Expenditure Forecasting Methodology Statement

Endeavour Energy 2024-29 Regulatory Reset

Endeavour Energy

Contents

Executive Summary

To assist the AER's assessment of our expenditure forecasts this document provides a comprehensive overview of the key strategies, plans and processes undertaken to guide our investment expenditure decisions. In addition, it also confirms Endeavour Energy's prudent assessment of proposed expenditure which is subject to robust and detailed analysis at all stages of the planning process. Specifically, this document explains how Endeavour Energy:

- makes investment decisions that align to our corporate plan and contribute to achieving our purpose;
- arrives at investment decisions based on a detailed understanding of the current condition of network assets and the technical requirements needed of the network to efficiently deliver future demand and service level expectations;
- adopts a stringent approval process for proposed solutions to network constraints and renewal needs, including demand management and other non-network options;
- responsibly incorporates the views and expectations of a range of stakeholders as received through our engagement activities;
- applies investment scrutiny through robust governance to ensure assets are managed in accordance with plans;
- undertakes constant reviews seeking delivery efficiency opportunities; and
- provides realistic costing estimates which are derived through the application of top-down and bottom-up approaches and are based on reliable estimates of key variables.

We have made significant improvements and changes to our forecasting methodology since the 2019-24 proposal to respond previous AER and stakeholder feedback,

adopting a best practice approach to asset management and to reflect the latest policy and regulatory developments. We have engaged heavily with our key stakeholders on these developments in the past 18 months.

What is the purpose of an Expenditure Forecasting Methodology Statement?

In accordance with the National Electricity Rules (NER), this document is designed to inform the Australian Energy Regulator (AER) and other stakeholders of the methodology Endeavour Energy proposes to use to forecast the operating and capital expenditure required for standard control services that will form part of our regulatory proposal for the regulatory control period 1 July 2024 to 30 June 2029.

The purpose of this forecasting methodology statement is to:

- allow the AER, stakeholders and customers to understand the approach and methods employed by Endeavour Energy to derive efficient forecasts of operating and capital expenditure for the 2024-29 regulatory control period; and
- enable engagement between Endeavour Energy and the AER so as to assist the AER in preparing its assessment methods for Endeavour Energy's proposed operating and capital expenditure forecasts.

This document has been prepared with the intention of implementing the forecasting methodologies as described to develop our 2024-29 regulatory proposal to the AER. Nevertheless, given that Endeavour Energy is not required to lodge a regulatory proposal until 31 January 2023, not all elements of our expenditure forecasting methodology can be finalised at the time of lodging this statement.

As a consequence, this statement can only provide an overview of the methodologies we propose to adopt in forecasting our operating and capital expenditure that form part of our 2024-29 regulatory proposal. Full details of these methodologies, including key variables and assumptions, will be included in our regulatory proposal.

Should Endeavour Energy need to deviate from the proposed forecasting methodology to cater for changes in our circumstances from the time of lodging this statement, we will advise the AER as soon as practicable. Any amendments will also be outlined in our 2024-29 regulatory proposal.

Endeavour Energy's customers and stakeholders can provide feedback on this statement through the following channels:

Email	yoursay@endeavourenergy.com.au
Online	www.endeavourenergy.com.au/contactus

Customers can also provide feedback and comments on our Forecasting Methodology Statement to the AER (www.aer.gov.au).

Alternatively, customers may also like to contact us via twitter.com/endeavourenergy.

Endeavour Energy

Context

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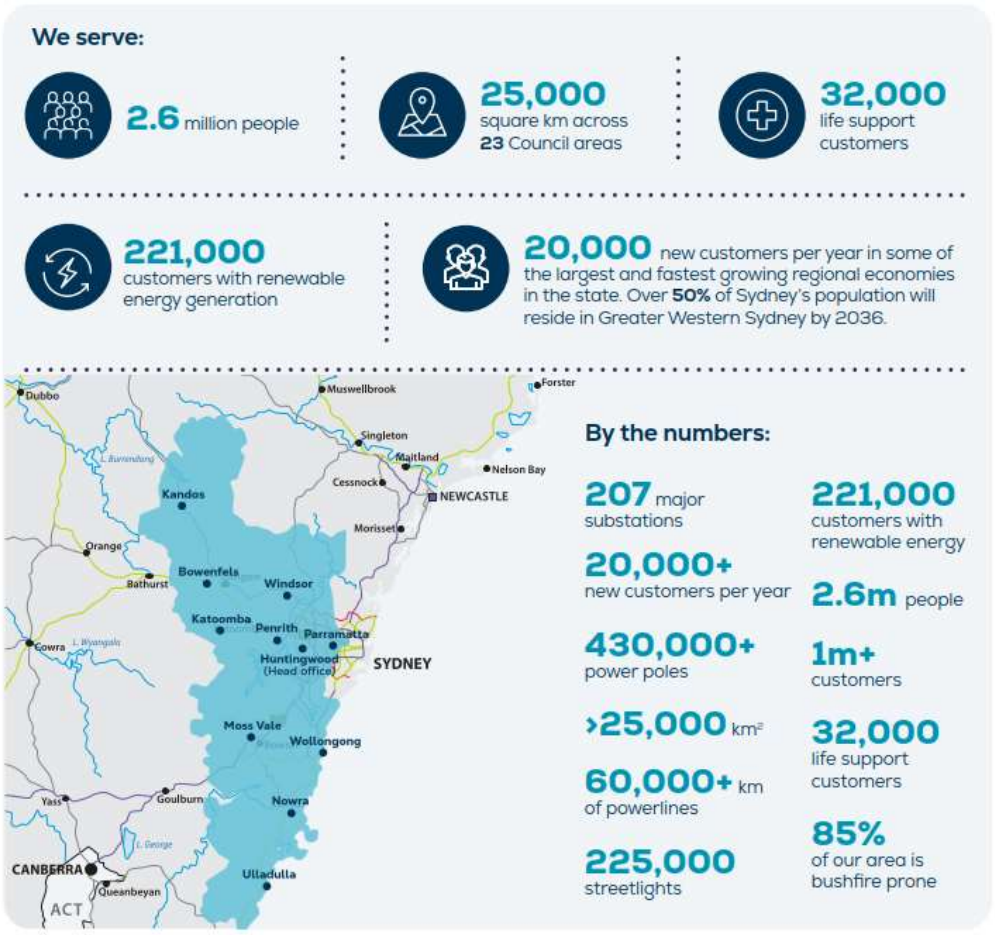
Who we are

Endeavour Energy manages an electricity distribution network for 1,060,000 customers, in households and businesses across an area spanning Sydney's Greater West, the Blue Mountains, Southern Highlands, Illawarra and South Coast of NSW. The value of the regulated assets to support our customers is over $7.5 billion ($;FY24).

Our network services communities with some of the highest cultural and language diversity in Australia across the lands of the traditional custodians – the people of the Dharawal, Dharug, Gundungarra, Wiradjuri and Yuin nations. We recognise first peoples' continuing connection to Country, cultures and community. We pay our respect to elders past, present and emerging.



On 14 June 2017, an Australian-led consortium of long-term private investors with significant global experience in managing energy infrastructure businesses, acquired 50.4% ownership of the rights to manage Endeavour Energy's network assets under a 99-year lease. The remaining 49.6% ownership is held by the NSW Government. Our customers are central to our plans. We're committed to making a

serious and sincere effort to deliver better value for customers by reducing our costs, without compromising safety or services

What we do

We build and operate a network that transports electricity from the high voltage transmission system to homes and businesses. We recover costs from customers through network tariffs. Our bills comprise about a third of a typical customer's electricity bill. The other two thirds consist of electricity generation, transmission, retailer and jurisdictional scheme charges.

There are significant costs in maintaining a network of our size and complexity as well as preparing it for future services and uncertainties. Our core activities include:

- Safely maintaining distribution lines and substations to keep homes and businesses powered
- Building new substations, underground cables, poles and wires, including in new suburbs
- Responding to emergencies like storms that bring down power lines and poles
- Tree trimming to maintain safety clearances, managing bushfire risk and preventing power outages caused by falling trees
- Facilitating the connection of new customers to the network
- Researching, trialling, and installing new technology, like batteries, to use as alternatives to poles and wires
- Installing and maintaining streetlights
- Various 'user pay' services like meter testing, off-peak conversion and design certification.

Our corporate strategy reflects these changing needs as we continue our vision of being amongst the best performing networks in Australia to achieve our purpose of powering communities for a brighter future.

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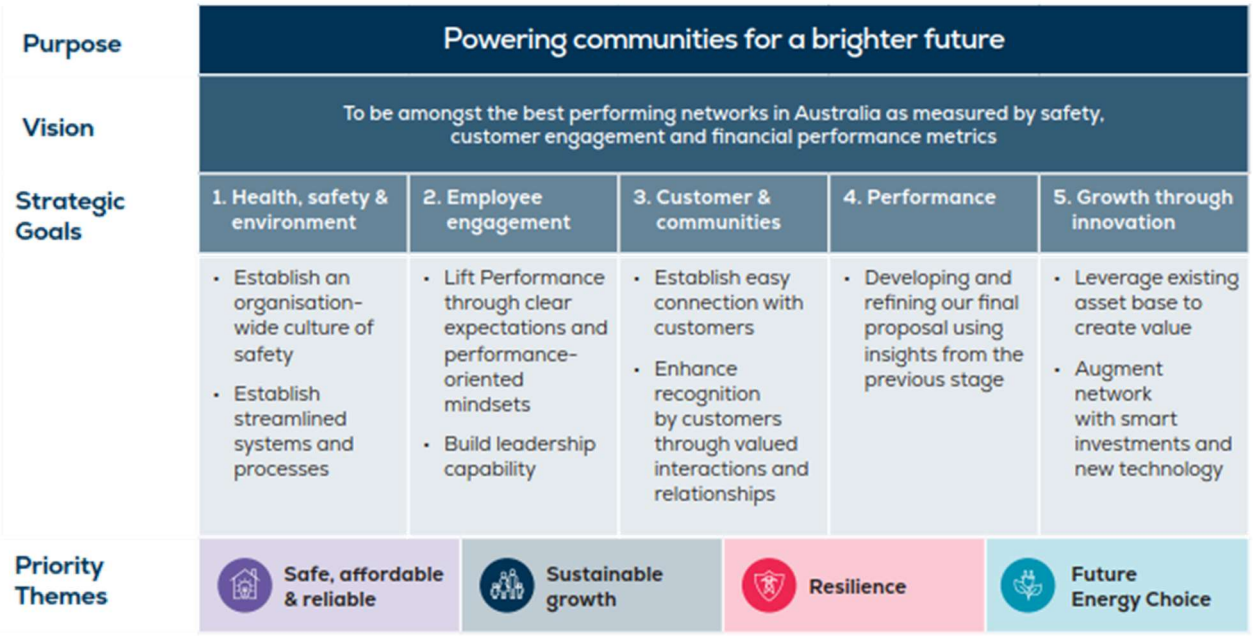

Key energy sector trends

Energy affordability has been the dominant theme of the last decade following increases in distribution charges and the introduction of jurisdictional green schemes during the 2009-14 period. These increases coincided with the Global Financial Crisis and were followed by increases in the retail and generation component of bills for several years.

Our customers felt the impacts of these increases acutely and it became our clear priority to resolve. We have worked hard to reduce our contribution to energy bills over the last decade through improved productivity. This has led to Endeavour Energy's distribution charges ranking amongst the lowest in the National Electricity Market (NEM).

That is not to say the job is done. In fact, it remains as important as ever following the economic impacts of the COVID-19 pandemic on businesses and households as well as the inflationary impacts of geo-political instability. Our customers will always expect and deserve value for money and we must continue to work hard to deliver this.

The challenges to providing a safe, reliable and affordable service are evolving as the NEM is impacted by decarbonisation, decentralised generation and changing energy consumption patterns. We must evolve to keep pace with these trends in order to meet the expectations of our customers into the future.

There are six key trends shaping our current and future operational landscape. These are:

- **Customer centrality:** A focus on customers' needs and experiences from high energy users to pensioners to empowered prosumers means customers play a much 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.

- **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.
- **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, centered around the Nancy-Bird Walton International Airport, new industry and manufacturing, and a new science park. This plan is akin to building a new city, from scratch.
- **Climate change and extreme weather events:** Climate modelling and our own experience 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 can compromise the performance of infrastructure, and increase risks to the reliable supply of electricity.
- **A changing grid in 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.
- **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, cyber-attacks become more frequent and sophisticated, targeted at the disruption of energy supply.

While the general direction of the external drivers is largely understood, there are uncertainties around specific outcomes, their timing and Endeavour Energy's role in the response to those drivers. This creates an imperative to define and deliver our strategy in new ways.

Rule requirements

This expenditure forecasting methodology statement has been prepared with consideration to the various legal and regulatory requirements that Endeavour Energy, as a registered and licenced electricity distribution network service provider, is obligated to comply with. Endeavour Energy is committed to the principles that are supported by the National Electricity Objective (NEO) as stated in the National Electricity Law (NEL).

National Electricity Objective (NEO)

The objective of this Law 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—

(a) price, quality, safety, reliability and security of supply of electricity; and

(b) the reliability, safety and security of the national electricity system

The National Electricity Objective and the Rules look to maximise the present value of the benefit to all those who produce, consume and transport electricity in the market.

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The NER identifies the requirements Endeavour Energy must satisfy in submitting operating and capital expenditure forecasts as part of the building block proposal. The NER sets out the objectives our capital and operating forecasts are required to meet, the criteria by the AER will assess these forecasts and the factors the AER will have regard to in doing so.

During our 2019-24 regulatory determination, the AER and EMCa identified several areas for improvement in our capital governance, risk prioritisation and planning approach. Since then, there have also been several significant regulatory reforms that have occurred and some remain ongoing. These learnings and trends are critical to informing our updated capital planning and value optimisation framework.

NER clause 5.17:

"...identify the credible option that maximises the present value of the net economic benefit to all those who produce, consume and transport electricity in the National Electricity Market (the preferred option)."

AER/EMCa review of Endeavour Energy's prior proposal (2018):

"Endeavour's portfolio-level risk assessment does not reflect Endeavour's stated risk framework and does not provide risk metrics (including linkages to a defined risk appetite) that would allow assessment of the appropriate level or mix of expenditure;

We consider that the weaknesses we have observed with Endeavour's expenditure governance and management process and its forecasting methodologies render it unlikely that its RP (Revised Proposal - ed) is a reasonable forecast of its prudent and efficient requirements."

We have made significant improvements and changes to our forecasting methodology since the 2019-24 proposal to respond to this feedback, adopt a best practice approach to asset management and to reflect the latest policy and regulatory developments. We have engaged heavily with our key stakeholders on these developments.

Several key external regulatory developments since our last determination that have been incorporated in our approach include:

- Publication by the AER of a Practice Application note on Asset Replacement Replanning detailing expectations with respect to replacement decision making.
- New Value of Customer Reliability (VCR) values have been set by the AER (previously administered by AEMO).
- Increased industry focus (and ongoing reforms) on Future Grid/DER enablement related expenditure and ongoing AER work on DER valuation and expenditure assessment including the recently published DER guidance note.
- The AEMC's DER rule change is likely to culminate in an update to the AER's Forecast Expenditure Assessment Guideline, Benchmark approach, incentive schemes (including potentially a DER component to the STPIS) and the publication of a customer export curtailment value (CECV)

methodology. Networks may also have to develop a basic export allowance based on the inherent hosting capacity of the network.

- A series of extreme weather events / natural disasters resulting in several pass-throughs and an increased stakeholder interest in network resilience. The AER has recently published a guidance note outlining its expectations for how networks should consider and justify network resilience related investments.
- The AER has standardised several regulatory models including developing a capex model.
- AEMO continues to refine the Integrated System Plan (ISP) providing context for the future state of the energy market and in particular customer energy choices.
- Publication of the 'Better Resets' Handbook which outlines the AER's expectations for best practice customer engagement and building block proposals capable of accessing an early signalling pathway.

Digital transformation

Our digital transformation in the current regulatory period has provided customer benefits such as meeting changing customer demand and delivering a streamlined, integrated, and stable platform to better keep pace with the transitioning energy marketplace. For network asset planning decisions this includes a stronger, more accurate and more flexible long-term forecasts approach and needs analysis to replacement and augmentation.

Enhanced digital capabilities are an integral component to deliver energy services efficiently and securely in the future. Investments in ICT have enabled us to both respond to changing customer demands and enable more cost-effective future network enhancements. In particular, the ICT investment has:

- increased flexibility to respond to changes in demand,
- ability to obtain real-time data and meet market rule change requirements, such as the 5-minute settlement rule change,
- provided an integrated platform,
- enhanced workplace flexibility,
- improved productivity, and
- better asset visibility, risk management and asset management.

During our ICT transformation we actively considered and sought to mitigate key risks, including:

- business continuity risks
- security and network resilience
- reliability of network performance
- vendor risks

- cost effectiveness of maintenance and future network development.

We plan to continue enhancing our customer centric data capabilities to enable the business; to provide our customers smarter, simpler, and seamless access to and use of data; and to help us make better informed decisions

We will consider use cases of our foundational data platforms when planning to invest in further improvements of our capabilities to access, use, share and protect data. Data is a critical enabler to help us, and our customers make informed decisions on energy choices and transition, to manage and match customer and industrial growth, and to prepare for the potential regulatory compliance requirements.

In the current RCP, we aim to complete building our capability which involves building the underpinning skills, processes and technologies that reduce business friction, establish common data practices and create reusable components that support scaling of use cases. We aim to achieve this by:

- Building consistent and self-service access to readily available, high-quality business and external data to support the priority use cases and for routine operational analytics and reporting
- Improving trust in our data by establishing tool driven data governance to effectively manage the quality, integrity and coverage of data required to deliver use cases
- Equipping all layers of the business with advanced analytical tools and capability to improve efficiency and effectiveness of decisions (capabilities include simulation, optimisation, AI/ML and geospatial analytics)
- Creating a data-driven organisation that effectively and consistently uses data in decision making processes across all levels of the organisation.

From an Asset Management perspective, three key factors have driven an increased capability in Endeavour Energy's network asset expenditure forecasting include:

Availability of Data

The availability of data throughout the organisation and the tools to import, process and manipulate large volumes of data has been opened up across the business. This capability has created new insights into the performance and criticality of assets as well as developed a culture where data is a key driver behind decisions.

Increased Capability

In parallel with increasing the "availability of data", capability in data processing, risk modelling and risk-cost analysis has also been significantly increased throughout the organisation. A combination of leveraging existing internal capability, introducing new skillsets and collaboration with several external stakeholders (within Australia and internationally), has significantly improved internal capability to develop robust data driven models.

Automation

The output of these increases in “data availability” and “capability” have further been supported by standardisation of processes and automation of workflows. All processes associated with the development of repex forecasts for instance are developed in software that allows the process to be automated. Effectively once the systems and process are established and approved, the same process can be rerun with ease. This additional capability in automation allows for a transparent and repeatable process to be conducted at any frequency that is desired. It also allows multiple scenarios of models to be created allowing sensitivity analysis on to be conducted on all inputs.

The role of customer engagement

The role of engagement

Every day, Endeavour Energy engages with people and organisations who have an interest in or connection to what we do and who are, in some way, connected to our purpose. The quality of those relationships determines how well we will deliver on our vision to be amongst the best performing networks in Australia.

As the Australian energy industry changes, we recognise that we need to continually improve our engagement so that our day-to-day operations and plans benefit from fresh insights and ideas. Endeavour Energy is committed to embedding quality customer and stakeholder engagement across our business so that it informs our actions and underpins our decisions, always placing our customers at the heart of what we do.

Importantly, it demands an “outside-in” approach to listening and acting on engagement. This means focussing on the outcomes that customers value and how we can develop investment plans that meet these expectations.

Our customers and stakeholders have told us they are interested in engaging with us on many aspects of our business and their service, including: service reliability, Western Sydney growth, regulatory proposals, climate change, bushfire prevention, community resilience, future grid, pricing and tariff reform, how we help vulnerable customers and our engagement practices.

We welcome this interest and related opportunities to listen and incorporate customer and stakeholder views so that we can design outcomes that are good for the business, good for customers and good for our communities.

As will be outlined further below, our forecasting approach takes into account strategic directions, priority themes and key trade-offs in setting an overall level of expenditure that is prudent and efficient. The views of customers on investment scenarios, priorities and responses are an integral element of informing these considerations to ensure there is alignment between our plans and the expectations of customers. This is fundamental to producing forecasts which achieve the expenditure objectives and satisfy the expenditure criteria.

Our engagement plan

To deliver on this commitment we have updated our stakeholder engagement framework and developed a customer and stakeholder engagement plan to shape our 2024-29 Revenue Determination.

This engagement plan was developed through a co-design process with our Board, Executive and customer and stakeholder representatives. This plan is also guided by:

- Endeavour Energy’s Corporate Strategy
- Endeavour Energy’s Stakeholder Engagement Framework
- The Energy Charter

- IAP2 Core Values for Public Participation

Our engagement goal for the 2024-29 Revenue Determination has been co-created and refined with our Regulatory Reference Group (RRG) and is as follows:

To undertake engagement that delivers our vision of powering communities for a brighter future by developing a revenue proposal that balances

- *the priorities, preferences, diversity and current and future needs of our customers*
- *with sustainable returns to shareholders, and*
- *can be considered prudent and efficient by the AER.*

This means providing fair access to the modern grid and ensuring customers pay no more than is necessary for a safe, reliable and secure electricity supply and quality service.

Our plan focusses on working with our customers and stakeholders, leveraging their unique insights and perspectives, to collaboratively build an engagement program that will meet our objectives of strengthening business-as-usual engagement, amplifying our customer-centric culture, and reflecting the changing needs of our customers and our evolving industry.

We have many stakeholder groups, each with distinct types and levels of involvement. In developing our engagement approach for the 2024-29 Revenue Determination we intend to engage with all these stakeholder groups, ensuring that bring diverse and sometimes conflicting interests that we must balance.

Our approach also seeks to iteratively and continually build stakeholder feedback into our plans. It allows for regular periods of reflection to ensure feedback is being adequately considered in decision making at all levels of the business – with a focus on ensuring senior leaders are involved throughout the engagement process.

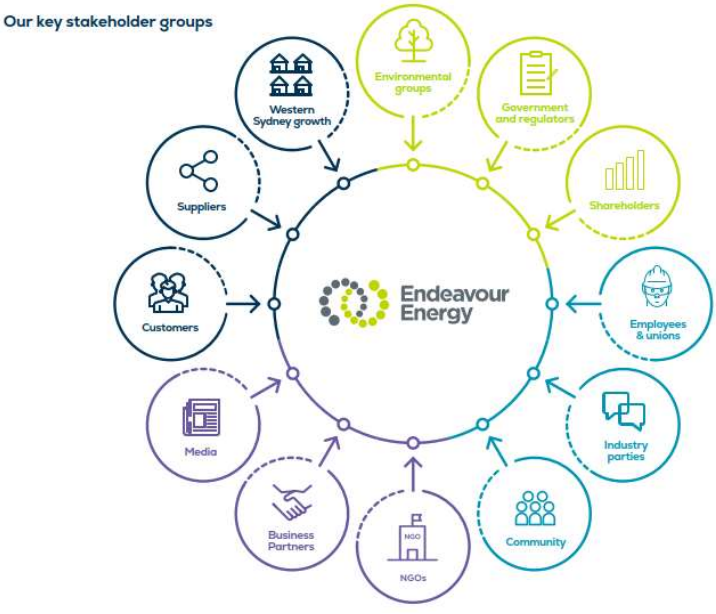


Figure 1: Our key stakeholders

We believe it strikes the right balance between undertaking a rigorous regulatory reset engagement process, genuinely listening to feedback, and embedding engagement in 'business as usual' processes as part of our broader efforts to deliver cultural change across the business. It is a steady and deliberate approach. Key features of our engagement approach are:

- Collaborative influence – working with customers to achieve common goals where appropriate across the Public Participation Spectrum (IAP2)
- Iterative and responsive – adjusting to stakeholder and customer needs and preferences both for engagement and the revenue proposal that it will develop
- Led from the top – appropriate Board, CEO, and Executive participation to ensure access to key decision makers
- Joint engagement – collaborating with other networks where possible to support aligned topics and simplification of process
- Multiple channels and languages – facilitating diverse inputs and supporting culturally and linguistically diverse communities
- Informed and resourced – undertaking meaningful engagement with a broadly representative body of customers, providing the clear and accessible information they need to participate in a meaningful way
- Robust challenge capability – enabling the assumptions and strategies that underpin the proposal to be tested with adequate resources to do so.

To provide additional focus and support the detailed engagement required in support of a Revenue Determination, we have refreshed our Peak Customer and Stakeholder Committee. Its membership is designed to reflect our diverse customer base. We have also established three subcommittees: a Regulatory Reference Group, a Retailer Reference Group and a Future Grid Reference Group.

Regulatory Reference Group (RRG)

The purpose of the RRG is to co-design Endeavour Energy's engagement plan and Endeavour Energy's revenue proposal as agreed through ongoing collaboration with key customers and stakeholders. In doing so, we are listening to and embedding customer voices in our business practice and in the future plans that inform the delivery of our services.

This commitment to the principle and practice of co-design however will not infringe the autonomy of the independent members of the RRG, who represent peak stakeholder organisations and consumers at large; and who are expected to report separately to the AER on the Endeavour Energy proposal, and Endeavour Energy's engagement program. The RRG will report regularly to the PCSC, ensuring that the ideas and plans it develops can be tested and endorsed by all peak stakeholders.

Future Grid Reference Group (FGRG)

The CSIRO - Electricity Networks Australia Electricity Network Transformation Roadmap estimates that by 2050, DER may contribute up to 45% of Australia's electricity generation capacity. We are actively transitioning to a new model of operation that adopts emerging technologies and supports the choices of our customers.

The FGRG will provide valuable stakeholder input and guidance specific to our Future Grid strategy.

Retailer Reference Group (ReRG)

We regularly engage with Retailers and have formed a ReRG to help inform our approach to:

- tariff engagement and reform;
- supporting the transition to competitively provided metering;
- identifying different customer segments and stakeholder needs and expectations;
- opportunities to collaborate across the supply chain; and
- supporting vulnerable and CALD customers;

We view the ReRG as an opportunity to actively shape a culture of increased and continuous engagement between Endeavour Energy and Retailers for the benefit of customers.

Our progress so far

Our priority is to develop expenditure forecasts that deliver against the priorities of our customers. This involves finding solutions that reflect the priorities and expectations of our customers.

So far, we have worked collaboratively with stakeholders to develop our engagement approach. Subsequently, we have undertaken exploratory research with customers and begun exploring themes relevant to our investment plans in a wide range of business-as-usual stakeholder forums.

In particular, exploratory research conducted by SEC Newgate was designed to gain insight into what's important to customers. As part of this research, residential, small business and high energy-consuming customers were asked which of the core services provided should be prioritised by Endeavour Energy. This included research with residential and small to medium business customers being conducted in language (Vietnamese and Assyrian) for the first time by Endeavour Energy.

The initial feedback that we have received from customers is that:

- Reliability is becoming the top priority for customers, with network resilience (the ability to adapt and respond quickly to external impacts) a closely associated and new priority for customers as storms, fires and floods become more prevalent with a changing climate. The increasing connectedness of our lives and working from home has also highlighted the importance of a reliable electricity supply that is resilient to external impacts in the minds of our customers.

- Affordability: The cost of living and doing business is a primary concern. There is an expectation that we will do our part to reduce our costs efficiently as well as widespread interest from customers in hearing about ways they can save money by changing behaviour.
- Safety: remains a non-negotiable expectation.

In the future, customers have also identified emerging priorities:

- More choice and control: there is an increasing expectation that customers will have access to grid-connected solar PV and other new technologies to save money and improve their sustainability.
- Ongoing reliability: there is an expectation that Endeavour Energy will meet the challenge of climate change and continue to deliver existing reliability levels as a minimum.
- New opportunities to save money: Customers are keen for Endeavour Energy to help improve energy affordability by facilitating customer access to new technology, improved visibility and management of their energy usage and incentive pricing.
- Facilitating increased sustainability: while affordability remains a priority, there is also an interest in improving the environmental and social sustainability of the network for communities, the vulnerable and future generations.

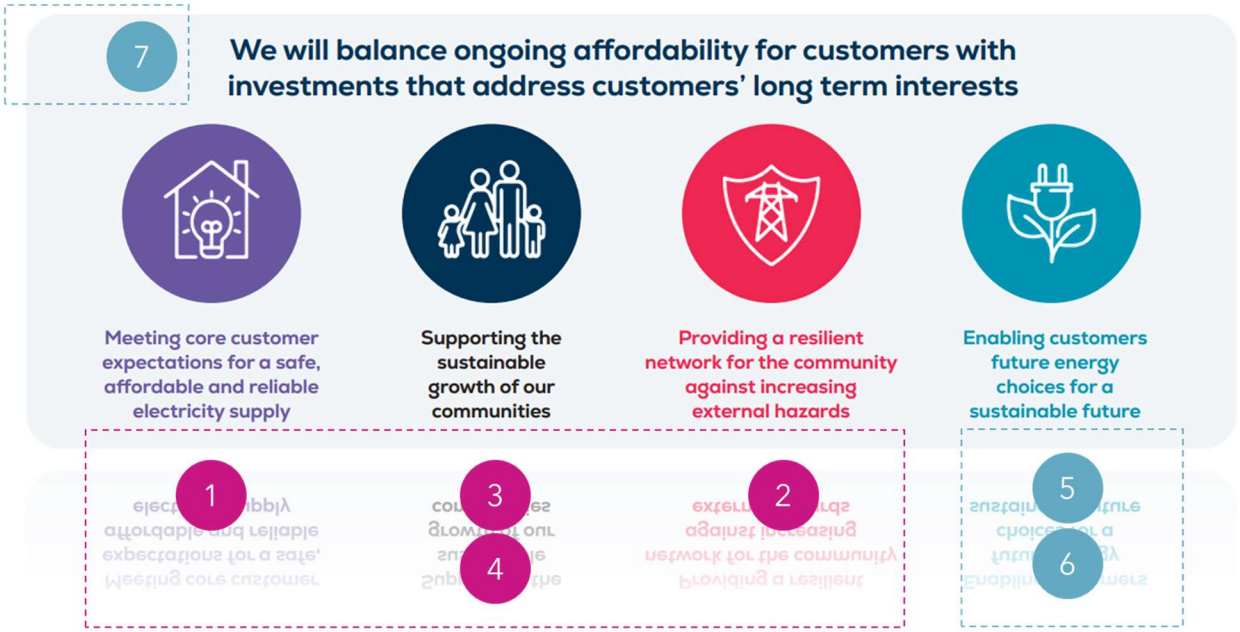
	Delivering on evolving customer needs and expectations		
	The customer's priority	What we have heard so far on why it matters to them	Endeavour Energy's approach so far
1 Providing reliable supply	Providing a reliable supply of electricity to all customers by building, maintaining and managing the substations, poles and wires, underground cables and other equipment.	Customers want to be confident they can turn on their lights, use their heating and cooling, stay connected with family and friends, and have the choice to work and learn from home.	New threats and opportunities to network reliability are emerging from climate events, cyber security events and emerging technologies. An increased investment focus on network resilience, justified by appropriate evidence, is required as part of our continued focus on long-term reliability.
2 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.	Following the recent floods and bushfires across NSW, customers are placing more value on the role of the distributor in responding to emergency situations. People trust their distributor to respond by restoring 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.
3 Prudent and efficient management of the network	Managing the network efficiently to deliver electricity services in the most affordable way.	Managing the network efficiently to deliver electricity services in the most affordable way is a core expectation of the customer, and an enduring requirement.	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.
4 Researching, trialling and installing 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.	With the need to decarbonise, and the rapid pace of digitisation, customers expect their distributor to research, trial and install technologies that enable a reliable and affordable future energy system.	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.
5 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.	We have a responsibility to keep our customers informed of planned and unplanned outages to minimise disruption. As we change the ways we communicate, a broader range of information will need to be shared across new mediums.	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.

From this feedback five key customer expectations have emerged. We will look to test these further with our broader stakeholders, or RRG and customers in the coming months through a series of workshops, deliberative forums and deep-dives as we provide more detailed information around options and costs for meeting these expectations.

Several key co-designed trade-offs have been posed in these forums, which are ongoing, forming key components of depth that impact the regulatory determination. Namely:

1. How should Endeavour Energy time investment to best meet customer expectations for a safe, reliable and affordable electricity supply?

2. Should Endeavour Energy take a more proactive or reactive approach to maintaining network services in the face of increasing major weather events (storm, bushfire, flood, etc)?
3. How should Endeavour Energy time the delivery of the electricity infrastructure required for the economic development of Greater Western Sydney and other areas?
4. Should new customers be required to pay “upfront” for the infrastructure required to service new development, or should the costs for this infrastructure be recovered over time from all customers through existing charges?
5. How do we modernise the network to meet emerging and future customer service expectations as technology evolves?
6. **A)** Should tariffs reflect the different demands customers place on the network?
   B) Should solar exports tariffs be introduced by Endeavour Energy to reflect the different demands customers place on the network? This is separate from feed-in tariffs paid by some retailers.
7. Does Endeavour Energy’s proposal reflect customers’ priorities, preferred outcomes and long-term interests by providing a reliable, affordable and safe distribution network?



Forecasting capital expenditure

Endeavour Energy 2024-29
Expenditure Forecast Methodology Statement

Overview

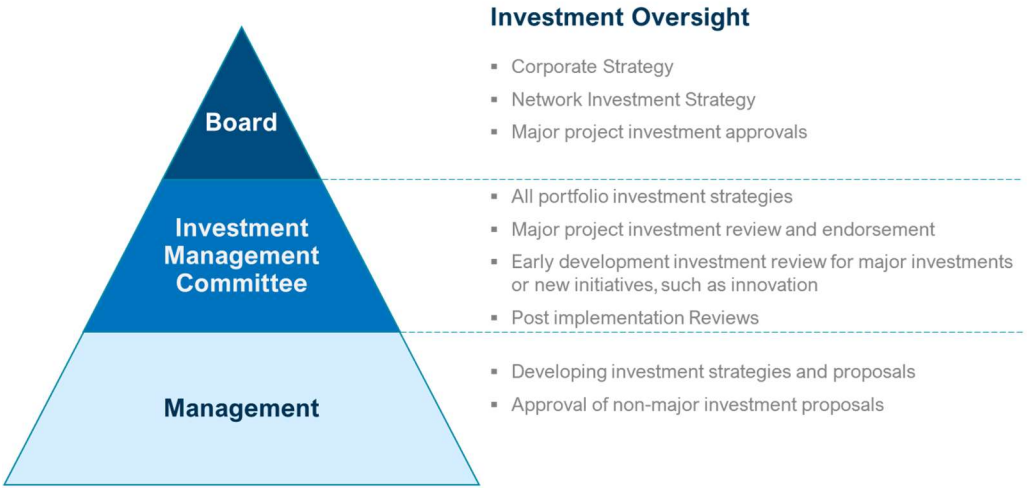
In the previous sections we outlined our organisational strategy, key industry trends, feedback from the AER from the previous determination and regulatory developments since and our approach to customer engagement including preliminary research results. In this section we outline how our forecasting approach is impacted by and reflects these factors in order to derive an efficient and prudent estimate of our capital investment needs.

Our investment governance and management frameworks align with AER guidance material and are supported by AS/ISO55001 (Asset Management), 33001 (risk management) as well as environmental and regulatory management system methodologies and certification.

Investment Management & Governance Framework

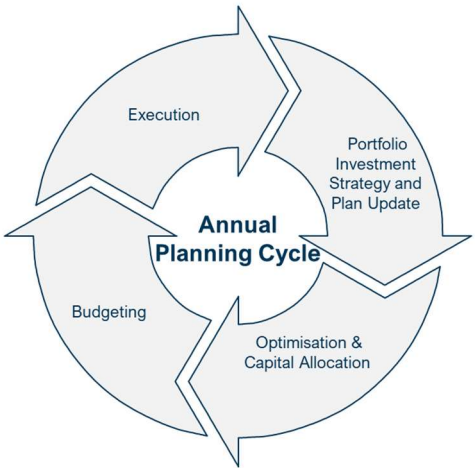
Our Investment Management Framework has been revised to ensure best-in-class customer investment outcomes and business governance and to adopt the digital transformation platforms. This includes risk-based approaches to economic benefits quantification and alternative options, risk and uncertainty management. The Investment Management Framework is consulted on and revised annually and was socialised with the RRG and the AER in late 2021.

Investment oversight is multilayered and based on strategic importance and investment levels. The Board oversees the Corporate and Network Investment Strategy as well as large, single project investment approvals. The Investment Management Committee, chaired by the CEO, oversees all portfolio investment strategies, major project endorsement and post implementation review and learnings.



An annual planning and investment cycle oversees key capital allocation from a management level for optimisation.

Investment Lifecycle



- The **Annual Planning Cycle** starts with each portfolio reviewing and updating its Investment Strategy and Investment Plan.
- The Investment Plan update is then reviewed and endorsed by the Investment Management Committee during the **Optimisation and Capital Allocation** process.
- Optimisation is an iterative process integrated with Budgeting, which takes in to account all **constraints such as capital or resource availability**. The final investment profiles and key outcomes are approved by the Board.
- Performance outcomes are continuously monitored during execution phase and lessons learned conducted. Key learnings are embedded into subsequent practices.

Our investment strategy

We have developed our system capex forecast in response to the six key drivers shaping our future operational landscape as defined in the earlier Context section. The implications for our expenditure plan include:

- Customer centricity:
    - Where and how Endeavour Energy invest in the Future Network will be shaped by customer support for our role.
    - A deep and broad understanding of all customers' expectations and views is increasingly central to investment and operational improvement.
    - A continuous focus is needed to reflect the preferences of a significantly expanding customer base, including the customers of today and the customers of tomorrow.
- Trust, reputation and purpose:
    - Active contribution to total economic and ESG goals and the community in which we operate is an important part of meeting our customers evolving expectations
    - Trust is considered the foundational driver. Without trust, initiatives to address the other drivers don't matter.
    - As part of our ESG commitment, we will need to ensure we facilitate our customers' aspirations for sustainable growth and for partnership in the delivery of ESG principles. Growth must be delivered in the most sustainable way possible within regulatory constraints.
- Western Sydney development:
    - Expansion should be future proofed, taking up opportunity for new approaches and the network has the capacity to provide access to emerging technologies
    - Investment is needed to sustainably and equitably support the growth of Western Sydney, while continuing to deliver for our existing customers
- Climate change and extreme weather events:
    - To adapt to the changing climate, targeted solutions are required to ensure a safe, affordable and reliable network.
    - As extreme weather events become more common and more severe, the network will need to be more resilient.
    - Growth can be facilitated in new ways, with new designs, to enhance the resilience of the network
- The evolving grid within a low carbon economy:
    - As emerging technologies become more prevalent, our customers trust us to enable their future energy choices.
    - We must find ways to equitably deliver customer choice, innovating to maintain the affordability and reliability of our network and ensuring no one is left behind.
    - New technologies and government policy enable us to support growth in new and varied ways.

- Efficient and effective service in the digital age:
    - The continual evolution of digital capability is needed to facilitate customer choice
    - We must demonstrate how digitisation helps us to delivers new services with less investment
    - Technology allows growth to be delivered most efficiently and effectively
    - Enhanced cyber capability will underpin reliable networks in the future.

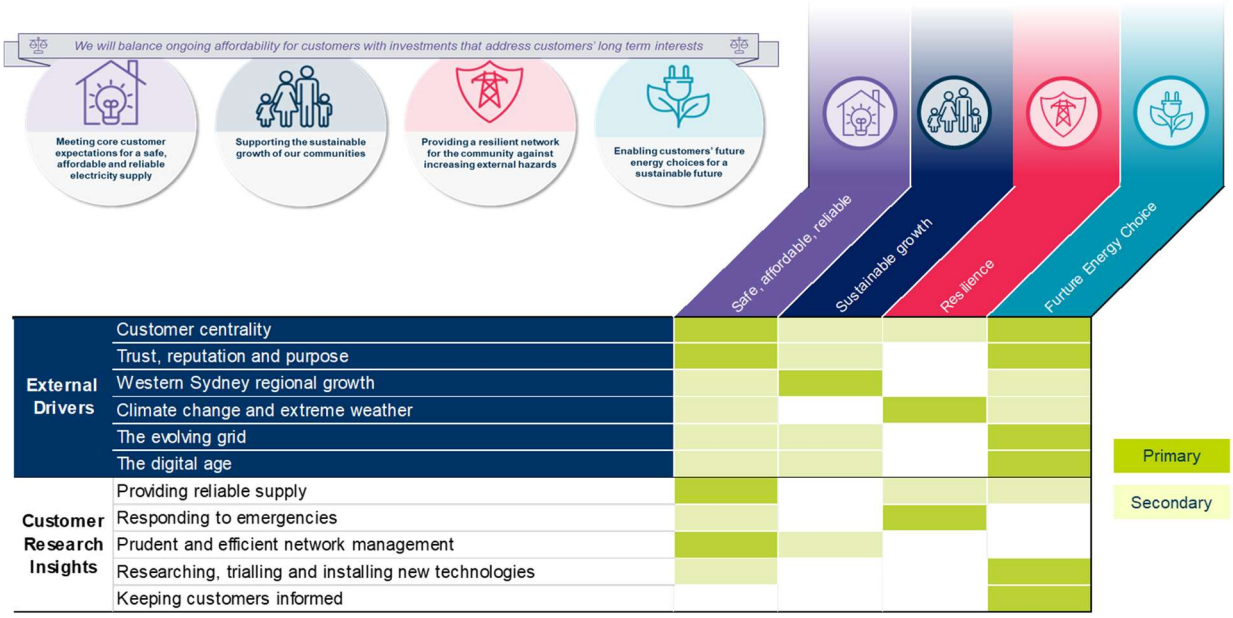
To guide our investment activities, we adapted these insights and implications into four priority themes that balance affordability for customers with customers' long-term interests

While external forces pressure energy networks to adapt and change, Endeavour Energy is focused on finding solutions that reflect the priorities and expectations of our customers.

In preparation for the 2024-29 Revenue Reset, Endeavour Energy working with the RRG engaged SEC Newgate Research to conduct exploratory focus groups of mixed customer segments to gain insight into what's important to them. As part of this research, residential, small business and high energy-consuming customers were asked which of the core services provided should be prioritised by Endeavour Energy.

When asked what they believe Endeavour Energy should prioritise in the delivery of its current core services, customers identified five themes they felt were of the most importance. Similarly, when asked what services they felt Endeavour Energy should focus on delivering in the future, there were four considerations they most closely identified with.

Based on this, Endeavour Energy has identified four key themes for its investments over the coming regulatory period. Each of the themes can be mapped to the external forces as either the primary catalyst for investment, or a secondary beneficiary of the investment. As Endeavour Energy navigates its way through the external changes facing the sector, the key focus behind each of its initiatives for expenditure will be targeting on broadening and improving the services available to our customers.



The four themes are explained below:

1. **Meeting core customer expectations for a safe, affordable and reliable electricity supply:** At Endeavour Energy, we invest in the replacement and renewal of assets across our network to ensure they continue to meet our customers' expectations for a network that is safe for our workers and the community, provides a reliable electricity supply to our customers and is affordable.

2. **Supporting the sustainable growth of our communities;** As the ongoing transformation of Western Sydney and our regions continues to drive growth across the Endeavour Energy network, we need to align our investments with other lead infrastructure provisions by facilitating grid technologies that will be adaptable to the evolving needs of businesses and communities.

3. **Providing a resilient network for the community adapting to changing climate and external hazards:** Endeavour Energy defines resilience as the ability to anticipate, withstand, quickly recover and learn from major disruptive events. As the effects of climate change become real, our infrastructure needs to meet our high levels of service in an increasingly challenging environment. Our organisation needs to be prepared, enabling our trained personnel to respond to incidents and provide support services to those in need.

4. **Enabling customers' future energy choices;** As customers seek to connect more distributed energy resources and increasingly use sophisticated digital platforms, the network and its management must evolve. Our objective is to enable customers' future energy choices for a sustainable future, moving use towards the future integrated and low carbon energy system.

Our capital expenditure forecast will balance long term affordability with reprioritised investment to meet customer expectations and long term interests.

Our approach to Asset Management

Endeavour Energy has developed an Asset Management System (AMS) to deliver the long-term safety, reliability and sustainability of the network and our customers. It provides a framework for effectively managing the network and its assets through the complete asset life cycle of planning, programme development, design, construction, operation, maintenance, renewal and disposal.

The AMS consists of the asset management policy, strategic asset management plan (SAMP), asset management strategies, asset management plans and activities and organisational structures necessary for the development, implementation and continual improvement. The AMS has been developed over many years based on practical asset management experience and complies with ISO 55001.

Further, the Electricity Network Safety Management System is in place to meet the expectations and requirements of stakeholders including:

- the safety of members of the public;
- the safety of persons working on the network;
- the protection of property (whether or not belonging to a network operator);
- the management of safety risks arising from the protection of the environment (for example, preventing bush fires that may be ignited by network assets; and
- the management of safety risks arising from loss of electricity supply.

The ENSMS is a collection of interrelated strategies, policies, procedures, Formal Safety Assessments (FSAs), plans and standards which govern the activities of Endeavour Energy in relation to the safety and management of its electricity network. These obligations meet the Electricity Supply (Safety and Network Management) Regulation 2014 which requires that Endeavour Energy implements an Electricity Network Safety Management System (ENSMS) that complies with the Regulation and Australian Standard AS 5577 – Electricity network safety management systems. Compliance is reported to NSW IPART.

Our forecasting approach

Our forecasting approach involves both top-down and bottom-up elements and is designed to determine an appropriate balance between our investment priorities and the expectations of customers on service quality and affordability outcomes. This process of detailed build up, refinement and prioritisation is depicted and summarised in the below figure.

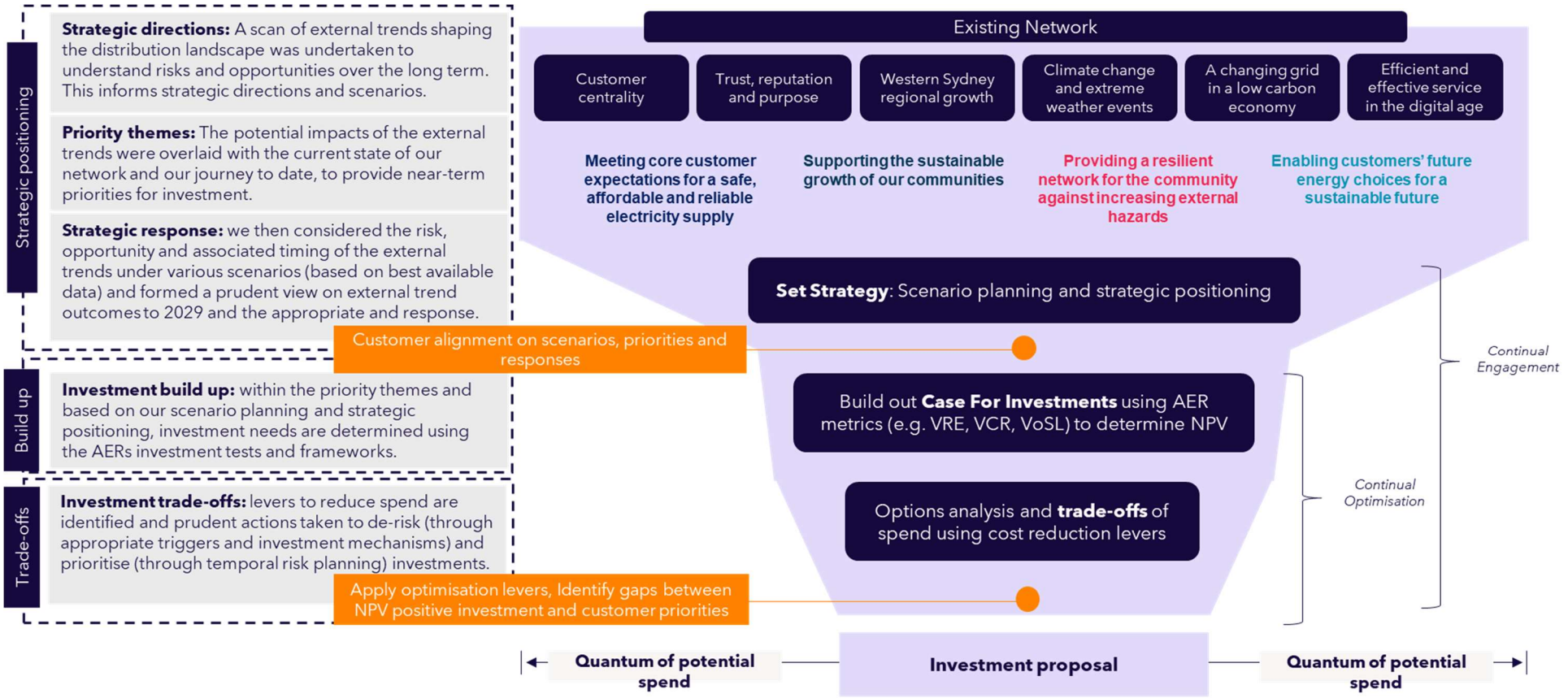


Figure 2: Endeavour's framework for ensuring prudent and efficient spend

As part of the early engagement process, Endeavour undertook a market scan exercise identifying six key external trends shaping the future operational landscape of our network through to 2035. The six trends comprise of a number of societal and energy related issues which have varying impact on the electricity network, and that will require a varying level of investment in response. This worked underpinned the Business Narrative that was co-designed with our RRG.

Potential impacts of the external trends were overlaid with the existing network design and capacity, and also our journey to date to provide near-term priorities for investment. These investments flow into the typical categories of capital expenditure (new connections, augmentation and replacement) as well as future network that will be detailed further below.

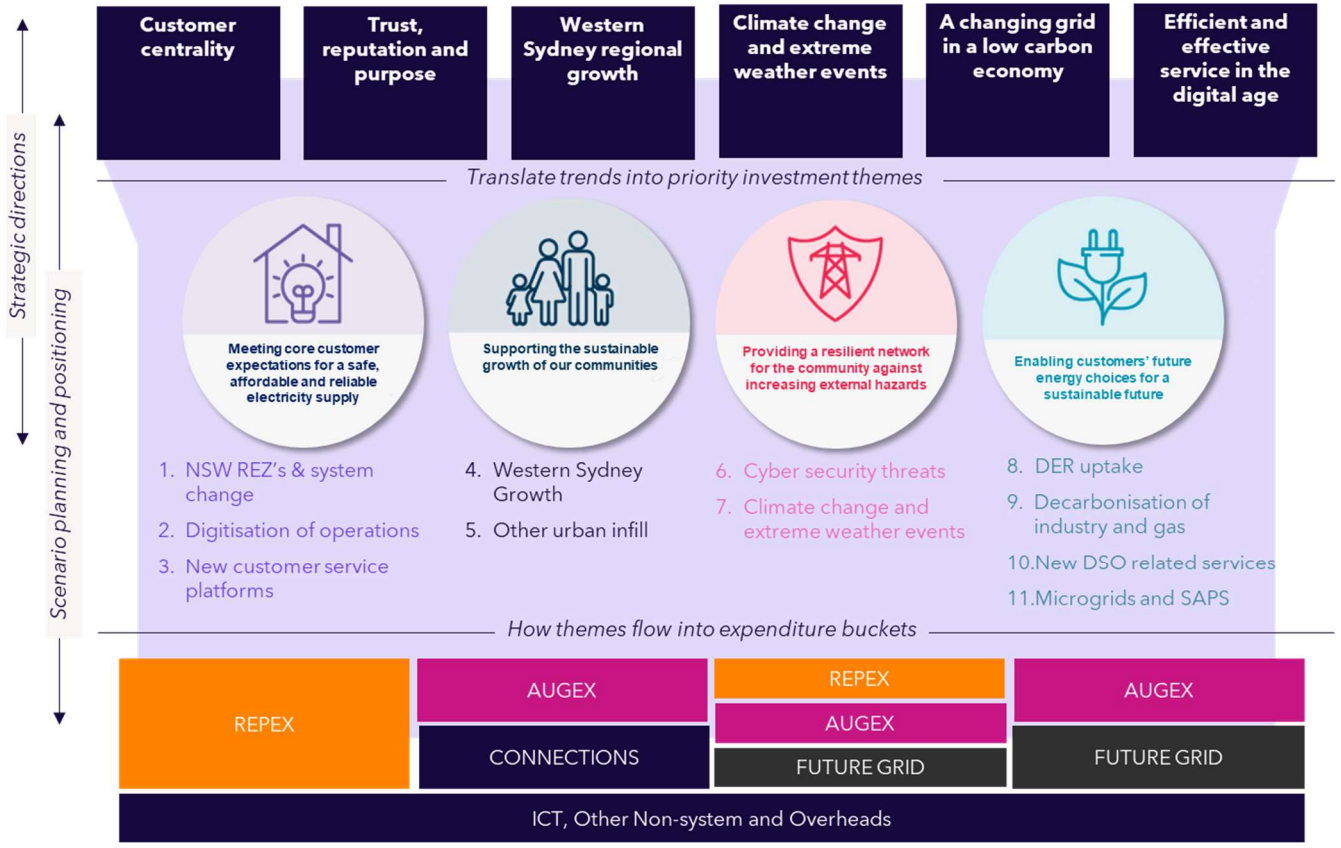


Figure 3: Our market scan and exploratory customer insights narrowed focus into four priority investment themes

Endeavour Energy is required to develop and manage a risk-assessed & optimised investment portfolio. This enables the efficient allocation of capital and operational expenditure to drive and maximise value for Endeavour Energy and its stakeholders.

To optimise the value of investments, we apply a consistent approach to quantify asset and network risk and benefits and determine the timing for investments based on the need and the best overall value provided by the portfolio. This is the basis of the value framework and is underpinned by:

- Using a rational economic approach to allow the comparison of dissimilar investments.
- Using a consistent and repeatable approach to assess all the benefits, risks, and cost of the investment.
- Ensuring that both financial and non-financial benefits are included, where their contributions are aligned to a common scale, and
- Measuring its alignment to the organisation's corporate strategy & risk appetite.

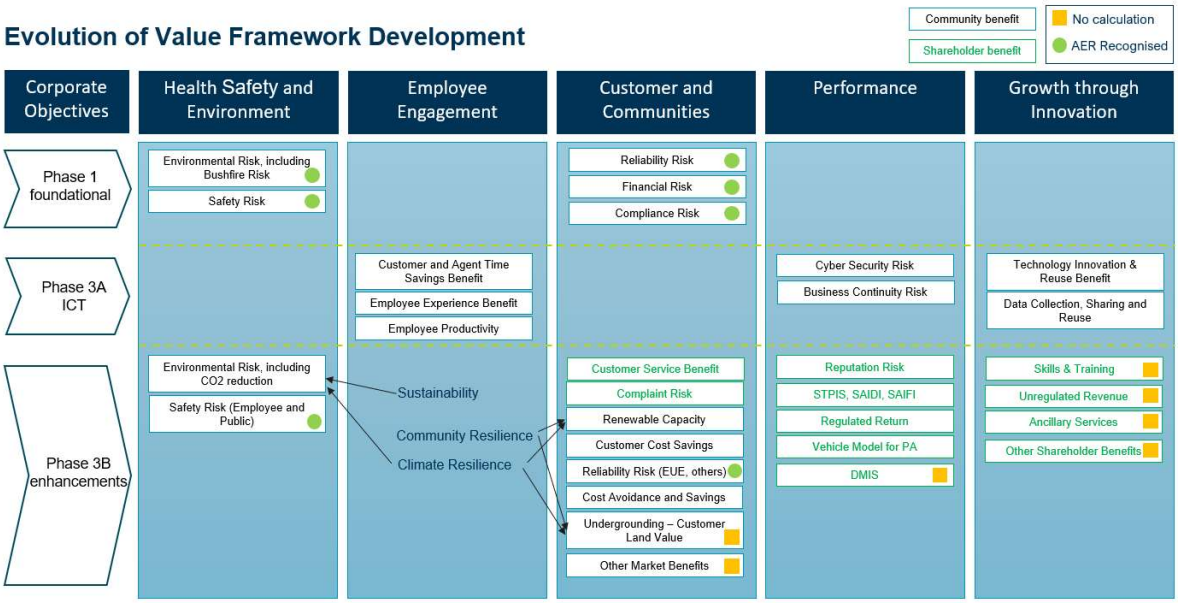
The current version of the value framework is provided in the Appendix noting this is subject to change.

To support this revised framework (since the previous regulatory determination) we have made several enhancements to our value framework so that we quantify economic benefits, being either risk reduction or opportunity to lower cost) from a customer's perspective. This has involved implementing the Portfolio Optimisation Software Tool in addition to the amended Investment Governance and Risk Management framework outlined above.

The table below illustrates the alignment between some of the key value measures in the Endeavour Energy value framework and the organisation's strategic objectives. The list includes value measures that are relevant to the strategic objectives but excludes the financial metrics. Some value measures may align to more than one strategic objective.

Value Measures	Strategic Objectives
Bushfire Risk, Environmental Risk, Employee & Contractor Safety Risk, Public Safety Risk, CO2 reduction	Safety and Environment
Change in Load Transfer Capacity, Complaint Risk, Compliance Risk, Customer Cost Savings, Customer Satisfaction Benefit, Customer Service Benefit, Cyber Security Risk, Reliability Risk (EUE), Renewable Capacity, Voluntary Load Curtailment	Customer and Communities
Financial Risk, Reputation Risk, STPIS, SAIDI, SAIFI	Performance
Energy Transition Enablement, Technology Innovation & Reuse Benefit, New Business Opportunity – Option Value	Growth Through Innovation
Business Continuity Risk, Employee Experience Benefit, Employee Productivity, Skills and Training	Employee Engagement

We engaged with the RRG on the development of our value framework during 2021 and outline its evolution below:



Each value measure is defined and calculated in accordance with AER guidance, where available, or otherwise per best industry practice. This focus on quantified economic cost by several value measures will allow us to consider risk in a more sophisticated manner and to align our investment plans with our organisational strategy more directly and clearly. It will also more readily support informed trade-off discussions with management, stakeholders, and customers by allowing for the justified investment portfolio to be prioritised to maximise different value drivers and for the impacts on overall value to be compared.

In the following sections we provide a more detailed overview of our forecasting approach for key categories of capex; Repex, Augex, DER and ICT noting the remaining categories are derived formulaically (Overheads and Connections) or based on historical trends (Fleet, Property and Buildings and Other non-network).

Replacement capital expenditure (Repex)

We have adopted a quantified risk approach to both reactive and proactive replacement decisions as part of our asset management strategy. The objective of our asset replacement strategy is to optimise customer benefit, while aligning risk with our customers' expectations. Asset replacement strategies are fundamentally based on balancing *Proactive* and *Reactive* asset interventions (including the potential removal of the asset from the network) at the end of an asset's life as well as maximising the opportunity provided by the need for asset replacement in terms of selecting the most appropriate replacement approach.

We consider many drivers in developing our proposed repex investment such as:

- deterioration in asset condition, associated with aging assets, and the associated reliability and safety risk;
- asset failure risk, which may cause supply interruptions, increased risk of collateral asset damage, safety risk to public and field personnel, and environmental damage from asset failure;
- whether assets can be retired;
- technical obsolescence, which increases the cost and risk of retaining assets in service;
- asset damage caused by third parties; and
- cost differences between planned and reactive intervention.

Shortly after the last determination process, Endeavour Energy embarked on a significant transformation of asset replacement decision making, which is focussed on a data-driven, quantified benefits approach. Our processes and tools have been developed to align with the guidance and expectations of our customers and the AER. Investment in ICT, digital platforms, system overhauls and capability uplifts have allowed Endeavour Energy to develop robust cost-benefit analysis at an asset level that we believe aligns with best industry standards of practice.

Top-down repex modelling provides a network wide overview of the forecasted asset replacement volumes and expenditure, however it is less accurate at the asset class level (e.g., power transformers, poles, circuit breakers etc) and furthermore it is unable to determine the particular assets that need to be considered for intervention. Top-down modelling is suitable for providing a reasonably accurate indication of estimated total future expenditure to maintain current levels of risk / benefit, however, is not suitable for determining the repex forecast at a deliverable level.

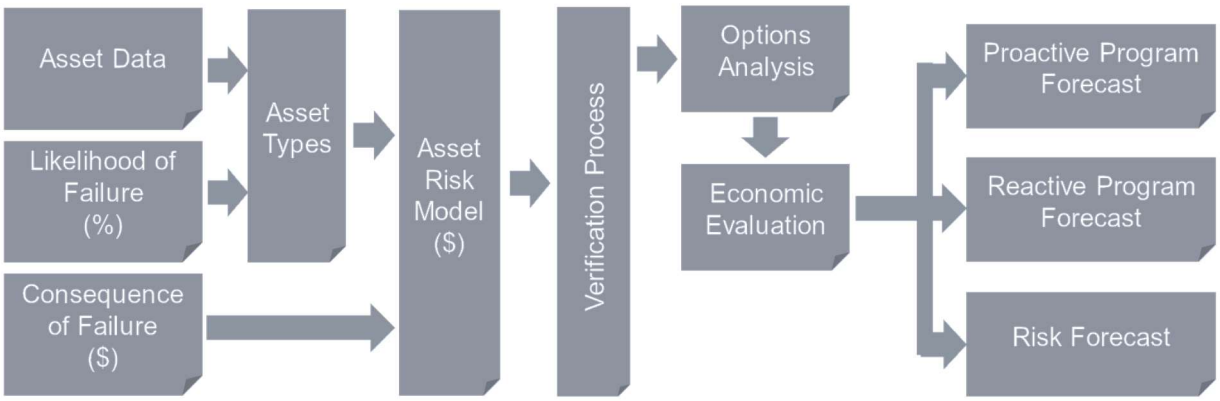
Current top-down modelling also does not allow asset condition and/or risk to be considered and therefore cannot and should not be used independently to determine an optimal repex forecast.

Significant transformation has been undertaken to improve Endeavour Energy's capability in determining cost-benefit analysis at an asset level. This transformation has resulted in the development of transparent, repeatable, and flexible risk-cost models.

Improvements in capability combined with a change in approach to cost-benefit analysis at an asset level have allowed Endeavour Energy to take the following approach while determining the investment timing of asset intervention.

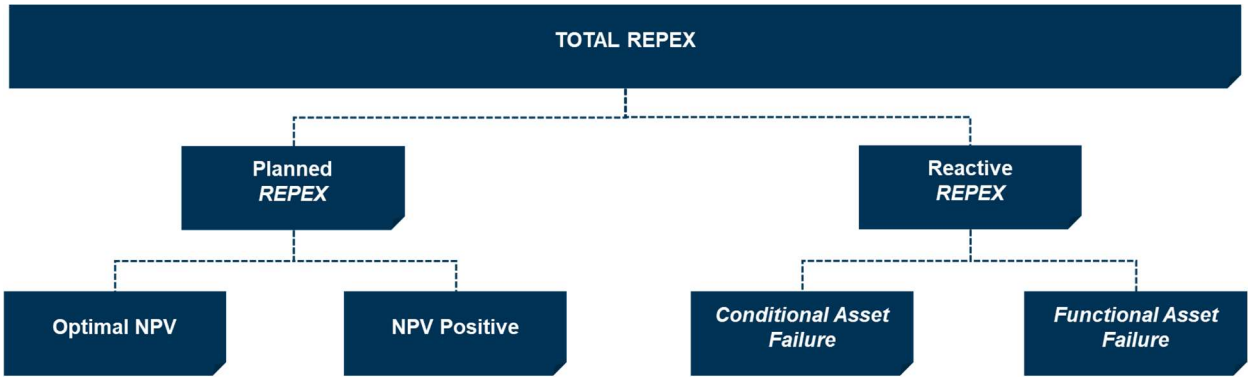
Ultimately an asset will reach end of life (economic or technical) and the aim of Endeavour Energy's replacement strategy is to understand the *Cost of Consequence* (CoC) and *Probability of Failure* (PoF) at the most granular level possible, prior to the event occurring.

This approach effectively allows Endeavour Energy to determine which assets are more suitable for a proactive intervention program and which are best suited to a reactive asset management strategy.



The balance between proactive and reactive asset intervention is also a balance best discussed in terms of timing of expenditure, risk and/or customer benefit. Since ultimately an asset will reach end of life, the repex process is looking to achieve the best balance of these three factors at the most granular level possible. As the answer must be driven by asset risk, cost of intervention and benefit to the customer.

Repex can broadly be divided into four categories as illustrated in the image below:



The objective of the repex strategy is to determine which of these strategies should be applied to each individual asset and which one provides the greatest benefit to our customers.

Our approach starts by diving the asset base up into groups (asset types) defined by assets with similar *Probabilities of Failures* and *Costs to Intervention*. Each asset is assigned an individual *Cost of Consequence* based on that asset's location, criticality and redundancy within the network.

The *Cost of Consequence* is calculated per Endeavour Energy's value framework and focuses on key customer risks / benefits including:

- Reliability
- Public Safety
- Financial
- Employee Safety
- Environmental *(incl Bushfire Risk)*

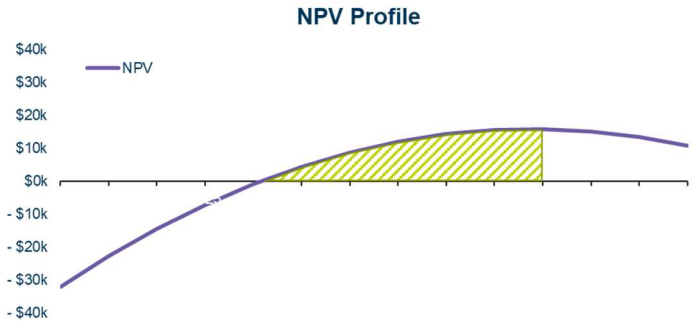
The outcomes of these consequence models are calibrated against current measurable metrics (e.g. number of asset failures) to ensure that the models are generating realistic outputs in line with the current networks performance.

A cost-benefit analysis is completed on each asset against one or multiple intervention options to determine the Net Present Value (NPV) and Benefit to Cost Ratio (BCR) for replacement of the asset today and every year in the future. This analysis allows us to understand if the benefits associated with doing something with the asset are greater than the annual risks / costs associated with the asset.

Furthermore, it allows us to understand how this BCR changes over time and how it compares with other possible assets / projects. For example, is the greatest benefit given to customers by replacing a single power transformer or 25 pad mount transformers.

The image below illustrates the NPV analysis for a given asset:

- the point at which a project becomes NPV positive (e.g. where it crosses the x-axis) or where the benefits exceed the costs
- the point at which the maximum NPV can be achieved (the peak of the curve), the year 2027 in this scenario



The ability to perform this calculation at the asset level for hundreds of thousands of assets illustrates that in practice, assets live along the full duration of this curve, including beyond the optimal point of investment.

The point at which a particular asset reaches NPV maximum does not alone provide the greatest benefit for customers. For example a project that has reached its maximum NPV may have a much lower Benefit to Cost ratio compared with a project that are marginally NPV positive. Additionally, allowing a project to go beyond the optimal point (e.g., deferring the project) may allow a project with higher benefits to be completed.

The true network wide view of optimised customer benefit can only be determined by allowing all NPV positive projects to be considered and optimised based on greatest benefit to customers and real-world limitations (including project lead times, critical milestones, timing of third-party projects).

Assets that fail to have a NPV positive result are therefore not candidates for consideration as a Proactive intervention and are dealt with via a reactive modelling process.

The shift to a risk-based planned investment program implies all asset types will need to have a reactive component. The forecast level of repex required for the reactive component is calculated using the same PoF data that is used for the Proactive intervention modelling and is simply summated for each year into the future.

This process goes through a range of sensitivity analysis tests and comparisons to the current performance of the network to ensure that the results are accurate, meaningful, and logical.

The process provides a repeatable and transparent methodology for determining the Proactive and Reactive repex forecasts into and beyond the following regulatory period as well as a clear link between

the Proactive and Reactive repex (e.g., an increase in Proactive work results in a decrease in the Reactive forecast).

The introduction of new network options as well as DER enablement has some overlap with repex. This overlap is considered at both the individual asset level justification for planned repex or at the network-wide level for reactive repex.

The final optimised repex proposal will, through the top down repex model, management challenge and customer engagement, balance cost to the customer, risk sharing to maintain current network performance as well as resources and network limitations.

We also note the emergence of resilience as a relatively new area of stakeholder interest that the community is becoming increasingly conscious of following a number of major environmental events (bushfire and flood) that occurred in New South Wales. Consequently, customer references to resilience during early exploratory research were more prevalent than in previous regulatory periods.

Endeavour Energy defines resilience as the ability to anticipate, withstand, quickly recover, and learn from disruptive events.

We acknowledge that a network can be reliable, without being resilient. In the context of increasing impacts from climate change, increasing cyber security threats, and increasing community awareness of climate change we acknowledge the potential value of investment in measures that specifically deliver resilience, minimising the impacts of disruptive events on customers who rely on power more than ever before for transport, finance, water, communications and flexible working.

Resilience is thinking about the future and taking advantage of the opportunities that present themselves now, to assist in bring existing parts of the network up to the current needs of customers. At Endeavour Energy, it is treated as an additional long-term benefit or risk reduction (e.g., the decreased likelihood of initiating a bushfire for covered conductor compared with bare conductor). These additional resilience options are considered in parallel to traditional options.

For example, while the Proactive or Reactive assessment for an asset is being considered, a number of alternative resilience options (with increased resilience benefits and potentially costs) are evaluated. Each potential solution, with its costs and benefits, will be compared to one another and only where the Benefit to Cost ratio of the resilience option exceeds that of traditional interventions would Endeavour Energy propose a resilience option as the preferred option.

This approach allows the maximum benefit to be released as asset reach the end of the economic or technical life and the network of the future to be built.

Endeavour Energy see resilience as portion of the justification for traditional repex and augex projects, in adapting to changing extremes, not as a major change to current asset management strategies.

Augmentation capital expenditure (Augex)

Our purpose is to ensure that there is prudent and efficient investment to allow for new connections and growth to occur.

The development of our regions, in particular the Western Sydney Parkland City, including Bradfield and the Airport are key aspects driving forecast augmentation expenditure growth. Western Sydney is one of the fastest growing regions in Australia. Whilst there have always been large areas of greenfield residential development there has been noticeable shift in the current period towards developing increased employment and services within Western Sydney which in turn has led to a shift to industrial/commercial development.

The Greater Sydney Commission has defined a vision of Sydney as a metropolis of 3 cities:

- The Eastern Harbour City (centred on the existing Sydney CBD)
- Greater Parramatta
- Western Parkland City (having the largest greenfield component)

We have been and will continue to be an active and integral part of greenfield planning processes being part of formal collaboration/coordination groups that include key government planning authorities, other utilities, and infrastructure agencies. Key to this is a coordination to ensure that all types of essential infrastructure are available at the same time in a precinct by using common planning assumptions and minimise disruption to the community (avoid digging up the same road multiple times).

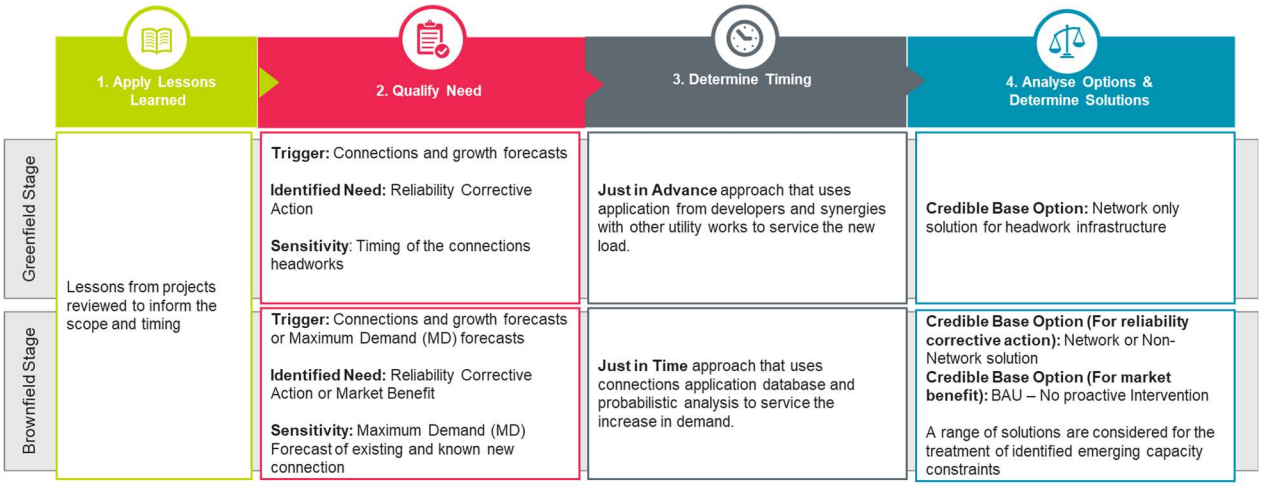
Larger industrial spot loads can have relatively short lead times (6-18 months) from the time of firm connection request (hyper scale data centres, automated – temperature controlled multistorey warehousing, hydrogen electrolysers). As an example, the data centre forward pipeline exceeds 2000MW with an average size of 150MW per site. 90% of greenfield industrial land is in Western Sydney, we are seeing older industrial areas and established areas being repurposed, with businesses relocating west to new facilities in greenfield areas.

A 2020 DPIE employment lands reported noted that in 2019 $2bn worth of development activity in Metropolitan Sydney with $1.4bn within Endeavour Energy locations. Activity in Western Sydney has further increased since that time with ABS data showing non-residential building approvals in Blacktown LGA at $825m in FY21. The Aerotropolis council areas Liverpool Council and Penrith Council registering increases to $2.1bn and $0.7bn respectively in non-residential building approvals in FY21.

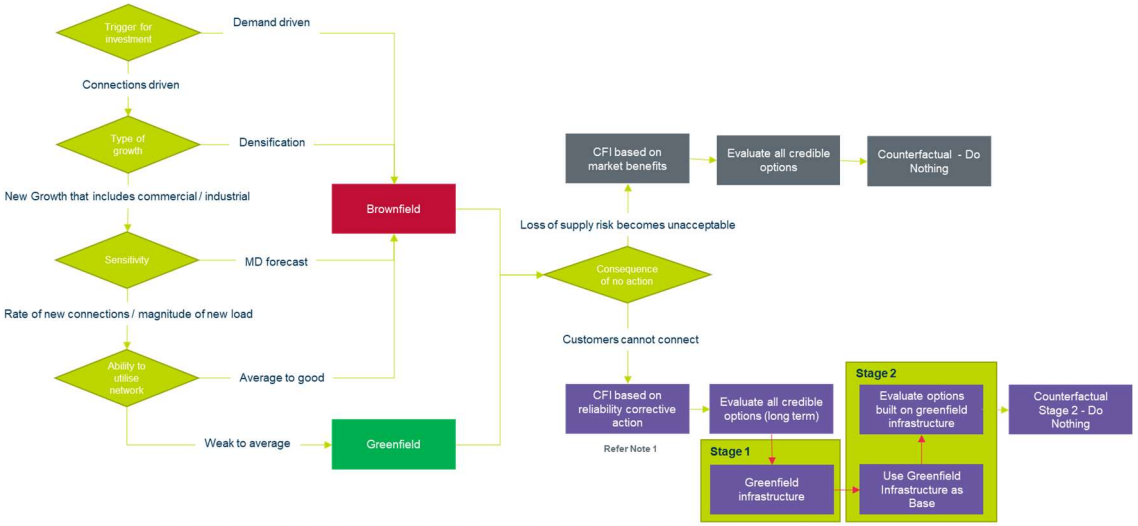
Endeavour Energy has historically had large volumes of greenfield residential land release in Western Sydney and the Illawarra region. The demand in these areas is affected by market forces as well consumer energy trends including BASIX, rooftop PV, batteries and electric vehicles, an emerging transition away from natural gas.

Our approach to Augmentation expenditure forecasting differs depending on the key drivers. This approach for the Augex proposal is designed to balance the need to service growth with concerns about

affordability. Broadly, the figure below shows our approach to developing our forecast. A summary of our connection and demand forecasting approach is provided further below in this section.



The lessons learnt have shaped our approach to Augex in the next period. To provide a fit-for-purpose response to the growth challenge as well as be consistent with the NER and AER guidelines, Endeavour Energy has established a decision framework. The figure below outlines the decision framework from the Growth Servicing Strategy, which is used to inform the development of Case for Investments (CFIs) to address the uncertainties and identified need.



Note 1: Per Section 3.3 of the RIT-D guidelines, if the identified need is for reliability corrective action, the RIT-D proponent may choose to select a credible option as its base case (a 'base credible option').

The framework helps with:

- Managing uncertainty by evaluating the trigger, type of growth and sensitivity to growth.

- Optimising the utilisation of the existing network by always looking at ability of adjacent network to service the initial phases of growth until intervention is required.
- The proactive usage of non-network solutions and integrated planning by looking for alternative market-based solutions to respond to customer increase demand.
- Selecting the most efficient and prudent response to address the consequence of no action based on type of Augex investment in whether the investment is greenfield or brownfield.

As per the figure above, the type of augmentation expenditure results in differing management and input approaches to reflect the needs of customers. Augex is typically capex required to address constraints arising on the electricity network to meet new or increasing demand. Increasing demand is generally an uncontrollable variable as it increases the risk of not meeting the maximum demand at the desired quality or reliability standard. One solution to these constraints is to undertake Augex projects, which typically involves augmenting network components to ensure we have sufficient capacity to meet forecast demand. An alternative to augmenting the network is to implement non-network solutions to constraints, including demand management.[1]

To facilitate growth there are three types of Augex investment supplemented by customer-initiated works:

1. ***Connection driven Augex*** creating new upstream assets to enable customer/development connection. This makes up approximately 50% of our combined augex and connections capex forecast.
2. ***Demand driven Augex*** designed to maintain secure and reliable supply as load increases over time. This makes up approximately 30% of our combined augex and connections capex forecast.
3. ***Customer Initiated Works***, supplementing developer provided/gifted new assets to enable customer connection at the time of connection. This makes up approximately 20% of our combined augex and connections capex forecast.

Managing uncertainty

Augex is different to other capex categories in that the need for investment is heavily influenced by what action external stakeholders such as government, developers, other infrastructure providers take, as well as demographic and economic trends. There are number of key aspects to uncertainty in future demand and connections growth such as the rate of development, customer energy trends and DER uptake, the planning approval process, government investment in infrastructure and broader economic conditions.

[1] Section C1 Expenditure Forecast Assessment Guideline – Explanatory Statement, Nov 2013

Our Augex investment forecast is mostly put together by collating individual projects, although with projections out to 2029 there is an element of modelled expenditure. We intend to engage an independent consultant to provide a top-down challenge of investment using the AER Augex model.

At a portfolio level we need to manage the uncertainty around whether or not certain capex projects will be required. It is possible that a small number of projects may be affected by uncertainty in the development proceeding or may be deferred by non-network options. It is also possible that there will be unforeseen investment needs due to step changes caused by customer connections during the next regulatory period.

Below we discuss ways in which we seek to manage this uncertainty.

Demand and connection forecasting

Endeavour Energy spatial demand and connection growth forecasts are produced for summer and winter over a 10-year period. As asset ratings are lower and typically demand is higher during summer, it is the summer forecast that is most relevant to Augex. There are two main processes that affect the forecasts:

1. **Demand on existing infrastructure**

In locations where existing zone substation infrastructure exists there is a process of determining a starting point for peak demand by temperature correcting the most recent actual peak demand for the season. This means if the recent summer was abnormally hot the temperature corrected demand would be lower and if it was unusually mild it would get corrected up.

Post model adjustments are then applied to determine a base level forecast over 10 years.

- An independent economic consultant is engaged to provide an estimate of “organic growth” due to consumer energy trends (for example, solar PV, BASIX, efficiency and electric vehicles, tariffs/price elasticity).
- In recent years these adjustments have resulted in a minor declining trend in peak demand for our existing substation sites. i.e., organic growth has been negative
- Endeavour is referencing AEMO scenarios to test the impact of consumer energy trends and DER as part of the development of our proposal

2. **Consideration of spot loads (step changes)**

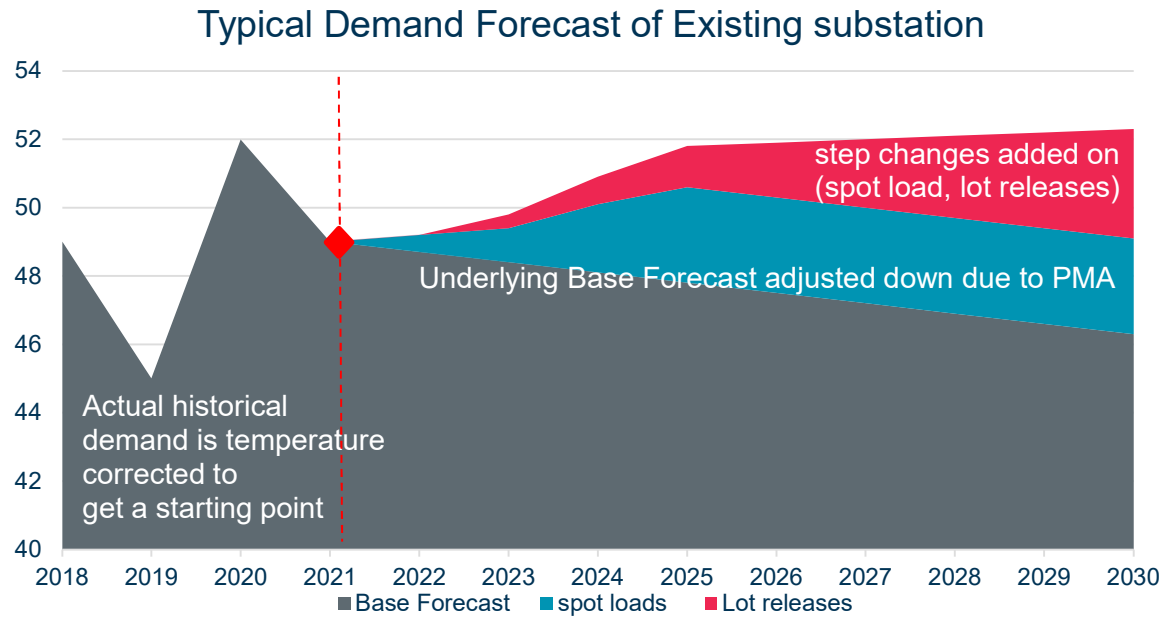
In greenfield precincts where there is no existing substation the above processes do not apply as the starting point is zero demand. The process of incorporating spot loads (new connections) determines the rate of growth in the forecast period. This process is the same for both an existing substation where the starting points are determined by temperature correction and for greenfield precincts where the starting point is zero.

Step changes in residential or industrial/commercial development are captured by either connection applications received (short term) or an allowance for longer term development (lot release) as connection applications are typically only received with a 1 to3-year time horizon.

For residential development the number of forecast dwellings is multiplied by the After Diversity Maximum Demand (ADMD). The impact on ADMD of the most recent proposed changes to BASIX in 2022 are currently being assessed. Furthermore, a probability factor of 0.8 is applied to reduce resultant expected demand growth on the substation.

For industrial/commercial applications, the load applied for by customers and developers is reduced by probability factors as appropriate in the range from 0.6 to 0.8.

There are many connection enquiries at the feasibility stage where we have applied a zero probability for in the forecast, but some of these are necessarily included with an appropriate probability factor in the demand forecast to ensure a sensible integrated planning approach with government, utility, and developer stakeholders.



Utilisation of Existing Assets

In addition to our forecasting methodology and validation process, another means of managing this uncertainty is through the timing and staging of investment. This can involve the utilisation of existing capacity in a location (or nearby) to service growth where it is technically feasible and the optimum economic solution.

A key indicator of utilisation for Augex is the utilisation of zone substation level transformer capacity which measures the actual peak demand of all zone substations against our installed capacity. Notably, only measuring utilisation using peak demand does not reflect the overall usefulness of the network as at lower

levels, particularly as the network is increasingly being required to cope with reverse power flow due to rooftop solar generation.

A probabilistic planning approach (likelihood, consequence) for Augex determines how much risk can be taken on the existing network before investment is required. To value expected unserved energy, we apply the AER determined Value of Customer Reliability (VCR) values.

Non-network solutions and integrated planning

To service the growth challenge, Endeavour Energy evaluates network, non-network and hybrid options. New technologies will continue to play an increasing role across all these options and Endeavour Energy will evaluate credible options to efficiently service the growth challenge. New Technology and its applications continue to move in all dimensions in respect to changes in price, capabilities, ownership models, partnerships, investment value stacks, as well as the maturation of industries that were previously considered high risk. To address this issue, Endeavour Energy is moving to a more consistent and proactive approach for the consideration and adoption of new technology and customer-based solutions on our network. This includes:

- **Utilising the New Technology Master Plan (NTMP):** Endeavour Energy has developed a proactive approach to the efficient use of non-network solutions to alleviate network constraints and respond to network needs, in the interest of the business and our customers. This tool integrates existing network data and enables the efficient exploration of the net-benefits of various non-network solutions at a pre-feasibility stage, considering the various uncertainties and sensitivities. The NTMP tool furnishes Endeavour Energy with the knowledge and business capabilities that will allow for the effective identification of new technology options (as potential non-network options).
- **CAPEX/OPEX balance:** The impact of new technology and non-network options may have an impact on the TOTEX, where some network CAPEX in Augex maybe deferred or substituted by non-network options that are OPEX in nature. Endeavour Energy will proactively evaluate the options and the DER / Augex capital expenditure will continue to be evaluated using a holistic approach.

Distributed Energy Resource (DER) Enablement capital expenditure

Defining the Future Grid Scenarios

To plan for the Future Grid we need to understand and accept the uncertainty involved in forecasting and plan to adapt as the future unfolds. Scenario planning helps us to best manage this uncertainty and allows transparency in not only identifying needs and their timing but also the trade-offs involved in the scenarios.

Our approach has been to adopt and translate the AEMO ISP scenarios as credible external reference points to plan and compare different outcomes. The energy transition involves a great number of stakeholders and coordination is one of the greatest challenges. We believe referencing the NEM operator ensures that there can be coordinated planning across the entire industry.

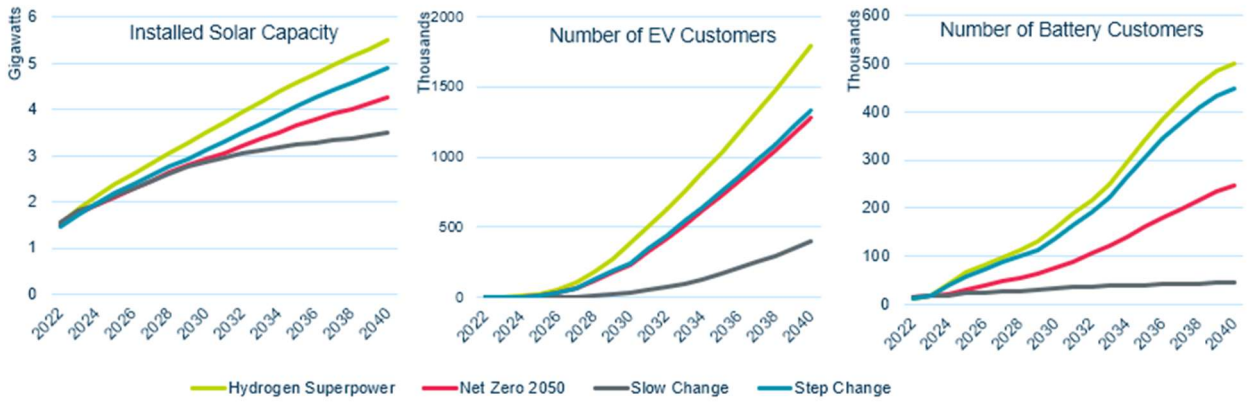


Figure 4: Projected DER uptake on the Endeavour Energy Network for the AEMO ISP Scenarios

We have taken our forecast for a "step change" scenario as a central case, it involves high levels of decentralisation and ambitious steps in decarbonisation. This was a favoured approach from both our customer groups and the broader stakeholder groups involved in the AEMO 2022 ISP.

Year	Total Number of Customers	Annual Total Energy (TWh)*	"Step Change" Scenario[2]		
			Customers with PV	Customers with Battery Systems	Customers with EVs
2022	1,074,000	16.7	220,000 (20%)	12,000 (1%)	2,000 (0%)
2024	1,118,000	17.0	298,000	41,000	6,000
2030	1,268,000	18.2	467,000 (37%)	138,000 (11%)	246,000 (19%)

**current energy forecast not including the optimised response of DER*

To support this rapid growth, we will need to evolve our operations and innovate. One of the key transformations called for by the Post-2025 Market Reform initiatives was the transformation of Network Service providers to Distribution System Operators (DSO) - securely and actively operating networks with high penetrations of DER in a manner which fairly benefits all customers. Our network and our business will transform into a platform – connecting and coordinating a broader range of physical assets,

[2] Based on translation of AEMO's 2021 Input, Assumptions and Scenario Report

technologies and management systems, with options to optimise the grid through better data, systems and operation approaches.

A major milestone for the energy transition was the AEMC Access Pricing and Incentive arrangements for DER in 2021. Previously the rules were written in the context of energy services delivered as a one-directional flow. This rule change was significant as it allows networks to recognise our role in enabling customer exports and multidirectional flow. In the context of our network planning and the upcoming regulatory submission, this is significant as it recognises that network investments may be needed to enable DER participation and the emergence of a new expenditure category. The rule change also obligates us to prepare a dedicated DER Integration Strategy.

Forecasting hosting capacity

There are multiple possible approaches to simulating and assessing DER hosting capacity, or inversely quantifying the DER curtailment due to voltage or capacity constraints. The AER's guidance note states that hosting capacity can be "deterministic or probabilistic and can be undertaken using a range of modelling and analysis methods." Endeavour Energy has developed a deterministic LV simulation tool in partnership with researchers at the University of Wollongong's Australian Power Quality and Reliability Centre (APQRC).

This simulation tool:

- Builds customer load profiles from an available sample of smart meters, solar profiles based on historical irradiance data, and assumed battery and EV charging profiles from AEMO and CSIRO.
- Builds LV models for each of Endeavour Energy's residential LV circuits based on the ADMS LV network electrical model data.
- Adjusts customer profiles based on our DER forecast and forecast scenario.
- Runs average daily as well as full year time series power flows simulations between now and 2040, calculating inverter curtailment energy as well as baseline and forecast power flows and voltage levels.

Running this system across the entire LV network requires approximately 20 billion power flow simulations and results in several hundred gigabytes of data.

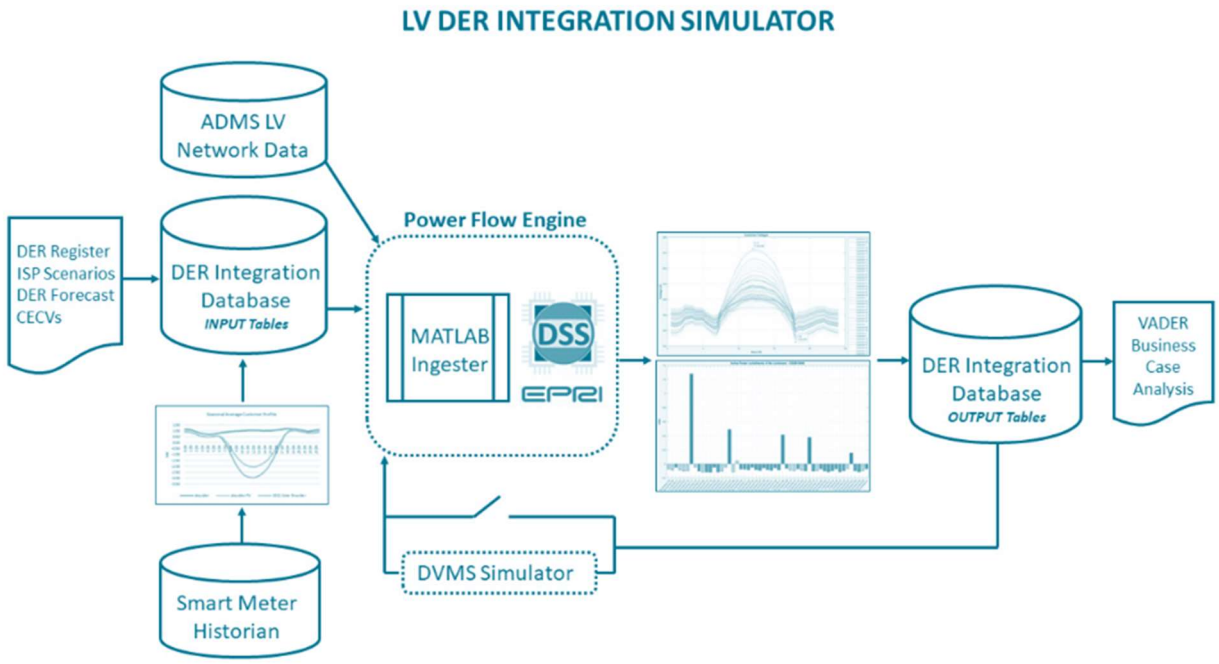


Figure 5: Explanation of inputs and flows for the DER Integration simulator

Endeavour Energy is using this tool to quantify and value service outcomes (DER curtailment) using the AER's Value of DER (VaDER) methodology, of which a key input is the Customer Export Value of Curtailment (CECV). The tool can simulate the benefits of operational interventions such as distribution transformer optimisation and Dynamic Voltage Management as well as identify which LV circuits remain constrained after applying operational optimisation and where a network investment intervention is economically justified.

Forecasting expenditure requirements

Solutions to improving hosting capacity for customers range from customer level and non-network solutions through to operational improvements enabled by LV visibility and analytics as well as targeted network investment. Endeavour Energy is applying a "solution hierarchy" approach to considering the range of likely approaches to improving hosting capacity as shown below.

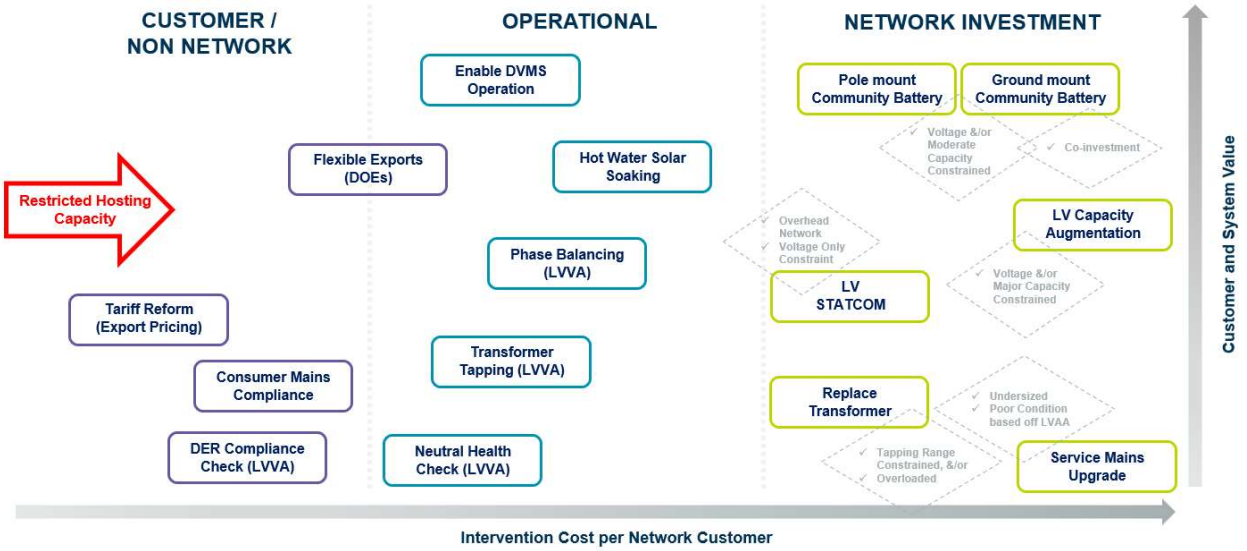


Figure 6: Classification and ranking of how hosting capacity constraints can be resolved

In NSW, under the power of choice framework, power quality data from smart meters needs to be commercially procured. Accessing smart metering data has a range of potential network benefits including improving hosting capacity, service quality and customer safety outcomes. Currently Endeavour Energy is accessing Power Quality data from approximately 10,000 smart meters across the network supply area representing 0.1% of customers or 0.3% of installed smart meters.

Endeavour Energy proposes to increase its access to smart meter power quality data to between 20-30% of customers in a statistical and targeted fashion. The use cases, customer benefits and access approaches are summarised below.

Use Case	Customer Benefits	How Have We Valued Benefits	Access Penetration % (Average RCP24-29)	Access Approach
Neutral Integrity	Safety	Avoided Shocks Risk (Statistical Value of Human Life)	~5%	Targeted based on network age and other factors
Dynamic Voltage Management (DVMS) & Proactive Tapping	Hosting Capacity Quality of Supply	CECV	20%	Broad statistical sample
Customer Responsive Complaints Investigations	Hosting Capacity Quality of Supply Operational Cost Optimisation	CECV Reduced Truck Rolls	~5%	Targeted based on customer call volumes

Figure 7: Outcomes and roadmap (draft)

DER hosting capacity and integration modelling is a new capability and is still undergoing development and verification. There remains therefore uncertainty in the curtailment of DER, the value of DER and therefore quantum of investment required to enable it. There remain several dependencies including completion of time series network models, sensitivity analysis of DER uptake scenarios and the agreed value of DER (including the CECV which is expected to be finalised shortly by the AER) and so currently a range is being used to indicate expected investments.

Investments will broadly be categories as follows:

- Low Voltage Visibility and Analytics – making sure we acquire the right amount of smart meter data to maximise benefits. This will depend on the forecast scenarios and hosting capacity limits (noting the significant current network visibility challenges)
- DER Enablement capital expenditure – the network investments that will be required as per Figure 6. This will be informed by the hosting capacity, a finalised CECV value and DER integration modelling.
- Business Enablement - investment in the applications, infrastructure and security which will need to scale with the two items above.

Information & Communications Technology

Enhanced ICT capabilities are an integral component to deliver energy services efficiently and securely now and in the future. Investments in ICT have enabled us to both respond to changing customer demands and further enable more cost-effective future network enhancements.

A broad range of internal and external factors, including changing customer expectations and rapid and continuous technological evolution – present both opportunities and risks to Endeavour Energy and DNSPs in general. Endeavour Energy's legacy ICT platforms were fragmented and beyond end of life and end of support, which reflected the minimal investment that occurred in the prior regulatory periods. Management identified and responded to these factors in our Corporate Strategy and embarked on an ICT investments journey since the 2017 partial privatisation. Optimus, ADMS and Security Infrastructure Program (SIP) are the three key initiatives:

- Optimus – Streamline core enterprise systems to improve business efficiency and effectiveness
- ADMS – Integrated network monitoring and control to improve efficiency and reliability
- SIP – Enhance cyber security capability to protect customers, assets and data

The digital transformation in the current RCP has provided customer benefits, such as mitigating critical infrastructure security risks, meeting changing customer demand and delivering streamlined, integrated, and a stable platform to better keep pace with the transitioning energy marketplace.

Consistent with the requirements of the AER's ICT guidance note, we will conduct a post-implementation review of this non-recurrent program to assess the prudency and efficiency of that investment based on

the AER ICT capex assessment Guideline(noting this guideline did not exist at the start of the ICT transformation program).

We plan to maintain the ICT functionalities and capabilities established during the business transformation by emphasising automation, flexibility and security in the next regulatory period. We believe this will continue to position Endeavour Energy as a more efficient and resilient organisation, responsive to changes in the energy market and customer preferences at least cost. For our ICT capex proposal for 2024-29, we aim to:

- acquire, replace/upgrade or maintain technology services in an increasingly changing and complex environment.
- enable and facilitate customers' future energy choices and known preferences; as well as continue to support our vulnerable customers with safe and reliable services
- comply with new regulatory obligations

Our ICT proposal will be developed by splitting ICT investments between recurrent and non-recurrent drivers per the AER's ICT guidance note. For non-recurrent ICT cost-benefit analysis will be conducted to identify least cost / maximum benefit solutions. Investment benefits and drivers for the 2024-29 period include:

- enhance customer experience
    - reduction in constrained DER
    - Increased customer confidence and trust (via access to real time information e.g., outages)
    - improved tariff structure (via improved data analytics)
    - meeting changing customer preferences
    - smarter, simpler, and seamless digital transactions
    - achieved efficiency gains that will be passed through to customers
- deliver future efficiencies in different scenarios (productivity)
    - deliver future economies of scale
    - facilitate acceleration of decentralised (localised) generation and storage
    - increase automation and flexibility to respond to changes in demand
    - satisfy increasing information sharing requirements at least cost
    - enhance workplace flexibility

  - obtain real time data and meet market rule change requirements
- directly support network assets (reliability and security)
  - modern cyber and information protection (satisfying licensing conditions imposed at privatisation)
- Improve safety outcomes
  - Improve data and greater visibility of the operational state of the network
- Integrate Operations
  - common data model across core business functions
  - consistent user interface across multiple integrated functions
  - building functionality for future change
  - business continuity
  - enhanced ability for data sharing with business partners and regulatory compliance reporting

In developing our ICT expenditure forecasts, we had regard to:

- the six external drivers identified in our Draft Business Narrative. Our forward looking and flexible ICT strategy will position us to respond to external drivers such as customer centricity, trust reputation and purpose, Western Sydney Regional Growth, climate change, changing grid in a low carbon economy, efficient and effective service in a digital age. We will aim to keep our costs low and apply innovative demand management solutions to maintain affordability.
- The four investment themes outlined in our Draft Business Narrative. ICT is a critical enabler of safe, affordable, and reliable services, sustainable growth, resilience and future energy choices. We plan to only invest if there is clear value to customers.
- Regulatory/compliance requirements. ICT will help us comply with existing and emerging regulations and requirements in a timely and efficient manner
- Internal drivers. ICT, particularly data analytics, will help us make better-informed decisions and better manage assets through automation, improved analytics, data capabilities and tools, and unlocking value from data.

Forecasting operating expenditure

Endeavour Energy 2024-29
Expenditure Forecast Methodology Statement

Overview

In accordance with the Efficiency Benefits Sharing Scheme (EBSS) and ex-ante 'revealed cost' incentive based regulatory framework, Endeavour Energy relies on a top-down forecasting approach to derive an efficient level of operating expenditure. Endeavour Energy's main top-down approach involves applying the AER's operating expenditure (OPEX) model which applies a base-step-trend approach to forecasting operating expenditure.

The output from the model provides a total operating expenditure forecast that allows a reasonable opportunity to achieve the operating expenditure objectives.

Our forecasting methodology

The AER's OPEX model applies the base-step-trend 'revealed' cost methodology in determining the efficient forecast total operating expenditure. The model provides a forecast based on a series of inputs provided by Endeavour Energy.

The model requires a combination of actual and forecast information to be provided as inputs. The actual information is collected from internal systems and correlates with information provided to the AER and other relevant stakeholders in Regulatory Information Notice (RIN) responses. Forecast information is derived through a combination of external and internal expert analysis and is consistent with the approaches outlined throughout this methodology statement. Each input value is arrived at through established and robust forecasting techniques and is thoroughly assessed and evaluated prior to inclusion.

The OPEX model provides Endeavour Energy with a view of the efficient level of operating expenditure to which our combined or aggregated category level forecasts should not materially exceed. Broadly, the base-step-trend approach contained in the OPEX model can be described as follows:

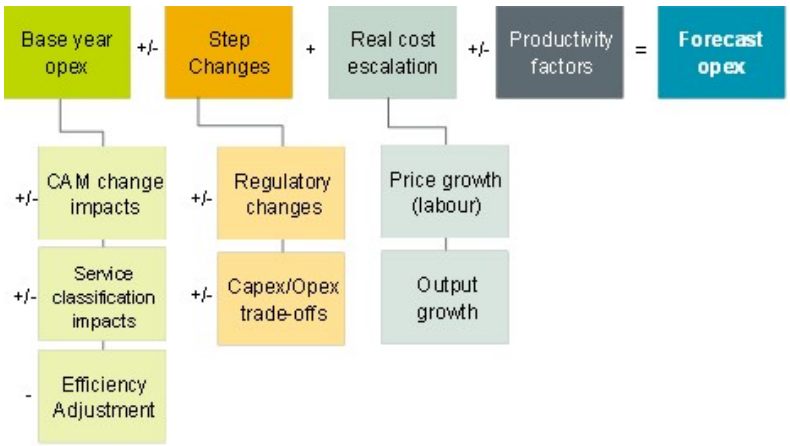


Figure 8: OPEX forecasting methodology

Efficient Base Year

The base-step-trend 'revealed cost' forecasting approach necessitates an efficient base year level of expenditure. We conduct analysis to ensure our revealed costs in the base year in these respective

categories are inclusive of savings initiatives and reforms and reflect efficient expenditure levels. This analysis replicates the benchmarking models applied by the AER to determine an efficient substitute opex forecast against which to assess the base year.

We consider the fourth year of the current regulatory control period (which contains actual cost information by the time of the revised proposal and final determination) should be used as the base year. This is because a network's most recent actual expenditure best reflects the efficient expenditure required to achieve the operating objectives.

The base year operating expenditure in this year will be appropriately adjusted to remove one-off and non-recurrent costs. For our 2024-29 proposal, the 2022-23 year will form the base year from which our forecast will be developed. Our regulatory proposal will provide evidence, including benchmarking analysis, to demonstrate the efficiency of the proposed base year operating expenditure.

We acknowledge that at the time of our regulatory proposal in January 2023 this year will still be forecast with FY22 the most recent year of actuals. However, given we will be more than halfway through the FY23 year we consider our forecast will be relatively accurate and ultimately closer to the final FY23 base year opex that will be used at the time of our revised proposal and final determination compared to our FY22 actuals.

Step Changes

Endeavour Energy will next consider the need to incorporate any step changes into the forecast. These are considered additional costs arising from exogenous events which will impact our operating expenditure in the 2024-29 regulatory control period that are not reflected in the 2022-23 efficient base year or included elsewhere in the proposal.

Endeavour Energy considers step changes may be required following new regulatory obligations and efficient capital and operating expenditure trade-offs. All proposed step changes will be evaluated against the AER's specific criteria.

Rate of Change

Network operating costs are expected to change over the course of the 2024-29 regulatory period. This is largely a result of the changes in inputs (price of labour and materials) and outputs (network size, demand and customer numbers). As a consequence, forecast expenditure will be adjusted accordingly to reflect these year-on-year changes. According to the AER's Expenditure Forecast Assessment Guideline, Endeavour Energy may also propose a productivity factor to reflect technological and procedural improvements in the industry that are expected to result in cost savings. The rate of change calculation can be expressed as:

Rate of Change = Output Change + Real Price Change – Productivity Change

Importantly, Endeavour Energy will incorporate all expected efficiency gains arising from cost saving initiatives and reforms into expenditure forecasts. The gains will include savings derived from current or future programs. Only efficient forecast trend factors will be proposed and determined through economic analysis and by using the most relevant and up-to-date market data. External economic consultants will be utilised to derive efficient and reliable rate of change forecasts for these factors. The forecasting methods

used to derive estimates of the impacts of the corresponding rate of change factors is provided in Table 3 below:

Rate of Change Factors	Forecasting Methodology:
Price Change (labour)	External economic consultants will provide estimates of forecast real cost of labour forecasts.
Non-labour Costs	External economic consultants will provide estimates of forecast real cost of material forecasts. Endeavour Energy will then consider whether it is
Customer Numbers	Customer growth will be forecast by aggregating the expected number of new net connections in greenfield developments and the existing network.
Maximum Demand	Estimated using our internally developed forecasting processes.
Route Line Length	Informed by our expectations of new development design and requirements and historical growth rates.
Productivity Factor	Informed by our expected savings associated with current and future efficiency and transformation initiatives.

It should be noted that the output growth factors listed in the table above (customer numbers, maximum demand, route line length) are those which underpin the AER's opex cost function modelling.

Operating expenditure forecast drivers

Endeavour Energy's operating expenditure forecast includes all costs required to inspect and maintain our network assets in accordance with our network procedures and standards. Our forecasting methodology seeks to derive efficient estimates of operating expenditure and is reflective of prudent and responsible network maintenance practices. This involves development of category level forecasts based on the outputs of the top-down OPEX model. An overview of our approach to key categories is provided in the following sections.

Network maintenance

Network maintenance expenditure is required to ensure that our network assets continue to provide their predetermined service capacity and quality and to achieve their useful life. The activities involved in each network maintenance cost category can be broadly grouped into the following maintenance activity descriptions:

- Vegetation Management: This work, mainly carried out by external contractors, reduces safety hazards and interruptions to supply on our overhead electricity network. Compliance with this policy is a critical

control measure associated with management of bushfire and community safety risk. Vegetation management must be done regularly to ensure a reliable and safe electricity supply. It must also be done in a way that is sensitive to environmental and community issues.

- Inspection/Investigation: Inspection of equipment (in both a programmed and ad-hoc manner) including assessment of tolerance parameters, identification of defects, post-fault investigations and other scheduled programs or patrols such as inspections for bushfire management or audit of environmental impact. Inspections may be intrusive or non-intrusive.
- Preventative Maintenance: Typically intrusive work carried out on a predetermined basis for the purpose of maintaining an asset in a satisfactory operational condition with respect to its prescribed performance parameters.
- Condition Based Maintenance: Typically intrusive work triggered by an inspection/investigation maintenance that has assessed the asset's performance parameters as having fallen outside of the predetermined tolerances. This includes the planned repair of defects.
- Fault and Emergency: Typically work triggered by any incipient or urgent and unpredicted failure, incident or event which is adversely impacting or may potentially impact on safety or the environment or cause the loss of supply or reduction in quality of supply to customers or impose operational constraints on the network.

Historical data and project level assessment is used to develop detailed category level forecasts for budgeting purposes (subject to the constraints of the overall top-down OPEX model forecast).

Network operation and business support

This operating expenditure group comprises of expenditure attributable (directly or indirectly) in supporting the operation of Endeavour Energy's network system. These network and corporate overhead costs are allocated and attributed in accordance with Endeavour Energy's Cost Allocation Methodology (CAM) as approved by the AER.

Category	Division:	Description of Division:
Network Overheads	Network Services	Responsible for activities associated with network program delivery, network control and emergency response.
	Asset Management	Manages the activities associated with asset strategy and planning, asset standards, customer connections and program management.
Corporate Overheads	Chief Executive Officer	Responsible for the leadership management of Endeavour Energy.
	Chief Financial Officer	Responsible for Finance, Treasury, Tax, Commercial & Decision Support, Network Regulation and Finance Transactions & Services (e.g. Payroll, Accounts Payable, Network Billing and Accounts Receivable).
	Strategy & Transformation	Manages activities relating to corporate strategy, and transformation strategy and program office
	Safety, Human Resources & Environment	Activities include Employee Relations, HR Operations, HS&E System & Reporting, Health Services & Injury Management, Safety & Environmental Services and HS&E Assurance & Improvements.
	Customer & Corporate Services	Responsible for Property & Fleet, ICT, Procurement & Logistics and customer and stakeholder management.
	Company Secretary	Company secretariat and responsible for activities relating to legal, governance, risk and compliance and internal audit.

Other operating expenditure

Remaining operating expenditure items that are not attributable to the previous categories are allocated as other expenditure. Expenditure items include debt raising, self-insurance and non-network alternative costs.

Self-insurance and debt raising costs will be set using benchmark costs. We will adopt the AER's method for the calculation of debt raising costs. That is, debt raising costs will be calculated by applying a benchmark debt raising unit rate to the debt portion of our regulated asset values. Self-insurance costs will be developed with reference to benchmark actuarial assessments for cost categories that are best managed through self-insurance. Non-network alternatives will be forecast on an individual project basis identified based on network need.

Appendix – Value Framework

Endeavour Energy

Endeavour Energy 2024-29
Expenditure Forecast Methodology Statement

Purpose

The value framework provides a consistent approach to assess and quantify the economic and financial value of all investments within Endeavour Energy's investment portfolio. This approach applies to all investments that require economic justification.

Introduction

Endeavour Energy is required to develop and manage a risk-assessed & optimised investment portfolio. This enables the efficient allocation of capital and operational expenditure to drive and maximise value for Endeavour Energy and its stakeholders.

To optimise the value of investments, we apply a consistent approach to quantify asset and network risk and benefits and determine the timing for investments based on the need and the best overall value provided by the portfolio. This is the basis of the value framework and is underpinned by:

- Using a rational economic approach to allow the comparison of dissimilar investments.
- Using a consistent and repeatable approach to assess all the benefits, risks, and cost of the investment.
- Ensuring that both financial and non-financial benefits are included, where their contributions are aligned to a common scale, and
- Measuring its alignment to the organisation's corporate strategy & risk appetite.

Value-Based Decision-Making

Endeavour uses a *Portfolio Optimisation Software Tool* (the **Optimisation Tool**) 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 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.

Value Measures, Value Functions and Value Drivers

A value measure is a characteristic that is used to determine the worth of an investment. Value measures are the different components that, when combined (via a value function), summarise the value of an investment.

Value measure categories are elements that contribute to the overall value of an investment. These include:

- Risk
- Benefit – including financial and non-financial benefits such as KPIs
- Cost
- Condition – for example, asset condition (health score)
- Resource – for example, number of hours of agent time saved
- Service measure – for example, SAIDI, SAIFI

Value Functions define the value of an investment and specify how to combine cost, benefits, condition, resources, risk mitigation, and service measures to calculate the overall merits of an investment alternative. This allows the organisation to put different weights on different investment drivers, for example, an increased emphasis on environmental risks will prioritise investments that promote sustainability and mitigate bushfire risk.

Value measures and value functions are value drivers for investments.

Value Measures and Strategic Objectives

Value measures are grouped to broadly align with the organisation's strategic objectives, namely:

- Safety and environment – ensuring asset replacement and augmentation projects aim to mitigate risk to the public and minimise adverse impact to the environment
- Customer and communities centric – ensuring network reliability and quality of service at an affordable price
- Performance – targeting operational excellence, achieving regulatory compliance and capital efficiency
- Growth through innovation – embracing technological innovation to grow the business and achieve intergenerational sustainability
- Employee engagement – providing the best place for work, the right tools and appropriate training to equip employees to thrive in their jobs.

The table below illustrates the alignment between value measures in the Endeavour Energy value framework and the organisation's strategic objectives. The list includes value measures that are relevant to the strategic objectives but excludes the financial metrics. Some value measures may align to more than one strategic objective. The full list of available value measures and the associated calculation methodology are detailed further below.

Value Measures	Strategic Objectives
Bushfire Risk, Environmental Risk, Employee & Contractor Safety Risk, Public Safety Risk, CO2 reduction	Safety and Environment
Change in Load Transfer Capacity, Complaint Risk, Compliance Risk, Customer Cost Savings, Customer Satisfaction Benefit, Customer Service Benefit, Cyber Security Risk, Reliability Risk (EUE), Renewable Capacity, Voluntary Load Curtailment	Customer and Communities
Financial Risk, Reputation Risk, STPIS, SAIDI, SAIFI	Performance
Energy Transition Enablement, Technology Innovation & Reuse Benefit, New Business Opportunity – Option Value	Growth Through Innovation
Business Continuity Risk, Employee Experience Benefit, Employee Productivity, Skills and Training	Employee Engagement

Value Functions – Regulatory Compliance and Shareholder Values

Two main value functions are set up to drive investment value from the perspective of regulatory compliance and shareholder values respectively. The Regulatory perspective is designated as the system default value function while the Shareholder perspective provides a different lens from business owners' perspective on the profitability of investments.

Each value function combines all relevant value measures to assess and compute the overall value that the Investment is bringing to the organization. These value functions can also be used to constrain portfolio optimisation with the aim of achieving a solution where everyone benefits. Investments are then optimised to bring the highest total value to the organization while satisfying financial, resource, service measure, and timing constraints.

The table below provides a high-level view of these value drivers. Refer Appendix A for the complete set of value measures and the associated value functions. If needed, additional value functions can be developed to drive investments differently by applying weightings to value measures.

Note that the Regulatory and Shareholder value functions are not mutually exclusive as some value measures are relevant from both shareholders and the regulator perspectives, the latter represents the interest of customers and the community.

Regulatory Compliance / Default Value Function)	Other Value Functions
• CAPEX Planned • CAPEX Reactive • OPEX Planned • OPEX Reactive • Contingency • Cost Avoidance - CAPEX • Cost Avoidance - OPEX • Cost Savings - CAPEX • Cost Savings - OPEX • Business Continuity Risk • Change In Load Transfer Capacity • Complaint Risk • Compliance Risk • Costs for Non RIT-D Proponent Parties • Customer Cost Savings • Customer Land Value • Customer Satisfaction Benefit • Customer Service Benefit • Cyber Security Risk • Data Collection, Sharing and Reuse • Decommissioning Costs • Difference In Timing of Unrelated Expenditure • Employee and Contractor Safety Risk • Employee Experience • Employee Productivity • Energy Transition Enablement • Environmental Risk • Financial Risk • Non-Network Option Provider Costs • Other Classes of Market Benefits • Planned Routine Maintenance • Public Safety Risk • Reliability Risk • Renewable Capacity • Technology Innovation & Reuse Benefit • Unplanned Corrective Maintenance • Voluntary Load Curtailment	• Ancillary Services • Demand Management Incentive Scheme (**DMIS**) • New Business Opportunity - Option Value • Regulatory Return - Total Recovery • Regulatory Return - Tax Allowance • Reputation Risk • Revenue Increase • Service Target Performance Incentive Scheme (**STPIS**) • Total Investment Cost - includes CAPEX Planned, CAPEX Reactive, OPEX Planned, OPEX Reactive, and Contingency • Unregulated Revenue

Financial Metrics

In addition to value functions, financial metrics are value measures used for financial performance measurements. These include financial costs and financial benefits but exclude risk mitigation or non-financial benefits. Financial metrics can provide useful insights on the return and profitability of an investment. Relevant financial performance measures such as the financial NPV, internal rate of return (**IRR**), benefit-to-cost ratio (**B/C ratio**) are calculated by the *Optimisation Tool* and output to the Investment Summary Report generated by the tool.

The table below shows the measures for financial benefits and financial costs that combined to form Endeavour Energy's financial metrics.

Financial Benefits	Financial Costs
• Service Target Performance Incentive Scheme (STPIS) • Cost Avoidance - CAPEX • Cost Avoidance - OPEX • Demand Management Incentive Scheme (DMIS) • Cost Savings - CAPEX • Cost Savings - OPEX • Financial Risk • Planned Routine Maintenance • Regulatory Return - Total Recovery • Regulatory return - Tax Allowance • Revenue Increase • Unplanned Corrective Maintenance	• CAPEX • CAPEX Planned • CAPEX Reactive • Total Investment Cost • OPEX • OPEX Planned • OPEX Reactive • Decommissioning Costs

Financial Analysis and Portfolio Optimisation

The value of an investment is determined using the discounted cashflow method, where incremental cashflows including all relevant costs, mitigated risk, and other financial and non-financial benefits, are discounted back to the period in which the investment is valued. This is the NPV of the investment. The standard NPV equation is:

$$NPV = \sum_{t=1}^{n} \frac{c_t}{(1+r)^t} - c_0$$

In this equation:

- c_t = net cash inflow during the period 't'
- c_0 = total initial investment costs
- r = yearly discount rate
- n = number of time periods (in years) included in the NPV calculation

- t = cashflow period in years

If time periods are in months (as used by the *Optimisation Tool*), the NPV of each value measure is expressed as follows:

$$NPV = \sum_{t=0}^{N} \frac{x_t}{(1 + r/12)^t}$$

Where:

- x_t = monthly value measure output for period 't' (for financial value measure, this will be the inflated output)
- r = yearly discount rate
- t = time periods in months starting from the first month of the current fiscal year (t=0) to the end of the investment calculation horizon (t=N)

Mitigated risk or benefits that can be derived from an investment is the difference between the baseline ("Do Nothing" scenario) and outcome risk or cost, as expressed in the formula:

Mitigated risk/benefit (*t*) = Baseline risk (*t*) – Outcome risk (*t*), where ***t*** = time periods

Endeavour uses the *Optimisation Tool* to perform the financial analysis on each investment where incremental cashflows are calculated at monthly intervals over a 60-year horizon. These investments form the long-term view of our investment portfolio. The *Optimisation Tool* then allows users to set multiple constraints to derive the optimised investment portfolio based on available resources and operational and performance targets. The optimised view helps inform the organisation's capital planning and identify areas and opportunities for improvements.

Value Measure	Description in Endeavour context	Calculation method	Value Function/ Driver
AGENT TIME SAVINGS BENEFIT	Financial benefits of saving end customers and internal IT Agents time during a service interaction	Agent Time Savings = (Duration in Minutes * Number of Customer Requests Impacted * Value of Agent Time * Benefit Likelihood/100)	Regulatory Compliance
ANCILLARY SERVICES	Ancillary services provided such as RERT, Reactive power support, Contribution to voltage/ PF support, and backup power capabilities	Input only - no calcs	Other Value
ASSET RISK MODEL	Developed for Predictive Analytics, it uses a 'Health and PoF' internal value measure to calculate Health, Bushfire Risk, Environment Risk, Financial Risk, Maintenance Risk, Safety Risk, VCR Risk, Financial PoF, Environmental PoF, Bushfire	The calculation methodology uses probability density functions to calculate the probability of failure for non-repairable assets. This forms the basis of all associated risk calculations.	Regulatory Compliance

Value Measure	Description in Endeavour context	Calculation method	Value Function/ Driver
	PoF, Reliability PoF, Safety PoF, SAIDI, SAIFI and STPIS	For repairable (linear) assets, the hazard rate probability of failure is used to calculate asset risks.	
BUSHFIRE RISK	Risk of bushfire resulting from asset failure	Risk = Asset PoF * failure starts fire likelihood * BushfireAssetTypeFactor1 * BushfireAssetTypeFactor2 * Asset proximity to vegetation LoC * Asset proximity to vegetation LoC * Bushfire cost of consequence (CoC) * BushfireAssetFactor1 * Favourable bushfire weather LoC * Time of day fire starts LoC * Bushfire suppression factor * BushfireSystemFactor1	Regulatory Compliance
BUSINESS CONTINUITY RISK	Business Continuity Risk measures the mitigation of a risk that would prevent the organization from continuing to deliver an acceptable level of service following a disruptive event	Business Continuity Risk = Employees Affected * Impact Level * Recovery Time / Hours per Year * Employee Productivity Value * Risk Likelihood	Regulatory Compliance
CAPEX	CAPEX	CAPEX = CAPEX Planned + CAPEX Reactive	Regulatory Compliance/ Other Value
CAPEX PLANNED	CAPEX Planned	Input only - no calcs	Regulatory Compliance/ Other Value
CAPEX REACTIVE	CAPEX Reactive	Input only - no calcs	Regulatory Compliance/ Other Value
CHANGE IN LOAD TRANSFER CAPACITY	Monetised value of added load transfer flexibility for the distribution network	Input only - no calcs	Regulatory Compliance
CO2 REDUCTION	Avoided GHG emissions expressed in tonnes of CO2 equivalent (tCO2e). It includes contributions from avoided SF6 releases and power savings	CO2 Reduction = Avoided SF6 Releases * SF6 to CO2 Conversion Factor + Power Savings * CO2 per MWh	Regulatory Compliance
COMPLAINT RISK	Impact of proactive investment on the volume and severity of complaints based on the cost of complaint handling	Risk = Number Complaint Enquiry * Projected rate + RHL * RHL Rate + Number Level 1 * Level1Rate + Number Level 2 * Level2Rate +Number Level 3 * Level3Rate	Regulatory Compliance

Value Measure	Description in Endeavour context	Calculation method	Value Function/ Driver
COMPLIANCE RISK	Cost to the company due to Endeavour breaking the law and/or breaching its licence conditions	Risk = PoF * (Size of Investigation + Safety Legislation Breach + Environmental Legislation breach + NEM Breach of Compliance + Litigation	Regulatory Compliance
CONTINGENCY	The costs associated to the Contingency Account in the forecast	Input only - no calcs	Regulatory Compliance/ Other Value
COST AVOIDANCE - CAPEX	Financial benefits to the organization in the form of annual CAPEX Cost avoidance (a form of financial subsidy)	Cost Avoidance CAPEX = CAPEX Cost Savings * Benefit Likelihood	Regulatory Compliance
COST AVOIDANCE - OPEX	Financial benefits to the organization in the form of annual OPEX Cost avoidance (a form of financial subsidy)	Cost Avoidance OPEX = OPEX Cost Savings * Benefit Likelihood	Regulatory Compliance
COSTS FOR NON RIT-D PROPONENT PARTIES	Costs For Non RIT-D Proponent Parties measures the additional project costs not captured by RIT-D proponents but are incurred by other market participants because of a RIT-D project. This value measure assigns a positive value to investments which help mitigate a portion of these costs	Input only - no calcs	Regulatory Compliance
COST SAVINGS - CAPEX	Financial benefits to the organization in the form of annual CAPEX cost savings	Financial Benefits - CAPEX = (CAPEX Cost Savings - CAPEX Cost Increase) * Benefit Likelihood	Regulatory Compliance
COST SAVINGS - OPEX	Financial benefits to the organization in the form of annual OPEX cost savings	Financial Benefits - OPEX = (OPEX Cost Savings - OPEX Cost Increase) * Benefit Likelihood	Regulatory Compliance
CUSTOMER COST SAVINGS	Financial benefits that customers will receive because of the investment, e.g., wholesale price suppression, ancillary services price suppression, avoided transmission costs, DLF or DUOS charges	Customer cost savings = Expected annual customer cost savings * Likelihood of benefits realised	Regulatory Compliance
CUSTOMER LAND VALUE	Increase in customer land value due to undergrounding of mains assets	Input only - no calcs	Regulatory Compliance
CUSTOMER SATISFACTION BENEFIT	Monetised impact of improving Endeavour's brand value across a portion of the customer base. Same as Public perception benefit	Benefit = Value to increase NPS score by 1 * Percentage of customers impacted * Benefit likelihood	Regulatory Compliance

Value Measure	Description in Endeavour context	Calculation method	Value Function/ Driver
CUSTOMER SERVICE BENEFIT	Financial benefits of saving End Customers and internal IT Agents time during a service interaction	Measure = (CallWaitsReducedBelowSTPIS Threshold / Total Calls) * 100 * CS_STPIS	Regulatory Compliance
CUSTOMER TIME SAVINGS BENEFIT	Financial benefits of saving end customers time in a service interaction	Customer Time Savings = (Duration in Minutes * Number of Customer Requests Impacted * Value of Customer Time * Benefit Likelihood/100)	Regulatory Compliance
CYBER SECURITY RISK	Mitigation of the risk of cyber security breaches. Used to capture the multi-dimensional aspects of an Investment/Project that impact on cyber security concerns by applying the corporate risk matrix	Cyber Security Risk = Risk Consequence * Risk Likelihood	Regulatory Compliance
DATA COLLECTION, SHARING AND REUSE	Data Collection, Sharing & Reuse measures the value of enhancements to the organization's data landscape. This includes hardware and software contributing to availability of valuable information, reporting and other business intelligence usages	Data Collection, Sharing & Reuse = Contribution to Data Sharing Reuse * ((Capture New Data Weight * Capture New Data) + (Speed Frequency Data Access Weight * Speed Frequency Data Access) + (Data Utility Level Weight * Data Utility Level) + (Number Users Data Use Weight * Number Users Data Use) + (Accuracy Of Data Weight * Accuracy Of Data) + (Data Tracking History Over Time Weight * Data Tracking History Over Time)) * CAPEX Spend	Regulatory Compliance
DECOMMISSIONING COSTS	The expected costs associated with taking equipment offline and assigns a positive value to investments which result in a reduction of this expense This category in the RIT-D process ensures decommissioning costs are captured in the cost/benefit assessment	Input only - no calcs	Regulatory Compliance
DEMAND MANAGEMENT INCENTIVE SCHEME (DMIS)	Value of and eligibility for DMIS reimbursement	Input only - no calcs	Other Value
DIFFERENCE IN TIMING OF UNRELATED EXPENDITURE	Benefits of avoided intervention costs	Input only - no calcs	Regulatory Compliance

Value Measure	Description in Endeavour context	Calculation method	Value Function/ Driver
ELECTRICITY ENERGY LOSSES	Monetised value of avoided electrical energy losses in the distribution system	Input only - no calcs	Regulatory Compliance
EMPLOYEE EXPERIENCE	Employee Experience Benefit measures the fiscal impact of influencing employee turnover or attraction of new employees. It is intended for use in a value function, where the avoided risk is a positive contributor to investment value	Employee Experience Benefit = ((Number of Candidates Attracted * Workplace Impact On Attractiveness * Value per Candidate Attracted) + Number of Employees Affected * Workplace Impact On Productivity * Employee Cost per Year) + (Number of Employees At Risk Of Leaving * Workplace Impact On Productivity * Employee Cost to Replace)) * Benefit Likelihood	Regulatory Compliance
EMPLOYEE PRODUCTIVITY	Employee Productivity measures the improvements in working conditions and employee productivity that can be achieved by executing the Investment	Employee Productivity = ((Field Employee Costs Saved + Office Employee Costs Saved + Manager Costs Saved) * Probability Of Repurposing)) - (Field Employee Additional Costs + Office Employee Additional Costs + Manager Additional Costs)	Regulatory Compliance
ENERGY SAVINGS	Value of efficiency power saving benefits	Energy Savings Value = Benefit Likelihood * Power Savings * CO2 per MWh * Cost per tCO2e	Regulatory Compliance
ENERGY TRANSITION ENABLEMENT	To capture value of investment that are conducive to transitioning to DSO and renewable/ clean energy future	Input only - no calcs	Regulatory Compliance
ENVIRONMENTAL RISK	Risk of SF6 emissions and oil leaks due to asset failure. Covers sustainability	Risk = Oil Risk + SF6 Risk Environmental Risk Value = (Baseline $_{Oil / SF6}$ – Outcome $_{Oil / SF6}$) + Energy Savings Value Oil Risk = Volume Of Oil Spilled * Impacted Region * Site Sensitivity * Site Sold Factor * Number Of Assets * PoF * Likelihood of Oil Spill SF6 Risk = SF6 Qty (kg) * SF6 Unit Cost * Number of Assets * PoF * Likelihood of SF6 Leakage	Regulatory Compliance
FINANCIAL RISK	Reactive replacement due to asset failure, and annual maintenance cost for an ageing asset	Risk = (Repairs + Replacement) * No. Assets * PoF Replacement = Replacement Cost	Regulatory Compliance

Value Measure	Description in Endeavour context	Calculation method	Value Function/ Driver
		Repairs = (Duration Of Repair * Hourly Rate) *NumOfPeople	
NEW BUSINESS OPPORTUNITY - OPTIONS VALUE	Return of investment in technologies that have a future value when scaling up or installing multiple units if test installation proves successful. Measured by call option value (covers future enablement benefits)	Call option price = ((normal distribution of D1) * Current stock price) - ((Normal distribution of D2) * Strike price * (e ^ (risk free interest rate * time to maturity))) where D1 and D2 is dependent on the volatility from the project technology class	Other Value
NON-NETWORK OPTION PROVIDER COSTS	The expected costs associated with non-network providers. It assigns a positive value to investments that help mitigate a portion of this expense (RIT-D proponent costs)	Input only - no calcs	Regulatory Compliance
OPEX	OPEX	OPEX = OPEX Planned + OPEX Reactive	Regulatory Compliance/ Other Value
OPEX PLANNED	OPEX Planned	Input only - no calcs	Regulatory Compliance/ Other Value
OPEX REACTIVE	OPEX Reactive	Input only - no calcs	Regulatory Compliance/ Other Value
OTHER CLASSES OF MARKET BENEFITS	Market benefits not otherwise captured in the value of EUE - required for RIT-D	Input only - no calcs	Regulatory Compliance
REGULATORY RETURN - DEPRECIATION	Regulatory Return for adding assets onto the RAB	Based on PTRM Model	Other Value
REGULATORY RETURN - DEPRECIATED VALUE	Regulatory Return for adding assets onto the RAB	Based on PTRM Model	Other Value
REGULATORY RETURN - RETURN OF CAPITAL	Regulatory Return for adding assets onto the RAB	Based on PTRM Model	Other Value
REGULATORY RETURN - RETURN ON CAPITAL	Regulatory Return for adding assets onto the RAB	Based on PTRM Model	Other Value

Value Measure	Description in Endeavour context	Calculation method	Value Function/ Driver
REGULATORY RETURN - TAX ALLOWANCE	Regulatory Return for adding assets onto the RAB	Based on PTRM Model	Other Value
REGULATORY RETURN - TOTAL RECOVERY	Regulatory Return for adding assets onto the RAB	Based on PTRM Model	Other Value
RELIABILITY RISK	Expected unserved energy for an outage and its associated consequence of failure	Risk = Peak load * Load Factor * PoF * Adjustment factor (1.3) * outage duration * VCR ($/MWh)	Regulatory Compliance
RENEWABLE CAPACITY	Financial benefits of increased renewable capacity resulting from the investment, assuming customers would pay more for clean, renewable energy (future enablement). Covers Hosting Capacity, Value of Distributed Energy Resources (VaDER), and Community Resilience	Renewable capacity = Renewable capacity added or removed (MWh) * Renewable capacity value per MWh * Benefits likelihood	Regulatory Compliance
REPUTATION RISK	Cost of adverse impact due to public grievances	Risk = Risk Consequence * Risk Likelihood	Other Value
REVENUE INCREASE	Financial benefits to the organization in the form of annual revenue increases (including unregulated revenue)	Revenue Increase Benefit = Annual CAPEX Cost Savings * Benefit Likelihood	Other Value
SAFETY RISK - EMPLOYEES & CONTRACTORS	Risk to Endeavour employees and contractors because of asset failure	Risk = LoC * CoC * Disproportionate factor * PoF CoC = No. Of Casualties * VSL * Compensation Amount factor Compared to fatality LoC = Injury due to Person Being Present (Level 1...4 Employee)	Regulatory Compliance
SAFETY RISK - PUBLIC	Risk to the public because of asset failure	Risk = LoC * CoC * Disproportionate factor * PoF CoC = No. Of Casualties * VSL * Compensation Amount factor Compared to fatality LoC = Injury due to Person Being Present (Level 1...4 Public)	Regulatory Compliance
SAIDI RURAL	SAIDI - Rural - EUE Model Calculates the rural per person SAIDI value	SAIDI - Rural - EUE Model = NumCurrentAssets * Failures Per year * outage duration / totalCustomers * (1 - networkPercentUrban)	Regulatory Compliance

Value Measure	Description in Endeavour context	Calculation method	Value Function/ Driver
SAIDI URBAN	SAIDI - Rural - EUE Model Calculates the rural per person SAIDI value	SAIDI - Rural - EUE Model Calculates the rural per person SAIDI value	Regulatory Compliance
SAIFI RURAL	SAIFI - Rural - EUE Model Measures the per person SAIFI Rural Value	SAIFI - Rural - EUE Model = averageFailuresPerYear / totalCustomers * (1 - networkPercentUrban)	Regulatory Compliance
SAIFI URBAN	SAIFI - Urban - EUE Model Measures the per person SAIFI Urban Value	SAIFI - Urban - EUE Model = averageFailuresPerYear / totalCustomers * networkPercentUrban	Regulatory Compliance
SKILLS AND TRAINING	Value gained from training and beneficial programs for employees	Input only - no calcs	Regulatory Compliance
STPIS	Financial incentives for EE to maintain or improve its service performance	Risk = (Customer Minutes Interruption per Outage Urban * System SAIDIIncentiveRateUrban * Customers Number Urban * VCR) + (Customer Interruption per Outage Urban * System SAIFIIncentiveRateUrban* Customers Number Urban * VCR) + (Customer Minutes Interruption per Outage Rural * System SAIDIIncentiveRateRural * Customers Number Rural * VCR) + (Customer Interruption per Outage Rural * System SAIFIIncentiveRateRural* Customers Number Rural * VCR)	Other Value
TECHNOLOGY INNOVATION AND REUSE BENEFIT	The monetised benefit of reusing technology or investing in technology that can be reused.	Technology Reuse Benefit = Total Investment Spend * Plans For Reuse * Percent Project is Enabler	Regulatory Compliance
TOTAL INVESTMENT COST	Total investment cost	Total Investment Cost = CAPEX + OPEX + Contingency	Regulatory Compliance/ Other Value
UNREGULATED REVENUE	Additional revenue generated for Ausconnex	Input only - no calcs	Other Value
VEHICLE MODEL (Note: This model has multiple measures)	Developed for Predictive Analytics, it models the date in which a vehicle should be replaced	The Copperleaf Vehicle model considers In-Service date, replacement cost, average usage, operating cost, depreciation rate.	Regulatory Compliance

Value Measure	Description in Endeavour context	Calculation method	Value Function/ Driver
VOLUNTARY LOAD CURTAILMENT	Monetised value of avoided need for voluntary load shedding - required for RIT-D	Input only - no calcs	Regulatory Compliance

Glossary

Endeavour Energy

Acronym	Meaning
AER	Australian Energy Regulator
ACS	Alternate Control Services
ADMS	Advanced Distribution Management System
AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
ANS	Ancillary Network Services
ASP	Accredited Service Provider
ATO	Australian Taxation Office
Augex	Augmentation expenditure
BESS	Battery Energy Storage Systems
CALD	Culturally and Linguistically Diverse
Capex	Capital Expenditure
CCP	Consumer Challenge Panel
CECV	Customer Export Curtailment Value
CESS	Capital Efficiency Sharing Scheme

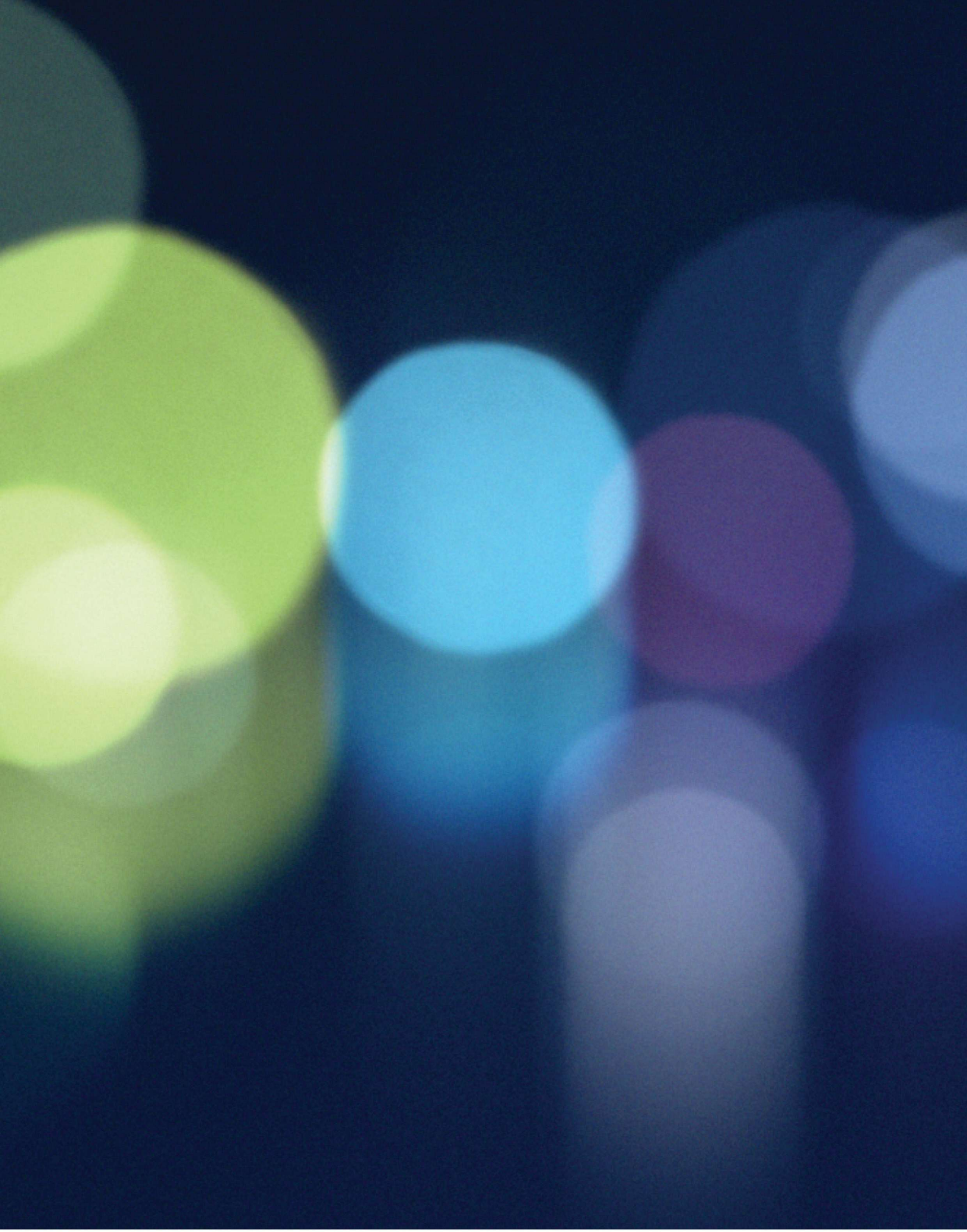
Acronym	Meaning
CFI	Case for investment
CSIRO	Commonwealth Scientific and Industrial Research Organisation
CSIS	Customer Service Incentive Scheme
CSR	Corporate Social Responsibility
Ctrl	Control
DER	Distributed Energy Resources
DERMS	Distributed Energy Resource Management System
DMIA	Demand Management Innovation Allowance
DMIS	Demand Management Incentive Scheme
DNSP	Distribution Network Service Provider
DOE	Dynamic Operating Envelope
DRC	Debt raising costs
DSO	Distribution System Operator
DUOS	Distribution Use of System
DVMS	Dynamic Voltage Management System

Acronym	Meaning
EBSS	Efficiency Benefit Sharing Scheme
ERC	Equity raising costs
ESB	Energy Security Board
ESG	Environmental and social governance
EVs	Electric Vehicles
F&A	Framework and Approach
FCAS	Frequency Control Ancillary Support
FGRG	Future Grid Reference Group
FLISR	Fault location, isolation, and service restoration
GRESB	Global Real Estate Sustainability Benchmark
GRP	Gross Regional Product
GSL	Guaranteed Service Level
GW	Gigawatt
GWS	Greater Western Sydney
IAP2	International Association of Public Participation

Acronym	Meaning
ICT	Information and Communication Technology
ISP	Integrated System Plan
kV	Kilovolt
kWh	Kilowatt hour
LED	Light-emitting diode
LRMC	Long-run marginal cost
LV	Low Voltage
MD	Maximum Demand
MPFP	Multilateral partial factor productivity
MTFP	Multilateral total factor productivity
MVA	Million Volt-Amps
MW	Megawatt
MWh	Megawatt Hours
NEM	National Electricity Market
NER	National Electricity Rules

Acronym	Meaning
NPV	Net-present Value
OEF	Operating Environment Factor
Opex	Operating Expenditure
PCSC	Peak Customer and Stakeholder Committee
PTRM	Post-tax Revenue Model
RAB	Regulated Asset Base
RAP	Reconciliation Action Plan
Repex	Replacement Expenditure
ReRG	Retailer Reference Group
REZ	Renewable Energy Zone
RFM	Roll Forward Model
ROR	Rate of Return
RORI	Rate of Return Instrument
RRG	Regulatory Reference Group
SAP	Systems, applications, and products

Acronym	Meaning
SAPS	Stand-Alone Power Systems
Solar PV	Solar Photovoltaic
STPIS	Service Target Performance Incentive Scheme
ToU	Time of Use
TSS	Tariff Structure Statement
UAV	Unmanned aerial vehicle
VPN	Victorian Power Networks
VPP	Virtual Power Plant
WACC	Weighted Average Cost of Capital
WARL	Weighted Average Remaining Life



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