

# Preliminary Proposal

Endeavour Energy 2024-2029  
Regulatory Control Period

April 2022



Endeavour  
Energy

Powering communities for a brighter future

## Welcome to our Preliminary Proposal

**Servicing our communities is at the heart of everything we do. We are driven to be amongst the best performing electricity network in Australia.**

Our mission is to balance our core service commitments of safety, affordability and reliability with a transformation from a traditional 'poles and wires' network to a facilitator of customer technologies. We want to efficiently deliver a clean energy future including smart meters, batteries, electric vehicles and solar that will enable customers to generate, store, share and sell back electricity into the grid. We are also responding to a changing climate and increasing weather extremes to improve community resilience. We are delivering this transformation while enabling extraordinary growth in our regions as Greater Western Sydney transforms into a hub of industry and innovation surrounding the Western Sydney International Airport.

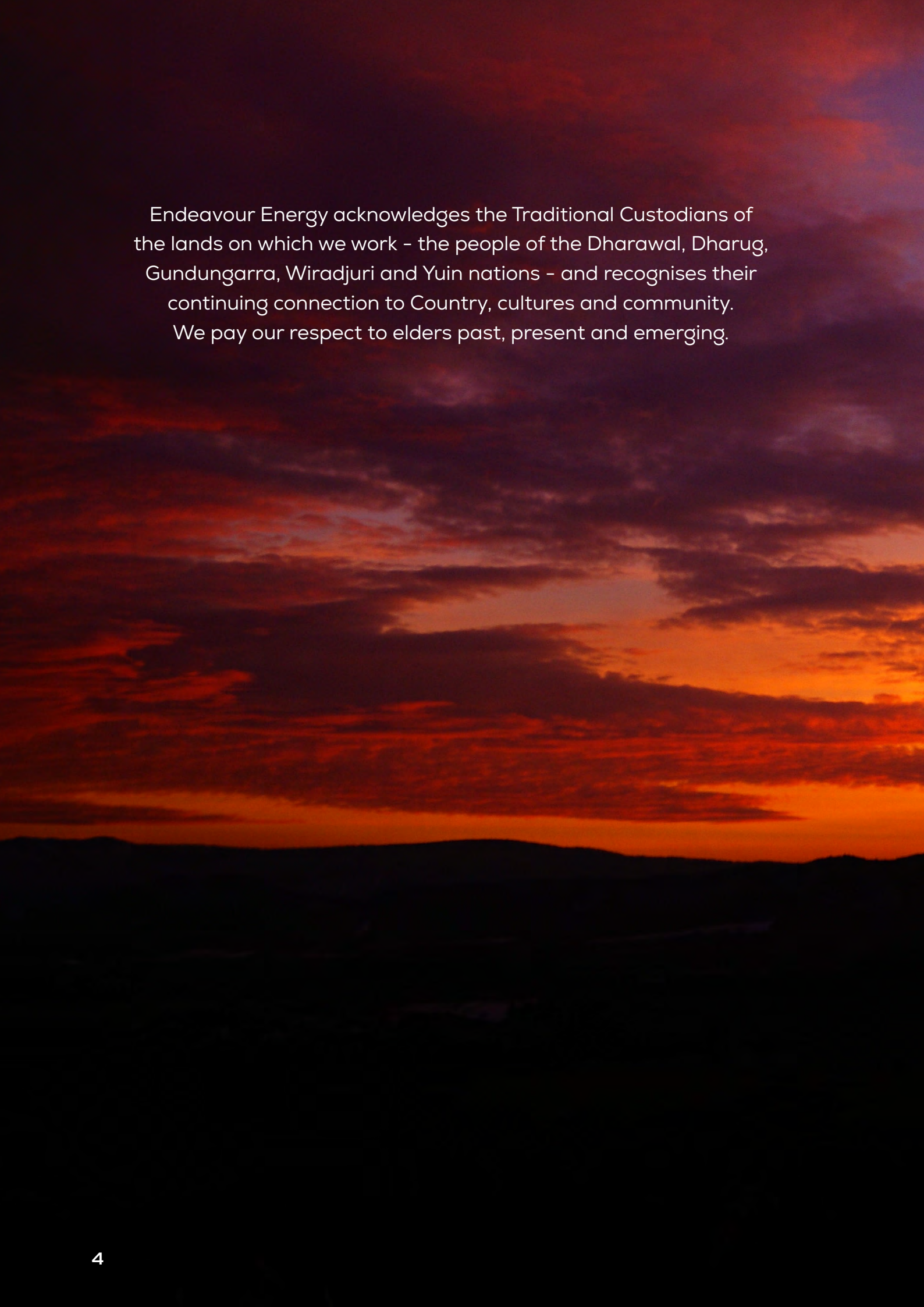
We want to get this balance of dependability and vision right, and we need your input to help us plan investments that deliver on our core promises and help us deliver our vision, and your vision for the future.



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Endeavour Energy acknowledges the Traditional Custodians of the lands on which we work – the people of the Dharawal, Dharug, Gundungarra, Wiradjuri and Yuin nations – and recognises their continuing connection to Country, cultures and community. We pay our respect to elders past, present and emerging.







# A welcome from our CEO and Chair

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Australia's energy sector is amid an unprecedented transformation, with a shift from fossil fuels to renewables and from large scale generation to distributed bi-directional generation. This is increasingly delivered through energy generation by rooftop solar panels and soon home batteries and electric vehicles. In my view, this transition is opening opportunities for the future performance of the entire energy supply chain. Our research suggests that customers have evolving expectations of their energy supply and want to be confident about the energy system's performance during this period of transformation.

Every five years, Endeavour Energy submits a proposal to the Australian Energy Regulator (AER) that includes our capital and operating plans and the funding needed to deliver a safe, secure, and reliable electricity network.

The AER reviews our proposal, considers feedback from interested parties, and then decides the fair revenue we can recover from customers.

Our proposal is vital to affordability and the long-term interests of electricity consumers. The revenue that is finally determined is used to build and maintain an electricity network that powers economic growth, creates jobs, keeps communities safe and productive and enables customers' energy choices and lifestyles beyond the five-year regulatory period.

Ultimately, our proposal affects the lives of 2.6 million people today living and working across five Aboriginal nations in Sydney's Greater West, the Blue Mountains, the Southern Highlands, the Illawarra and the South Coast regions of NSW. By 2029 this will increase to over 2.8 million people and businesses.

Our purpose is to power communities for a brighter future. Our objective is to provide a service that meets the long-term interests of customers and reflects their priorities and preferences. We're in the process of preparing our plans to achieve this objective, ahead of a submission to the AER by 31 January 2023. Based on the feedback we have received to date from customers, we have developed our initial plan in accordance with the following priorities:

## We will balance ongoing affordability for customers with investments that address customers' long term interests



Meeting core customer expectations for a safe, affordable and reliable electricity supply



Supporting the sustainable growth of our communities



Providing a resilient network for the community against increasing external hazards



Enabling customers future energy choices for a sustainable future

A summary of key service outcomes and how to engage in the development of our plan is provided on the following pages. I'd like to invite your comments by 30 June 2022 on our Preliminary Proposal and the key elements of our plans and welcome your continued interest and participation in this process.

## **We are supporting customers transition in the energy system**

Endeavour Energy recognises that the grid will play a foundational role in the achievement of net zero emission targets within NSW and the country. This is a significant challenge, integrating 100% clean energy means more variable generation, significantly more energy storage to balance loads, and a much more dynamic and bi-directional load profile.

To do this we will play a leading role in optimising the use of the distributed resources on our network. We will link smart, responsive households and businesses, aggregated as active market participants, to efficiently balance loads and deliver essential network services. We will enable flexible demand to manage two-way energy flow across our growing suburbs, cities, and regions in real time. And where necessary we will provide additional capacity to enable the decarbonisation of industry including the increased electrification of clean, alternative fuel production.

In delivering these outcomes, Endeavour Energy will become a central, intelligent orchestrator of a dynamic affordable energy system, integrating and sharing data across networks, customers and other market participants and platforms to the benefit of our customers.

## **Investments over the next five years provide a crucial steppingstone to the future**

Our 2024-29 Regulatory Proposal must move us in the direction of the future network, making prudent investments while retaining sufficient optionality over the long term. To inform priorities, our investment plan is being designed by Endeavour Energy and our key stakeholders. In developing a Preliminary Proposal, Endeavour Energy aims to undertake meaningful engagement that delivers our purpose of powering communities for a brighter future, to develop a 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 Australian Energy Regulator (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 priority is to provide the outcomes our customers want, which we will better understand through engagement**

Our priority is to develop a proposal that delivers the outcomes that customers want and value. We have commenced a detailed engagement program with customers and their advocates to co-design key elements of our proposal. Through engagement with our customers and stakeholders along the way, we are striving to improve the efficiency and robustness of the engagement process, for Endeavour Energy, our customers, stakeholders and the AER.

We are aiming high. From the Board down, we are committed to listening, identifying best practice, learning from past experience, utilising international standards and building a culture of effective engagement recognised across the industry. This paper reflects the feedback we have received to date and represents a starting point for more detailed engagement over the coming months. We will provide a number of opportunities for customers to provide their insights and prioritise this feedback in developing this proposal further.

We invite you to have your say on how you want us to meet your electricity needs into the future.



**Guy Chalkley**  
Chief Executive Officer



**The Hon. Robert Webster**  
Chair

# How to share your feedback

## Your Guide to our Preliminary Proposal

Our Preliminary Proposal articulates a vision for our customers' energy future that is based on early customer insights, considers the context of Australia's changing energy landscape, and outlines how we can invest to deliver that vision.

This guide has been prepared to help readers understand and critically evaluate our Preliminary Proposal against our objective to prudently and efficiently invest in the energy outcomes that our customers want; and to encourage readers to provide their feedback on how our developing plans address the customer preferences we have heard so far.

## Who's reading this document?

We understand that a broad range of customers and stakeholders will have an interest in our plans, from highly informed, technically skilled energy advocates to government agencies and individual businesses and residential customers.

We have structured this document with layers of information to help as many interested parties as possible consider our plans according to their interest and expertise, from high level summaries to in-depth technical and economic analysis.

## For customers

We recommend that individual customers consider the questions on [p. 13](#) to help decide which questions they are interested in answering, and which parts of this document they might want to look at more closely.

Interested customers would benefit from information about who we are and what we do on [pp. 19-20](#). Please also look at the customer preferences for energy services that we learned from early customer research on [p. 43](#) to see if these are in line with your own preferences.

The key outcomes we are trying to deliver for customers and the impacts to average bills (residential and small to medium businesses) can be found on [pp. 46-50](#). And of course, ways to get involved in specific parts of our ongoing engagement program are set out on [p. 73](#).

## For informed advocates and agencies

This document provides a headline summary of our investment themes and potential investments on [p. 15](#).

It also provides deep contextual advice regarding our core business purpose ([Chapter 2](#)) the external drivers affecting the energy sector ([Chapter 3](#)), and the customer preferences and engagement practices that underpin this Preliminary Proposal ([Chapter 4](#)), and the customer outcomes we are seeking to achieve ([Chapter 5](#)).

If you want to jump into a technical assessment of the regulatory building blocks of our proposal, please see [Chapter 6](#).

## Questions to keep in mind as you read the Preliminary Proposal

To help ensure that we understand and deliver on our customers' priorities, we have posed questions throughout the document that we welcome your feedback on.

Additionally, we welcome feedback on whether we have provided you with enough information to comment on our proposal.

## How you can respond

There are many ways you can have your say about the Preliminary Proposal:

1. You can write a response and lodge it via email [yoursay@endeavourenergy.com.au](mailto:yoursay@endeavourenergy.com.au)
2. Or if you would prefer to provide your comments verbally, please email [yoursay@endeavourenergy.com.au](mailto:yoursay@endeavourenergy.com.au) to make a time for you to share your feedback with us personally.





## Making a submission

If you make a submission, please be sure to start by explaining who you are, who you are representing (if you are writing on behalf of a business, organisation, or other group) and which part of our network area you reside or do business in.

This information will help us to understand your feedback in the context of the challenges of your community.

To ensure your feedback can be fully considered, written submissions to the Preliminary Proposal must be received by 30 June 2022. All submissions to Endeavour Energy should be considered public.

## How we will use your feedback

The feedback we receive in response to this Preliminary Proposal and during the upcoming Prioritise Phase of our engagement program will continue to shape our plans for the 2024-29 regulatory period.

Once we have received and reviewed all the feedback, we will share a report that summarises what we have heard and how we will be acting on that feedback.

We will then update our positions in response to your feedback and as better information becomes available. This will be reflected in our updated forecasts which will be included in our updated proposal forecasts in October 2022.

Our formal proposal will then be lodged to the Australian Energy Regulator in January 2023.

# : 1. Our proposal at a glance

## Overview



# Our plans for 2024 and beyond

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We are investing in your future. While the next 5-year regulatory review period starts in 2024 and finishes in 2029, Endeavour Energy is planning for the critical investments required in the long term that can support our regions, the energy transition and deliver our vision of powering communities for a brighter future.

Importantly, our investment planning takes shape at a time of unprecedented growth, including the single largest planning, investment and delivery partnership in the history of Australia, the *Greater Cities Commission*. Our investment is focused on:

- **Deploying the enabling energy infrastructure in Greater Western Sydney and our regions:** Endeavour Energy is actively supporting and enabling the unprecedented growth of Greater Western Sydney through the efficient, timely and innovative deployment of critical electricity infrastructure for this booming region. Western Sydney is undergoing rapid growth and transformation as a hub of industry, innovation and 'liveable' urban development, attracting local and global companies and hundreds of thousands of people drawn to the enormous potential of the Western Parkland City and the Western Sydney International (Nancy-Bird Walton) Airport that serves it.
- **Supporting the net zero economy and rapidly changing customer technology choices:** Endeavour Energy is actively supporting the pursuit of a net zero economy which will transform the way our customers generate and consume energy. As customers take up technologies such as solar, batteries and electric vehicles, the network will need to evolve through investment that allows for two-way energy flows and active market participation from customers and third parties. Sophisticated digital platforms will be deployed to interact with a more dynamic, integrated network that orchestrates the low carbon energy system.

- **Adapting to a changing climate and extreme weather events:** Endeavour Energy has developed its plans to support partnerships to improve community resilience and deploy the critical infrastructure that can provide services that continue to meet high standards in the face of a changing and more extreme climate. Climate modelling and our own experiences suggests that extreme weather events will continue to increase in both frequency and intensity over the coming decades despite global efforts to reduce carbon emissions. These critical investments will reduce the impact of climate change-related weather events and increasing urban heat on our customers' electricity supply.
- **Actively driving efficiency and insights in the electricity-digital age:** The digitisation of the electricity grid enables insights, efficiencies, and new markets to emerge that support customers choice in new technologies. The introduction of new digital technologies and enhanced data capabilities transform the risk, roles, required skills and location of our future workforce. At the same time, we must invest to reduce the impact of increasing cyber-attacks as they become more sophisticated, targeted and can cause disruption of the energy supply.
- **Maintaining the high-quality level of service our customers seek:** Efficiently upgrading our existing electricity infrastructure is core to maintaining the high-level of service reliability and emergency response our existing customers expect of us.

Our plans are detailed throughout this proposal. We look forward to hearing from you how we can best deliver the energy services you need, now and into the future.





## Purpose of this Preliminary Proposal

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We are committed to developing a Regulatory Proposal that reflects the needs and priorities of our customers. To help us achieve this, we have developed a customer engagement plan that builds on our previous experience, best practice learnings from other networks and industries and the AER's expectations, which are outlined in the AER's Better Resets Handbook.

A key feature of our engagement program is the establishment of our Regulatory Reference Group (RRG), which comprises Endeavour Energy leaders and expert customer advocates who represent a diverse and broad set of customer views and interests.

With these key stakeholders, we are co-designing key elements of our proposal to meet the long-term interests of customers. In the 'Customer insights and engagement' (**Chapter 4**), we provide a more detailed outline of our multifaceted engagement program and the key phases.

This Preliminary Proposal is a key milestone in our engagement program, bringing our 'discover' and 'explore' phases to an end, introducing the 'prioritise' phase.

To date, we have focused on establishing our engagement plan, business narrative and researching current and future customer preferences, which all underpin this Preliminary Proposal.

This Preliminary Proposal signals a shift towards discussions about key proposal inputs and outputs, and the potential trade-offs customers will have to consider for the delivery of the future energy service.

Endeavour Energy is committed to delivering a customer-focused proposal. In doing so, we are striking a balance between establishing a Preliminary Proposal that provides customers with enough information to participate in an informed and meaningful way and collaborating with customers in the development of our plans. The forecasts within this paper are therefore a strong starting point for that informed customer discussion.

In the table on the following page, we provide an overview of each section of this Preliminary Proposal and some of the guiding questions we would appreciate your feedback on those which are of interest to you.

Section	What is the purpose of this section and who is it for	What we are seeking your feedback on
<b>Who we are (p. 18)</b>	This section is for those who want to know more about what our role is, the key activities we undertake, who we serve and how we have been performing in recent years.	<ol style="list-style-type: none"> <li>1. Have we clearly communicated Endeavour Energy's business and purpose?</li> <li>2. Do you understand your relationship to Endeavour Energy (as a residential customer, business customer, customer advocate or stakeholders)?</li> <li>3. Does your understanding of who we are and how we relate to you enable you to provide informed feedback about our plans for our customers' energy future?</li> </ol>
<b>Australia's changing energy landscape (p. 24)</b>	This section is for those who wish to understand the external forces that we have identified through our research and with our stakeholders impacting Endeavour Energy and its customers. These are events outside of the control of Endeavour Energy that we will need to manage and respond to over the coming years.	<ol style="list-style-type: none"> <li>4. Have we identified the key emerging priorities and trends within the Australian energy landscape?</li> <li>5. To what extent will external forces such as population growth, extreme weather events and the renewable energy transformation, impact your expectations of Endeavour Energy?</li> <li>6. How should Endeavour Energy be responding to these changes?</li> </ol>
<b>Customer insights and engagement (p. 36)</b>	This section is to outline our commitment to customer engagement and our intended approach for improving our customer engagement focus and to deliver a proposal that is reflective of customer feedback. It is for those who wish to provide feedback on the quality of our engagement to date, and our plans moving forward. It is also for those interested in understanding the preliminary insights we have gained from our customer research.	<ol style="list-style-type: none"> <li>7. Are we engaging with the right people, at the right time about the right issues?</li> <li>8. Is there anything missing from the feedback we have gathered, the way we are using it in developing this proposal?</li> </ol>
<b>Proposed 2024-29 revenue &amp; average customer bills (p. 44)</b>	This section is for those interested in the key outcomes and outputs associated with our preliminary forecasts and positions. The focus being to ensure the 'sum of the parts' produces overall outcomes that meet customers' expectations.	<ol style="list-style-type: none"> <li>9. What are the outcomes that matter most to you or the customers you represent?</li> <li>10. Does this Preliminary Proposal reflect priorities and outcomes that are in customers' long-term interests, while suitably balancing reliability, affordability, and safety?</li> </ol>
<b>Proposed 2024-29 forecasts (p. 52)</b>	This section is for those interested in reviewing our preliminary inputs and positions at a more detailed level for each of the Regulatory Proposal building blocks (eg expenditure, rate of return and depreciation) and constituent decision areas (eg tariffs, service classification and pass-throughs).	Please refer to this section for a more detailed listing of questions (11 through 26) by topic area, <b>refer to p. 53.</b>

We will update our positions in response to the feedback we receive, and as better information becomes available. A period of intense engagement follows the release of this Preliminary Proposal, after which we will publish our updated forecasts in October 2022. This will demonstrate how we have amended our proposal based on the feedback we have received and in response to improved information. It will also highlight where further discussions and detailed AER review are required on matters where agreement may not be reached. Our formal proposal will then be lodged with the AER for review in January 2023.

Our intended approach is pictured below

## Engagement process

	Stage 1 – Discover	Stage 2 – Explore	Stage 3 – Prioritise	Stage 4 – Refine
	Apr 2021 – Sept 2021	Oct 2021 – Apr 2022	May 2022 – Oct 2022	Nov 2022 – Jan 2023
	A research period to better understand customer and stakeholder needs, preferences to help shape our engagement approach	A period of deeper exploration of key issues to help inform development of our Preliminary Proposal	Broad and deep engagement on our Preliminary Proposal, identifying aspects of greatest importance to customers	Developing and refining our final proposal using insights from the previous stage
Engagement Activities	<ul style="list-style-type: none"> <li>• Benchmark previous engagement with best practice here and abroad and design improvements</li> <li>• Establish the RRG, FGRG and ReRG, determine terms of reference and hold regular meetings</li> <li>• Co-design the engagement plan</li> <li>• Ongoing engagement with AER</li> <li>• Segmented focus group exploratory research</li> <li>• In-language direct engagement with culturally and linguistically diverse (CALD) communities</li> <li>• Establish 'Your Say' project website</li> <li>• Digital and social media engagement</li> </ul>	<ul style="list-style-type: none"> <li>• One-on-one briefings with stakeholders</li> <li>• State of the Network Forums</li> <li>• High Energy User Workshop</li> <li>• Future Grid Workshops</li> <li>• Ongoing engagement with AER</li> <li>• Joint engagement with other networks</li> <li>• Commence engagement of AER's Consumer Challenge Panel (CCP)</li> <li>• Ongoing meetings with stakeholder reference groups, including some mini "deep dives" into specific topics and review of draft Business Narrative</li> <li>• Digital and social media engagement</li> <li>• Engagement via project microsite</li> <li>• Proactively issue sending engagement updates to interested stakeholders</li> </ul>	<ul style="list-style-type: none"> <li>• One-on-one briefings with stakeholders</li> <li>• Customer deliberative forums</li> <li>• In-language direct engagement with CALD communities</li> <li>• Issue-specific Deep Dives with broader stakeholder groups</li> <li>• Customer quantitative research</li> <li>• Ongoing engagement with AER</li> <li>• Ongoing engagement of AER's Consumer Challenge Panel (CCP)</li> <li>• Regular meetings with stakeholder reference groups</li> <li>• Digital and social media engagement</li> <li>• Engagement via project microsite</li> </ul>	<ul style="list-style-type: none"> <li>• Digital and social media engagement</li> <li>• Engagement via project microsite</li> <li>• Direct, proactive update of stakeholders</li> </ul>
Key Deliverables	<ul style="list-style-type: none"> <li>• Engagement plan</li> <li>• Exploratory customer research report</li> </ul>	<ul style="list-style-type: none"> <li>• Preliminary Proposal</li> <li>• Business Narrative</li> </ul>	<ul style="list-style-type: none"> <li>• Draft proposal</li> <li>• Draft proposal customer overview</li> </ul>	<ul style="list-style-type: none"> <li>• Final proposal</li> <li>• Final proposal customer overview</li> </ul>



# At a glance

To guide investment activities in response to the external influences facing our customers, and in line with what we have heard about the expectations and requirements of our current and new customers, we have developed our Preliminary Proposal in accordance with four key investment themes. These four investment themes reflect the priorities of our customers and were co-designed with our RRG and released as part of our Business Narrative in March 2022. We must balance these investment themes and needs with the long-term interest of customers while providing an affordable service. The four key themes are:

## We will balance ongoing affordability for customers with investments that address customers' long term interests



Meeting core customer expectations for a safe, affordable and reliable electricity supply



Supporting the sustainable growth of our communities



Providing a resilient network for the community against increasing external hazards



Enabling customers future energy choices for a sustainable future

Based on these investment themes and our overall objective to balance ongoing affordability with the need to invest in our customers' long-term interests, our initial forecasts and outcomes are as follows:

Revenue Requirements (\$m; real FY24)	FY20-24 (AER approved allowance)	FY25-29 (Preliminary Proposal)	Comment and where to go for further information
Revenue (smoothed)	4,371	4,238	The revenue outcome is the sum of the regulatory building blocks below. <b>Refer to p. 45</b> – How our revenue is set for more detail.
Net capital expenditure (including ERC <sup>2</sup> )	1,944	1,825	This reduction is driven by our commitment to balancing affordability with long term investment themes. <b>Refer to p. 55</b> – Capital expenditure for more detail.
Operating expenditure (including DRC <sup>3</sup> )	1,631	1,411	This reduction is largely driven by our increasing efficiency and productivity improvements from our transformation investments (digital and ICT). <b>Refer to p. 54</b> – Operating expenditure for more detail.
Weighted Average Cost of Capital - WACC (%)	5.27%	4.39%	This placeholder estimate will be updated for the AER's binding Rate of Return Instrument due in December 2022. It reflects a midpoint of a range of market conditions and is the largest driver of revenue outcomes. <b>Refer to p. 65</b> – Return on capital for more detail.
Return on capital	1,937	1,598	This reduction is driven by the lower WACC estimate above. <b>Refer to p. 65</b> – Return on capital for more detail.
Regulatory depreciation (return of capital)	667	1,080	This increase is driven by our reallocation of capital in the 2019-2024 period to our transformation (digital and ICT) noting these investments are depreciated over a shorter span. <b>Refer to p. 65</b> – Return on capital for more detail.
Revenue Adjustments	0	102	This increase is driven by incentive scheme payments for our efficiency improvements. <b>Refer to p. 66</b> – Incentive schemes for more detail.
Corporate tax allowance	141	41 <sup>4</sup>	This reduction is driven by a change in the tax treatment of capital contributions for which we are awaiting ATO confirmation. <b>Refer to p. 66</b> – Corporate tax for more detail.







<sup>1</sup>Equity raising costs, <sup>2</sup>Debt raising costs, <sup>3</sup>Mid-point estimate will be updated in June 2022 following the release of the AER 2022 Rate of Return Instrument, <sup>4</sup>Subject to ATO ruling

Key outcomes (period to period) (\$m; real FY24)	FY24	FY29	Comment and where to go for further information
Average residential network bill (DUOS) - \$ p.a.	\$458	\$428	This outcome relates to our distribution portion of the electricity bill (just under a third of the total electricity bill). This could be impacted by changes in market conditions which impact the WACC and changes to tax requirements. For more detail please <a href="#">refer to p. 50</a> regarding balancing investment needs with affordability and <a href="#">refer to p. 65</a> for return on capital.
Average small and medium business network bill (DUOS) - \$ p.a.	\$797	\$745	
Regulated Asset Base (\$m)	\$7,573	\$7,408	This reduction is driven by lower capital expenditure and higher depreciation.
RAB/customer (\$)	\$6,850	\$6,051	
Opex allowance/customer (\$)	\$298	\$239	This reduction is driven by productivity improvements from our transformation investments (digital and ICT).
Customer numbers	1,105,510	1,224,170	
Energy delivered (MWh)	17,006	17,907	These forecasts represent our best estimates of the substantive growth across our network area and will be independently verified.
Maximum electricity demand (MVA)	4,553	5,568	

Key regulatory positions	
<b>Incentive schemes (p. 66)</b>	We support incentive regulation and consider it has delivered significant benefits to customers. We are interested in testing whether we should implement a Customer Service Incentive Scheme (CSIS) and note the AER will review the current arrangements to introduce an incentive scheme related to Distributed Energy Resource (DER) hosting.
<b>Tariffs (p. 67)</b>	In developing our Tariff Structure Statement our engagement will focus on the following topics: <ul style="list-style-type: none"> <li>Refining our tariff structures, particularly for two-way pricing</li> <li>Strengthening our tariff assignment policy so that our customers receive the benefits of cost-reflective tariffs</li> <li>Trials of innovative cost reflective tariffs to encourage efficient use of network for new services in the energy transition</li> </ul>
<b>Service classification (p. 70)</b>	The Framework and Approach (F&A) process is in its early stages. Our Preliminary Proposal is for the current forms of control to be maintained, all incentive schemes apply and several adjustments to the service classification be made for emerging services, particularly the evolving role of a Distributed Network Service Provider (DNSP) outlined in the Energy Security Board's (ESB's) Post 2025 Market Review.
<b>Pass-throughs (p. 70)</b>	Our Preliminary Proposal is to maintain the existing nominated pass-through events for the current period. In due course we will review whether additions are required for war or cyber-security related risks.
<b>Contingent projects (p. 70)</b>	We have not identified any contingent projects at this stage.

We are confident these preliminary plans will support the long-term interests of customers. However, we must test and confirm this view through engagement with customers and stakeholders over the next six months. We are guided by the AER's Better Resets Handbook, published in December 2021, regarding what constitutes a high-quality proposal. Under the Handbook, the AER invited networks to apply for an 'early signal pathway', which involves greater participation by the AER in customer engagement programs, increased

reporting requirements for participating networks and their consumer advocates (independent members of the RRG), and early signalling by the AER on whether developing proposals meet with their expectations. Endeavour Energy was successful in its application for an 'early signal pathway' and we are now, along with the independent members of the RRG, working to deliver our commitments to this process. Below we set out our Preliminary Proposal outcomes with reference to the Handbook requirements.

Component	AER Expectation	Endeavour Energy Preliminary Plan	
<b>Overall assessment</b>	<ul style="list-style-type: none"> <li>Options for fast-tracked Regulatory Proposals (or key elements) through greater and earlier collaboration and transparency by networks and commitment of AER resourcing</li> </ul>		<ul style="list-style-type: none"> <li>We are conducting detailed pre-lodgement engagement with this Preliminary Proposal and deep dives and customer deliberative forums. The AER has accepted our proposal to adopt the Early Signal Pathway approach.</li> </ul>
<b>Customer engagement</b>	<ul style="list-style-type: none"> <li>Consumers partner with DNSPs in forming proposals, rather than just providing feedback</li> <li>Expect Board and Executive involvement</li> </ul>		<ul style="list-style-type: none"> <li>Peak Customer and Stakeholder Committee (PCSC) membership expanded, and RRG of key stakeholders formed to co-develop formation of this proposal</li> <li>The engagement plan and topics have been co-designed using best practice international engagement principles and led by Board and executive engagement.</li> </ul>
<b>Capital expenditure</b>	<ul style="list-style-type: none"> <li>DNSPs should demonstrate that forecast total capex is not materially above current period actual spend</li> <li>Recurrent categories of expenditure to align with top-down models and historic trends (eg repex). Material, increasing or new categories spend to be supported by cost-benefit analysis and all spend by good asset and risk management practices.</li> </ul>		<ul style="list-style-type: none"> <li>Headline expenditure figure within current period forecasts noting ongoing reprioritisation of the type of investment categories</li> <li>New value framework and asset management practices implemented, and cost-benefit analyses being developed to support a targeted proposal.</li> </ul>
<b>Operating expenditure</b>	<ul style="list-style-type: none"> <li>Efficiency scope at 0.75 (OEF), productivity of at least 0.5% p.a.</li> <li>OEF's and base year adjustment need to be discussed with AER prior to submission</li> <li>Step changes should be limited to legislative changes and capex/opex trade-offs</li> </ul>		<ul style="list-style-type: none"> <li>Endeavour Energy is positioned within the efficient frontier and will apply base-step-trend methodology</li> <li>Step changes and accounting changes are being consulted on further with customers and key stakeholders</li> </ul>
<b>Regulatory depreciation</b>	<ul style="list-style-type: none"> <li>Utilises AER post-tax revenue model, roll forward model and depreciation tracking</li> <li>Proposal for accelerated depreciation, and any changes to asset classes or asset lives, should be discussed with customers</li> </ul>		<ul style="list-style-type: none"> <li>Endeavour Energy will utilise AER models including adoption of a year-by-year tracking methodology</li> </ul>
<b>Tariff Structures</b>	<ul style="list-style-type: none"> <li>Progress transition to cost-reflective tariffs (import and export)</li> <li>Customer choice in network tariff assignment</li> </ul>		<ul style="list-style-type: none"> <li>A number of trials and options for progressing tariff reform are underway and detailed engagement has commenced to develop the Tariff Structure Statement</li> </ul>

**Key:**  Aligned or enough information available to suggest 'on track'

 To be determined / Unknown

 Not aligned or not on track



## : 2. Who we are

Our purpose is to power  
communities for a brighter future



# 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 Nations peoples' continuing connection to Country, cultures and community. We pay our respect to elders past, present and emerging.

## We serve:



**2.6** million people



**25,000**  
square km across  
23 Council areas



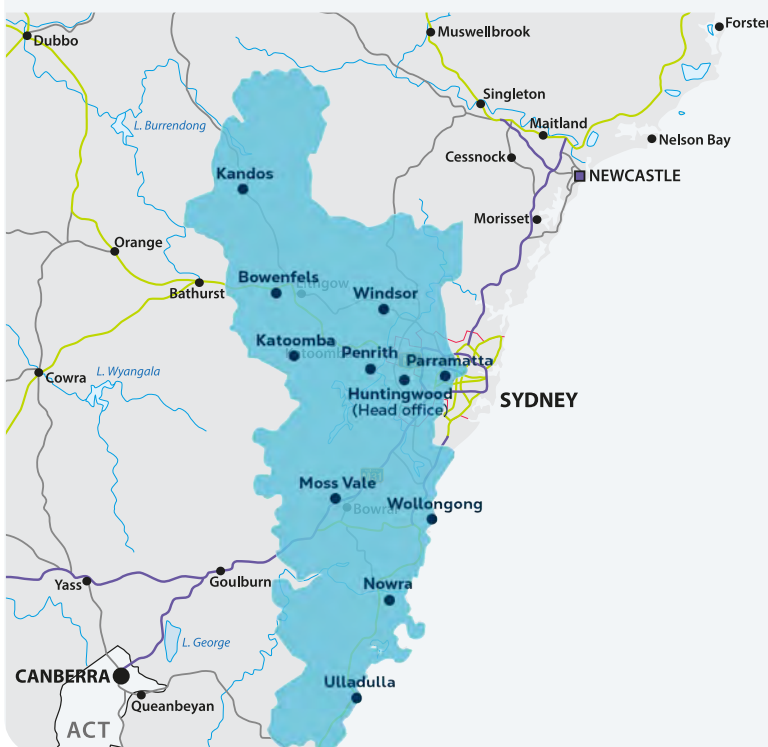
**32,000**  
life support  
customers



**221,000**  
customers with renewable  
energy generation



**20,000** new customers per year in some of the largest and fastest growing regional economies in the state. Over **50%** of Sydney's population will reside in Greater Western Sydney by 2036.



## By the numbers:

**207** major  
substations

**20,000+**  
new customers per year

**430,000+**  
power poles

**>25,000** km<sup>2</sup>

**60,000+** km  
of powerlines

**225,000**  
streetlights

**221,000**  
customers with  
renewable energy

**2.6m** people

**1m+**  
customers

**32,000**  
life support  
customers

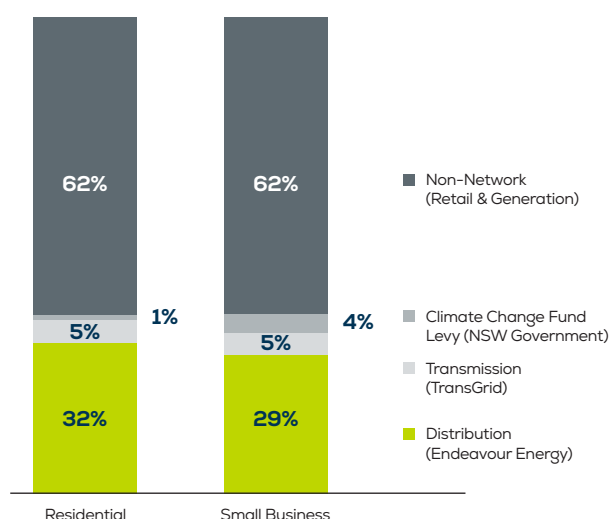
**85%**  
of our area is  
bushfire prone

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 including the newly established NSW Electricity Infrastructure Roadmap. The other two thirds of a bill can vary for a broad range of economic factors. For our component of the bill we are committed to ensuring customers pay no more than what is necessary to receive a safe and reliable supply of electricity.





Our contribution to the average electricity bill



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.

Purpose	Powering communities for a brighter future				
Vision	To be amongst the best performing networks in Australia as measured by safety, customer engagement and financial performance metrics				
Strategic Goals	1. Health, safety & environment	2. Employee engagement	3. Customer & communities	4. Performance	5. Growth through innovation
	<ul style="list-style-type: none"> <li>Establish an organisation-wide culture of safety</li> <li>Establish streamlined systems and processes</li> </ul>	<ul style="list-style-type: none"> <li>Lift performance through clear expectations and performance-oriented mindsets</li> <li>Build leadership capability</li> </ul>	<ul style="list-style-type: none"> <li>Establish easy connection with customers</li> <li>Enhance recognition by customers through valued interactions and relationships</li> </ul>	<ul style="list-style-type: none"> <li>Optimise work program and risk allocation</li> <li>Improve quality, speed and cost to deliver</li> </ul>	<ul style="list-style-type: none"> <li>Leverage existing asset base to create value</li> <li>Augment network with smart investments and new technology</li> </ul>
Priority Themes	 <b>Safe, affordable &amp; reliable</b>	 <b>Resilience</b>	 <b>Sustainable growth</b>	 <b>Future Energy Choice</b>	



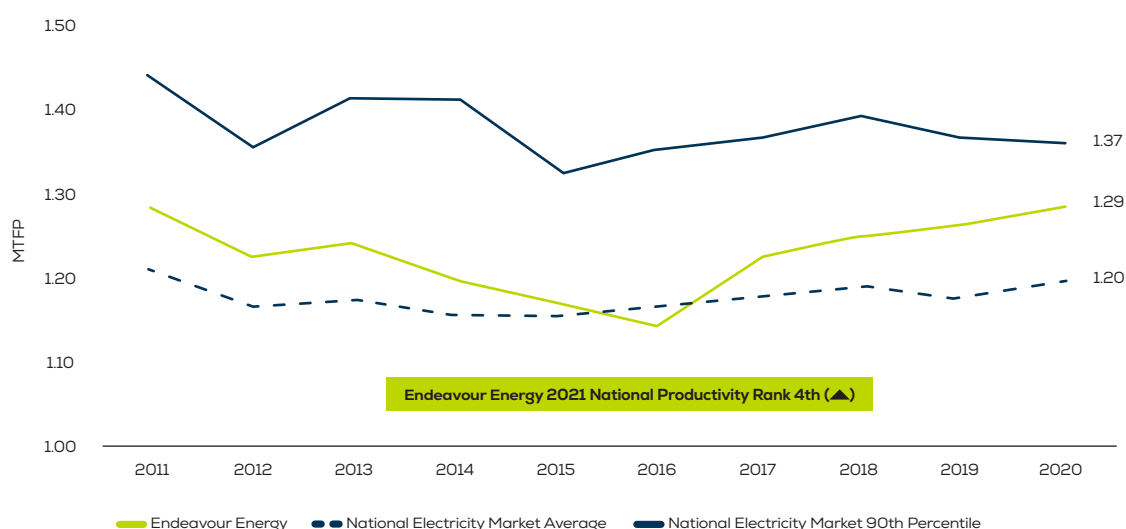
# How we have performed

Our primary goal is fundamental and enduring: to ensure our customers have reliable access to an electricity network that is affordable, safe and sustainable, and that enables access to a power supply in a way that suits them and their energy needs. We work together to adapt quickly to the needs of our customers, and continually strive to find better ways to power our communities.

Our performance over this current regulatory period (2019-24) demonstrates our commitment to becoming one of the best performing electricity network businesses, while preparing for future services and the future energy grid. Our improvements have accelerated since the 2017 partial privatisation of Endeavour Energy by the NSW Government.

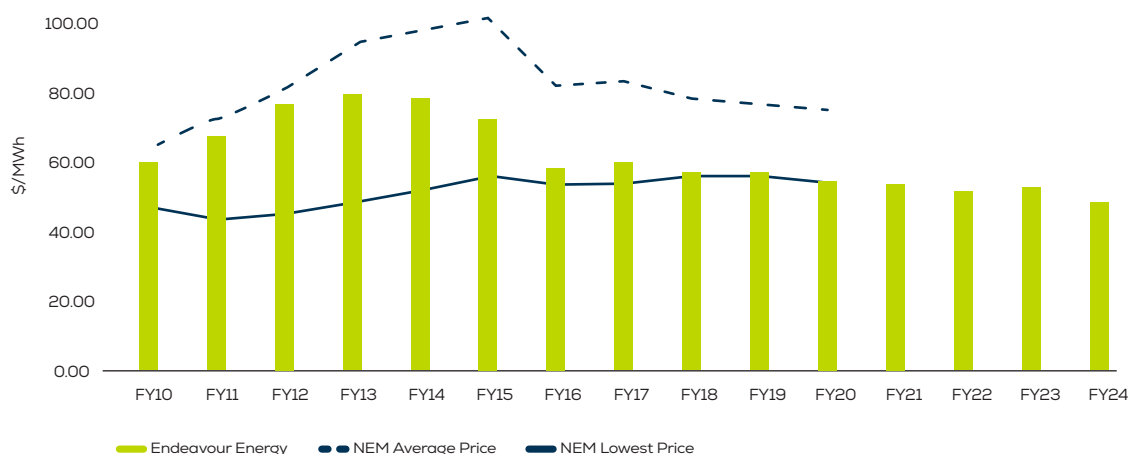
In 2021, Endeavour Energy was proud to be recognised as one of Australia's best performing energy distribution companies.

Productivity (outputs / inputs) under multilateral total factor productivity (MTFP)<sup>5</sup>



Our distribution price (Distribute Use of System Charges) remains amongst the lowest in the National Electricity Market (NEM):

Average network costs per unit of energy (\$/MWh) compared to NEM average and lowest<sup>6</sup>









<sup>5</sup>2021 AER network performance benchmarking

<sup>6</sup>AER 2020 network performance benchmarking



Between 2019 and 2024 we are forecast to achieve:

The numbers (2019-2024)		
Effectively and efficiently meeting needs	Supporting customers' future expectations	
 <p>▼ <b>16%</b></p> <p>Reduction in real average distribution network bills for customers</p>	 <p>▼ <b>20%</b></p> <p>Reduction in operating costs compared to allowance</p>	 <p>▲ <b>100%</b></p> <p>Of total capital expenditure allowance consumed</p>
 <p>▼ <b>16%</b></p> <p>Less system capital investment in network infrastructure</p>	 <p>▲ <b>100,999</b></p> <p>New customers connected to our network</p>	 <p>▲ <b>151%</b></p> <p>Additional expenditure on transformation investments (Digital and ICT)</p>

We achieved and will continue to achieve these efficiency improvements through the concerted effort of our people and a commitment to providing our customers value for their money.

While we have reduced our costs over the last several years, we also continue to improve our performance against several key customer metrics (from 2019-24):

- Average time off supply for our customers per annum (reliability performance) improved from 78 to 69 mins (99.99% reliable), excluding major hazard events
- RAB value to serve each customer reduced from \$7,102 to \$6,850 (\$FY24 real terms)
- Network asset utilisation improved from 53% to 55%
- Global ESG Benchmark (GRESB) 5 Star Rating achieved in 2021
- Our Reconciliation Action Plan (RAP) was endorsed by Reconciliation Australia in 2021.

As we look to the future, the nature of the energy system and our role within it is changing. The net zero ambitions of our community require fundamental changes to the way we generate and use electricity.

At all levels, this will require investment, innovation, new technology, additional infrastructure, and policy and regulatory reform.

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

The next five years will be a crucial building block. Our prudent investments must deliver on immediate needs, as well as the use of increased data and insights to set the pathway to the future. This will ensure Endeavour Energy continues to meet our customers' expectations while providing safe, affordable, sustainable and efficient services.



### What we are seeking your feedback on

1. Have we clearly communicated Endeavour Energy's business and purpose?
2. Do you understand your relationship to Endeavour Energy (as a residential customer, business customer, customer advocate or stakeholders)?
3. Does your understanding of who we are and how we relate to you enable you to provide informed feedback about our plans for our customers' energy future?



# : 3. Australia's changing energy landscape

We are responding to rapid change in our industry



## 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, which contribute under one third to electricity bills, 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 or external drivers 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.

We provide more detail on these key trends and the implications for Endeavour Energy on the following pages.



## Customer centricity

A deep and broad understanding of all customers' expectations and views is increasingly central to investment and operational improvement. Customers will help shape the direction of business through deep engagement on our Regulatory Proposal and investment decisions. To ensure we continue to meet the needs of all customers we will focus on:

- **Informing investments and approaches:** For networks and network regulators, understanding the evolving expectations and preferences of customers will allow networks and regulators to find the best options and approaches for investment planning. This will include increased transparency and more open conversations with customers, and also focus on equity and the need to ensure no customer is left behind.
- **Setting customer priorities and service levels:** Increasingly customers expect personalised and timely services, seamless transactions and accurate information. With an understanding of needs and expectations, the business can focus on higher-value services, and reduce effort and spend on services that are less of a priority.
- **Creating operational efficiency:** The use of data to improve operational decision-making and deliver improved service will become the hallmark of the efficient network business.

Our understanding of these benefits is driving Endeavour Energy to provide genuine, early and regular consideration of the unique and evolving needs of our customers.

### Implications for Endeavour Energy and this proposal:



A deep and broad understanding of all customers' expectations and views is increasingly central to investment and operational improvement.



The community will inform our approach to improving the resilience of the network, and how investments in this are prioritised with investment in other areas.



Where and how Endeavour Energy invest in the Future Network will be shaped by customer support for our role.

## Trust, reputation and purpose

As a leader of the community it is essential to retain our social licence, attract investment, and to establish and maintain a high performance culture. In doing so, our priorities are:

- **Increasing focus on Environment, Social and Governance (ESG):** Corporate Social responsibility (CSR) and the analysis of ESG performance is already becoming a fundamental driver of investment (both by shareholders and/or customers into companies and services, and companies into actions). Involvement in social and sustainability endeavours, and a consistent demonstration that these principles are front-of-mind in decision making, will form a key component of social licence to operate, and the ability to attract and retain talent. Our customers have told us they expect this.
- **Ensuring we attract and retain our talented people:** Empowerment and flexibility have already become the 'battleground' for talent. People want meaningful work, they demand a say in the direction of the organisation, they are constantly checking the alignment of their values with their employers and are increasingly seeking more flexible ways of working.

Looking forward, the way that Endeavour Energy approaches its investment priorities, decision-making and how it engages with customers will need to be fundamentally values-driven. Importantly, customer-centric outcomes demand an "outside-in" and transparent approach to being involved in, listening to and acting on engagement with our community, customer and employees.

### Implications for Endeavour Energy and this proposal:



Active contribution to 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



## Western Sydney regional growth

NSW population and modern industries growth has been focused in the urban expansion of Sydney's Greater West. This strategic expansion will drive the substantial and rapid growth of the region, 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, centred on new 'satellite cities'. Projections suggest the need for an additional 725,000 dwellings, in a region that is also planned to cater for a new international airport, new industry, rejuvenation of manufacturing, and a science park. We will be part of building a new city, from scratch.

Endeavour Energy is responsible for the expansion of the distribution network to facilitate this growth in population and industry, and to support the NSW Government's planning and development of liveable, productive and sustainable communities that thrive. This focus has been a driver of our investment for several years and it will continue to be in the foreseeable future. To continue to accommodate this growth, new networks must be planned and delivered in a way that both facilitates this vision and futureproofs the network for residents, small and large business and emerging needs such as datacentres and hydrogen hubs, this requires a focus on:

- **Planning for the future:** This predicted expansion of the asset base is occurring at the same time as the changing nature of the grid. Endeavour Energy will need to work with developers and government to ensure greenfield developments are future-proofed, efficient and remain cost-effective.
- **Ensuring network infrastructure is a facilitator to economic growth:** The roll-out of new infrastructure across Western Sydney will require significant investment, and the expansion cannot occur without this supporting infrastructure in place. Endeavour Energy will need to work with the NSW Government to ensure the infrastructure expansion meets the growth of the of the community.

Growth in key franchise area (2021-2041)



In supporting the sustainable growth of the Western Sydney community, we must also continue to deliver value for our existing customers. It is important that the costs and benefits of expanding the network are shared equitably through our connection charges and ongoing tariffs.

### Implications for Endeavour Energy and this proposal:



Expansion should be future proofed, taking up the opportunity for new approaches and ensuring 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

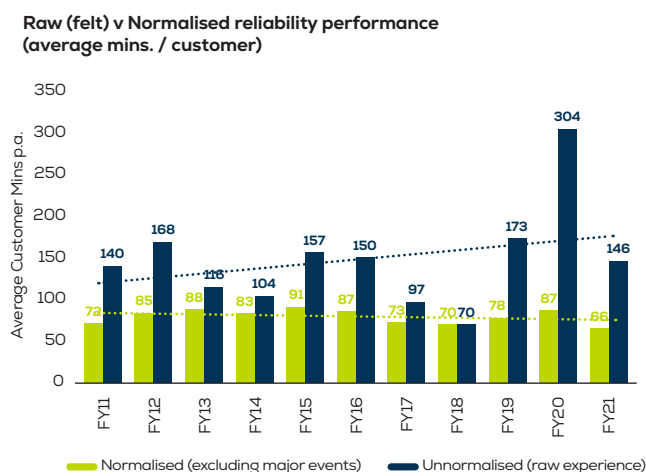
Climate modelling suggests that, regardless of the global action taken to reduce carbon emissions in the coming years, extreme weather events will continue to increase in both frequency and intensity over the coming decades. The risk of bushfires increases as heatwaves become hotter and last longer, and our storms (including East Coast Lows) are expected to increase in frequency and intensity, resulting in more common storm damage and flash flooding.

Climate change events pose a risk to the reliability of the network. Endeavour Energy is experiencing increased impacts from:

- **Bushfires:** The 2019/20 bushfire season was the most devastating in NSW history, impacting 44% of Endeavour Energy's network supply area and causing significant damage to parts of the network at a cost of more than \$26.7 million and interrupting services to more than 55,500 customers across the network.
- **Heat Waves:** By 2030, NSW is expected to experience 10 more days in heatwave each year, with the yearly maximum intensity of heatwaves seeing an increase of 5°C. As heatwaves become more common and more severe, the network will be threatened by asset deterioration and reduced system reliability, decreased system capacity and an increased load. With some of the hottest areas in NSW, our ability to reliably deliver electricity through these periods will be increasingly important for customers and reduces risk to life.
- **Storms and Floods:** Like bushfires and heatwaves, severe storms and their associated floods are on the rise (consecutively breaking records in 2021 and 2022); and are expected to become a common threat to network services, particularly from non-submersible assets.

While Endeavour Energy has invested in solutions to address our impactable outage times (Figure 1), customers will not experience the benefits due to the impact of major event-related outages (Figure 2).

To adapt to the changing climate, targeted solutions are required to ensure a safe, affordable and reliable network service is provided. Ultimately, a more resilient or robust network will be required to maintain reliability as extreme weather events become more common and severe.



Improving resilience beyond the purpose of maintaining reliability is an issue we wish to test further with customers and stakeholders. The regulatory framework provides both proactive (like capital expenditure programs) and reactive (like pass throughs) options for managing resilience risk. It will be important to strike the right balance between these options to ensure customers pay no more than what is necessary for the level of resilience they desire.

#### Implications for Endeavour Energy and this proposal:



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

**The NSW Government is targeting a 50% reduction in emissions, including 12GW of new low emissions generation and 2GW of storage by 2030. This requires fundamental changes to the way we produce and consume energy and changes the nature of the energy system. Our electricity networks will underpin this evolution, and we must keep pace with the change.**

In the coming years, our network needs to cater for the growing customer uptake of clean and distributed energy resources such as solar PV (Solar Photovoltaic), battery storage, and electric vehicles. As our customers take up these technologies they will participate more actively in the market and unlock more value from their investments. Sophisticated digital platforms will increasingly underpin and automate more responsive users, coordinated by energy 'aggregators' such as virtual power plants. These changes form part of the solution to limit the impacts of climate change, and the augmentation of our network must reliably and affordably deliver the capability to balance dynamic, responsive, bi-directional flows.

These new technologies, and the changes to the way our communities will choose to use and share electricity, will change the role of the network. Open, real-time data sharing will become critical to the successful operation of a network, allowing and incentivising customers and third parties to use their technologies to help balance the system. The network will become a platform of energy trade, and underpin the modern, low carbon way of living. We will shift from operating as a traditional distributor of energy to enhancing our capabilities as a multi-directional Distribution System Operator (DSO).

As emerging technologies become more prevalent, we must find ways to equitably deliver customer choice. We must also innovate in using these technologies to service new growth and to maintain the affordability and reliability of our network. Below we provide more detail on these new technologies and how each of them impacts our network.

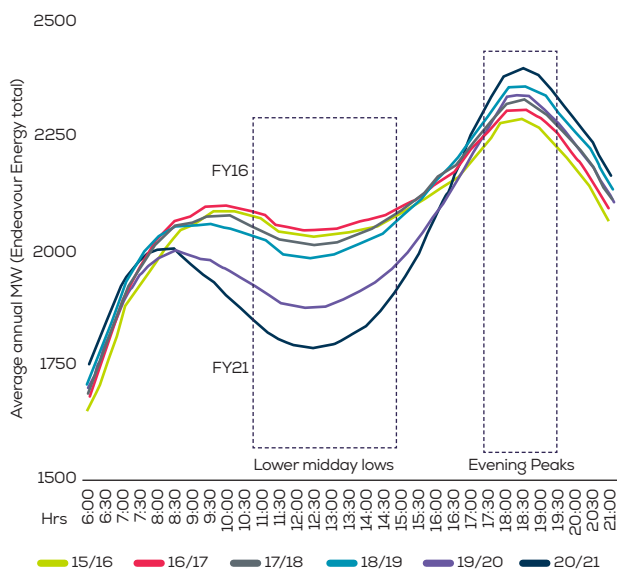
### Solar Photovoltaic (PV Solar) systems

The uptake of PV solar systems by households and businesses on Endeavour Energy's network is forecast to increase rapidly in the coming years. Currently, more than 20% of Endeavour Energy's customers have installed PV solar systems to supplement their energy requirements. By 2030, this figure is projected to reach 55%.

The changing profile and volatility of supply and demand as a result of the high penetration of solar PV creates network wide and localised issues that will need to be addressed. At the network scale, this includes the 'duck curve' whereby solar input reduces the demand for electricity during the day at the same time as growth in electricity use could increase night time peaks.

This also increases the ramp-up required to meet evening demand. Local volatility, including voltage surges, can damage equipment, cause 'trips' or 'faults', and result in the temporary shutdown of solar inverters to restore voltages to safe limits.

**Impact of PV on Endeavour Energy's overall load profile**



*"We have to educate people on how to manage their electricity and teach them about the new technologies"*  
**- Customer quote, SEC Newgate Research**

Network augmentation and new operational rules can successfully address these issues. However, any solution must minimise limitations on household market participation (eg, localised curtailment), and address equity concerns that will become more prevalent as localised saturation levels are reached. Equity is needed both around new 'entrants' being able to access benefits and ensuring the cost of the system is equitably shared between those who receive benefit and minimised for those who don't.

Lessons can be drawn from distribution networks already managing a high penetration of solar in other states, such as the setting of appropriate solar export limits to reduce grid congestion and upgrading voltage management systems across substations. This allows Endeavour Energy to better develop proactive and equitable measures to address the operational and reliability issues that have emerged elsewhere.

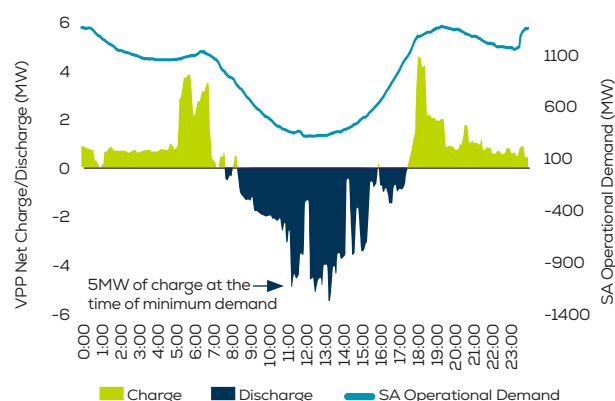
## Energy storage

As more variable renewable energy sources feed into the grid, such as solar PV, energy storage will play an increasing and crucial role to balance supply and demand. As costs of storage technology decline (eg, batteries) and market and/or tariff-based incentives grow, the installation of storage is expected to increase rapidly across our network.

Storage will be delivered at the household, the local area and broader grid-scale, and will be a vital contributor to the management of seasonal, daily and micro variations in supply and demand. These services can only be delivered via the active participation of customers and third parties, which requires a dynamic and digital capability and necessitates the more central role of the grid.

**Household:** As the costs of battery storage decline, more customers are choosing to install privately-owned, behind the meter storage systems. In its simplest use, battery storage allows customers to store the solar energy otherwise fed into the grid during the day and consume that energy at night when it's needed (load shifting). This has the benefit of 'flattening the duck curve' created by solar.

**Virtual Power Plant load shifting (South Australia VPP trial)<sup>7</sup>**



<sup>7</sup>Source: AEMO



**Grid-scale:** There are several energy storage solutions that are becoming increasingly viable at the system level, from traditional Battery Energy Storage Systems (BESS) to the Seasonal Hydrogen Storage Systems. These technologies enable distributors to more accurately manage the demand and supply of energy across the network.

#### Virtual Power Plant (VPP) market services

Trial Service Group	Service	VPP Capability	
Market Services	Energy	✓	
	Regulation FCAS		✓
	Contingency FCAS – 6 second		✓
	Contingency FCAS – 60 seconds	✓	
	Contingency FCAS – 5 minutes	✓	
SA VPP Trial Demonstration	Inertia		✓
	Voltage Support		✓
	Fast Frequency Response		✓

✓ Current VPP rules      ✓ VPP demonstrated capability

#### Aggregation and Virtual Power Plants (VPPs):

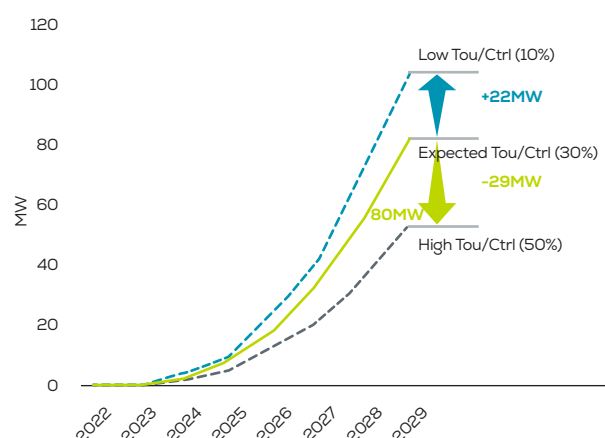
Sophisticated digital platforms and energy ‘aggregators’ (such as VPPs) unlock value for households by accessing wholesale markets. This transforms households into market participants, responding to price signals and delivering market services. However, this can create local network capacity issues, as households become orchestrated in their supply and demand from networks. Responding to these opportunities provides new ways to efficiently deliver our services.

**Shoalhaven pumped-hydro:** Large-scale energy storages and ‘base-load’ generation from pumped-hydro such as Shoalhaven will play an important role in addressing peak and seasonal demand changes, allowing more reliable integration of variable renewable energy.

## Electric Vehicles (EVs)

While the projected uptake of EVs in Australia is still wildly uncertain, market indicators are pointing towards increasing penetration at the back-end of the decade. While price, model and charging infrastructure barriers are currently in place, experience from Europe indicates that once these constraints are addressed, the market can shift rapidly. By 2029, 250,000 EVs are expected in households on the Endeavour Energy network, up from 2,000 currently.

Forecast increase in energy demand by electric vehicles with or without efficient tariffs or control



EVs are an emerging consumption on the network, and a changing profile of demand. The contribution of 250,000 EVs to peak load increase from 1MW now to approximately 80MW by 2029. This will result in requests for new connection points and will require network augmentation to facilitate the increase in customers’ changing transport choices. However, EVs will also represent the opportunity for mobile (battery) storage. The rise in EVs will rapidly enhance the flexibility of consumption and will form a crucial component of the dynamic architecture of the future network. They will become a very useful tool to balance loads, but will require sophisticated, transparent, digital capabilities operating with a proliferation of third parties to optimise this value.

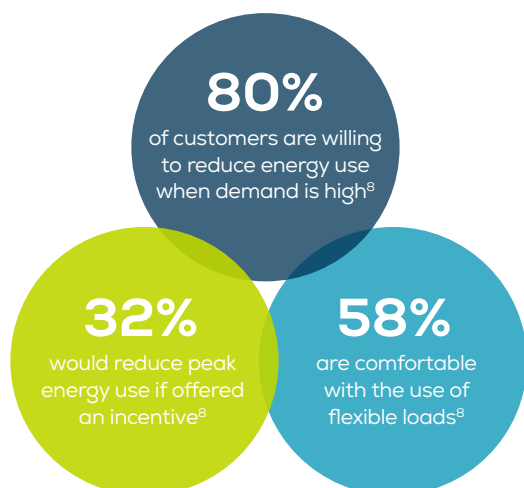
With the Australian and NSW Governments announcing their intentions to invest in EV infrastructure, and global manufacturers declaring the cessation of production for most Internal Combustion Vehicles by 2030–35, Endeavour Energy needs to ready its network, operational and digital planning for the fairly rapid yet unpredictable rise in EVs once the settings are right.

## Demand response devices and flexible load

When managing the capacity of the grid, the focus has historically fallen on the energy generators to ensure the supply to the grid matches demand. But with changes in consumer behaviour affecting when, where and how people access the grid, there's a growing opportunity to manage capacity by tackling the demand for energy.

A shift to a more dynamic and transparent tariff regime will further incentivise these behaviours. In a system with abundant, but variable, renewable energy, households and businesses will benefit from the ability to reduce demand or transition to more flexible operations. This is part of the solution to balancing the low carbon, variable energy system.

Demand response is the voluntary reduction or shift in the customer's use of electricity. This is typically achieved by financially incentivising consumers to switch their use of power to off-peak periods to ease the demand on the network.



*"I would like to take a little bit more control of my electricity. I want it broken down so I can be a little more in control. In an app [so I know] fridge uses this, washing machine uses that."*

**- Customer quote, SEC Newgate Research**

Flexible load refers to the coordination of electricity consumption used for existing loads. For households this includes water heaters, air-conditioning systems and pool pumps. For business and industry, this includes flexible production which can lower individual production costs and balance loads on the network.

The role of the network is to facilitate the ability of customers to participate in such a way. In this light, the value of the network shifts more in favour of its capacity to allow participation, rather than the electricity demanded. This change requires re-consideration of tariff structures to reflect the alternative value of the network (such as capacity charges).

## Renewable generation

Decarbonising Australia's economy will be challenging, involve a variety of alternative fuels developed through multiple different pathways, and approaches will vary within and across industries and use cases based on needs and opportunities. Hydrogen, which is very similar to natural gas and can be produced from renewable electricity, represents one such option.

The NSW Government through its Electricity Infrastructure Roadmap and Hydrogen Strategy is aggressively pursuing the activation of new renewable energy zones to drive decarbonisation of its electricity generation and establishment of a hydrogen industry, for both domestic and export markets. This will drive significantly more variable renewables into the generation mix and may add considerable load to the distribution network.

The scale of electricity generation associated with large-scale hydrogen production dwarfs that of Australia's current demand. NSW is targeting 12GW of renewables to deliver 110,000 tonnes per annum of hydrogen by 2030. It is focusing on production in two key hubs, Illawarra and the Hunter Valley (with Wagga Wagga considered a strategic location mainly for transport).

<sup>8</sup>Energy Consumers Australia - Energy Consumers Behaviour Survey 2021



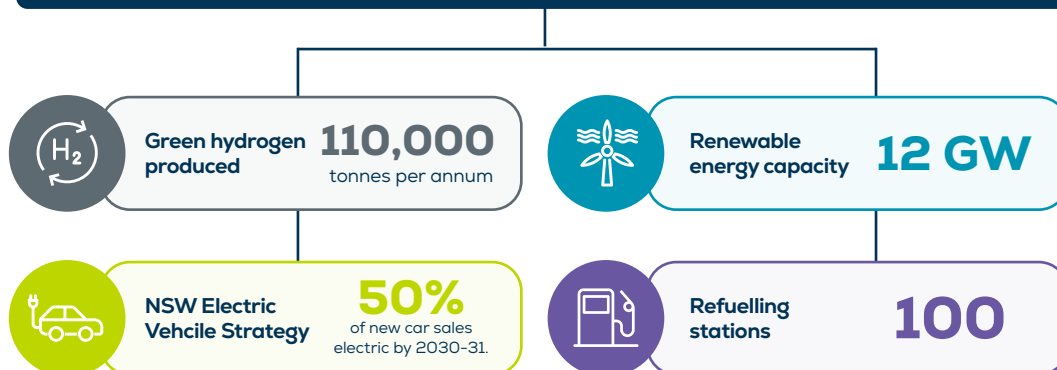
## Snapshot of planned and potential NSW hydrogen hubs<sup>9</sup>



Annual hydrogen production capacity from waste water (Mt)

Location	Mt	Location	Mt
Moree	0.6	Hay	0.6
Narrabri	0.1	Wagga Wagga	1.2
Armidale	0.6	Hunter	8.8
Dubbo	0.7	Illawarra	11.7
Parkes	0.6		

## NSW Stretch Targets include



<sup>9</sup>Source - NSW Department of Planning and Environment - NSW Hydrogen Strategy - October 2021. This map is a visual guide only and does not represent REZ or hydrogen hub boundaries. For more information on the REZs, please visit [energy.nsw.gov.au/government-and-regulation/electricity-infrastructure-roadmap](https://energy.nsw.gov.au/government-and-regulation/electricity-infrastructure-roadmap)



The wave of renewables will create system challenges, but also new opportunities. Hydrogen may act as a flexible way to lift minimum demand and store excess energy. It may also play a role in decarbonising gas networks, with localised production, storage and potentially generation, supporting grid stability.

However, with the commercial pathway to hydrogen production still some way off, we will need to prepare for scenarios where we see large scale electrification, the emergence of a hydrogen economy, or something in between.

## Microgrids and SAPS

Microgrids and Stand-Alone Power Systems (SAPS) are essentially localised energy sources and loads that are capable of functioning autonomously in times of need. Thus, they require less or no connection to the traditional electricity network, mitigating the need for new, or significant augmentation or replacement of existing connections to communities. The transformation of the grid will lead to a more 'compartmentalised' network, with many localised networks functioning like microgrids, and interacting in a broader system.

The increasing value that can be derived from microgrids and SAPS is twofold. Firstly, with the decreasing cost of distributed generation and storage technologies, as well as the increasing costs of providing traditional network connection, SAPS are becoming more commercially feasible. Secondly, and in addition to the potential commercial value, SAPS can avoid the need for long, stringy connections. In the face of increasing extreme weather events, this will reduce the risks to the safety and reliability of the network.

In addition to these two benefits, microgrids can offer communities a chance to help co-design their energy system, specifically creating elements for their unique values and needs.

For Endeavour Energy, microgrids in particular present new opportunities to deliver growth and replace assets more affordably, with lower risks. With a huge range of different areas for our network to cover, and that creates many different challenges for both existing locations and newly developing areas, designing and maintaining a network that is safe and reliable, but also makes best use of all locally generated renewable energy is what we are striving to achieve with microgrids.

Our customers have told us that they want safe, reliable and resilient electricity. We see microgrids and SAPS as a way to harness new technology, and at the same time deliver on all of the key priorities of our customers. The use of SAPS and microgrids will need to align with new regulations.

## Case Study



Western Sydney's greenfield development presents a unique opportunity to build the network of tomorrow, today

<b>The Area</b>	<ul style="list-style-type: none"> <li>• One of the fastest growing areas in the country</li> <li>• \$41bn of infrastructure committed to the region</li> <li>• Over 50% of Sydney's population will reside in Greater Western Sydney by 2036</li> </ul>
<b>Proposed microgrid solution</b>	<ul style="list-style-type: none"> <li>• Co-design with developers and build a community microgrid consisting of local customer solar and battery systems, combined with larger scale in-front of the meter energy storage</li> <li>• Endeavour Energy DER (generation, storage, loads) will optimise use of local assets, both behind and in front of the meter</li> <li>• Operates as an island when upstream connection is lost</li> </ul>

## Implications for Endeavour Energy and this proposal:

	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.

# Effective and efficient service in the digital age

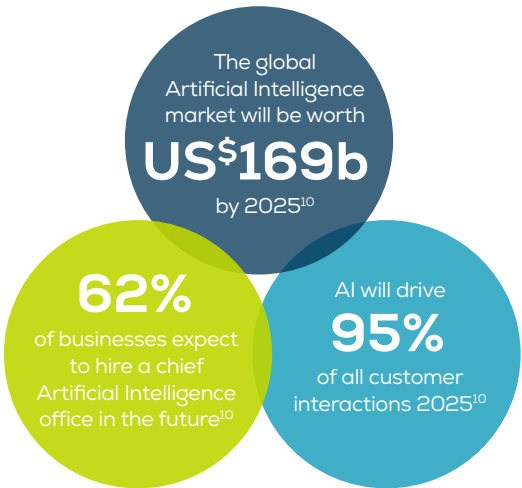
The continual evolution of digital capability is needed to facilitate customer choice in new technology, to enhance cyber security to maintain a reliable network and to efficiently and effectively service growth and operate our network.

While this requires investment it also enables us to do much more with less; affordably, safely and reliably integrating more dynamic services through our existing infrastructure.

Leveraging the use of digital sensors, automation, artificial intelligence and quantum computing will transform our capability to manage the network's operation. Evolving digital capabilities will underpin our role as the energy system orchestrator, and facilitate seamless, dynamic, real-time interactions between the network and the third-party platforms driving VPPs, charging stations, and active behind the meter participants.

But at the same time, we will be seeking to facilitate open data sharing with third parties, we will need to protect against an increasing frequency and sophistication of cyber-attacks. Endeavour Energy, like all networks, will need to enhance our cyber defences to protect the integrity of the network and our customers' data.





While the network's management becomes more automated, our workforce will also evolve. Virtual reality, robotics, driverless vehicles, and other innovations implemented alongside our human workforce will allow us to service our customers' needs more safely and efficiently. For example, drones (or UAVs (Unmanned Aerial Vehicles) have enabled distributors to quickly locate and diagnose network disruptions, without risking the safety of employees.



Implications for Endeavour Energy and this proposal:	
	The continual evolution of digital capability is needed to facilitate customer choice
	We must demonstrate how digitisation helps us to deliver new services with better investment
	Enhanced cyber capability will underpin reliable networks in the future.
	Technology allows growth to be delivered most efficiently and effectively

<sup>10</sup>KPMG 20 predictions for the next 20 years

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.

The Outcome	The Timing	Our Role	
Uncertainty of how the trend or factor will ultimately play out	Uncertainty in the timeframe in which the trend or the uptake will occur	Uncertainty in the role for networks in responding to the trend	
In the face of uncertainty, different strategic approaches are required to ensure our investments are prudent and provide best value for customers over the long term			
Where we need to understand perspectives and preferences	Where we are best placed to deliver optimal customer outcomes	Where others form part of optimal customer outcomes	Where pace or direction of the trend is yet to play out
			
We will <b>openly share data and discuss options</b> where we need to understand the community’s preference for investment.	We will <b>actively position</b> through clear communication and investment strategies the role customers want us to play.	We will build <b>stronger partnerships</b> to deliver new, better services. Partnerships will include third-party solution providers, users, consumer groups, councils.	We will <b>ensure optionality</b> that allows us to respond to changing pace and direction of trends.



### What we are seeking your feedback on

- Have we identified the key emerging priorities and trends within the Australian energy landscape?
- To what extent will external forces such as population growth, extreme weather events and the renewable energy transformation, impact your expectations of Endeavour Energy?
- How should Endeavour Energy be responding to these changes?

# : 4. Customer insights and engagement

Our engagement so far





## Our commitment to 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 deliver a proposal that meets 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.

We are aiming high. We are committed to listening, identifying better practice, learning from past experience, utilising international standards and building a culture of effective engagement recognised across the industry. Our goal is to embed effective business-as-usual engagement so that we strengthen a customer centric culture, reflecting the changing needs of customers and our evolving ecosystem.

## 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 (International Association for Public Participation) Core Values for Public Participation.

### Engagement goal

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

To undertake engagement that delivers our purpose of powering communities for a brighter future by developing a Preliminary 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 Australian Energy Regulator;

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.



## Engagement principles

Seven key principles guide our engagement activities and how they will be implemented throughout the business. They set the standards to help build consistent, open and trusted relationships.

1



### Clearly defined

We will provide customers and stakeholders appropriate consultation roles on each topic in accordance with the IAP2 Public Participation Spectrum, pictured on page 40.

2



### Iterative and responsive

We will adjust to stakeholder and customer needs and preferences both for ongoing engagement and the Preliminary Proposal itself. We will share “feedback loops” regularly that make clear what we have heard from our stakeholders and customers and how we are acting on that feedback.

3



### Led from the top

We will ensure appropriate CEO, Executive and Board participation so that our most senior people hear feedback directly.

4



### Efficient

We will collaborate with other networks where possible to respect peoples’ time, support aligned topics and simplify the process.



5



### Accessible

We will make it easier for customers and stakeholders to participate. We will improve our engagement with culturally and linguistically diverse communities.

6



### Informed and well resourced

We will undertake meaningful engagement with a broadly representative body of customers, providing the clear and accessible information they need to participate meaningfully.

7



### Open to robust challenges

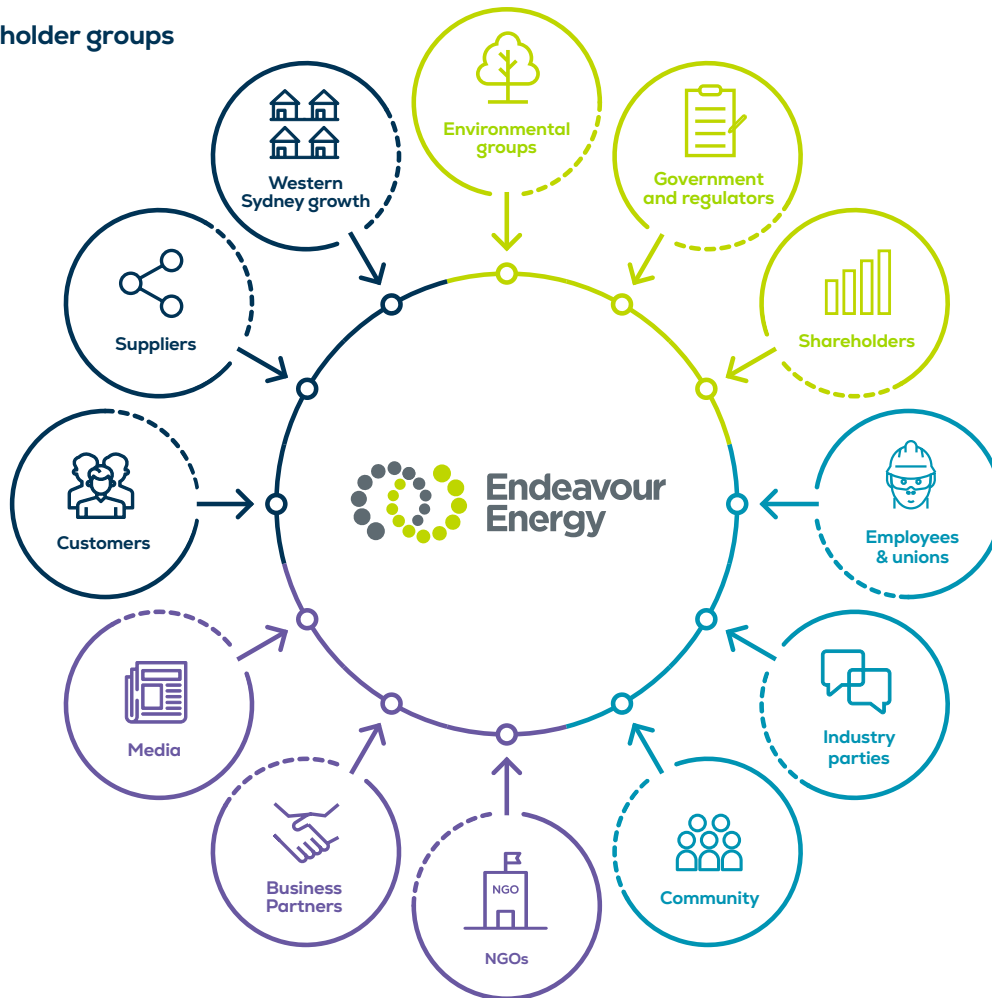
We will welcome robust testing of our assumptions and strategies and will be open to challenge.

## Engagement approach

Endeavour Energy has engaged in a genuine co-design approach to this regulatory reset. This approach allows us to work 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 we bring diverse and sometimes conflicting interests that we must balance. Our key stakeholder groups are visualised on the next page.

## Our key stakeholder groups



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.

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 Preliminary 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 Regulatory 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, distributed energy resources (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
- Supporting vulnerable and CALD customers.

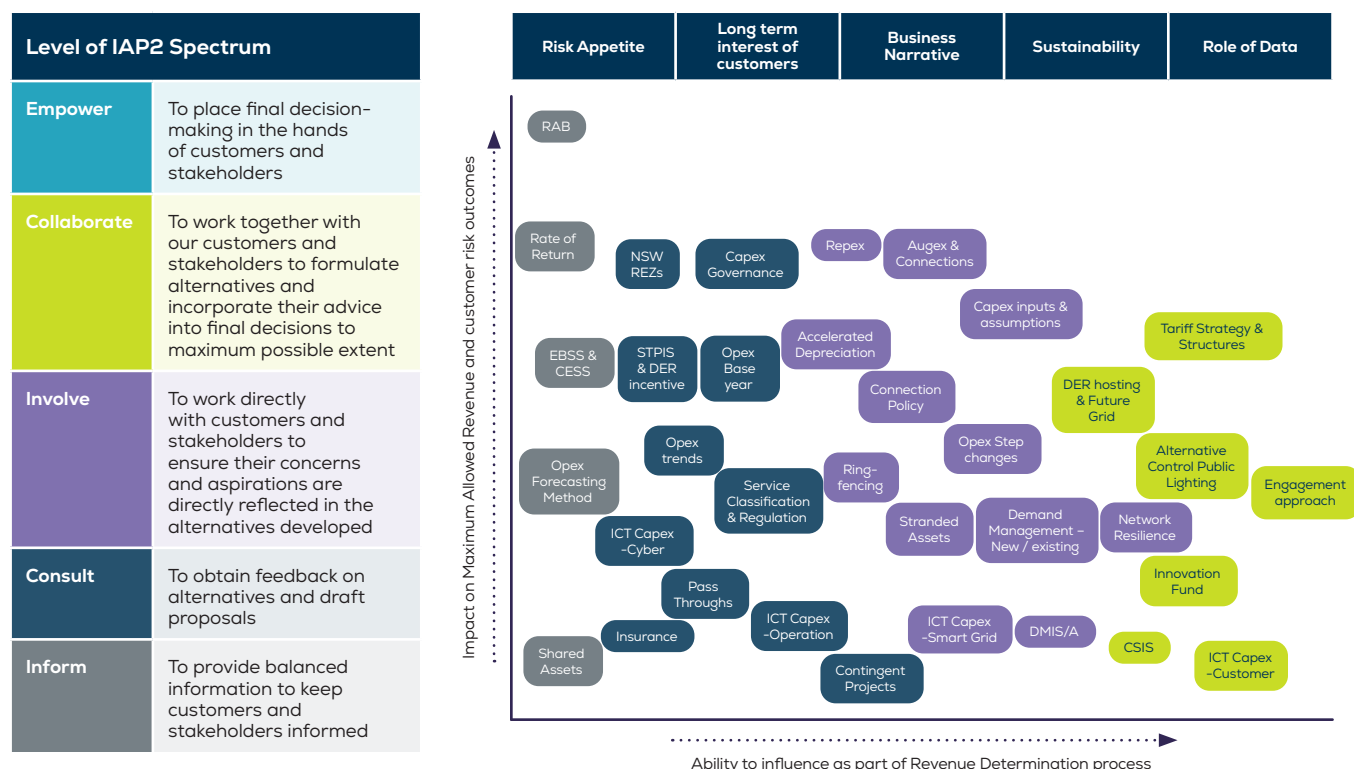
We view the ReRG as an opportunity to actively shape a culture of increased and continuous engagement between Endeavour Energy and Retailers for the benefit of customers.

## Engagement scope

Our engagement scope has been set looking outward from the regulatory framework as required by the AER.

The RRG, together with representatives of Endeavour Energy's Board and our Executive Leadership co-designed a map of issues for engagement, identifying their impact on the proposal and the ability of customers to influence the outcomes for each aspect of our Preliminary Proposal on the IAP2 Spectrum of Participation.

This co-designed map acts as a critical resource that defines detailed engagement planning and is subject to further amendment by agreement of the RRG and Endeavour Energy's Board and Leadership team.



In engaging with customers our focus will be on understanding the outcomes they value, expect and desire of us. We appreciate there will be conflicting interests within the feedback we receive. Our challenge will be in translating this feedback into a set of proposal inputs (as depicted on the previous page) that strike an appropriate balance and deliver optimal outcomes for our customers. The independent views and insights of our RRG and other informed stakeholders will be central to achieving this task.

## Our progress so far

Our priority is to develop a Regulatory Proposal that delivers 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 the Regulatory Proposal 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.

From this feedback five key customer expectations have emerged. We will look to test these further with our RRG and customers in the coming months as we provide more detailed information around options and costs for meeting these expectations.

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.



### What we are seeking your feedback on

7. Are we engaging with the right people, at the right time about the right issues?
8. Is there anything missing from the feedback we have gathered, the way we are using it in developing this proposal?

# 5. Proposed 2024-29 revenue & average customer bills

Key proposal outcomes





In this Chapter, we outline our forecast revenue and the outcomes we intend to deliver. This Preliminary Proposal reflects our latest forecasts and initial positions. There will be several opportunities to review and amend these forecasts as necessary between now and the formal lodgement of our proposal to the AER in January 2023 to account for:

- Customer and stakeholder feedback we receive
- Refinements to our forecasts for up-to-date inputs and information
- Policy and regulatory changes such as the release of AER Guidelines, Reviews and AEMC Rule changes
- Any unanticipated changes in Government policy, our obligations or any other material developments between now and 2023.

This proposal is therefore a starting point for more detailed discussions regarding the right balance between the costs we incur and the services we deliver. We welcome feedback on these plans and the priorities and expectations of our customers.

## How is our revenue set?

As a monopoly, our revenue (or prices) are set by an independent regulator (the AER) to ensure the costs we incur are efficient and the outcomes we deliver are reasonable and fair.

To set our revenue the AER uses a 'building blocks' approach. This involves calculating a total revenue requirement by adding up different kinds of costs, which include:

- **Capital and asset costs:**
  - Return 'of' investment (depreciation): the initial value of assets is return to debt and shareholders over the economic life of the asset
  - Return 'on' investment: the costs associated with financing investments such as interest costs and payments to shareholders
- **Operating expenditure:** the day-to-day costs of operating and maintaining our assets and operating the business
- **Incentives:** in the absence of competition incentive schemes are used to drive improvements in efficiency, innovation and service quality. This can result in revenue rewards or penalties being applied
- **Tax:** an allowance is provided for benchmark tax costs.

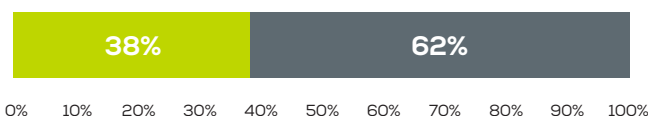
As a capital-intensive business capital and asset costs are the primary driver of our revenue. This means a large portion of our forecast revenue relates to the recovery of previously installed assets that are currently providing a service to customers.

Our opening asset base for the 2024-29 period is forecast to be \$7.4 bn (FY24). This means approximately 62% of our forecast revenue will relate to recovering costs associated with past investments and 38% will relate to costs we forecast to incur over the 2024-29 period.

### Revenue percentage contribution by upcoming or previous expenditure

Recovering the costs associated with the ongoing operation of the network and investments to upgrade, replace and install new assets.

Recovering the costs (financing and depreciation associated with past investments over the last several decades and carryover rewards and penalties from incentive schemes.

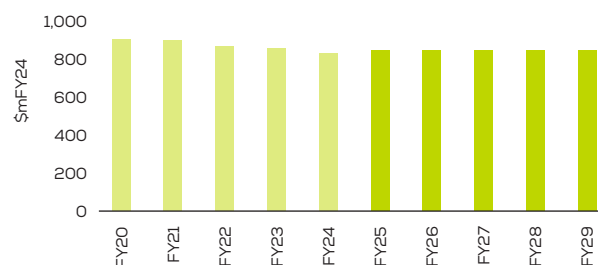


## Our forecast revenue for 2024-29

Total revenue is forecast to be \$4.2 bn (\$FY24) over the 2024-29 period. This is 3% lower than our expected revenue in the current 2019-24 period of \$4.4 bn (\$FY24).

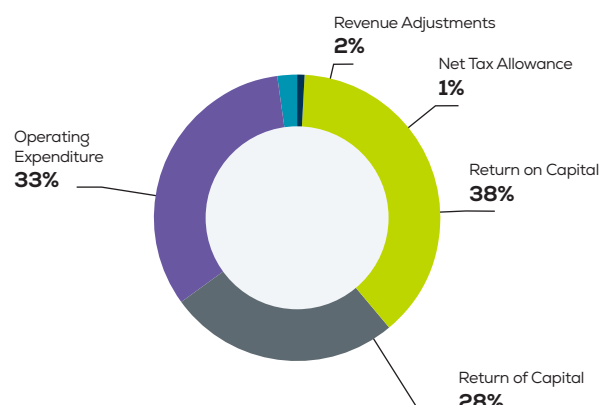
### Endeavour Energy Revenue (Actual and Forecast)

Total revenue is forecast to be \$4.2 bn (\$FY24) over the 2024-29 period. This is 3% lower than our expected revenue in the current 2019-24 period of \$4.4 bn (\$FY24).



A breakdown of this revenue between the building blocks shows returns on previous investments as the primary driver of revenue as noted above:

### Forecast revenue breakdown



## What outcomes will we deliver customers?

Our Regulatory Proposal is a product of our forecast costs and intended service levels for the 2024-29 period. While it is important that the inputs of our proposal meet the efficiency and prudence expectations of the National Electricity Rules, we consider the outputs we deliver customers to be the key criteria against which our proposal should be assessed.

We would welcome feedback from customers on what are the key outcomes our proposal should deliver. On this, we note the AER's Better Reset Handbook which

sets out the criteria by which a network's proposal will be subject to a proportionate and targeted review. Actioning the feedback we receive from customers is, in our view, the key criteria in demonstrating that a proposal is capable of a streamlined review process.

In the previous sections, we identified six key external drivers and five customer research insights that have guided our initial plans. We have synthesised these factors into four key investment themes with an overarching objective:

### We will balance ongoing affordability for customers with investments that address customers' long term interests



Meeting core customer expectations for a safe, affordable and reliable electricity supply



Supporting the sustainable growth of our communities



Providing a resilient network for the community against increasing external hazards



Enabling customers future energy choices for a sustainable future

Below we provide an initial indication of how our Preliminary Proposal delivers against these focus areas whilst providing an affordable service in the long-term interests of customers.

#### Meeting core customer expectations for a safe, affordable and reliable electricity supply

We will continue to 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 both our workers and the community and provides a reliable electricity supply to our customers.

We have developed a value framework that puts the needs of our customers first and is embedded into all our investment decisions. It considers public and worker safety, network reliability, bushfire and environmental impacts to help us understand where investments will have the greatest benefits.

We use this framework to determine where we need to invest and when based on our consideration of the degradation of asset performance over time.

To minimise the lifecycle cost of our assets we optimise the delivery of these investments within our network constraints and schedule project delivery to minimise the disruption on our customers.

Our replacement capex (repex) program considers the need to reactively replace assets with known defects before they fail, and to proactively replace assets that are no longer economically viable to operate on our network. We have developed a forecast program that aligns with the AER's top-down repex modelling tool.

#### Supporting the sustainable growth of our communities

As the ongoing transformation of Greater Sydney continues to drive growth across the Endeavour Energy network, we need to align the timing of our investments with other lead infrastructure providers by facilitating grid technologies that will be adaptable to the evolving needs of businesses and communities.

This growth will require substantial network investment that will support a wider suite of Government plans and initiatives for promoting affordable housing, industries, employment opportunities and economic growth in our network area.

In response to requests from various Government and private planning bodies, and those responsible for land development, we are aiming to address the challenges arising from both shorter development time cycles as well as reducing overall community costs by installing infrastructure in conjunction with other utility providers.

The investment will maximise the utility of existing infrastructure assets and include strategies to stage the investment. In addition, investment timing will be optimised to prevent delays in development due to unavailability of assets.

The investment has an optimal mix of traditional and grid transformation technologies to ensure that the new network installed in greenfield areas is adaptable and supports technological transformations such as customer Distributed Energy Resources.

### Providing a resilient network for the community against increasing external hazards

Endeavour Energy defines resilience as the ability to anticipate, withstand, quickly recover and learn from major disruptive events. As the effects of a changing climate become more impactful, 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.

With the move to 'electrify everything', electricity is increasingly central to our community as our customers are dependent on reliable power for transport, finance, water and communications. Our customers are trusting us with more and more of their lives and they are telling us they want more reliable and robust power day to day and during emergencies. Additionally, cyber security and a more variable and decentralised generation mix require investments to strengthen the stability and security of networks.

To meet these expectations, we are applying a value-based approach to identify ways to harden the existing infrastructure, improve fault detection and automate the network to reduce the size of outages and improve restoration times for customers. Across our organisation, we are optimising our response to fault and emergencies and have committed to sharing those learnings across the industry.

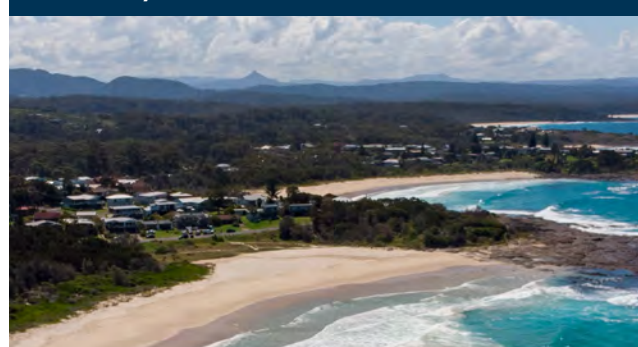
With over 85 % of our network in bushfire prone areas Endeavour Energy devotes a significant proportion of our projects and programs to mitigating bushfire risk for the community, including a rigorous pre-summer bushfire program.

### Enabling customers' future energy choices

As customers seek to connect more distributed energy resources and increase the use of 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.

Endeavour Energy has already positioned itself well for these changes. The current period investment into a new Advanced Distribution Management System, enhanced cyber-security and upgraded enterprise systems (SAP) are requisite initial steps. Through our innovation program, we have been conducting Dynamic Voltage Management System, Conservative Voltage Optimisation, Distributed Energy Resources Management system trials (such as what we have developed for Bawley Point).

#### Case Study

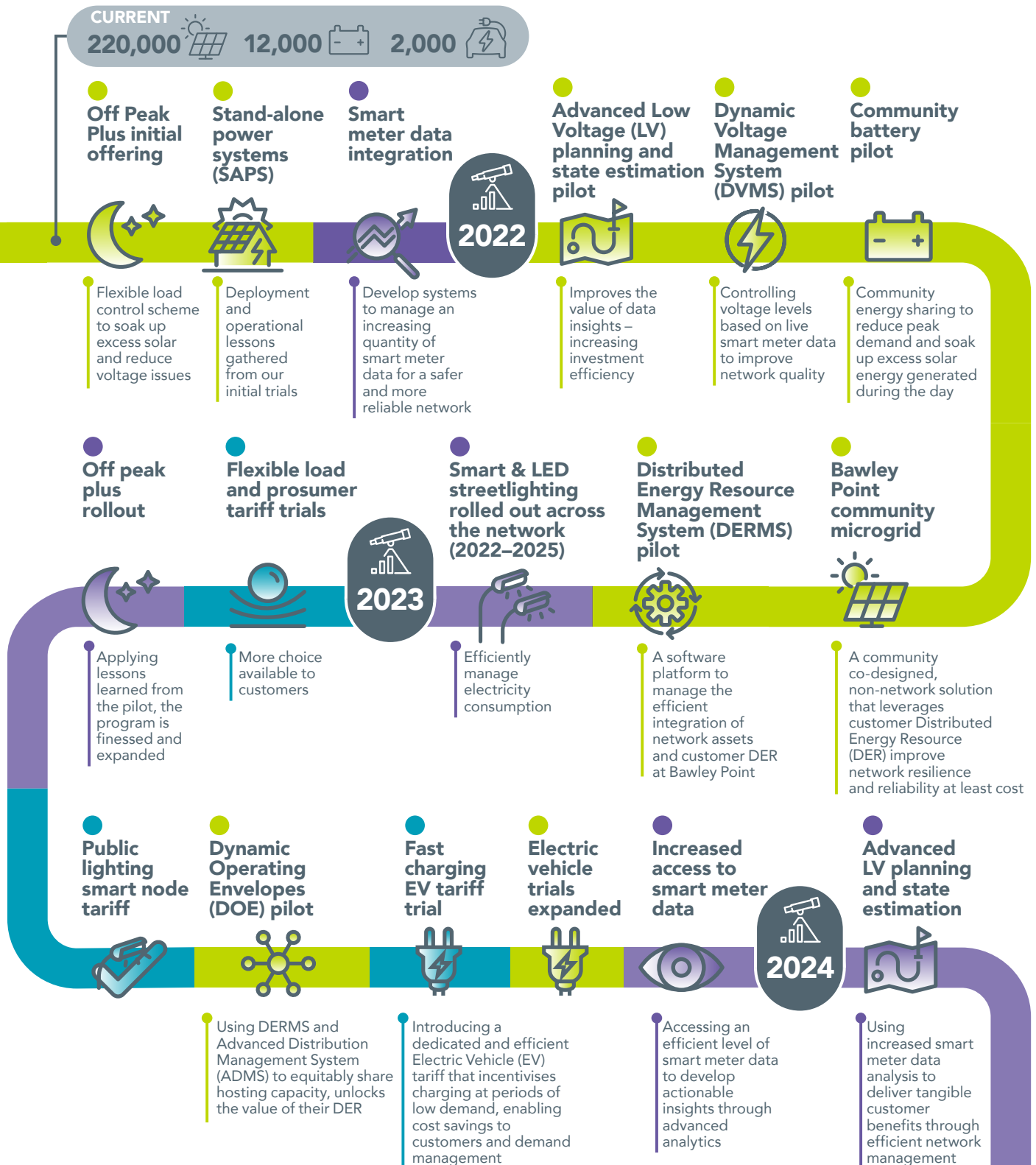


Edge of grid communities can benefit from efficient new technology solutions to improve customer outcomes

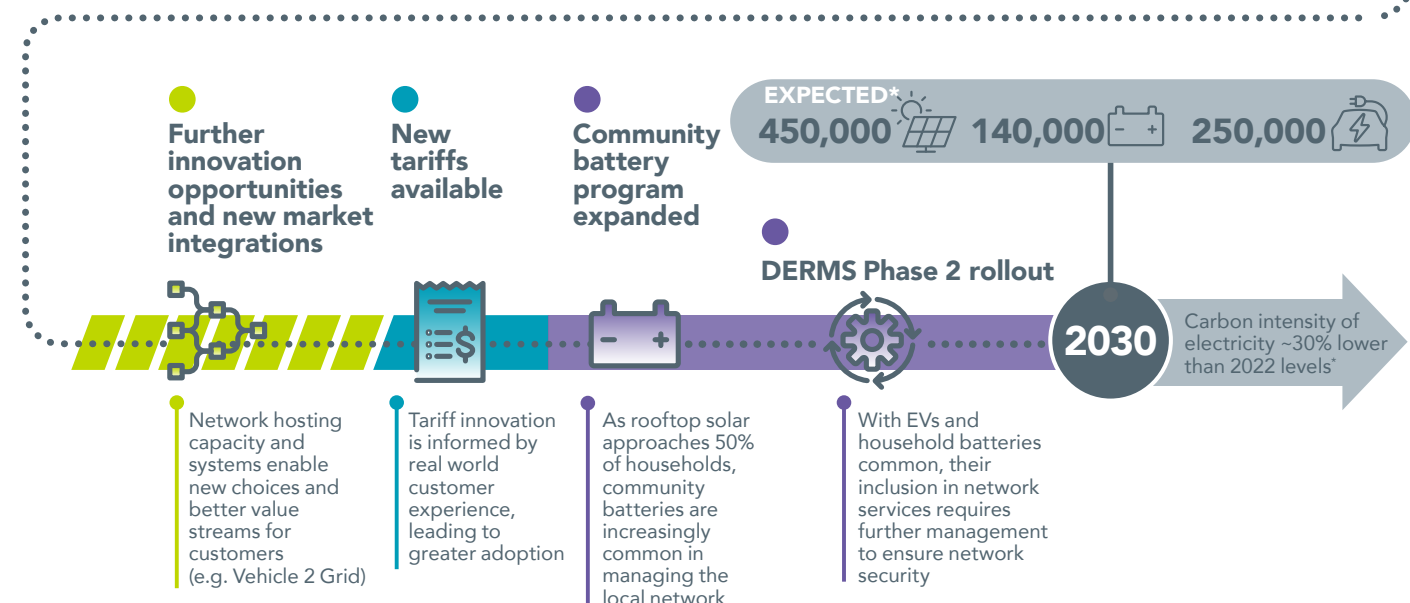
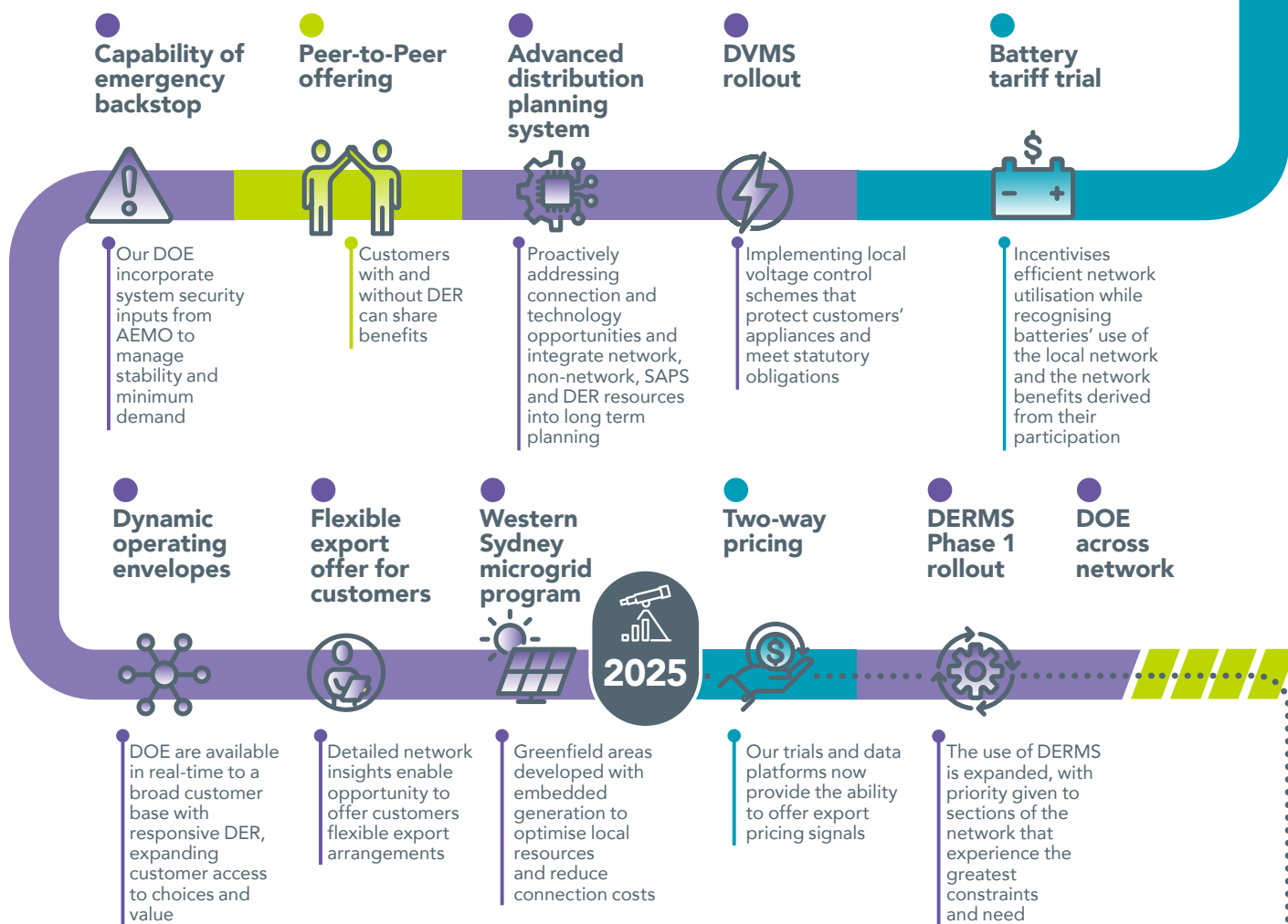
<b>The Area</b>	<ul style="list-style-type: none"> <li>Coastal community on the southern tip of our franchise</li> <li>1032 connected customers</li> <li>Popular tourist destination with a holiday swell of 4x – 5x</li> <li>Geographic isolation/ topography makes electricity services vulnerable to bushfire risk, voltage constraints and poor reliability</li> </ul>
<b>Proposed microgrid solution</b>	<ul style="list-style-type: none"> <li>Co-design and build a community microgrid consisting of local customer solar and battery systems, combined with Endeavour Energy owned storage</li> <li>Endeavour DER (generation, storage, loads) will optimise use of local assets, both behind and in front of the meter</li> <li>Operates as an island when upstream connection is lost</li> </ul>

We currently serve 220,000 PV solar, 12,000 battery and 2,000 EV customers. By the conclusion of the next period we expect to serve 450,000 PV solar, 140,000 Battery and 250,000 EV customers. To support these changes Endeavour Energy will be making prudent investments that incrementally build the capability to meet these evolving requirements. We have developed the below roadmap provisionally demonstrating the innovations and investments we intend to undertake.

## How will we enable customers' future energy choices?







Measure and Re-forecast

Pilots

Production/rollouts and expansions

New tariffs

\*Expected Distributed Energy Resources uptake and carbon intensity reduction is approximate and based on AEMO's "Step Change" Scenario.

Timing is indicative only.

These initiatives are necessary to prevent the need for curtailment as a tool to manage reliability issues and ensure customers that take up new technologies are able to maximise the value derived. Our customers may then, via these investments, enjoy greater access to new energy market opportunities, by households and third parties, to maximise value from the networks in a more dynamic system.

In regards to tariffs, customers with distributed energy resources (DER) technologies will continue to export up to a basic level of energy into the grid at low demand times (ie 10am till 2pm) without facing additional charges. For those who export above this basic level we intend to introduce an 'opt in' tariff that incentivises customers to shift their export from the middle of the day to our peak demand window (ie 4pm till 8pm).

## Balancing investment needs with an affordable service

The investment themes referenced above impact the level of expenditure we require and as a result our forecast revenue.

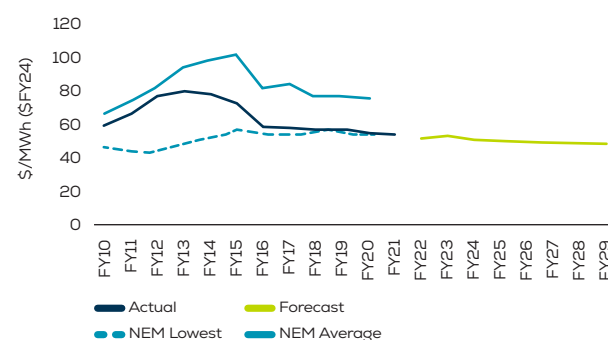
Our forecast revenue has a real and direct impact on the affordability of energy for our customers. Over the last decade, we have taken steps to improve our efficiency to reduce our contribution to energy bills. These efforts accelerated after our partial privatisation and have, along with a lower cost of capital afforded by decreasing market conditions, resulted in Endeavour Energy having the lowest average network price (c/kWh) in the NEM.

In making transformative and critical investments to support the decentralisation and decarbonisation of our network area we will continue to support the importance of long-term energy affordability. So, while our investment in growth areas and supporting DER will increase next period we will accommodate these drivers within an overall reduction in our forecast capex compared to current period spend. Our opex will also be set using the AER's base-step-trend method which produces a forecast opex below our current period spend/allowance

Based on our expenditure forecasts (along with the remaining building blocks) our forecast revenue is expected to be \$4.2bn (\$FY24) over the 2024-29 period which is 3% lower than our current period forecast. Given this, we expect to continue to have some of the lowest network charges in Australia.

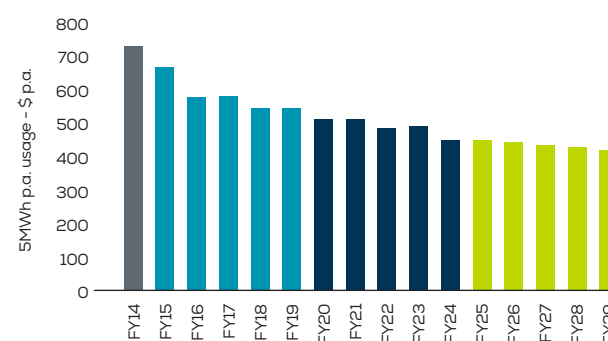
We note that whilst our proposal continues to drive efficiency improvements in our expenditure plans our forecast revenue is also subject to broader economic inflationary and interest rate pressure.

Average price per customers

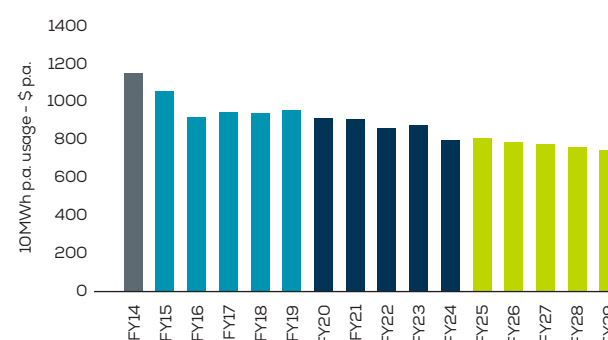


For the typical residential and small business customer, we expect to deliver a reduction on our portion of the bill over the course of the next regulatory control period. This is shown in the graphs below.

Average residential distribution bill



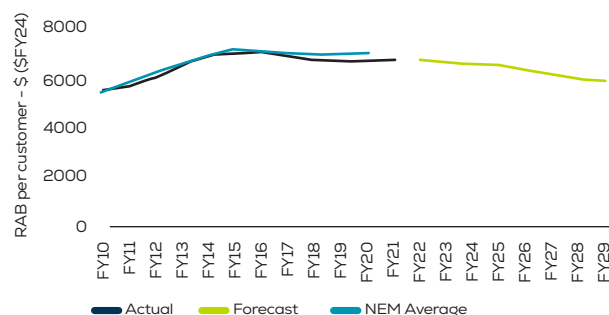
Average small business distribution bill



It is also important that our proposal supports affordability not just for the next five year period but over the long term given our assets are generally long-lived and past costs are the primary driver of future costs. RAB growth is therefore a key metric of interest to stakeholders in understanding whether a proposal contributes to affordability over the longer-term.

Endeavour Energy's RAB per customer is forecast to decline over the 2024-29 period as a result of our ongoing commitment to improving our capital efficiency in servicing growth and meeting our obligations as a network service provider.

**RAB per customer**



### What we are seeking your feedback on

9. What are the outcomes that matter most to you or the customers you represent?
10. Does this Preliminary Proposal reflect priorities and outcomes that are in customers' long-term interests, while suitably balancing reliability, affordability, and safety?

# : 6. Proposed 2024-29 forecasts

Key proposal inputs





This Chapter contains our Preliminary Proposal forecasts and positions for review and discussion. We also include a comparison of our preliminary positions to the AER's Better Reset Handbook and include initial comments and questions from our RRG.

This is to help provide context as to whether our preliminary positions are aligned with AER expectations and stakeholder feedback received to date. To be clear these positions are preliminary and have only been subject initial review in early engagement so far.

Our intention is to seek your feedback on these positions to understand where further work is required and areas of interest. We will then conduct more detailed engagement on these matters over the coming months with an objective to provide an updated view of our positions by October 2022 that will form the basis of our formal proposal to the AER in January 2023. The table below includes questions we would like your feedback on for the key topics covered in this Chapter:

Section	What we are seeking your feedback on
<b>Operating expenditure proposal (opex)</b>	<p>11. Does our operating expenditure proposal address our customers' priorities?</p> <p>12. Are there specific aspects of our proposed operating expenditure that you support, oppose, or want more information about?</p>
<b>Capital expenditure (capex)</b>	<p>13. Does our capital expenditure proposal address our customers' priorities?</p> <p>14. Are there specific aspects of our proposed capital expenditure that you support, oppose or want more information about?</p> <p>15. How do you feel about current resilience and reliability service levels and what is required in the years ahead from networks?</p> <p>16. What feedback do you have in relation to our approach to servicing growth across our network? Who should fund the costs of new connections?</p>
<b>DER enablement</b>	<p>17. How do you feel about our approach to supporting the types of energy choices customer may want now and in the future?</p> <p>18. How proactive should Endeavour Energy be in trialling and adopting new technologies and solutions?</p> <p>19. How should customers contribute to upgrading the network to support solar exports?</p>
<b>Rate of return &amp; depreciation</b>	<p>20. Is the June 2022 AER update of its Rate of Return Instrument the most appropriate approach for this proposal?</p> <p>21. Do you have any preferences for straight-line, period-by-period, or year-by-year depreciation? Why?</p>
<b>Incentives</b>	<p>22. Is our proposal to apply the AER's incentive schemes in line with the guidelines appropriate?</p> <p>23. Do you have any views about which measures of customer services should be included in an incentive scheme?</p>
<b>Pricing structures</b>	<p>24. To what extent should tariffs reflect the costs different customers impose on the network?</p> <p>25. Are there specific aspects of our proposed tariff structure that you support, oppose or want more information about?</p>
<b>Alternative control services</b>	<p>26. Is this the right approach to supporting the Local Government transition to energy efficient lighting and emerging technologies?</p>

In the current 2019–24 period our capital and operating expenditure is expected to be \$5 million (\$FY24) and \$378 million (\$FY24) below the allowances set by the AER respectively. This lower expenditure is the starting point for developing our plans for 2024–29.

## Operating expenditure

Operating expenditure (opex) is the costs required to operate and maintain our distribution network. Our opex include the following key activities:

- Inspecting, maintaining and repairing network assets
- Maintaining vegetation around our assets to reduce safety hazards and interruptions to supply
- Fault and emergency repairs and supply restoration caused by events such as storms and equipment failures.
- Customer service and corporate support activities like procurement, financial reporting, HR and legal required to meet our obligations.

In 2024–29 we forecast that required opex will be \$1,411 million (\$FY24). This forecast amount is 13% or \$219 million (\$FY24) below our opex allowance in the current period.

Our average opex per customer over 2024–29 is forecast to be \$237 (\$FY24). This represents:

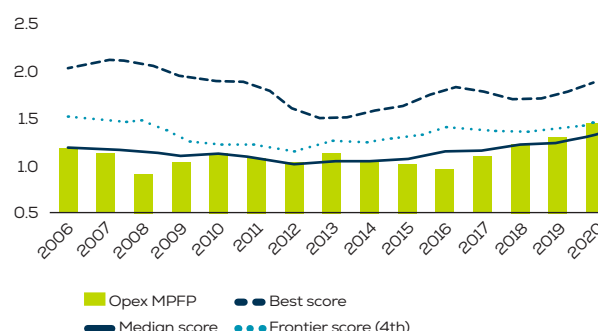
- A 2% or \$5 reduction compared to 2019–24
- A 28% or \$92 reduction compared to 2010–24.

The considerable reductions we have made in opex over the last several years have escalated since our partial privatisation in July 2017 are driven by sustainable efficiencies we have achieved and continue to expect to achieve. In particular, during the 2019–24 period we:

- Embarked on a significant and necessary transformation of our ICT enterprise systems and processes. This is the primary source of our more recent efficiency gains
- Re-structured our key operations to better utilise (and thereby reduce) our workforce while improving service quality
- Conducted a thorough and strategic review of all procurement processes and agreements to materially reduce our contract costs
- Initiated an innovation fund and continuous improvement project team to continually assess and review internal processes to identify better ways of working and productivity improvements
- Increased the scale of our unregulated activities which reduces the corporate overheads allocated to our standard control service activities.

Customers expect us to take steps like these to improve our affordability and sustainable cost reductions are one way in which we have delivered on this priority. These improvements mean we now rank amongst the most efficient networks in Australia per the AER's Opex multilateral partial factor productivity (MPFP) benchmark:

Endeavour Energy opex MPFP (output/input)



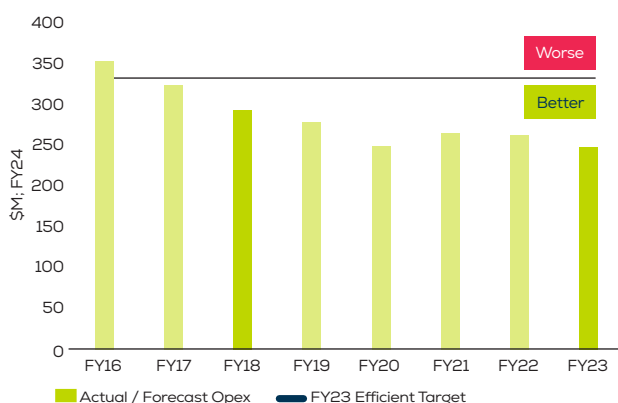
Under the AER's base-step-trend method customers receive the benefits of these reductions. This approach involves:

- **Base:** As opex is largely recurrent, the most recent year of actual opex (year 4 of a period by the time of the AER's final decision) is used as the forecasting starting point for future opex. This base year is subject to an AER test of efficiency and may be amended for one-off costs, changes in capitalisation or accounting standards and other known changes
- **Step:** Where there are known changes in forecast opex for specific activities these are accounted for via step changes. These typically relate to new obligations, trade-offs between capex and opex and specific increases or decreases in a cost category. The AER has a clear criterion that is applied to assess these
- **Trend:** In addition to specific changes, the opex forecast is adjusted for broader impacts. This includes forecast wage growth, output growth (ie, maintaining an expanding network) and productivity improvements.

This forecasting approach passes the benefits of Endeavour Energy's opex reductions over the current period through to customers. This is because the lower 'revealed' opex is used to set our future allowances. Based on the AER's econometric benchmarking models, we forecast our FY23 opex to be below (ie, better) than the AER's substitute estimate of the efficient opex<sup>11</sup> level for Endeavour Energy.

<sup>11</sup>The substitute estimate is set at a target score of 0.75 using the AER's preferred economic model; the Stochastic Frontier Analysis Cobb Douglas (SFA CD), or an average of this and other econometric modelling results.

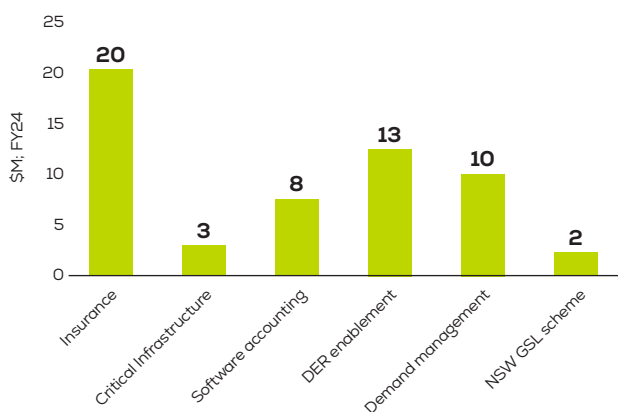
Base year opex efficiency test



We have applied the AER's typical approach for trend factors using our prevailing customer and demand growth forecasts and historical network growth rates. For step changes, we have identified several potential ones for further investigation and review:

- Increasing insurance premiums
- Security of Critical infrastructure (Act)
- Software as a Service accounting treatment change
- DER enablement and network visibility (meter data)
- Demand management contracts
- Amended NSW GSL scheme.

Opex indicative step changes (\$m; FY24)



At this stage, we have used estimates of the costs of these step-changes for modelling purposes but these will be refined in the months ahead.

For the trend factors, we have used the AER's productivity factor benchmark, the latest available labour escalators from recent AER decisions and historical growth rates for the output growth factors until forecasts can be updated and independently verified.

## Capital expenditure

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

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

Our capex allowance for the current period is \$1,944<sup>12</sup> million (\$FY24) and we expect to spend \$1,939 million (\$FY24). We note that whilst we forecast to spend the allowance in the current period this involves a re-prioritisation within this allowance for our ICT transformation program. This transformation program, along with the impacts of Covid-19 and several extreme weather events, has resulted in reduced expenditure in system categories to date. We are therefore forecasting increasing levels of system expenditure over the remainder of the 2019-24 period and into 2024-29.

Our forecast capex spend for the 2024-29 period is \$1,825 million (\$FY24). This is a 6% reduction or \$114 million (\$FY24) on our current period forecast. Our current period performance has been driven by:

- Achieving sustainable capital delivery productivity improvements and materials and contract cost reductions
- Improved asset planning, risk prioritisation and investment governance practices which are detailed further below
- An increased use of innovative and non-network solutions to defer and/or reduce traditional network investments. This includes engaging a third party supplier to provide one of the largest distribution Battery Energy Storage System (BESS) solutions in Australia to defer a Zone Substation upgrade in Penrith
- Prioritising investment in transforming our ICT systems and Buildings and Property to improve our organisational efficiency and create a culture of excellence and innovation
- Catering for unprecedented growth across our network area, highlighted by the establishment of the Western Sydney Airport and the emergence of data centres

<sup>12</sup>Gross Capex less capital contributions and inclusive of equity raising costs

- Supporting the ongoing transition of customers to decentralised and decarbonised renewable generation
- Managing the impacts of several natural disasters, such as the 2020 Bushfires and 2020 and 2022 Floods, and the Covid-19 pandemic on our development levels and business as usual activities. This, in addition to our early period focus on ICT transformation, has resulted in a deferral of some system capex within, and potentially between, periods.

We have achieved these reductions and managed this uncertainty whilst improving the reliability of our network, maintaining our 5th placed capital efficiency ranking and servicing one of the fastest growing areas in Australia over the last decade.

Our forecast capex seeks to maintain our current level of performance and risk appetite, noting that the AER's incentive schemes provide incentives to reduce costs, innovate and improve reliability over the course of a regulatory period.

Risk is a key determinant of capex requirements and central to our investment justification and prioritisation framework. During the 2019-24 determination process we received feedback from the AER, its technical experts and stakeholders that improvements could be made to our methodology for identifying, considering and delivering capex.

Based on this feedback we have made several changes to our investment planning and governance framework. This has involved:

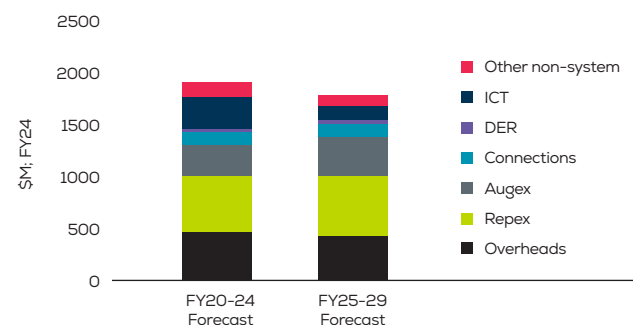
- Aligning with AER guidance material including the new 'Value of Customer Reliability' and 'Customer Export Curtailment Values', the repex and distributed energy resources (DER) guidance notes and AEMO Integrated System Plan scenarios
- Establishing a new value framework with a focus on quantified risk measures
- Implementing a new investment prioritisation tool (Copperleaf)
- Creating new Case-For-Investment (CFI) templates that rely on an economic cost-benefit analysis approach to options assessment
- Refinements to our Investment Management Committee to provide oversight on both investment strategies and individual proposals as well as continual learning cycles through post-implementation-reviews.

Broadly, our forecast capex is developed through developing a bottom-up portfolio of projects with a risk-based approach towards benefits quantification. This forecast is then optimised on the basis of top-down checks (like the 'repex model') and a prioritisation process. Our forecast is driven by our four key investment themes balanced with an overall objective of developing an affordable proposal in the long-term interests of customers.

It should be noted that our bottom-up plans are still in the process of being fully developed. We will continue to refine our plans and engage with customers and stakeholders to test our overall forecast against alternative options. This will be critical to confirming whether our overall forecast does in fact achieve the appropriate balance.

As outlined above, our forecast capex is below the current period forecast and consists of the following activities:

**Endeavour Energy Forecast Capital Expenditure**



We provide an overview of the key investment areas in the sections below.

### Replacement expenditure (repex)

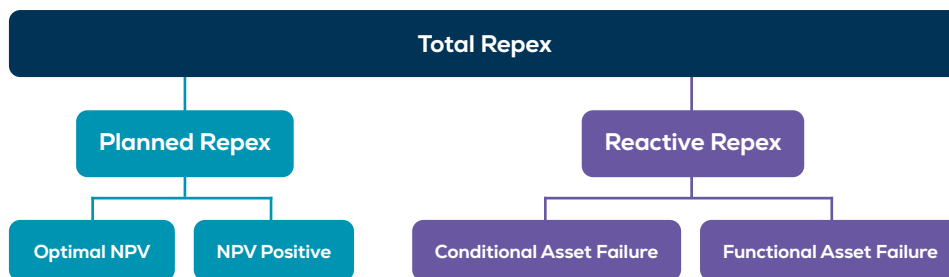
Our forecast repex is primarily driven by meeting customer expectations for a safe, affordable and reliable supply of electricity. It involves replacing existing assets when (or before) they fail based on an assessment of the risk and impacts on supply or safety of failure.

Given this a largely recurrent category of capex the AER relies on a top-down model (the 'repex model') to determine an appropriate forecast. We have adopted this approach<sup>13</sup> for setting our overall repex forecast whilst determining program and project level expenditure using our asset management framework and information.

While useful, this top-down modelling is less accurate at an asset class level. Our detailed forecast considers a range of factors such as asset condition, reliability, safety and failure risk, cost of intervention timing differences and benefits to customers.

<sup>13</sup>In accordance with recent AER decisions we have used the 'cost' repex scenario informed by our FY19-21 actuals. We have adjusted several anomalies in our dataset and to include Power Transformers as a modelled category of repex.






Our objective 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 repex is also driven by the investment themes of supporting resilience and enabling customers' energy choices. This is by ensuring we do not simply conduct

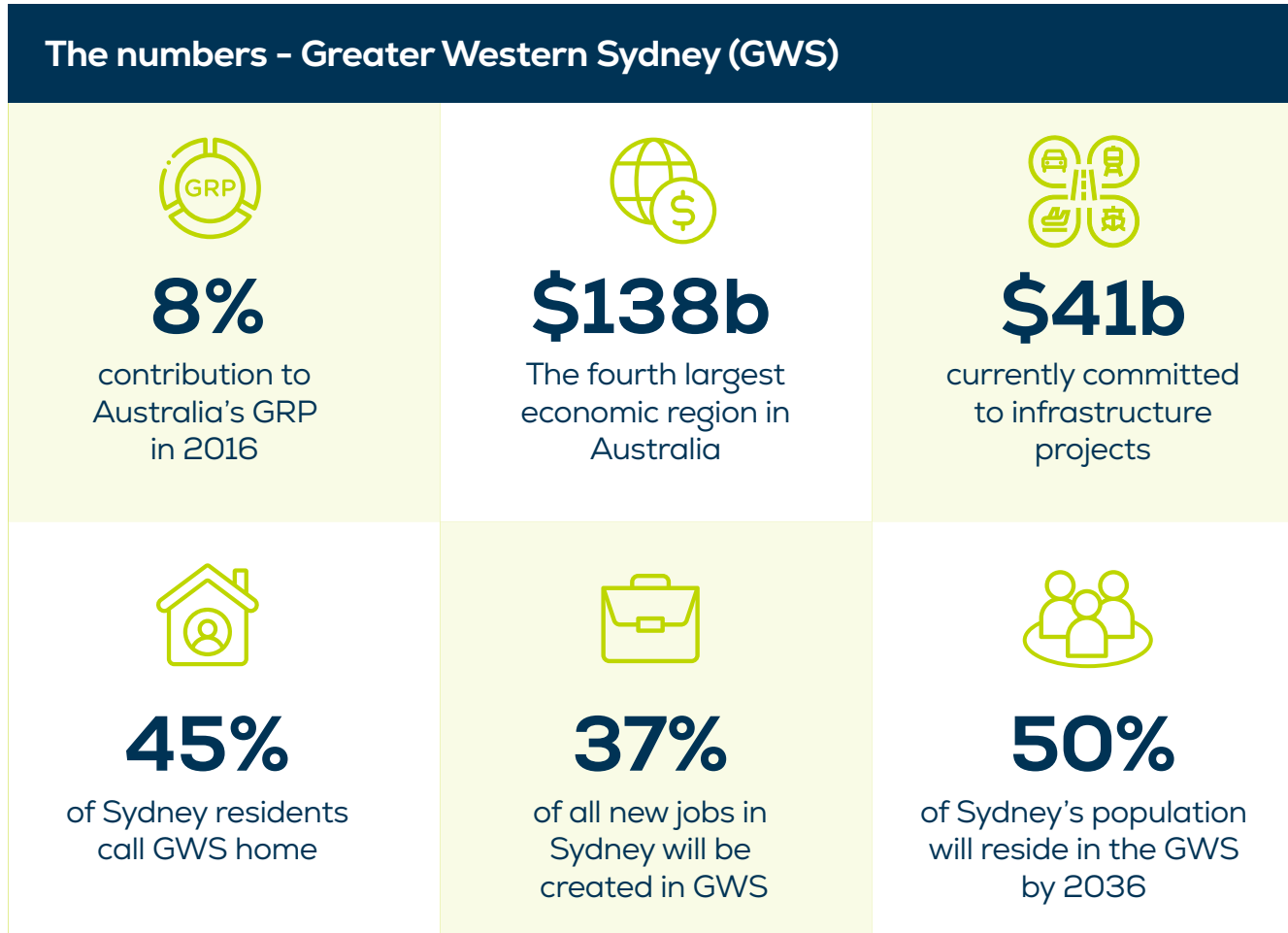
like-for-like replacements but instead test for innovative and alternative solutions that account for customer take-up of distributed energy resources (DER) and which can provide improved safety and resilience outcomes. Noting these factors are accommodated within an overall repex forecast that accords with the AER's repex model.

Some key projects include:

	<b>High Voltage Ground Mounted Switchgear Replacement Program (Magnefix MD4)</b> \$55m program across five years to address an increasing customer reliability, collateral damage and public safety risk across parts of the network.
	<b>Poles</b> \$94m reactive program over five years to reinforce or replace poles that no longer have a suitable safety factor. Poles in bushfire prone areas replaced with concrete poles to improve network resilience to future bushfires in the area.
	<b>Overhead High Voltage Switches</b> \$32m project across a range of asset types (Air Break Switches, Drop Out Fuses, Under Slung Links) to control an increasing probability of failure whilst building a more resilient network for the future. Including a combination of interventions including like for like replacement, upgrading to Load Break Switches (automated or manual) or removal of the asset where it is deemed no longer needed.
	<b>Power Transformers</b> \$41m (70% proactive and 30% reactive) risk based program to manage the fleet of power transformers. Program develop using individual asset specific condition data and customer impact data. Proactive replacements predominantly justified based on reliability risk to customers.
	<b>Tower upgrade</b> \$11m program consisting of refurbishment and replacement proposed to manage the increasing likelihood of a tower failure. Program focused on reducing the safety and reliability risk associated with Endeavour's ageing and deteriorating tower fleet of assets.
	<b>Oil filled cables</b> \$46m project to replace oil filled cables (feeders 228, 22W and 233) to manage the increasing likelihood of a cable failures. This project is driven by both an increasing risk cost associated with both reactive repairs and a growing unserved energy risk to meet forecasted load growth across the Greater Parramatta area.

### Augmentation expenditure (augex)

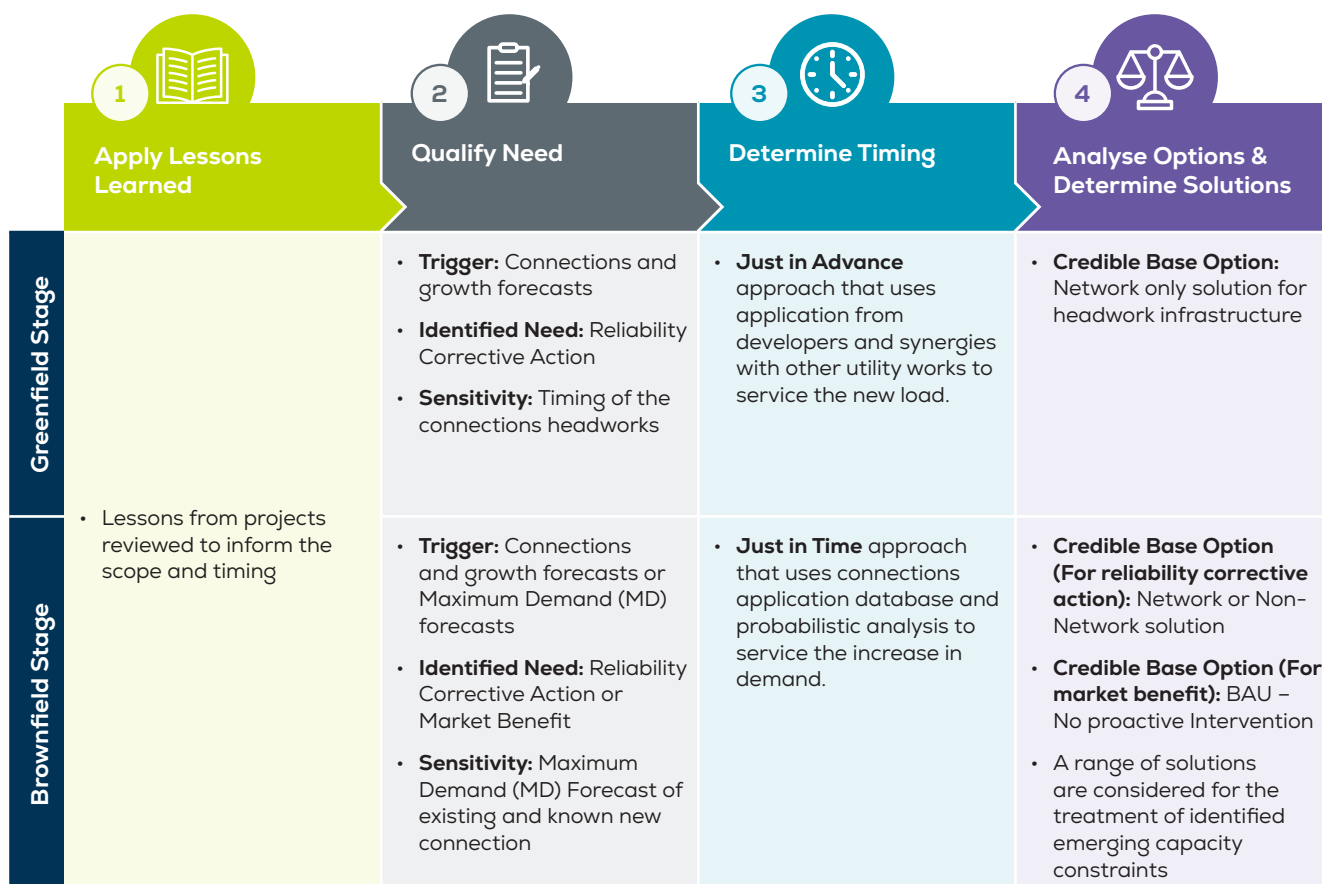
Our forecast augex is primarily driven by supporting the sustainable growth of our communities. It involves expanding the network to new areas to cater for customer growth and increasing the capacity of the existing network to cater for demand growth from existing customers. As aforementioned, we have experienced significant growth over the last decade and expect this to continue:



It should be noted that much of the anticipated growth for this period has been delayed to later in the period. This means there is a possibility that some of these projects could be deferred into the next period. Our position is that the Capital Expenditure Sharing Scheme (CESS) should be adjusted for any deferrals driven by forces outside of our control (ie development timing rather than the implementation of efficient non-network solutions) to ensure customers only pay once.

Unlike repex, this is a largely non-recurrent category of capex that is driven by broader economic growth and development within our network area. Augex is therefore developed on a bottom-up basis that involves a probabilistic assessment of demand and customer growth assumptions to determine how much additional network capacity is required and when.

To address this uncertainty, our customer, energy and demand management forecasts take into account the expected take-up of new technologies like EV, PV solar and batteries as well as the impacts of cost-reflective network tariffs. We also stage investments utilising surrounding network where this is efficient to do so. Our approach to developing our augex forecast can broadly be summarised as follows:



We are interested in testing this approach with the RRG and customers on a number of issues such as timing preferences, verifying key forecasts, assumptions, and inputs, considering the impacts of tariffs and DER (including via AEMO ISP scenarios), identifying the role of non-network options, accounting for current period deferrals and challenges and any other areas of potential interest.

Our augex investment is also driven by network resilience and enabling customers' future energy choices. These themes help determine the timing and size of network investment. We routinely test our investments to defer or reduce them by utilising demand management alternatives.

In addition, we consider it is important that where augex is necessary that our solutions will be fit-for-purpose into the future. This means adopting innovating network designs and technology that support the ongoing resilience and ability of customers to adopt DER and other new technologies.

On the next three pages we describe plans for three key growth areas of our network.

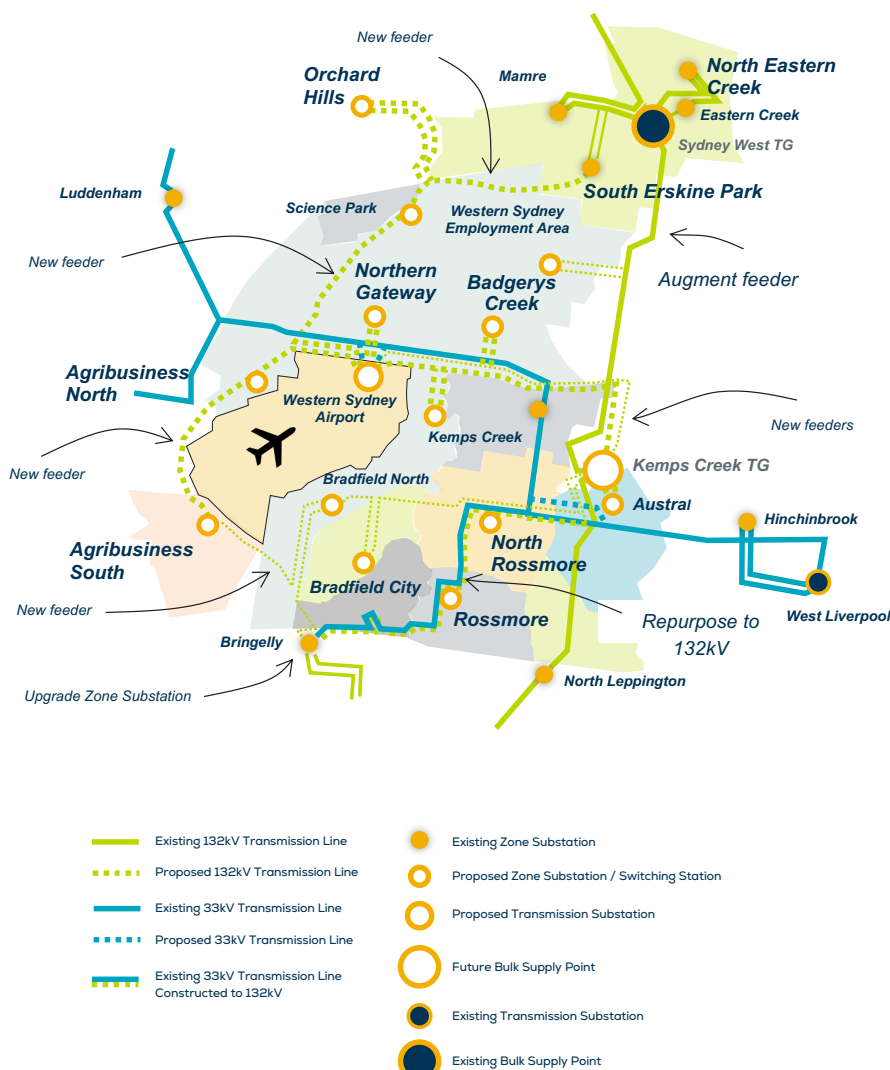


## Western Sydney Aerotropolis

The Western Sydney Aerotropolis (Aerotropolis) is a 11,200-hectare area surrounding the Western Sydney International (Nancy-Bird Walton) Airport located within the Western Parkland City. The Aerotropolis will become a hub of industry and innovation, attracting local and global companies drawn to the enormous potential of the Western Parkland City and the airport that serves it. The NSW Government has also recently announced over \$1 billion in funding to start building the Bradfield City Centre at the core. This is the next step in delivering Australia's newest, most advanced, green, and connected city. Our enabling works and partnerships support the growth of the Aerotropolis.

### Key Endeavour Energy projects unlocking the Aerotropolis economic potential include:

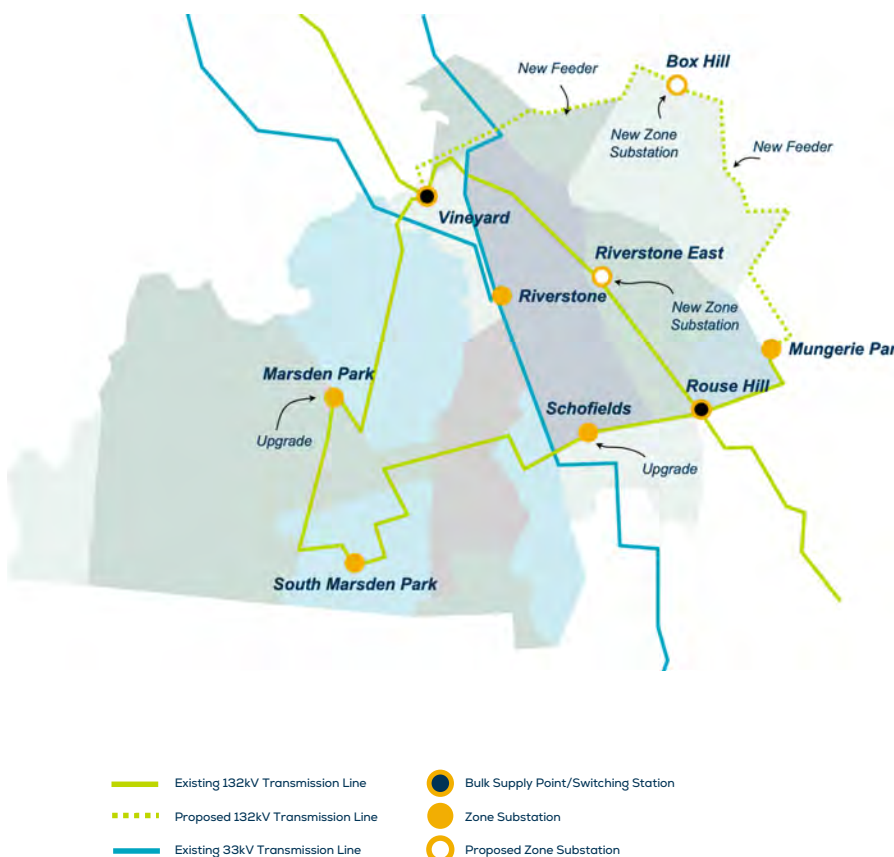
- **Aerotropolis 132kV Backbone feeder:** A carryover project from current regulatory period with an investment of \$24m in FY25-29 period. This is critical infrastructure required to service the growth
- **Bradfield North Zone Substation:** A carryover project from current regulatory period with an investment of \$32m for the Bradfield North zone substation development. This is critical infrastructure required to service the growth
- **New Badgery's Creek Zone Substation:** A carryover project from current regulatory period with an investment of \$33m for the new Badgery's Creek zone substation. This is critical infrastructure required to service the growth





## Sydney's North West

Sydney's North West is becoming an increasingly popular place to live. The North West Growth area was released by the NSW Government in 2017 following the Growing Sydney Plan in 2014. Within the North West Priority Growth Area, new communities will progressively develop with access to schools, parks, community facilities, jobs, roads and public transport. Within this period, 33,000 homes will be provided, and the growth area will be home to around 92,400 people. The North West Priority Growth Area is close to transport nodes, including the M7 Motorway with connections to the M4 Motorway and the new International Airport. It is well located to capitalise on recent infrastructure such as the Sydney Metro Northwest to Tallawong Station, and a public transport corridor extension toward Marsden Park. 13 regions have already been rezoned, including Box Hill, Riverstone, Schofields and Tallawong Station. Three further regions are undergoing planning and one zone remains for release (Shanes Park).



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

- Riverstone East Zone Substation:** Investment of \$20m to establish a new zone substation. This is critical infrastructure required to service the growth
- Box Hill Zone Substation Stage 2:** Investment of \$20m to expand the Box Hill Zone Substation to meet the increased demand
- Augment Westmead Zone Substation:** Investment of \$10m to expand the Westmead Zone Substation to meet the increased demand

## South West and Greater Macarthur

Greater Macarthur is a Growth Area incorporating Glenfield to Macarthur urban renewal precincts and the land release precincts to the south of Campbelltown, including Gilead, North Appin and Appin. In 2040, the Greater Macarthur Growth Area will be a highly connected and accessible urban region that recognises Country. It will support and be serviced by a thriving and diverse Campbelltown–Macarthur. People living here will be close to green corridors that contain parks, green cover and open space. Being active will be a way of life. The natural environment will flourish with koalas and other species in safe and growing populations through biodiversity protection and enhancement. High-quality jobs, services and education will be available close to home.

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

- Maryland Zone Substation:** Investment of \$20m to establish a new zone substation. This is critical infrastructure required to service the growth
- Establish West Appin Zone Substation:** Investment of \$10m to establish a new zone substation to meet the increased demand
- Establish Mount Gilead Zone Substation:** Investment of \$20m to establish a new zone substation. This is critical infrastructure required to service the growth
- Establish permanent Menangle Park Zone Substation:** Investment of \$10m to establish a new zone substation to meet the increased demand



## Connections

Relatedly to augex, we also incur costs to support the connection of new customers. Augex involves expansion of the upstream network at higher voltages (eg, the construction of new zone substations) whereas connections expenditure relates to the expansion and augmentation of the low voltage network (eg, new distribution substations and lines and cables connecting to the customer).

The majority (around 88%) of these costs are funded by the connecting customer and delivered competitively in NSW. The remaining costs relate to network extensions and augmentations that provide a shared benefit to the network and other customers. We therefore fund this proportion of costs.

Like augex our connections forecast is driven by our customer growth assumptions and historical unit costs. While our forecast is subject to confirmation it is likely to represent an improvement on historical performance on a cost per customer added benchmark:

Component	FY10-14	FY15-19	FY20-24	FY25-29
Connections capex (\$mFY24)	94	114	126	114
Customers connected (Os)	64,648	94,410	100,999	120,324
Endeavour Energy contribution per customer added (\$s)	\$1,451	\$1,211	\$1,245	\$944

We note that in our previous determination we tested whether Endeavour Energy should shift from a 'causer pays' to a 'beneficiary pays' approach to contributions as we consider the latter to be more aligned with the requirements of the National Electricity Rules (NER). At the time, we received strong feedback to maintain our existing approach.

We have therefore prepared our 2024-29 proposal on this same basis and will confirm with customers and stakeholders whether this remains the preferred approach.

## Distributed Energy Resource (DER) management and enablement

DER management and enablement is a relatively new category of expenditure that is primarily driven by enabling customers' future energy choices. Currently, 220,000 of our customers own PV solar and we expect this to grow to 450,000 by 2030. In addition, we expect there to be a 10-fold increase in the number of customers with batteries and EVs by 2030.

It is therefore important that we invest in ensuring customers' can make energy choices and share in the costs and benefits of doing so in a fair and equitable manner. If we fail to adequately respond to changing customer behaviour the take-up of new technologies could be constrained and adversely impact the reliability and stability of the network.

As this is a relatively new category of expenditure the AER is currently in the process of providing guidance on how distributed energy resources (DER) investments should be considered and justified and modelling key input assumptions such as the Customer Export Curtailment Value (CECV). We have followed the available guidance in developing our preliminary forecasts and will continue to engage with the AER and stakeholders on the development of these guidance notes and input assumptions.

Our forecast has been informed by expected take-up of DER across our network and best practice approaches of other networks for identifying and managing emerging DER constraints.

Our key DER investments include:

- **LV Visibility and Analytics:** There is significant benefit to be gained by accessing smart-meter data. It assists Endeavour Energy in identifying emerging issues on the low voltage network, which complements the existing visibility of the high-voltage network.
- **DER hosting capacity:** We are investing in creating the enablers for customers to derive the maximum utility from their DER, whatever their energy choices are likely to be. This encompasses support for additional participation models such as: Virtual Power Plants, SAPS and microgrids.
- **Future Networks:** Technology is evolving rapidly in order to meet the energy transition and Endeavour Energy will continue to trial these technologies and from the lessons learnt from those trials, apply these within our business context.

Our forecast is based on AEMO's primary ISP scenario and our draft estimate of the AER's CECV. In refining our forecast, we will test these assumptions with stakeholders particularly to ensure our proposal reflects the value of DER to customers. This may include valuing additional benefits such as CO<sub>2</sub> reductions, resilience improvements and self-consumption for instance which are currently excluded from the assessment.

## Information and Communications Technology (ICT)

ICT is key enabler of improving the way in which we do business to ensure that we strike the right balance between investing in the network and maintaining affordability. Our forecast ICT of approximately \$127 million (\$FY24) supports all of our investment themes and involves:

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

After several years of under investment below industry benchmarks we undertook a substantive ICT business transformation program over the current period. Our focus for the next period will be in maintaining these new systems and making targeted enhancements where justified and in line with industry standards.

Our plans will be prepared in accordance with the AER's guidance on ICT investments. This guideline distinguishes between recurrent ICT projects and non-recurrent projects with different requirements for each.

Given the significant ICT investment in the current period, our ICT forecast capex for 2024-29 is substantively lower than current period actuals. Our recurrent ICT is expected to return to a sustainable BAU level.

Our non-recurrent projects will be supported by business cases justifying the investment by reference to economic cost-benefit analysis and post-implementation reviews of previous investments to demonstrate delivery efficiency and good governance. This is in line with the requirements of the AER's guideline.

For our ICT capex proposal for 2024-29, we aim to:

- Acquire, replace and 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, in particular the need to protect against continuously evolving cyber security threats.

## Other non-system and overheads

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

Generally non-system capex is forecast based on specific business cases and historic trends. Our forecast non-system capex (excluding ICT) is \$102 million (\$FY24) which is significantly below our current period forecast of \$138 million (\$FY24) following a relocation of our head office and upgrades to our regional service centres during the current period. In consulting with stakeholders on this forecast a key consideration will be the pace at which we transition our fleet and property to Net Zero noting our current target is to do so by 2040.

For capitalised overheads, the AER has provided a benchmark forecasting methodology as part of its standardised capex model. This methodology applies a 25:75 variable: fixed assumption to overheads relative the system capex. This means that capitalised overheads should vary 25c for every \$1 movement in system capex.

This approach produces a marginally higher capitalised capex forecast than our internal forecast. The latter reflects efficiency improvements we have made during the current period. We have therefore adopted our lower forecast rather than the benchmark.





## Other building blocks

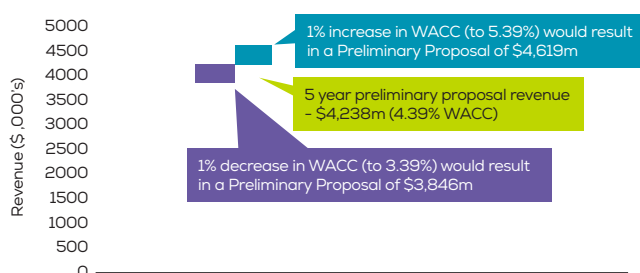
### Return on capital

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

The AER sets the rate of return (ROR) as part of a binding Instrument (the RORI) which is set every 4 years. The 2018 RORI applies to our 2019-24 determination. This RORI is currently under review and will be replaced by December 2022. The updated 2022 RORI will apply for the 2024-29 determinations.

The Draft 2022 RORI will be published in June 2022. Until then, we have adopted a placeholder ROR estimate averaging 4.39% over the period. This represents a midpoint estimate of potential market movements and outcomes from the 2022 RORI review.

2024-29 Revenue sensitivity to changes in the WACC



As can be seen above, our revenue requirement over the 2024-29 period can vary significantly with variations in the WACC. Whilst this analysis is illustrative we do note the recent increasing upward on interest rates may impact the forecast WACC. We would therefore encourage stakeholders interested in RORI matters to participate actively in the AER's 2022 RORI review process.

### Return of capital (depreciation)

Depreciation is the allowance provided so capital investors recover their investment over the economic life of the asset (return of capital).

In deciding whether to approve the depreciation schedules submitted by network businesses, the AER makes determinations on the indexation of the regulatory asset base (RAB) and depreciation building blocks for the regulatory control period. The regulatory depreciation allowance is the net total of the straight-line depreciation less the indexation of the RAB.

Depreciation reflects the use of an asset each year and accounts for its loss of value due to wear and tear over its useful life. Under a 'straight-line approach', the asset is reduced by a constant amount each period. That is, the asset value is depreciated evenly over its useful life.

We have applied the standard, straight-line depreciation approach and standard asset lives approved by the AER in previous periods. In the 2019-24 period, we moved from a Weighted Average Remaining Life (WARL) method to calculating the remaining life of assets to a period-by-period approach.

This change was to better match the depreciation allowance to the economic life of the assets. Under the WARL method, the indexation of the RAB results in a deferral of the recovery of the value of the asset which extends the average remaining life of the asset. This is similar to home mortgage where repayments in the early years of the loan primarily cover the interest costs rather than the loan amount.

For the 2024-29 period, we have considered moving from our period-by-period tracking to the 'year-by-year' tracking approach. This approach is the default method contained in AER models and used currently by the majority (10 of 14) of networks. Since we made the move to period-to-period tracking during the current period this has a minimal impact on 2024-29 revenues (in the order of \$0.5 million p.a.).

This change produces depreciation schedules that better reflect the nature of the assets and their economic life and it ensures that total depreciation (in real terms) equals the initial value of the assets. Overall this approach is neutral in net present value terms, but it will reduce long-term RAB growth and help reduce the risk of future price shocks.

Relatedly, we know RAB per customer is considered a key metric by many stakeholders. We are forecasting RAB per customer (\$FY24) to reduce from \$6,850 per customer at the end of the 2019-24 period to \$6,051 per customer by the end of the 2024-29 period.

We note that several networks in recent determinations have sought to accelerate the depreciation of specific assets. This is generally to account for the mis-categorisation of an asset, replacements driven by legislative changes, technological redundancy and solar enablement.

Based on our preliminary assessment, the only candidate asset class for accelerated depreciation is solar enablement. This is where distribution transformers need to be replaced early due to solar uptake. It is estimated that approximately \$8.5 million worth of transformer asset value could be accelerated over the 2024-29 period.

Our preliminary position is to not accelerate the depreciation of these assets. We would be interested in stakeholder views as to whether this is a topic of interest and whether this issue should be considered and discussed further.

## Incentive schemes

As a monopoly service provider networks lack the competitive forces required to discover the optimal cost-service quality mix. While the AER regulates networks, it also lacks the perfect information required to specify this mix. Instead the regulatory framework in Australia, like many internationally, relies on incentive schemes to encourage networks to 'reveal' these efficient cost and service levels to the AER and drive continuous improvement.

To do this, the AER has developed the following incentive schemes:

- **Service Target Performance Incentive Scheme (STPIS)**, which provides incentives to maintain or improve operational performance
- **Efficiency Benefit Sharing Scheme (EBSS)**, which provides incentives to achieve and maintain operating efficiency improvements
- **Capital Expenditure Sharing Scheme (CESS)**, which provides incentives to make capital expenditure efficiency gains
- **Demand Management Incentive Scheme (DMIS)**, which provides incentives to undertake efficient demand management and funding for innovative trials.

Endeavour Energy has responded strongly to the incentive framework in improving our efficiency over several years. Customers have shared in the majority of the benefits of these improvements under incentive regulation.

We therefore propose to apply these schemes in the forthcoming regulatory period in accordance with the AER's prevailing guidelines. Based on our actual and forecast capex and opex spend we forecast revenue adjustments totalling \$102 million (\$FY24) for the 2024-29 period.

We also intend to consult further with customers on replacing the customer service component of the STPIS. Currently, 0.5% of revenue is at risk for telephone answering within 30 seconds.

We have received feedback from customers that this is an antiquated and incomplete measure of customer service. We are currently in the process of improving our customer experience. It is important that incentive schemes reward (or penalise) outcomes that customers value.

We will work closely with the RRG and engage further with stakeholders in the coming months to understand what (if any) measures should be used to develop a Customer Service Incentive Scheme (CSIS). Some example areas based on the approach taken by other networks include:

- **Planned outage management:** measures targeted at reducing the frequency and duration of planned outages
- **Information and communication:** measures targeted at improving the timeliness, understandability and usefulness provided to customers (eg SMS outage notification, social media etc.)
- **Customer satisfaction:** surveys measuring customer satisfaction in a range of service areas (eg complaints resolution, connection process, general enquiries etc.)

We also note that separately the AER intends to review the STPIS to determine whether a specific incentive is required for the quality of supply or export hosting.

Enabling customer choice in technologies like solar PV is a priority of Endeavour Energy. We will engage with the AER and our customers in this review which is to be finalised by December 2022.

## Corporate tax

Under Australia's tax system, dividends that are paid out of company profits that have been taxed in Australia have imputation credits attached to them. The 'cost of tax' building block is reduced to account for the value shareholders place on imputation credits (gamma), reducing the required return to those shareholders. The AER's gamma estimate is 58.5%.

We also note the Federal Court ruling on Victoria Power Networks (VPN) v ATO (the VPN case) which dealt with the tax treatment of capital contributions, where the Court clarified that capital contributions are not assessable for income tax purposes. We are awaiting a ruling from the ATO and will need to update our forecasts accordingly.

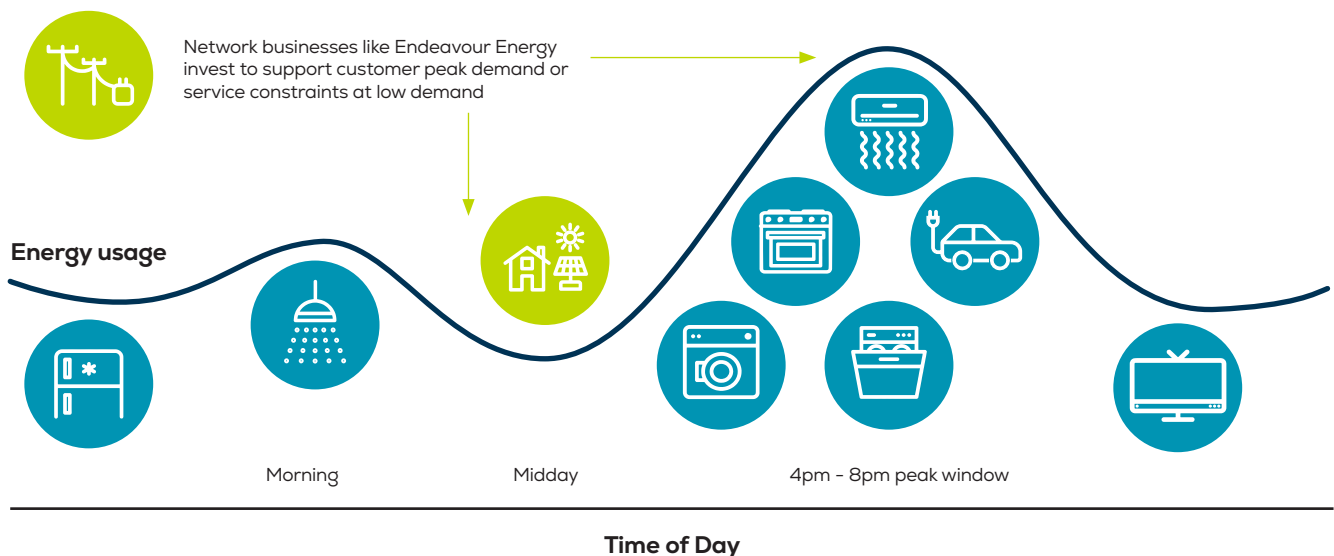
In the interim we have have therefore adjusted the treatment of capital contributions in the AER's PTRM to account for this change. This results in a material reduction in the tax building block from \$141 million (\$FY24) in 2019-24 to \$41 million (\$FY24) in 2024-29.

## Tariffs

A tariff is the way customers are charged for their energy. Endeavour Energy charges network tariffs to retailers who then pass them onto their customers. These tariffs enable distributors to recover revenue to build, operate and maintain the network that is used to convey electricity. The AER regulates these tariffs annually so that consumers pay no more than necessary for safe and reliable electricity services.

Electricity tariffs fall into two different categories: cost-reflective tariffs (ie, 'anytime' flat rate) and cost-reflective tariffs, which apply different pricing signals throughout the day, the week and across seasons to incentivise customers to use their energy as efficiently as possible.

A cost reflective tariff is one that reflects the true cost of supplying electricity, or specifically reflecting the investment that networks such as Endeavour Energy make in substations, underground cables, poles, wires and other assets in order to service the peak demand.



The Rules require distributors to gradually make their tariffs more cost reflective. The Rules were also amended recently to remove the prohibition on export tariffs (subject to a range of protections and conditions) to optimise the take-up of small-scale solar into the grid, while supporting growth of batteries and electric vehicles.

Network tariff reform encourages a more efficient use of networks that helps reduce the need for additional investment and/or the amount of network infrastructure that needs to be maintained.

The pace of this reform is impacted by:

- What customers want
- What impacts they will face
- The roll out of smart meters, which make it possible to record when energy is used at different times of the day.

This means tariff reform strategies can evolve as stakeholder understanding develops and new technologies and service models emerge. To help distributors, the AER have provided guidance on how network tariff reform can be implemented including through the use of trials to test innovative tariffs.

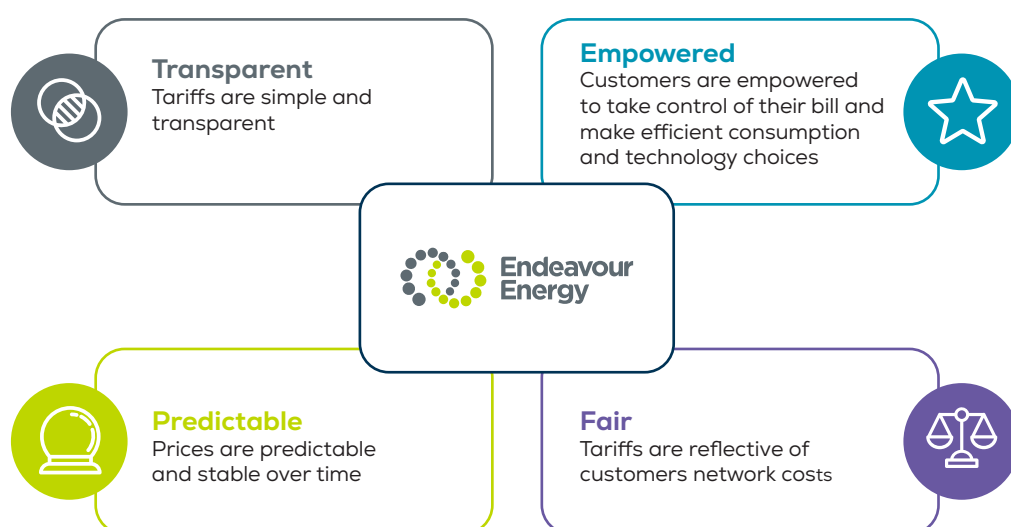
## Our approach to tariff reform

During the current period, we introduced three new residential and small business cost-reflective tariffs. Our tariffs are further along the cost-reflective spectrum than many of our network peers and provide a real opportunity for our customers to respond to the price signal and save money.

In implementing these tariffs, we estimated that 90% of customers on standard (or flat-rate) energy tariffs are likely to be better off on a cost-reflective tariff – even without a change in their energy usage behaviour. The savings could be even more significant where energy behaviour is changed (ie reducing demand at the peak time).

However, our existing ‘opt-out’ assignment policy allows retailers to control the speed of network tariff reform on behalf of customers. We have seen a low take-up rate of our cost-reflective tariffs amongst eligible customers and are working with retailers to advance the number of customers on cost-reflective tariffs. The success of tariff reform is dependant on our ability to pass through tariff changes via retailers. We are actively engaging with retailers to support this.

Given this, our preliminary focus seeks to consolidate the tariff reforms from the current period without losing sight of further innovative solutions. Our purpose in doing so and the principles which guide us are as follows:



In order to increase network utilisation by enabling greater flexibility of the network and empowering customer choices to support the energy transition, we intend the following:

- Tariff structures must reflect the true costs and benefits and facilitate use of the network to maximise benefits and minimise costs
- Develop new tariff structures that are robust to the ongoing energy transition, reflecting two-way energy flows, so that customers are empowered today, throughout the transition and into the future.

Based on this, we see the following as key opportunities and focus areas:

Key challenge or opportunity	Opportunities to focus
Greenfield development growth	<ul style="list-style-type: none"> <li>• Develop an embedded networks tariff</li> </ul>
Slow uptake of cost reflective tariffs	<ul style="list-style-type: none"> <li>• Update customer assignment policy (refer below)</li> <li>• Re-examine retailer opt-out clause</li> </ul>
Export tariff transition	<ul style="list-style-type: none"> <li>• Develop prosumer tariffs</li> <li>• Include as tariff trials prior to upcoming regulatory control period</li> <li>• Estimate hosting capacity and export LRMC</li> </ul>
DER integration strategy	<ul style="list-style-type: none"> <li>• Explore use of negative prices or rewards</li> </ul>
Innovative network uses and services	<ul style="list-style-type: none"> <li>• Develop an EV tariff</li> <li>• Community/grid connected batteries</li> <li>• Dynamic connection agreements</li> </ul>



## Our approach to innovation

In order to progress tariff reform, we intend to conduct tariff trials to test more innovative and complex options. We are interested in investigating further opportunities but we have identified some immediate trials that broadly appeal to customers and new energy devices:

Tariff trial	Off Peak+	Prosumer
Objective	Test retailer and customer demand for a tariff that provides customers with an incentive to allow control of their discretionary consumption for the benefit of the grid.	Test retailer and customer demand for a tariff that provides an incentive to shift excess export to times of peak network demand.
Features	<p>Allows Endeavour Energy and retailers to use discretionary loads to manage demand for peak afternoon imports and to 'soak' excess solar during the day.</p> <p>Potential application for growing EV penetration and customers with rooftop solar and grid connected electric hot water.</p> <p>Affordable, low cost solution that customers can 'set and forget'.</p>	<p>Recognises and reflects the cost of customer demand for network capacity to import and export.</p> <p>An export charge during the day with 'feed-in' reward at afternoon peak times.</p> <p>Encourage use of behind-the-meter storage to support grid security and utilisation.</p>
Proposed Tariff Availability	From 1 July 2022	From 1 July 2022

While we believe tariff trials are a valuable tool in support of the energy transition, it is also important that we consider and trial technology-based solutions and intend to do so each year.

A future network service will support the broader energy transition, whereby the energy supply chain is moving to greater inclusion of localised renewable generation rather than that of just consumption.

Given this transition, the future network topology is likely to be far less uniform / generic, with networks designed to meet the specific needs of local communities. Network designers will ultimately have available a much broader 'tool kit' of solutions to resolve emerging network constraints and address local customer needs. These technologies and solutions can drive innovative services and also allow customers to better manage their energy usage and cost.

We have adopted a number of new technologies and are evaluating further options particularly with our Future Grid Reference Group (FGRG), many of which are supported by cost-reflective tariffs.

### New technologies adopted

- Stand Alone Power Systems (SAPs)
- Network Automation (ADMS, FLISR and remote controllable equipment)
- Conservative Voltage Optimisation
- Statcoms
- Demand Management

### Additional technologies being evaluated

- Distributed Energy Resource Management
- Electric Vehicle Services
- Microgrids
- Low Voltage Network Management
- Community Batteries
- Grid Scale Batteries

## Other matters

### Service classification

The AER is required to classify the services we provide and determine what form of control applies. This decision is guided by the Rules and is primarily an assessment of which services have monopoly characteristics and which can be provided competitively. Monopoly services are suited to more direct control by the AER (ie, setting a revenue allowance or price) and funded by all customers.

The Framework and Approach (F&A) process which sets out the AER's intended services classification is currently underway. We are engaging in this process with a focus on classifying new services which have emerged since our last determination following the emergence of DER and battery technology.

### Pass-throughs

The Australian regulatory framework uses an ex-ante, incentive based approach to regulation. However, the Rules do allow for decisions to be re-visited and revised in certain circumstances. Pass-throughs cater for high consequence events of uncertain timing or cost.

It can be inefficient for a network (and therefore customers) to fund the mitigation of all risk in a revenue allowance. For instance, the impacts of a terrorist event, natural disaster or retailer insolvency. Rather than manage these risks via capex or opex, the Rules prescribe several events that trigger a re-opening of a determination where a certain event occurs with a material cost impact.

In addition to these prescribed events a network can nominate several additional events in their Regulatory Proposals. We intend to nominate several events that the AER routinely approve. These are:

- Insurance cap
- Insurer's credit risk
- Natural disaster
- Terrorism.

We will review our current definitions to bring them into alignment with more recent AER decisions and to ensure their coverage remains appropriate (for things like cyber-security attacks).

### Contingent projects

Similar to the above, there can be large capital projects of uncertain timing or cost that can be managed on an ex-post basis. This means rather than include an uncertain project in a network's capital allowance the AER can instead review it and specify a trigger event.

Only where this trigger event occurs would the project then be formally reviewed and approved by the AER and the revenue allowance adjusted to include it.

Based on the materiality threshold in the Rules this option is only available for projects with costs in excess of approximately \$42 million (\$FY24) for Endeavour Energy. As a distribution network, we rarely have individual projects in excess of this cost. For the 2024-29 period, there are no projects exceeding this cost threshold of uncertain timing or scale. As a result, we do not intend to include any contingent projects in our proposal.



## Alternative control services

The preceding sections of this Preliminary Proposal set out our plans and expenditure forecasts to build, maintain and operate the shared electricity network, the costs of which are recovered from all customers. We also provide a number of other services that are associated with owning and operating an electricity distribution network.

These services are typically provided to a discrete and identifiable customer(s) and/or have the potential to one day be provided on a competitive basis. The AER regulates these services separately as 'Alternative Control Services' (ACS) and typically sets a maximum price that can be charged on a per service basis or the method and inputs required to quote a price for less uniform services. ACS includes the following:

- **Public Lighting:** We currently manage over 205,000 streetlights across our network area on behalf of Councils and the NSW Government. The charges vary depending on whether the customer funds the cost of the light and installation upfront and based on the technology type.
- **Legacy Metering Services:** We are responsible for maintaining and operating Type 5 meters (Time-of-Use Interval) and Type 6 meters (Basic accumulation) for existing customers. All new meters, whether replacement of an existing meter or for a new customer or upgrade, are provided on a competitive basis by meter providers (not Endeavour Energy) and must be remotely read interval meters (advanced meters).
- **Ancillary network services (ANS):** We provide a number of non-routine, customer specific or requested services that have either a fixed fee for standard works or a quoted fee for non-standard works. This covers a broad range of services such as basic connection offers, design, certification and inspection of Accredited Service Provider (ASP) work, reconnections and disconnections and special meter reading.

For Metering and ANS, the AER has recently published standardised models that we will use to develop our forecast prices.

The primary issue for metering is the pace of the transition of customers from legacy metering to advanced metering. It is likely to be impacted by the AEMC's ongoing review of its metering competition reforms which is canvassing options for increasing the pace of the transition and the associated benefits of advanced metering. Our forecast must also account for the diseconomies of scale created by the transition as we maintain a decreasing number of meters across our network.

For ANS, these fees are mostly labour based. The AER typically uses an estimate of efficient labour costs (per type of labour) from benchmarking analysis. We will use benchmark labour rates to set out prices for the next period in accordance with this approach.

For Public Lighting, we intend to review our current modelling approach for best practice across the NEM with the aim of developing a simpler and more transparent pricing approach. We note several other networks have consolidated their price lists to reduce their complexity and to make them more adaptive to new technology types or lights that are released over the course of a regulatory period.

We also intend to engage with Councils on how we can innovate our public lighting service offerings while providing an affordable service in accordance with NSW service standards. To date, this has involved facilitating the transition to energy efficient streetlights (LEDs) which have allowed Councils to reduce costs whilst improving service quality.

We also note the ongoing transition by Councils towards 'Smart City' innovations like 'smart lighting' and 'smart poles' that provide a range of enhanced functions. These technologies can provide enhanced public lighting services such as remote monitoring and operation to optimise energy usage and service quality. Through ongoing discussions with Councils, we will seek direction on how our service offerings and pricing approach should be expanded and adapted to support the take-up of these technologies in a timely and efficient manner.

## : 7. Next steps





## How to have your say on this Preliminary Proposal

We welcome your feedback on this Preliminary Proposal. Throughout the document we have highlighted some questions you might want to consider as you develop your response. For ease of reference, we have collated each of these questions below:

Section	Question
<b>Who we are</b>	<ol style="list-style-type: none"> <li>1. Have we clearly communicated Endeavour Energy's business and purpose?</li> <li>2. Do you understand your relationship to Endeavour Energy (as a residential customer, business customer, customer advocate or stakeholders)?</li> <li>3. Does your understanding of who we are and how we relate to you enable you to provide informed feedback about our plans for our customers' energy future?</li> </ol>
<b>Australia's changing energy landscape</b>	<ol style="list-style-type: none"> <li>4. Have we identified the key emerging priorities and trends within the Australian energy landscape?</li> <li>5. To what extent will external forces such as population growth, extreme weather events and the renewable energy transformation, impact your expectations of Endeavour Energy?</li> <li>6. How should Endeavour Energy be responding to these changes?</li> </ol>
<b>Customer insights and engagement</b>	<ol style="list-style-type: none"> <li>7. Are we engaging with the right people, at the right time about the right issues?</li> <li>8. Is there anything missing from the feedback we have gathered, the way we are using it in developing this proposal?</li> </ol>
<b>Proposed 2024-29 revenue &amp; average bill Impact</b>	<ol style="list-style-type: none"> <li>9. What are the outcomes that matter most to you or the customers you represent?</li> <li>10. Does this Preliminary Proposal reflect priorities and outcomes that are in customers' long-term interests, while suitably balancing reliability, affordability, and safety?</li> </ol>
<b>Operating expenditure (opex) proposal</b>	<ol style="list-style-type: none"> <li>11. Does our operating expenditure proposal address our customers' priorities?</li> <li>12. Are there specific aspects of our proposed operating expenditure that you support, oppose, or want more information about?</li> </ol>
<b>Capital expenditure (capex) proposal</b>	<ol style="list-style-type: none"> <li>13. Does our capital expenditure proposal address our customers' priorities?</li> <li>14. Are there specific aspects of our proposed capital expenditure that you support, oppose or want more information about?</li> <li>15. How do you feel about current resilience and reliability service levels and what is required in the years ahead from networks?</li> <li>16. What feedback do you have in relation to our approach to servicing growth across our network? Who should fund the costs of new connections?</li> </ol>
<b>Distributed Energy Resource enablement proposal</b>	<ol style="list-style-type: none"> <li>17. How do you feel about our approach to supporting the types of energy choices customer may want now and in the future?</li> <li>18. How proactive should Endeavour Energy be in trialling and adopting new technologies and solutions?</li> <li>19. How should customers contribute to upgrading the network to support solar exports?</li> </ol>
<b>Rate of return and depreciation</b>	<ol style="list-style-type: none"> <li>20. Is the June 2022 AER update of its Rate of Return Instrument the most appropriate approach for this proposal?</li> <li>21. Do you have any preferences for straight-line, period-by-period, or year-by-year depreciation? Why?</li> </ol>
<b>Regulatory incentives</b>	<ol style="list-style-type: none"> <li>22. Is our proposal to apply the AER's incentive schemes in line with the guidelines appropriate?</li> <li>23. Do you have any views about which measures of customer services should be included in an incentive scheme?</li> </ol>
<b>Pricing structures</b>	<ol style="list-style-type: none"> <li>24. To what extent should tariffs reflect the costs different customers impose on the network?</li> <li>25. Are there specific aspects of our proposed tariff structure that you support, oppose or want more information about?</li> </ol>
<b>Alternative control services</b>	<ol style="list-style-type: none"> <li>26. Is this the right approach to supporting the Local Government transition to energy efficient lighting and emerging technologies?</li> </ol>

You can respond to all of these questions, or just the ones that are most relevant to you or your organisation or community.

Please be sure to start by explaining who you are, who you are representing (if you are writing on behalf of a business, organisation, or group) and where you live. This will help us to understand your feedback in the context of the challenges of your particular community.

To ensure your feedback can be fully considered, submissions must be received by 30 June 2022.

There are many ways you can have your say about the Preliminary Proposal:

1. You can write a response and lodge it via email [yoursay@endeavourenergy.com.au](mailto:yoursay@endeavourenergy.com.au).
2. Or, if you would prefer to provide some verbal comments, please email [yoursay@endeavourenergy.com.au](mailto:yoursay@endeavourenergy.com.au) to make a time for you to share your feedback.

## How to get involved in our ongoing engagement program

In addition to commenting on the Preliminary Proposal there are still many ways you can contribute to the regulatory reset process.

As we move from the Explore Phase of our Engagement Program into the Prioritise Phase, we encourage you to join any of our upcoming events:

Event	How you can join in
<b>Digital and social media engagement:</b> We will share our progress regularly online and invite stakeholders and customers to have their say via online surveys and discussion boards.	Please follow Endeavour Energy on Facebook and Twitter to keep up to date with our online engagement. You can also sign up to our YourSay website <a href="https://yoursay.endeavourenergy.com.au">yoursay.endeavourenergy.com.au</a> to receive updates on upcoming engagement activities and the latest outcomes of our regulatory engagement program.
<b>Customer Deliberative Forums:</b> We will host highly interactive workshops that allow customers to decide their preferences after thoughtful and deliberate consideration of the ideas presented.	If you live in Endeavour Energy's network area and would like to join the Deliberative Forums, please email <a href="mailto:yoursay@endeavourenergy.com.au">yoursay@endeavourenergy.com.au</a> to see if you are eligible.
<b>Customer quantitative research:</b> We will undertake formal quantitative research with customers to ensure a broader understanding of customer preferences, following the Deliberative Forums.	If you live in Endeavour Energy's network area and would like to participate in the quantitative research, please email <a href="mailto:yoursay@endeavourenergy.com.au">yoursay@endeavourenergy.com.au</a> to see if you are eligible.
<b>One-on-one briefings with subject matter experts:</b> We will meet with experts and key stakeholder organisations to understand their individual needs and priorities.	If you are a subject matter expert and would like to discuss how this proposal relates to your area of expertise, please email <a href="mailto:yoursay@endeavourenergy.com.au">yoursay@endeavourenergy.com.au</a>
<b>Issue specific stakeholder deep dives and workshops:</b> We will hold a series of 4–6-hour forums for the detailed exploration of complex, difficult to resolve issues and subjects and shorter workshops with key stakeholder cohorts.	If you would like to know more about the stakeholder deep dives, please email <a href="mailto:yoursay@endeavourenergy.com.au">yoursay@endeavourenergy.com.au</a>
<b>In-language direct engagement with CALD communities:</b> We will ensure there are regular and meaningful opportunities for culturally and linguistically diverse (CALD) communities to participate in our engagement activities, including some in-language engagement.	If you speak a language other than English at home and would like to participate in our engagement program, please email <a href="mailto:yoursay@endeavourenergy.com.au">yoursay@endeavourenergy.com.au</a>

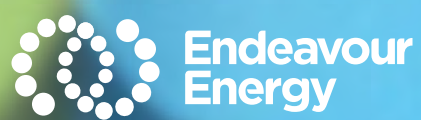
In addition to these events, we will continue our ongoing and regular engagement with:

- The AER;
- The AER's Consumer Challenge Panel (CCP); and
- Our stakeholder reference groups like the PCSC and RRG.

# Glossary

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
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
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
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

Acronym	Meaning
MW	Megawatt
MWh	Megawatt Hours
NEM	National Electricity Market
NER	National Electricity Rules
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
SAPS	Stand-Alone Power Systems
PV solar	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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