholders, and regulators' expectations.

As illustrated in the figure below, they align with the five corporate strategic pillars providing a clear line of sight to the Corporate Strategy.

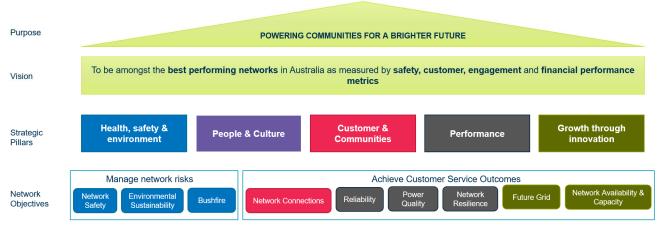


Figure 12 - Network Objectives and line of sight to Corporate Strategy

The three Objectives under Safety and Environment address managing network risks while the remaining nine Objectives are focused on achieving customer service outcomes. The objectives and performance measures of each Network Objective are described below.



6.1 Network Safety

•

Network Safety				
Owner: Keith Hoskins GM Health Safety & Environment		Line of Sight	iver – Trust, reputation & purpose	
Description		 Customer Expectations: Responding to emergencies and keeping customers informed 		
Network Safety objectives address the worker and public aspects of network safety in line with corporate health and safety objectives.		 Corporate Strategy – Safety and Environment Sustainability Pillars – Inclusion and well being Public Safety Plan – Projects and programs driving positive public safety outcomes 		
Sub-Objectives	Performance Mea	sure	Performance Targets	
Minimise network safety risk to employees, contractors and the community So Far as is Reasonably Practicable (SFAIRP)	 High Potential Overdue Signif Actions Safety actions time Asset strikes Domestic shoc (network initiate 	icant Corrective closed out on k incidents	 HPIs < 8 0% overdue significant corrective actions Safety actions closed out on time greater than 80% Number of asset strikes (monitor for trends) Number of domestic shock incidents (monitor for trends) 	



•

6.2 Environmental Sustainability

Environmental Sustainability				
Owner: Keith Hoskins, GM Health Safety & Environment Description Enhance our environmental sustainability performance and reduce our contribution to climate change.		 Line of Sight External Driver – Trust, reputation & purpose Customer Expectations: Responding to emergencies and Keeping customers informed Corporate Strategy – Safety & Environment Sustainability Pillars: Climate, Circularity, and Nature 		
Sub-Objectives	Performance Mea	asure	Performance Targets	
Protect the environment So Far as is Reasonably Practicable (SFAIRP)	 Environmental aspects (air/noise/water/land heritage/flora & fauna) impacted (H/M/L) 		 No increase in environmental impacts overall 	
Fast forwarding the transition to a climate positive, flexible grid that is reliable and affordable for all	 tCO2 emissions reduction (scope 1,2) tCO2 emissions avoided for the community 		 40% emissions reduction in scope 1 and 2 by 2030 (excluding line losses FY21 baseline) Net Zero by 2040 (scope 1,2,3) 	
Maximise the useful life of our assets and resources in a circular way throughout lifecycle (production, operation and end of life)	 Increased recycled content in products Decreased waste generated (that can't be recycled) Increased end of life recyclability 		 Become waste neutral by 2030 (0% to landfill) 	
Creating a net positive impact on the nature and biodiversity of the communities we operate in	 Net habitat im trees) 	pact (m2 or #	 Nature Positive by 2025 – planting more trees than removing 	



•

6.3 Network-Initiated Bushfire Risk

Network Initiated Bushfire Risk	
Owner: Scott Ryan, Chief Asset & Operating Officer	 Line of Sight External Driver – Trust, reputation & purpose
Description Bushfire objectives address proactively managing public safety, employee risk, and business risk from bushfires initiated by Endeavour Energy's network assets.	 Customer Expectations: Responding to emergencies and Keeping customers informed Corporate Strategy – Safety & Environment Sustainability Pillars – Environmental Sustainability

Sub-Objectives	Performance Measure	Performance Targets
	 Number of network-initiated fires 	 Number of network-initiated fires less than the previous 5 year average
Continually reduce the risk of our network causing harm to communities	 Number of overdue network vegetation and asset bushfire defects (as defined by TB 0290) 	 Zero at the start of the nominal bushfire season
	 Number of overdue customer-directed vegetation and asset bushfire defects (as defined by TB 0290) 	 Zero at the start of the nominal bushfire season
Achieve 100% compliance with the relevant legislative and regulatory requirements	 YTD planned vs actual vegetation and asset inspections completed 	• 100%



•

6.4 Network Connections

Network Connections				
Owner: Scott Ryan, Chief Asset & Operating Officer		Line of Sight External Driver Trust, reputation 	s – Customer centricity and	
Description Network connections objectives address meeting network connection obligations in a manner which balances cost, risk, and customer needs.		 Customer Expectations: Providing reliable supply, Prudent and efficient management of the network and Keeping customers informed Corporate Strategy – Customers & Communities Sustainability Pillar: Not Applicable 		
Sub-Objectives	Performance Measure		Performance Targets	
Improve customers' connections experience	 Customer satisfaction connections by control NER regulatory requires ponse times not connection enquiry timeframes 	nection types uirements for exceeded for the	 Reptrak, Annual CNS customer surveys to measure improving sentiment No breach of NECF performance measures 	
Connect customers' low carbon technologies quickly and easily	 Reduce the average connection 	e approval time per	 10% improvement on end- to-end connection timeframes. 	



6.5 Network Reliability

Reliability				
Owner: Scott Ryan, Chief Asset & Operating Officer Description Reliability objectives address achieving appropriate levels of reliability of electricity supply in alignment with the requirements and expectations of customers, regulators, and other stakeholders.		 Line of Sight External Drivers – Trust, reputation & purpose, and Climate change & extreme weather events Customer Expectations: Providing reliable supply and Prudent and efficient management of the network Corporate Strategy – Performance Sustainability Pillars – Resilience 		
Sub-Objectives	Performance Measure		Performance Targets	
Maintain overall network reliability performance So Far as is Reasonably Practicable (SFAIRP) at a similar cost to customers as today	 Annual normalised SAIDI Annual normalised SAIFI Rolling quantity of poor performing feeders' 		 Maintain a normalised SAIDI in line with the 5-year average (79 minutes per customer) Maintain a normalised SAIFI in line with the 5-year average (0.74 outages per customer) Maintain the quantity of poor performing feeders below 2.5% of total distribution feeders 	
Improve the reliability performance experienced by	 Percentage of customers restored within one hour Quantity of instances where customer restoration is 		 Performance is less than the previous 5-year average Performance is less than the previous 5 years average 	
Endeavour Energy's worst served customers	 Quantity of customers experiencing more than five unplanned outages per year 		 previous 5-year average Performance is less than the previous 5-year average 	



6.6 **Power Quality**

•

Power Quality				
Owner: Scott Ryan, Chief Asset & Operating Office Description Power quality objectives address variance of the voltage supply for characteristics in terms of wave magnitude. Poor power quality increased energy consumption adverse effects like impacting la complexes, data centres or ser machinery.	ss minimising the from specified eform and leads to and can have arge industrial isitive medical	 Line of Sight External Drivers – Trust, reputation & purpose, and Climate change & extreme weather events Customer Expectations: Providing reliable supply and Prudent and efficient manageme of the network Corporate Strategy – Performance Sustainability Pillars – Not applicable 		
Sub-Objectives Reduce the number of power quality customer complaints So Far as is Reasonably Practicable (SFAIRP)	customer complaints		 Performance Targets 1 Year target < 750 customer complaints 5-Year target < 250 customer complaints 	
Maintain compliance with Power Quality regulatory obligations and standards	points conforming to acceptable standards (over voltage & under voltage)		 1 Year target >= 95% of customer connection points within voltage and time limits 5-year target >= 98% of customer connection points within voltage and time limits 	



•

6.7 Network Resilience

Network Resilience					
Owner: Scott Ryan, Chief Asset & Operating Officer Description Network resilience objectives address improving our ability to anticipate, withstand and quickly recover from disruptive events.		 Line of Sight External Drivers – Trust, reputation & purpose, and Climate change & extreme weather events Customer Expectations: Providing reliable supply, Responding to emergencies and Prudent and efficient management of the network Corporate Strategy – Performance Sustainability Pillars – Resilience 			
Sub-Objectives	Performance Mea	asure	Performance Targets		
Define and predict the risk of climate change on network			 Have projections out to 2090 for likely weather hazards under multiple emissions scenarios 		
and community resilience	 Perform historical base-line analysis on network impacts from climate hazards 		 Perform historical base-line analysis on Wind, Fires, Storm, Flooding events 		
	 5 year averag Unnormalised 		 Performance is less than the previous 5 year average of unnormalised SAIDI 		
Enhance customer experience through regular engagement and improved	Comparison o customer outa previous and s events	age between	 Outage duration is less than previous climate event 		
		ustomers and velop solutions the community	 Proactively engage with customers Facilitate the development of robust Local councils' Resilience Plans incorporating loss of electrical supply events 		
Incorporate the concept of climate change resilience into investment planning	Use of calcula factors into as calculations	ited escalation set REPEX	 Asset replacement calculations incorporating climate hazard escalation factors 		



6.8 Future Grid

•

Future Grid					
Owner: Scott Ryan, Chief Asset & Operating Officer Description To enable our customer's evolving energy choices and the energy transition.		Line of Sight			
		 External Drivers – Customer centricity, Trust, reputation & purpose, A changing grid in a low carbon economy Customer Expectations: Prudent and efficient management of the network and researching, trialling, and installing new technologies 			
				Corporate Strategy – Growth through innovation	
		 Sustainability Pillars – Resilience 			
		Sub-Objectives	Performance Measure		Performance Targets
Enable DER uptake and fulfillment of value to customers through the improvement of network hosting capacity.	• The performance ratio of actual kWh curtailment vs. the predicted kWh curtailment after alleviation as presented in the DER Integration Strategy.		 Maintain a performance ratio below 1.5 of the curtailment glidepath 		
Test and prove innovative Future Grid concepts that are potentially transformative for our customers, our network, and our business.	 # of innovation projects that result in defined strategic and quantified benefits # of successfully tested R&D ideas that move to scale testing. 		 Completion of 3 innovation projects per year, including formal closure and review of lessons learned. 1 project approved to move from pilot to scaled solution per year 		
Secure and utilise innovation funds based on approved projects in alignment with direction of industry and customer choice.	 Success in other innovation grant funding (government, ARENA etc) % utilisation of DMIA fund % utilisation of Future Grid Innovation fund 		 Succeed in at least 1 innovative grant application per year Meet or exceed 100% DMIA allocation in regulatory period. Meet or exceed 100% Innovation Investment allocation in regulatory period and high customer panel satisfaction score 		



6.9 Network Availability and Capacity

Network Availability and Capacity					
Owner: Scott Ryan, Chief Asset & Operating Officer Description Network capacity objectives address meeting existing and forecast customer demand (both generation and load) for network capacity, focussing on the optimal capacity utilisation of existing network assets while maximising the value of grid connection and addressing the challenges of DER integration.		 Line of Sight External Drivers: Customer centricity, Trust, reputation & purpose, Western Sydney Regional Growth, and A changing grid in a low carbon economy Customer Expectations: Providing reliable supply and Prudent and efficient management of the network Corporate Strategy – Growth through innovation Sustainability Pillars – Resilience 			
Sub-Objectives Facilitate greenfield connections and growth (e.g., Aerotropolis) by establishing new infrastructure using just in advance principles To facilitate growth, maximise the efficient and prudent deployment of both network and non-network solutions in particular Distributed Energy Resources (DER) integration	 Performance Measure Number of No (Zero) delays to overall infrastructure development due to lack of electricity distribution infrastructure. Number of non-network solutions per annum split between DER solutions and other \$ value of capacity deferrals due to DER integration 		 Performance Targets No delays to development activity, and continuation to deliver 'just in advance' Increase in number of non- network integrated growth investments Increase in deferral value from FY19-24 values (~\$10m in \$300m) 		
Consideration of use of existing network assets prior to augmenting new infrastructure	 Number of capacity deferrals due to utilisation of existing assets and / or usage of mobile substations. Increasing optimal utilisation (RIN data worksheet Asset data). Note: Greenfield assets installed may start with a low utilisation and may need to be separated. 		 Continued redeployment of mobile substations to defer investments Trending of utilisation across all brownfield substations within defined limits 		



Produced by Portfolio Management Office

- W Endeavourenergy.com.au
- E news@endeavourenergy.com.au
- T 131 081



ABN 11 247 365 823

