Empowering communities to share and use energy for a better tomorrow

2019-24 Regulatory Proposal

April 2018

Contents

About this Regulatory Proposal

Informed by customers

Chapter Summary

- We have prepared our Regulatory Proposal for submission to the Australian Energy Regulator (AER) for 2019-24
- Input from customers and stakeholders has been incorporated throughout this Proposal
- This Proposal has been prepared in a way to make it as easy as possible for customers, stakeholders and the AER to review our future plans

Message from Essential Energy's Chief Executive Officer

Essential Energy has prepared a Regulatory Proposal to submit to the Australian Energy Regulator (AER). It lays out our proposed business plans for 2019-24; the service levels we propose to deliver for customers; and the funding we will need to deliver them.

John Cleland Chief Executive Officer

At Essential Energy, listening and responding to our customers sits at the heart of everything we do as we deliver on our promise of empowering communities to share and use energy for a better tomorrow.

During 2017 and early 2018, we consulted extensively with customers and stakeholders to better understand how our services are valued, and how customer needs should be balanced with delivering a safe, reliable, affordable and innovative electricity distribution network.

What did we hear? Customers placed safety above all else and are clearly satisfied with their power reliability, however affordability is a key challenge. In this rapidly evolving energy sector, we also heard that our customers are interested in new and emerging technologies.

To meet these customer expectations, Essential Energy is pursuing strategic initiatives that focus on best practice systems, technology and processes, commercial capability, and customer and community connections. These initiatives help keep downward pressure on network charges whilst ensuring we fulfil our obligations in managing our day to day inspection, maintenance and vegetation management responsibilities. The initiatives also complement and support the growing opportunities around emerging technologies such as batteries, microgrids, large scale solar, and wind and hydro generation.

A culture of continuous improvement and a fresh approach to risk, customer service, investment and efficiency will ensure Essential Energy remains responsive, enabling, enduring and local in the years ahead.

I believe our 2019-24 Proposal accelerates the best of what Essential Energy does today and truly reflects what our customers need, want and expect. I hope you agree and I invite all customers and stakeholders to read our Proposal and provide feedback. Comments can be provided to the Australian Energy Regulator via its website at aer.gov.au or given directly to Essential Energy using one of the communication channels detailed below.

I look forward to your feedback.

Thank you

John Cleland
Chief Executive Officer

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Follow us:

Our Values

What we care about

Make safety your own

Be easy to do business with

Make every dollar count

Be courageous, shape the future

Be inclusive, supportive and honest

Introduction

The context for this Proposal

The Australian energy market is transforming rapidly, presenting customers with more options on how they obtain and consume electricity. Essential Energy is embracing this transformation, and we have taken this into account when preparing this 2019-24 Regulatory Proposal.

Our core business vision is built around empowering communities to use and share energy for a better tomorrow; so engaging with customers is a vital part of our business strategy. We want to continuously gain insights into what customers need and expect from Essential Energy, and how our role should evolve. When asked about their priorities for this Proposal, customers told us they wanted us to help keep electricity costs down and that reliability was equally important to them. These factors were top of mind when we developed our Proposal.

We also took into account our changing operating environment and the regulatory limitations that currently exist. We are actively participating in, and shaping the evolving energy market. We must balance our existing role as a safe, reliable and efficient electricity network provider with our increasingly complex and emerging role as an active facilitator of domestic and grid-scale renewable energy.

We believe this 2019-24 Regulatory Proposal positions Essential Energy to deliver local, enduring, responsive and empowering electricity services while recognising the need to balance safety, affordability, reliability, service, innovation and shareholder returns.

Delivering value for customers was an important consideration, bearing in mind that many customers define value according to their location and type of network connection. A high proportion of people living in remote areas prioritise reliability, whereas customers living in densely populated areas focus on lower network charges. These differences impact how various customer groups approach alternatives to traditional electricity supply.

Why we are preparing a Regulatory Proposal

Essential Energy provides a range of distribution services to electricity customers in regional, rural and remote New South Wales (NSW). These include connecting customers to the poles and wires (network); managing the network; providing some metering services and public lighting; and non-routine services, such as special meter tests.

As a regulated electricity distribution business, Essential Energy is subject to economic regulation by the Australian Energy Regulator (AER) under the National Electricity Rules (NER). This means most of our distribution services are subject to revenue and/or price controls determined by the AER, and which apply for the determined regulatory period (usually five years).

This Proposal sets out our recommended revenue requirement and how this will be reflected in customer charges over the five years from 1 July 2019.

Our approach

Delivering customer value centres on managing risk, assets and cost, all of which provide the framework for our Regulatory Proposal.

Risk: Our robust risk framework links everyday decision-making to the best outcomes in safety, network performance, service delivery and business sustainability. We plan to increase our use of sophisticated technology to help us match customer needs with network maintenance and investment.

Assets: The ageing nature of the network means advanced asset management approaches will play a critical, long-term role in future network sustainability. We are linking whole-of-life asset planning strategies and sophisticated risk management to our asset management decisions so we can assess all network activities on their ability to deliver real benefits to customers.

Cost: In balancing our role as a reliable network provider with that of being a renewable energy facilitator, we have prepared this Proposal based on our objective to strive towards real price reductions in distribution network charges.

How this document is structured

We have approached this Proposal to make it as easy as possible for customers, stakeholders and the AER [1] to review our future plans.

This Proposal is supported by customer and stakeholder fact sheets and an overview paper which:

- provide a plain English summary of the Proposal;
- describes how we have engaged with customers, and stakeholders in developing our Proposal, and how we have responded to the important matters raised; and
- includes the key risks and benefits for customers and a comparison between our total revenue requirements for the 2014-19 and 2019-24 regulatory periods, explaining any material differences between them.

Our Regulatory Proposal has been prepared to comply with the requirements set out in the NER, and includes:

- a service classification proposal, which shows how our distribution services should be classified for the purposes of economic regulation by the AER;
- a building block proposal which shows the costs we forecast are required to supply our standard control services, including indicative charges;
- a demonstration of the application of the AER's approved price control mechanism for our alternative control services, including indicative charges;
- our proposed Connection Policy; and
- how our proposed Tariff Structure Statement complies with the NER pricing principles for direct control services.

Our Regulatory Proposal is also accompanied by:

- information required by the AER in the Regulatory Information Notice (RIN) for this distribution determination; and
- checklists documenting our provision of the information required by the NER and the AER's RIN.

1. The AER's economic regulation of our business is governed by the provisions of Chapter 6 of the NER, which also require us to make it as easy as possible for the AER to perform its regulatory tasks. We have therefore prepared our full Proposal to comply with Chapter 6 requirements

Executive Summary

Responding to changing customer needs in the new energy market

Chapter Summary

- Our Proposal has been shaped by consultation with our customers and stakeholders
- We are continuing our transformation journey to minimise network charge increases
- Our ongoing transformation journey will deliver further benefits in addition to the significant savings we have already delivered

Executive Summary

Listening to customers

Essential Energy's network investment and customer services aim to deliver our corporate objectives. These objectives have been influenced by your needs and the changing energy landscape. Customers' views on how we meet these on an ongoing basis are very important to us, so we actively engaged with you as we developed this Proposal. Our customers told us that the following themes are most important to you:

Safety Leader | **Affordability** | **Reliability** | **Good customer service & communication** | **Transparency/ bill itemisation** | **Environmentally friendly/ encouraging renewables** | **Innovative technologies**

Continuing our transformation journey to minimise network charge increases

This Proposal outlines our expenditure forecasts for 2019-24 which will form the basis for the AER's revenue decision and our pricing plans. In 2011-12 we embarked on a journey to transform our business, which focused on improving our efficiency and productivity to deliver better affordability for customers while maintaining or improving supply reliability.

This transformation continues into the current 2014-19 regulatory period and, throughout this Regulatory Proposal for 2019-24, we will draw on the learnings and comparisons of previous years to demonstrate the improvements we have made, and will continue to make, across the business in the long-term interests of customers.

In summary, we are proposing further sustainable cost reductions in addition to the substantial savings already achieved:

- an average of $340 million (Real $2018-19) per annum in operating expenditure which is 40 per cent below 2011-12 actual operating expenditure;
- an average of $420 million (Real $2018-19) per annum in capital expenditure which is 50 per cent below 2011-12 actual capital expenditure;
- to apply the AER's Rate of Return guideline; and
- to limit the increase in annual revenue to 1.43 per cent above CPI.

Essential Energy has provided the results of new efficiency benchmarking analysis undertaken by Frontier Economics. This analysis shows that Essential Energy's proposed expenditure is in line with that expected from an efficient distribution network of Essential Energy's size and nature. More detail on this analysis is included in the Benchmarking chapter.

Our forecast expenditure only forms part of the overall revenue requirement. Obtaining a reasonable Rate of Return on the capital invested in our network assets is the most significant contributor to the revenue requirement and, in turn, to the network charges to our customers. Adoption of the AER's Rate of Return guideline provides the most affordable outcome for customers.

The significant business improvements since 2011-12 have largely been achieved through the introduction of major workforce reforms and by constraining costs wherever possible. We have improved our efficiency and productivity whilst successfully managing our obligations in inspection, maintenance and vegetation management activities. To continue delivering further improvements in efficiency and productivity in the 2019-24 regulatory period, the business must now move into a phase of innovation and investment in technology. This is a much more complex and challenging stage in our strategy, however, our forecast reductions in expenditure in this and future regulatory periods are not achievable without making these conservative yet critical investments.

Recognising that Essential Energy's distribution charges typically represent 37 per cent of an average residential and small business customer's electricity bill, we carry the responsibility to deliver a service that meets customer needs in a rapidly changing energy environment.

The commitments made in this Proposal have been made to limit price increases as much as possible, while maintaining a safe and reliable network and providing an appropriate rate of return to shareholders.

Why are charges increasing when costs are reducing?

Despite the decline in our operating costs, capital expenditure and expected rate of return, our charges will increase for this regulatory period by 1.43 per cent per annum above CPI. This is primarily attributable to ongoing growth in the value of our network, i.e. investment in the network is greater than depreciation in the value of the network during the same period; and the return we receive on our network's value (the Regulated Asset Base).

Our network has been built over many decades to meet customer connection requirements, peak demand growth and reliability standards. This allows us to supply electricity on the hottest days or provide backup power for a house with solar panels. Even if customers don't use the network often, we still have to provide and maintain it for when it's needed.

In addition, we are required to repay borrowings and provide a satisfactory return to our shareholder, the NSW Government, over the useful life of the network assets.

Transforming to improve efficiency

Our customers told us that affordability is important to them. In a rapidly evolving energy ecosystem, we also recognise that technologies are increasing the affordability of alternative electricity options for customers. Our aim is to remain competitive by continually improving our efficiency and delivering customer value.

We have significantly transformed our operations during the current Regulatory Period, placing us in a good position to improve efficiency levels even further in the next Regulatory Period.

Compared to the commencement of our transformation in 2011-12, by 2023-24 we propose to deliver, in real terms:

- network charges that are 26 per cent lower;
- operating costs that are 47 per cent lower; and
- capital expenditure that is 56 per cent lower.

Our 2019-24 plans include strategic initiatives to improve efficiency, without compromising safety, reliability or service. This will come largely from:

- investing in research and new technology to improve asset monitoring, analysis and risk management;
- risk-based asset planning to meet long-term customer needs; and
- automation of manual processes to reduce operational costs and drive efficiencies.

Essential Energy has already begun this journey through the extensive use of our risk management framework and supporting tools. This has impacted how we have prepared our forecasts and how we considered the key risk areas.

Every expenditure program has been informed by the risk management framework and, along with ongoing customer feedback, it has significantly influenced how we balance safety, risk and affordability.

Changing our pricing approach

Our Tariff Structure Statement (TSS) provides the guiding principles that have informed the development of our network charges. Based on customer feedback, our TSS aims to continue a slow and careful transition for our customers to network charges that better reflect the costs of managing a large rural, regional and remote network. We also recognise the need for, and importance of Tariff reform. Our proposed approach will impact individual customers differently, depending on how they use the network. Essential Energy's total revenue will be determined by the AER, so the pricing approach won't change the total allowed revenue.

Our previous TSS was a major milestone on our pricing reform journey. These reforms provided customers with more options, and improved cost-reflectivity in our network charges. Our proposed TSS builds on this previous TSS by taking into account the changing energy market and stakeholder preferences by including:

- a new default tariff assignment for customers installing new innovative technologies (solar, battery storage etc.) to encourage efficient usage. These customers will have the choice to move to a less cost-reflective tariff.
- a small increase to the fixed charge component with offsetting changes to the usage component for Residential and Small Business customers to continue our slow and steady progress towards more cost-reflective pricing.
- trials of specific price solutions for larger scale innovations, such as microgrids.

Our future role

The electricity industry is undergoing significant change, driven largely by customer demands for lower prices, alternative technologies and greater control of how electricity is consumed. Many changes will be driven by the pace and types of innovation, making them difficult to plan for, particularly when decisions on network investment can be long lived. Changes are also needed to the regulatory framework to ensure customers can benefit from innovation in the future and lower prices in the longer term.

To help network businesses with this transformation, the Energy Networks Association released the *Electricity Network Transformation Roadmap* [1] in 2017.

Over the next five-year Regulatory Period, Essential Energy plans to engage with our customers, retailers, energy service providers and policy makers to help shape our future network business.

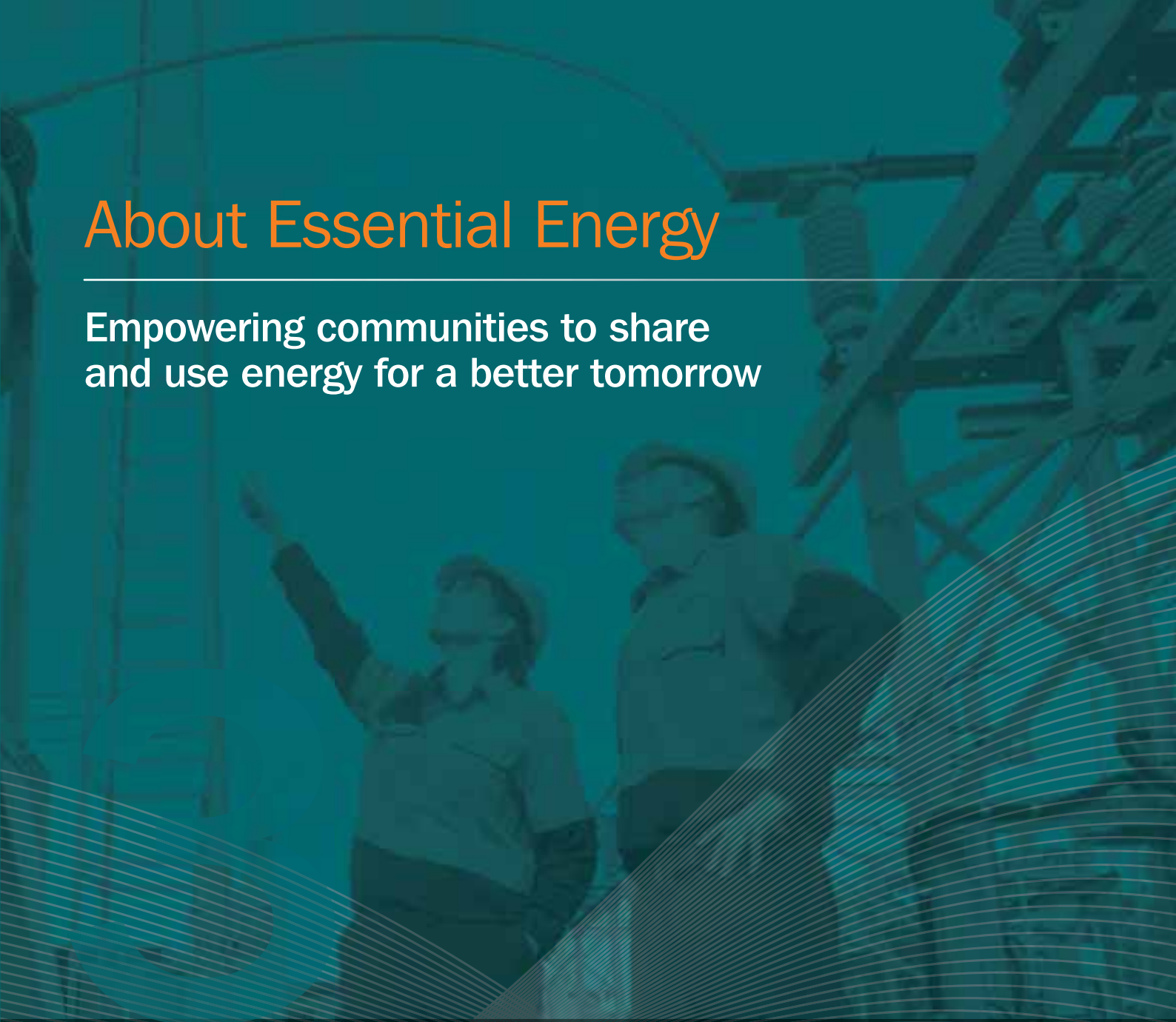
We plan to be an active participant in these and other developments while continuing to respond to changing demands for our traditional network services and working towards operating and capital expenditure reductions that lead to further downward pressure on network charges.

Underpinning all of this, Essential Energy's business vision is to empower communities to share and use energy for a better tomorrow. We believe this Proposal is an important step in delivering that vision.

1. Energy Networks Australia and CSIRO, Electricity Network Transformation Roadmap : Final Report, April 2017

About Essential Energy

Empowering communities to share and use energy for a better tomorrow



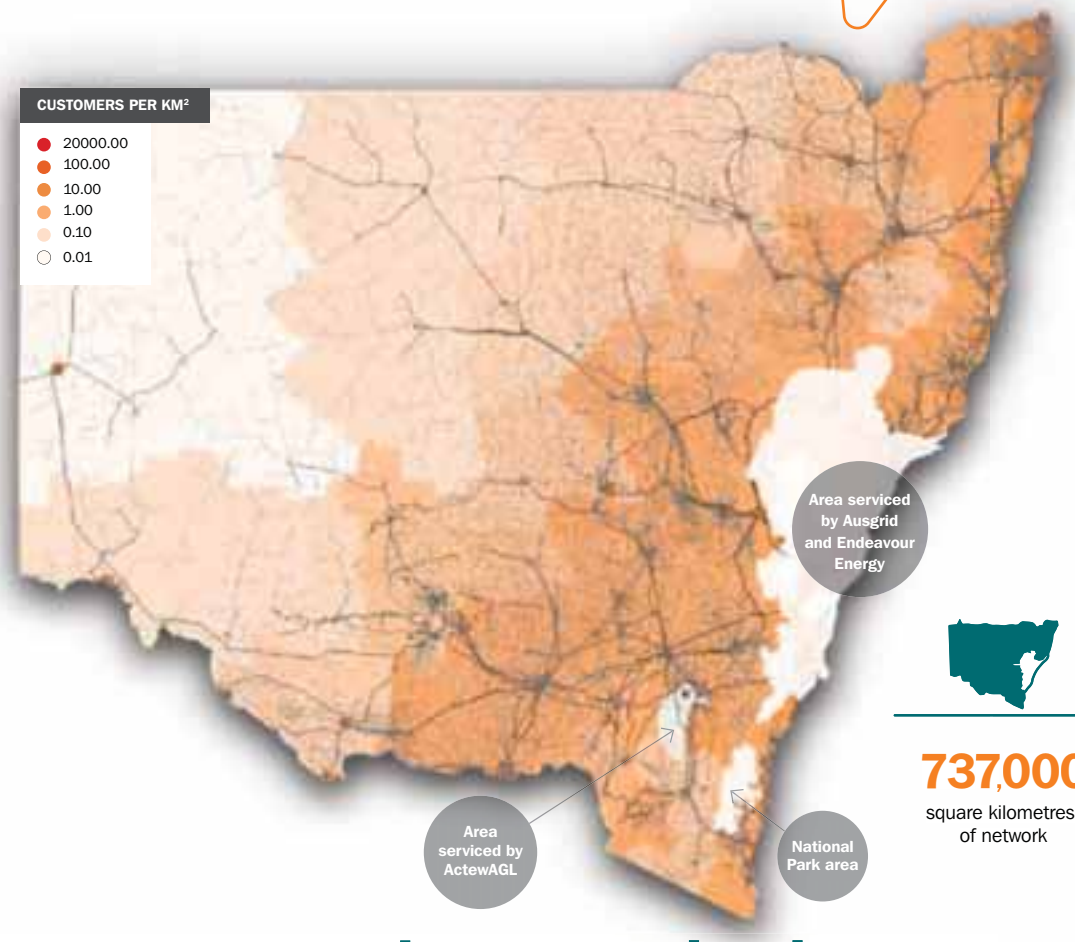
Chapter Summary

- Essential Energy operates and maintains one of Australia's largest distribution networks, delivering electricity to our customers safely, reliably and sustainably
- Everything we do is guided by our vision to empower communities to share and use energy for a better tomorrow
- We are continuously evolving in response to changes in how our customers want to use our network, including embracing new technologies such as solar, batteries, electric vehicles and energy exchange

"They maintain the power grid, wires, poles, etc.; upgrade systems, restore power when there are power outages, possibly connect new premises"

Southern region customer

About Essential Energy



1,381,758
power poles – which equates to 1.6 power poles for every customer

>840,000
customers

737,000
square kilometres of network

95%
of NSW & parts of southern Queensland

377
zone substations and 140,000 distribution substations

183,612km
of overhead powerlines – equivalent to driving around Australia 13 times

1,905km
length of our longest powerline – services 335 customers

4.6 customers
per km of powerline – the lowest customer density in the National Electricity Market

36 years
average age of network assets

1m
spans in designated bushfire zones

15,409
lightning strikes per year on the network

Extreme variations
in both weather and terrain

40m kms
travelled by our employees each year

Vegetation management
our largest operating expenditure

Serving our communities

Essential Energy provides essential services to our communities and is a key enabler of economic activity in regional, rural and remote NSW. We are 100 per cent owned by the NSW Government.

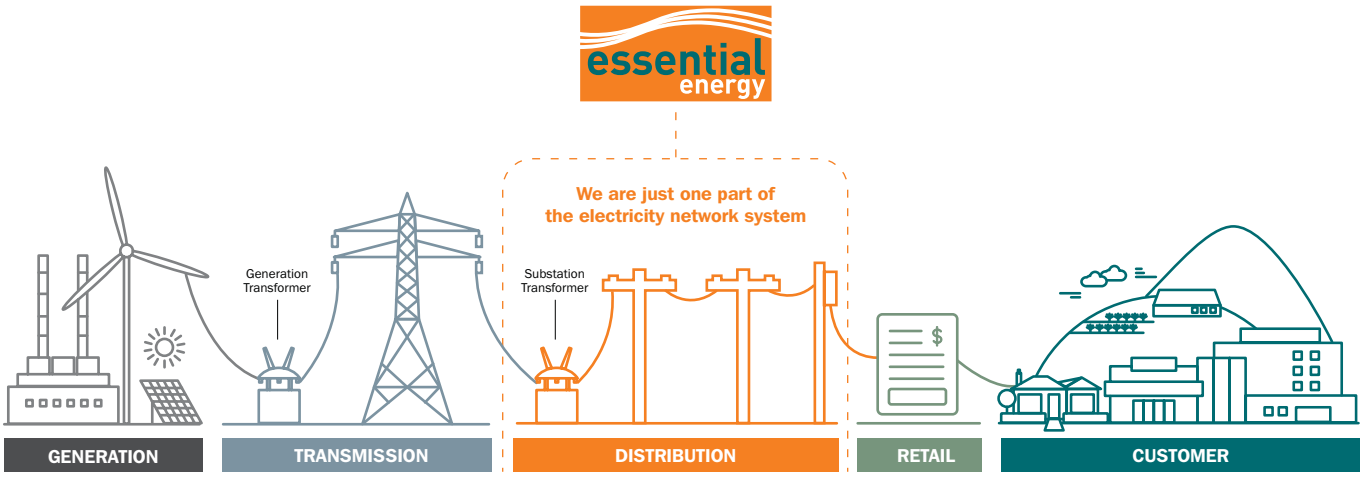
Our core business is building, operating and maintaining one of Australia's largest electricity networks. Our network footprint is environmentally and geographically diverse. It includes sub-tropical areas in northern NSW, the alpine highlands of the Snowy Mountains and arid conditions in western NSW such as Broken Hill.

The geographic spread of our network and demographics of the communities we serve sets Essential Energy apart from other electricity distributors. Essential Energy has about one third the number of customers per kilometre of powerline compared to the average customer density across the National Electricity Market.

A distribution network with a low customer density requires more poles and wires to reach customers than other networks with a higher customer density. This significantly impacts the cost to serve our customers.

Relatively sparsely populated networks also provide significant challenges for achieving reliability and service quality targets. Even so, the reliability of supply of Essential Energy's network has continued to improve, with today's performance approximately 20 per cent better than ten years ago.

We are one part of an evolving electricity supply chain



During our Phase 1 Customer Engagement we provided customers information on our role in the electricity supply chain. Once participants understood that we are only responsible for the distribution costs, and gained an understanding of our business and our key activities there was a significant change in the perception of our distribution charges being good value for money.

An industry responding to changing customer needs

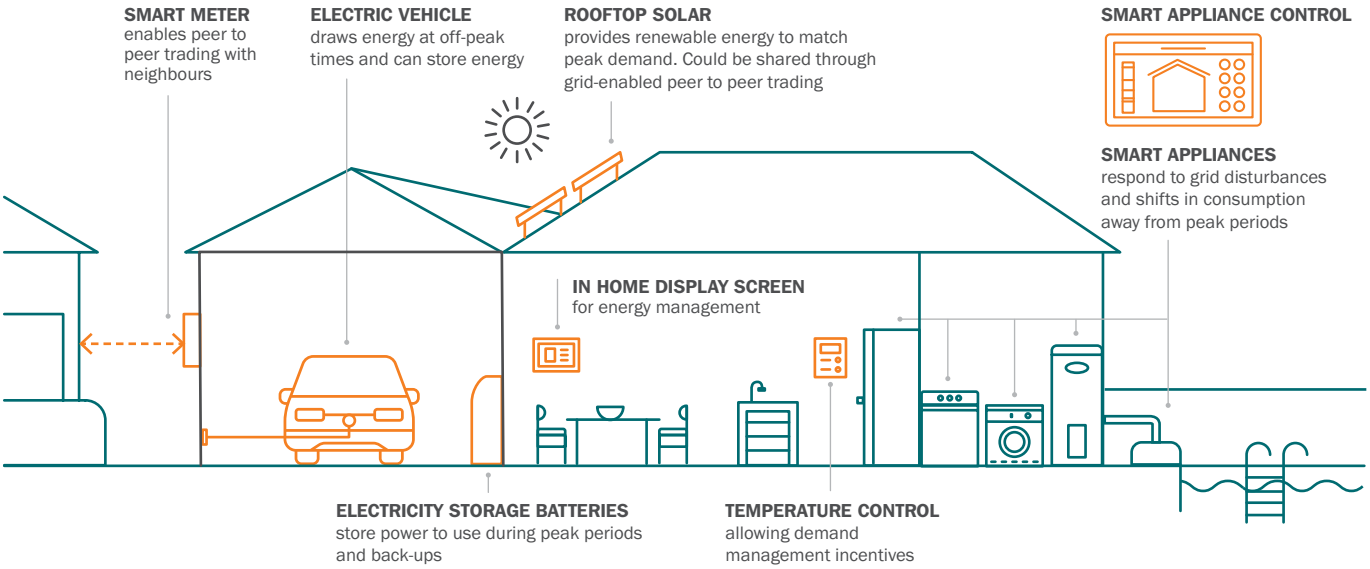
The electricity landscape is becoming more complex than ever before, with rapidly evolving technologies, emerging innovative business models and a shifting regulatory landscape. To meet these external challenges, whilst continuing to offer a competitive electricity service, we must fundamentally change how our business is organised and how we deliver services.

Like the rest of our industry, Essential Energy is evolving in response to changing requirements in major areas such as pricing and how electricity is generated, consumed and exchanged. The regulatory framework, designed for the electricity industry, also needs to evolve to ensure maximum benefit can be delivered to customers.

To help distributors respond to these changing market conditions, the Energy Networks Association released its *Electricity Network Transformation Roadmap* [1] (the Roadmap) in 2017. Over the decade to 2027, the Roadmap forecasts rapid adoption of new distributed energy technologies, driven by falling costs of renewable energy and global carbon abatement measures. This will create the opportunity for a structured transformation of existing distribution networks like ours to become 'intelligent' networks based on advanced technologies.

Essential Energy plans to be an active participant in Australia's rapidly changing electricity supply chain. We are already adapting our network planning and service delivery processes to make the transition as seamless as possible. We began transforming our business in 2011-12 and will continue to transform, as set out in this Regulatory Proposal.

The diagram below shows how new technology may change the way our customers use electricity in the future.



> *"It's a changing world. I can see that this may be the future of electricity for regional areas."*
>
> Dubbo customer

> *"I would be happy to get electricity from anywhere – it doesn't matter where it is produced. If solar keeps getting better why can't we all become self-sufficient?"*
>
> Cootamundra customer

1. http://www.energynetworks.com.au/electricity-network-transformation-roadmap

Delivering sustainable cost reductions to customers

Essential Energy is transforming to deliver better value to customers. This is impacting all aspects of our operations and the way we think about balancing risk and expenditure.

We have already seen significant sustainable reductions in our operating expenditure and capital expenditure whilst also ensuring our obligations in inspection, maintenance and vegetation management have been met. This Regulatory Proposal reflects the outcomes of our customer consultation process by locking in these efficiency gains for the long-term benefit of customers.

The diagram below summarises our business transformation achievements so far. As our business becomes more efficient, the resulting savings will directly benefit customers in the future.

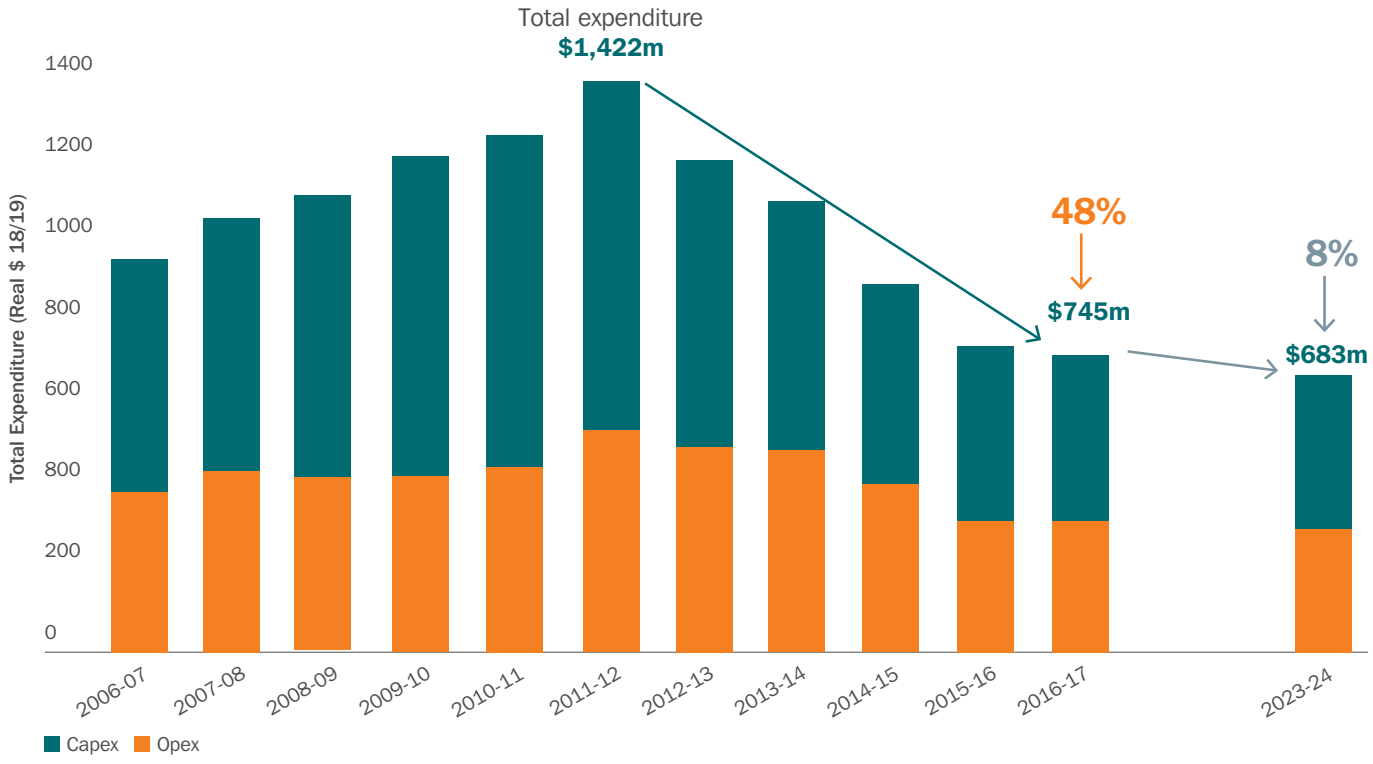
By 2023-24 we plan to reduce operating costs to the lowest levels in 20 years and reduce capital costs to their lowest levels in 19 years. These lower levels of expenditure will support Essential Energy moving closer to achieving its objective to deliver real reductions to network charges in the 2024-29 regulatory period.

Transforming to improve efficiency

The process of transforming our business to reduce total expenditure commenced in 2011-12.

Our 2019-24 Regulatory Proposal contains further forecast efficiencies:

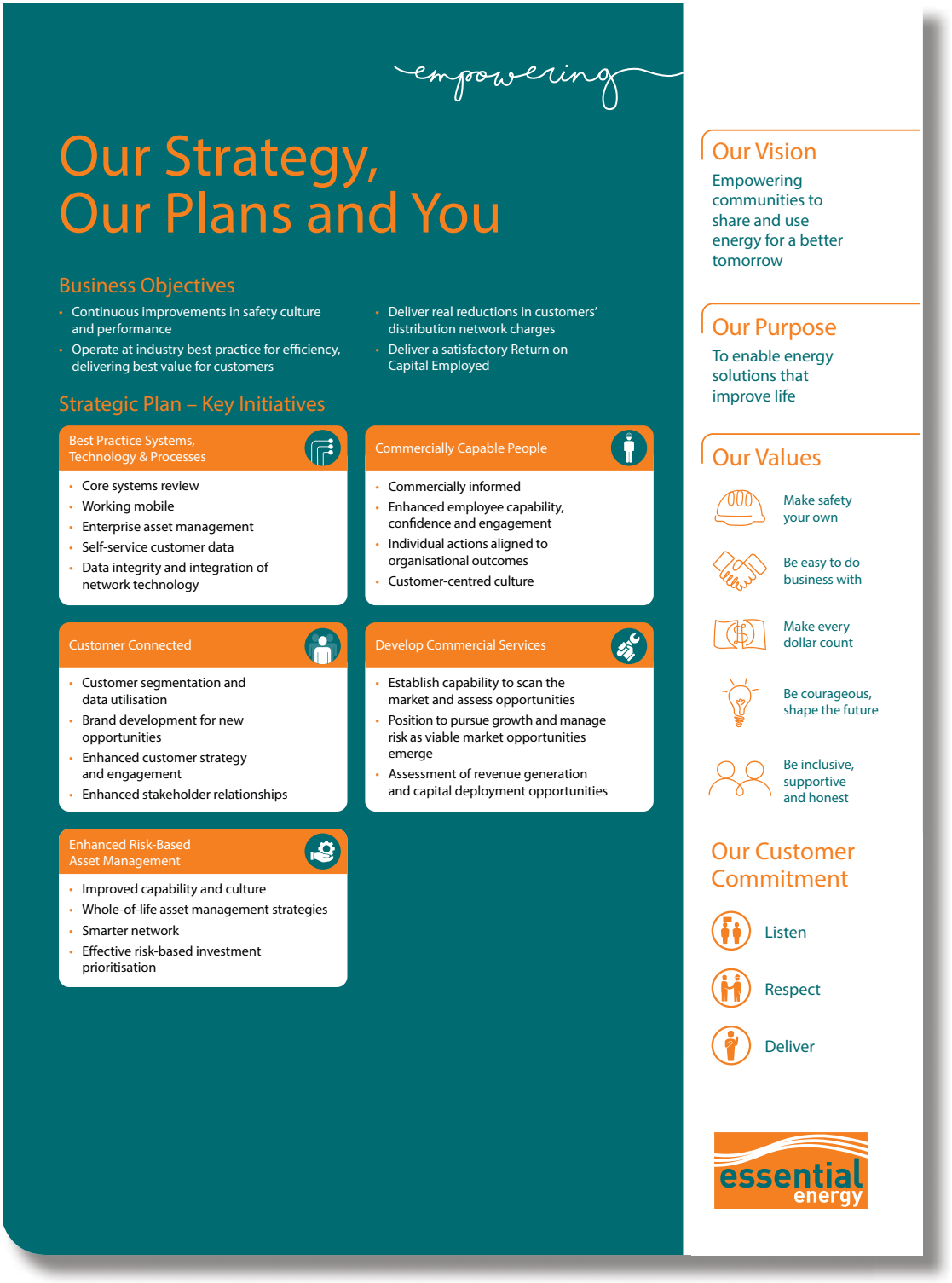
- Investing in new information technology
- Streamlining our operations and processes
- Improving how we manage our assets



Customer-centred Vision, Purpose and Values

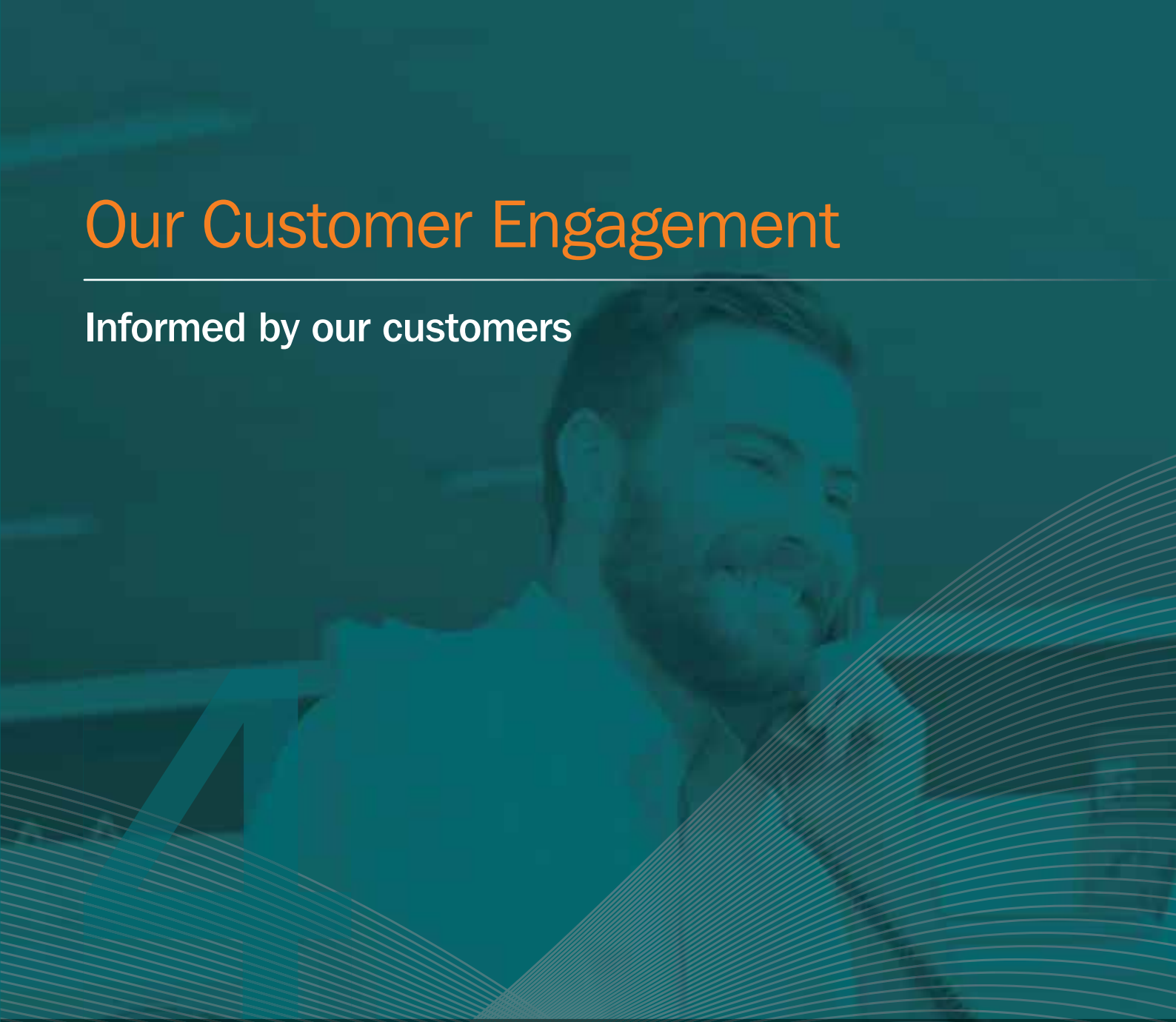
Staying true to Essential Energy's vision, purpose, and values amidst widespread change is an important objective. We are working hard to make sure our employees understand all three and reflect them in how they behave every day.

We listen to and respect our customers, safely deliver on our promises, and place our customers at the centre of everything we do.



Our Customer Engagement

Informed by our customers



Chapter Summary

- When developing this Proposal, we sought to identify key themes, insights and issues through customer and stakeholder engagement
- The strategies, investments and activities outlined in this Proposal reflect the views of our customers, while meeting our regulatory obligations and business requirements
- As the engagement program has progressed, we have reviewed and updated our Stakeholder Engagement Framework and consultation activities so they reflect and encourage ongoing feedback from customers and stakeholders

Our Stakeholder Engagement Framework – Approach

Essential Energy distributes electricity to households, communities and businesses. To continue increasing customer value, we need to invest efficiently and effectively. Through meaningful collaboration with customers and key stakeholders, we can make more informed investment decisions, deliver electricity services that better reflect customer preferences, and ensure our plans are supported by customers and stakeholders. We think of this collaboration as 'Outside in' (listening to customers before we make decisions) and 'Always on' (ensuring we are open to feedback and consistent in our approach).

Our engagement strategy for the 2019-24 Regulatory Proposal is consistent with, and builds on, Essential Energy's Stakeholder Engagement Framework (Attachment 4.1) and the Energy Networks Association's Customer Engagement Handbook.

The Stakeholder Engagement Framework sets out a clear methodology for how customer and stakeholder research and analysis inform future values, projects and activities.

Since 2012, ongoing customer engagement and a significant commitment from our business have resulted in a customer driven change within Essential Energy that is guiding positive, long-term customer outcomes and business success. The Framework has played a major role in this transformation and will continue to do so.

It promotes a culture within Essential Energy that values working with customers and stakeholders, recognising the diversity of our customer base and the importance of developing appropriate engagement programs that support the objectives of our customers and our business. It also helps us to manage material risks and make more informed strategic business decisions.

In our engagement, we are:

- **Curious:** Engaging early, to build respectful, inclusive and collaborative relationships with our diverse stakeholders. We design our engagement activities to meet the needs of stakeholders, actively seeking feedback to learn and improve.
- **Accountable:** We are transparent, setting clear deliverables for measuring and evaluating the quality of our engagement. Outcomes from engagement are visible to stakeholders.
- **Courageous:** Action-orientated, open-minded and acting with integrity. Our business is continuously informed and shaped by our engagement.

Throughout the consultation period, we have sought independent opinion from three core reference groups:

- **Customer Advocacy Group,** which is a proactive forum for consultation, engagement and insight across Essential Energy's customer base on any matters relating to the supply of electricity and associated services. The Group's members represent the interests of domestic, industrial, commercial, primary production, rural and remote, and low-income customers;
- **Streetlight Consultative Committee,** which consists of representatives from local governments and is dedicated to issues affecting public lighting; and
- **Vegetation Management Group,** which also consists of local government representatives and discusses the management of vegetation across our network.

Each of these three groups are embedded into Essential Energy's ongoing business and meet on a regular basis throughout the year.

Consultation for this Proposal

Planning

In June 2016, before starting the engagement program for this Proposal, we interviewed stakeholders and met with Essential Energy's Customer Advocacy Group to consult on our Stakeholder Engagement Framework. Their feedback improved the Framework and informed our ongoing consultation activities.

We then engaged independent experts, Woolcott Research and Engagement and Farrier Swier to facilitate deliberative engagement with customers and stakeholders for our 2019-24 Regulatory Proposal.

Identification of stakeholder groups and level of engagement

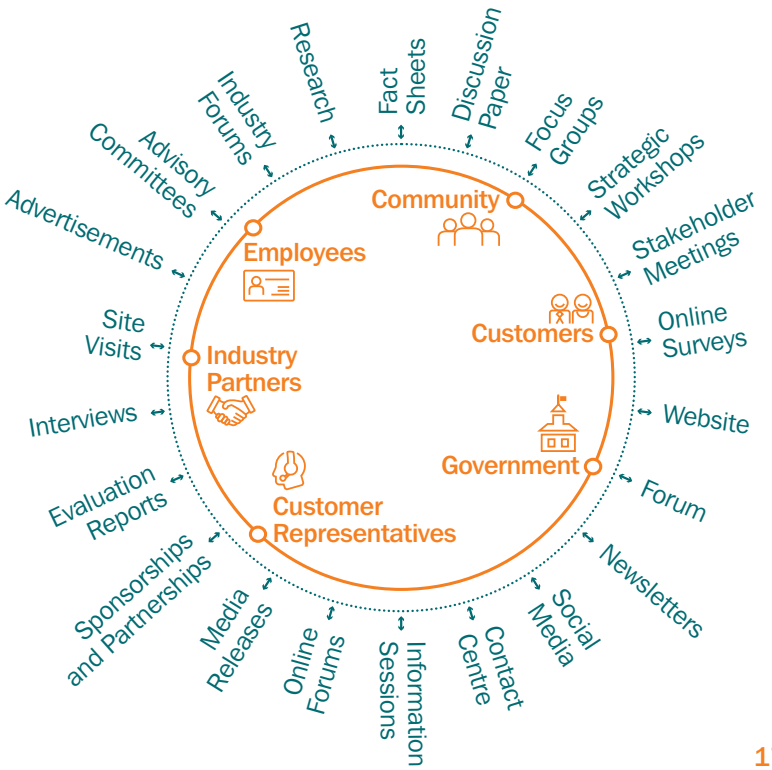
We recognise the diversity of our customers and the importance of developing appropriate engagement programs to ensure we hear from people representing all stakeholder groups. Our customers have varying levels of interest in, and knowledge about, Essential Energy and the electricity industry. This means our communication materials and engagement approaches must be appropriately tailored to suit every customer group, including culturally and linguistically diverse (CALD) and Aboriginal and Torres Strait Islander (ATSI) representatives.

To ensure our communications and engagement activities for this Proposal were relevant, accessible, created ongoing dialogue and facilitated robust discussion, we used a variety of channels and tools to share information and receive feedback, including graphics, video, presentations, reports, online, phone and face-to-face.

Through targeted sampling and a diverse range of communication and engagement activities, we are confident we have received sufficient and high-quality feedback to ensure we consider the needs, values, and concerns, of all customer groups impacted by this Proposal.

GROUP 1 NO KNOWLEDGE	GROUP 2 LIMITED KNOWLEDGE	GROUP 3 MODERATE KNOWLEDGE	GROUP 4 HIGH KNOWLEDGE
Stakeholders who are future customers or new customers.	Stakeholders with limited knowledge. Interactions mainly via their retailer.	Stakeholders who interact with Essential Energy and have some understanding of industry and usage.	Stakeholders who have worked closely with Essential Energy and industry and have extensive knowledge.

> *"There was lots of information being passed back and forth – I felt like I was listened to and opinions valued."*
>
> Tamworth customer



Listening and engagement is part of our ongoing business, we have been meeting with our Customer Advocacy Group for over 20 years

PLANNING

JUN 2016 TO DEC 2016

Our Stakeholder Engagement Framework is embedded into strategic planning and is dynamic, reflecting stakeholder consultation and empowering customers to inform business decisions and engagement approaches

We held stakeholder interviews with customer representative groups and met with Essential Energy's Customer Advocacy Group to consult on our Stakeholder Engagement Framework and early approach to the Proposal

We engaged independent experts Woolcott Research and Engagement to facilitate customer and stakeholder engagement for the 2019-24 Regulatory Proposal

We designed a consultation program which recognised customer diversity and varying levels of interest and knowledge about our business

UNDERSTANDING OUR CUSTOMERS

A Discussion Paper provided background information about our business and an open invitation to seek opinions on proposed capital, operating plans and investment decisions

We held interviews, surveys and deliberative forums with customers and stakeholders to understand what matters to customers

Customers identified the key customer values that have fundamentally informed the development of this Regulatory Proposal

We launched Essential Engagement, an online forum for people to 'Have YourSay' on key initiatives in our Regulatory Proposal

Customer feedback was shared in the Woolcott Engagement Program Summary Report – Phase 1

Phase 1: Consultation

JAN TO JUN 17

- > online survey: residential customers and small to medium businesses
- > 'YourSay': residents and businesses
- > interviews with large customers and stakeholders
- > 7 deliberative customer forums with attendees and internal and external observers
- > Customer Advocacy Group meeting
- > Vegetation Management Consultation Group meeting
- > Streetlight Consultative Committee meeting

1,590

Total number engaged

DEEP DIVE

Using a range of engagement activities, deeper consultation was held on customer priorities and issues impacting the Regulatory Proposal

An Engagement Focus Paper was published and used as a tool to support customer consultation and discussion

Customer feedback was shared in the Woolcott Engagement Program Summary Report – Phase 2

Phase 2: Consultation

JUL TO SEP 17

> online survey: residential customers and small to medium businesses
> 'YourSay': residents
> interviews with large customers and stakeholders
> 7 deliberative customer forums with 518 attendees with 54% repeat participants and internal and external observers.
> pricing workshops with stakeholder groups
> Customer Advocacy Group meetings
> Streetlight Consultative Committee meeting
> retailer meetings
> LED streetlighting meeting with local councils

1,598

Total number engaged

NOV 17

We refreshed:

Our Vision…
empowering communities to share and use energy for a better tomorrow

Our Purpose…
to enable energy solutions that improve life

TESTING

We are testing 'what we heard' and 'closing the loop' by continuing our engagement activities across our footprint in NSW

On 9 February we released our draft Regulatory Proposal for public consultation

Phase 3: Consultation

JAN TO FEB 18

> Public release of engagement findings and Regulatory Proposal
> Draft Regulatory Proposal invitation for feedback
> YourSay online dialogue
> 3 "closing the loop" customer forums
> Survey
> Employee engagement
> Customer Advocacy Group meeting
> Vegetation Management Consultation Group meeting
> Streetlight Consultative Committee meeting

AER SUBMISSION APRIL 2018

ONGOING

Our consultation with these advisory groups is ongoing as is our engagement on future plans and activities

Engagement program

Through our engagement program, we identified the key customer priorities that have fundamentally informed the development of this Proposal. Customers viewed safety as fundamental for Essential Energy to be able to operate. A relative ranking revealed that affordability and reliability were by far the two most important factors, in addition to safety.

Our customer and stakeholder engagement activities conducted between June 2016 and February 2018 are captured in the report 'How engagement informed our proposal' (Attachment 4.2).

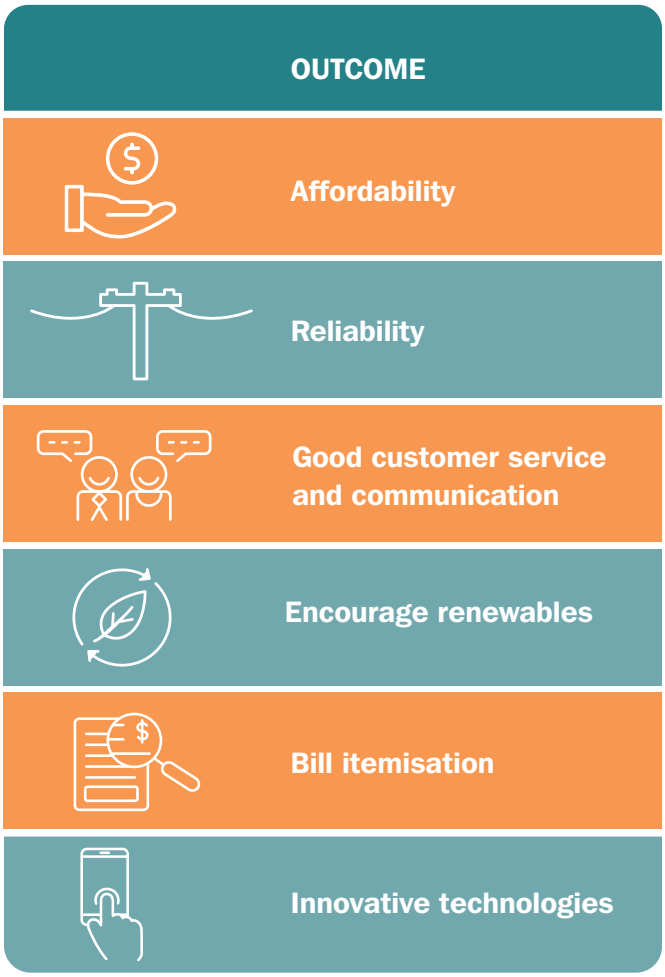
What matters to our customers

Each phase of our engagement program is set out in the diagram on the previous page. An engagement program summary report was published after each phase of consultation. These independent reports can be found at:

Attachment 4.3	Engagement Program Summary Report Phase 1
Attachment 4.4	Engagement Program Summary Report Phase 2
Attachment 4.5	Pricing Working Group Engagement Report
Attachment 4.6	Closing the Loop Report Phase 3 engagement
Attachment 4.7	Regulatory Proposal Stakeholder Engagement Evaluation Report
Attachment 4.8	Business Survey Findings Report Phase 1
Attachment 4.9	Business Survey Findings Report Phase 2
Attachment 4.10	Essential Energy Community Forum Report Phase 1
Attachment 4.11	Essential Energy Community Forum Report Phase 2
Attachment 4.12	Residential Consumer Findings Report Phase 1
Attachment 4.13	Residential Consumer Findings Report Phase 2

Our customers' top priorities

Safety is essential for doing business



Summary of engagement outcomes

Topic	What we heard from customers	Phase 1 and Phase 2 outcomes	Estimated bill impact per quarter	Phase 3 customer support	Proposal chapter where feedback has been addressed
Customer values 	Attitudes to electricity use and the services we provide.	Customer values incorporated into strategic business planning for this Proposal and expenditure approach.	—	90%	> About Essential Energy > Our Customer Engagement > Customer Overview
Safety 	Customers expect safety to be fundamental to everything we do.	Safety remains our number one priority.	—	91%	> Risk Management > About Essential Energy
	Poles in high traffic accident locations should be moved (Black Spot Program).	Proposal includes a Black Spot Program.	Increase $0.06	88%	
		Replacing old cross arms with new technology which is storm resistant to reduce wires falling down.	—	99%	
		Continuing our safety education programs.		94%	
Affordability 	Customers see our distribution costs as good value for money at around 37% of a typical bill.	Proposal applies the Rate of Return Guideline from the independent regulator.	—	83%	> TSS (and Overview) > Pricing Arrangements
	Affordability is important, but needs to be balanced with efficient services.	Investing in technology that will improve efficiency and lower operating and capital spend.	By 2023-24 customers will save $9.11	96%	
	Equity and fairness is important, with concern for vulnerable customers.	Seeking partnership to help support vulnerable customers.	—	91%	
	Remove inappropriate vegetation and selectively replant. Safely stacking cut vegetation, rather than chipping, is not supported.	Proposal includes specific vegetation removal where appropriate and selective replanting to reduce bills.	Reduce by $0.49	96%	
	To reduce costs, customers were prepared for streetlight repairs to take an average of 7 days rather than 4 days.	Completing streetlight repairs in an average of 7 days to improve scheduling efficiency.	Average of 10% reduction in streetlighting charges	87%	
		Greater use of LED technology for lower costs.		95%	

Next steps – continual engagement

Topic	What we heard from customers	Phase 1 and Phase 2 outcomes	Estimated bill impact per quarter	Phase 3 customer support	Proposal chapter where feedback has been addressed
Reliability 	Our network service is reliable.	Proposal aims to improve reliability, on average, by 25% in our worst-performing areas.	Increase $0.10	91%	> Our Network > Our Customer Engagement > Framework and Approach
	Limited support for planned outages starting earlier or finishing later. Equity and fairness is important, with concern for those with very low reliability.	Trial alternate start and finish times for planned outages.	—	89%	
	Little understanding of Service Target Performance Incentive Scheme (STPIS) or support for increasing our STPIS revenue.	Increase to our STPIS revenue at risk, from 2.5% to 5% to strengthen the accountability and incentives applied to our business.	—	71%	
Customer service and communication 	Want control of their energy use and bill transparency.	Proposal includes communications and engagement programs.	Increase $0.30	74%	> Our Customer Engagement (and Customer Overview)
	Aware of us but not what we do e.g. who to report a fault to.	Continue to be involved in and support the local community.	—	98%	
	Should support the community.	Resources to improve awareness and customer understanding of the role Essential Energy plays in delivering electricity.	—	94%	
	Support more customer engagement and education.	Collaborating with land owners to improve vegetation management.	—	97%	
	Want us to invest in customer service, timely outage notifications and meter data availability.	Maintain current outage notification schedule and system and improve availability of interval meter data.	—	90%	

Topic	What we heard from customers	Phase 1 and Phase 2 outcomes	Estimated bill impact per quarter	Phase 3 customer support	Proposal chapter where feedback has been addressed
Pricing 	Changing the time at which electricity is used impacts quality of life. Incentives needed to support change.	Off-peak pricing available and related services piloted.	—	90%	> TSS (and Overview) > Pricing Arrangements
	Progression to cost-reflective pricing should be slow and careful. Bills should be predictable and stable.	Due to lack of popularity, we have only increased fixed charges by $5 p.a., with offsetting reductions in variable charges which allows slower progression towards cost-reflective prices.	—	76%	
	Locational pricing, seasonal pricing and fixed charge increase were not popular.	No locational or seasonal pricing.	—	87%	
	Choice between pricing options required.	Network charging plans updated, with opt-out for all residents and small businesses.	—	87%	
	Support a price that encourages off-peak charging for electric vehicles.	New default assignment for customers installing new innovative technologies to encourage efficient use.	—	87%	
	Invest in researching microgrids as an option.	Microgrids will be piloted, with pricing trials undertaken and policy propositions.	—	81%	
	No change required to charging windows for time of use pricing.	Education on our network charges enhanced.	—	95%	
Innovation and Renewables 	Support for new energy technologies and invest in research and development that reduces network expenditure. Generation network can be changed provided reliability and price remain stable.	Proposal includes expenditure on research and development.	Increase $0.30	83%	> Risk Management > Innovation > Pricing Arrangements > TSS (and Overview)
	Concerned new technology advantages not available to all.	Trialing new technologies, including microgrids and small-scale renewables, that will improve efficiency and lower network expenses for all.	—	93%	

Guided by our Stakeholder Engagement Framework, we will continue our customer-focused 'always-on' engagement approach during the 2019-24 regulatory period and have included the projected costs in this Proposal.

We will incorporate lessons learned into our day-to-day activities and planning, and share them with our peers to encourage customer-driven decision-making across the industry.

Stakeholder engagement delivery plan

Lesson learned	Deliverable	Deadline
Be broad in the delivery of communications materials.	Refresh our website and make mobile-friendly advancements.	30 Sept 2018
Refresh key messages. Introduce more proactive visual and digital content.	Launch a communication and awareness campaign to increase participation and dialogue through our online engagement platform.	31 Dec 2018
Not all participants read material we provide before customer forums.	Provide information at customer forums as well as for pre-reading.	Ongoing
No central database to record stakeholder engagement.	Implement a stakeholder management system to record interactions, document actions, monitor impacts and responses to emerging issues, and enhance reporting.	31 Dec 2018
Need to engage more with large business customers.	Facilitate engagement opportunities with large business customers and maintain this relationship.	Ongoing
Provide clear, easy-to-understand information to customers.	Collaborate with retailers and industry partners to increase education and awareness on projects that impact customers, such as smart meter initiatives.	Ongoing
	Proactively share learnings with industry peers as a foundation for productive, ongoing change.	Ongoing

Our Network

Enabling energy solutions that improve life

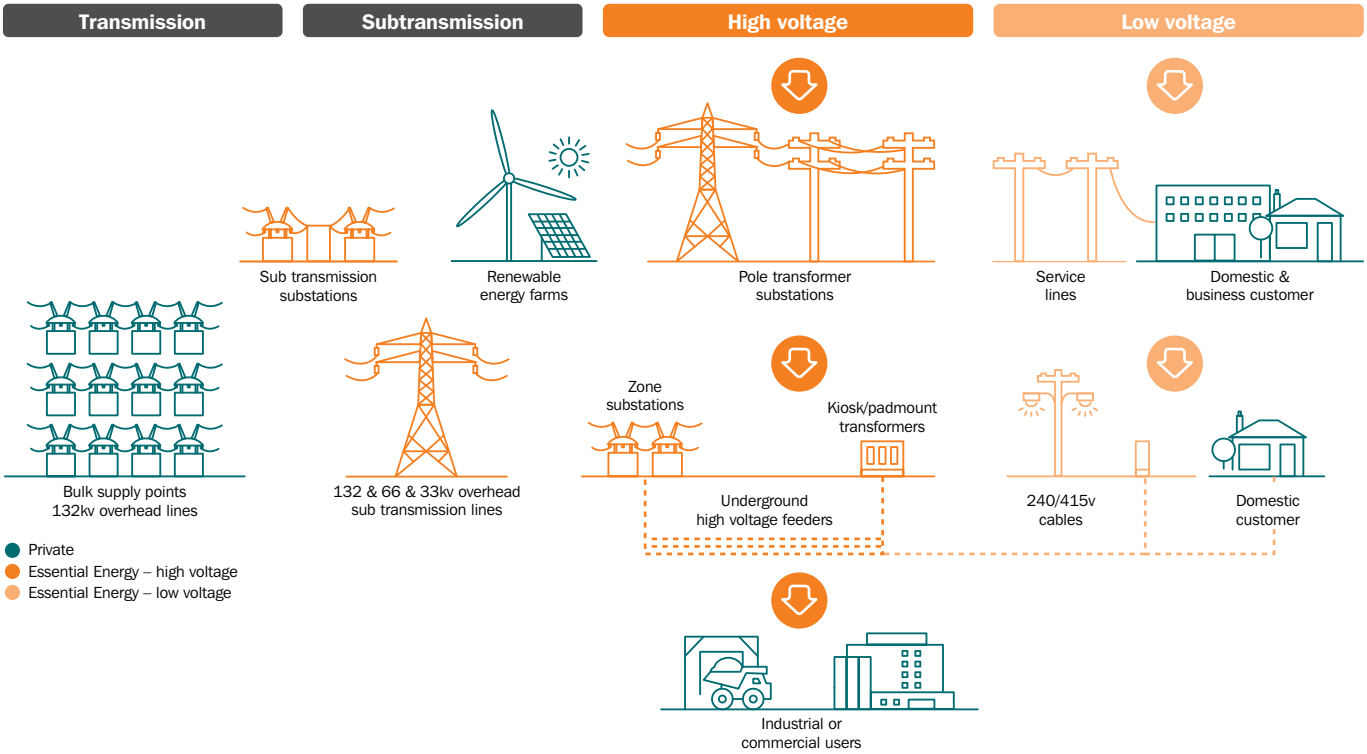
Chapter Summary

- We manage the challenges associated with the scale, characteristics and operating environment of the Essential Energy network
- Our goal is to deliver the best possible service at the best possible price to all customers across our network
- We are evolving in response to changes in customers' expectations and how the market operates

Our Network

How our network transports electricity

Most electricity in Australia is delivered from large-scale generators through transmission and distribution networks to residential and business customers. These services are then billed by your retailer. Essential Energy operates one of the largest distribution networks, distributing electricity through assets such as substations, transformers and powerlines to our customers in their homes and workplaces.



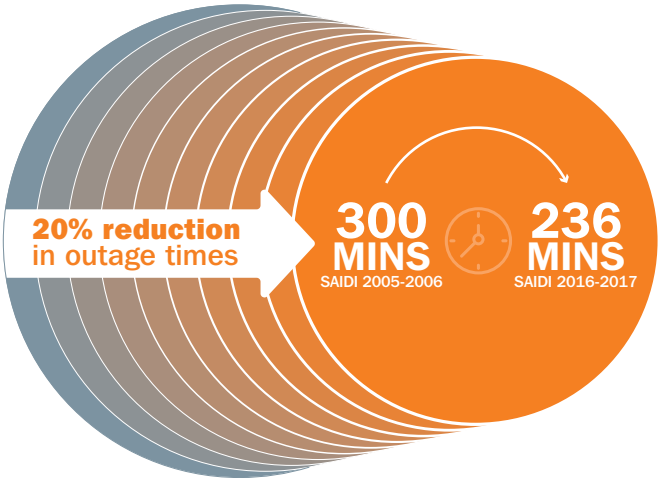
Our commitment to maintain network reliability

Our average availability of supply is currently around 99.96% and has improved significantly over the years.

Electricity reliability performance is measured by the number (SAIFI) and duration (SAIDI) of supply interruptions. This means we measure how many outages occur and how long they last and allows us to understand the reliability performance being experienced by customers.

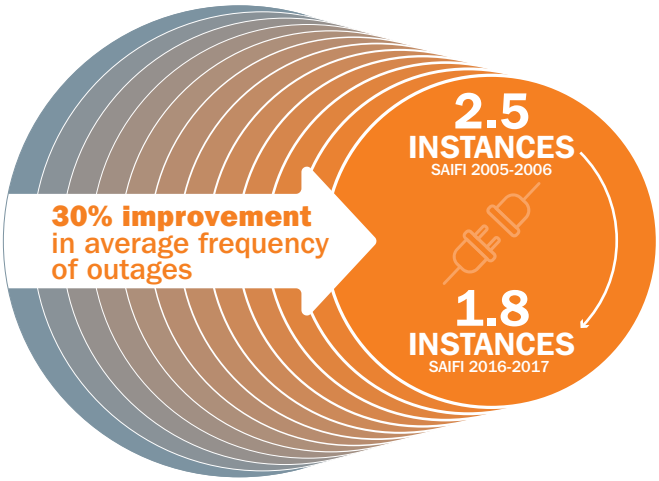
In 2005-2006, the average time per year that Essential Energy customers were affected by unplanned supply interruptions (SAIDI) was over five hours (300+ minutes). In 2016-17, their average time without supply reduced to just under four hours (233 minutes) – an improvement of over 20 per cent.

Duration of unplanned supply interruptions (SAIDI)



Similarly, in 2005-2006, Essential Energy customers averaged 2.5 unplanned power outages (SAIFI) over the year. In 2016-17, the average was 1.8 unplanned power outages – an improvement of more than 30 per cent.

Number of unplanned supply interruptions (SAIFI)



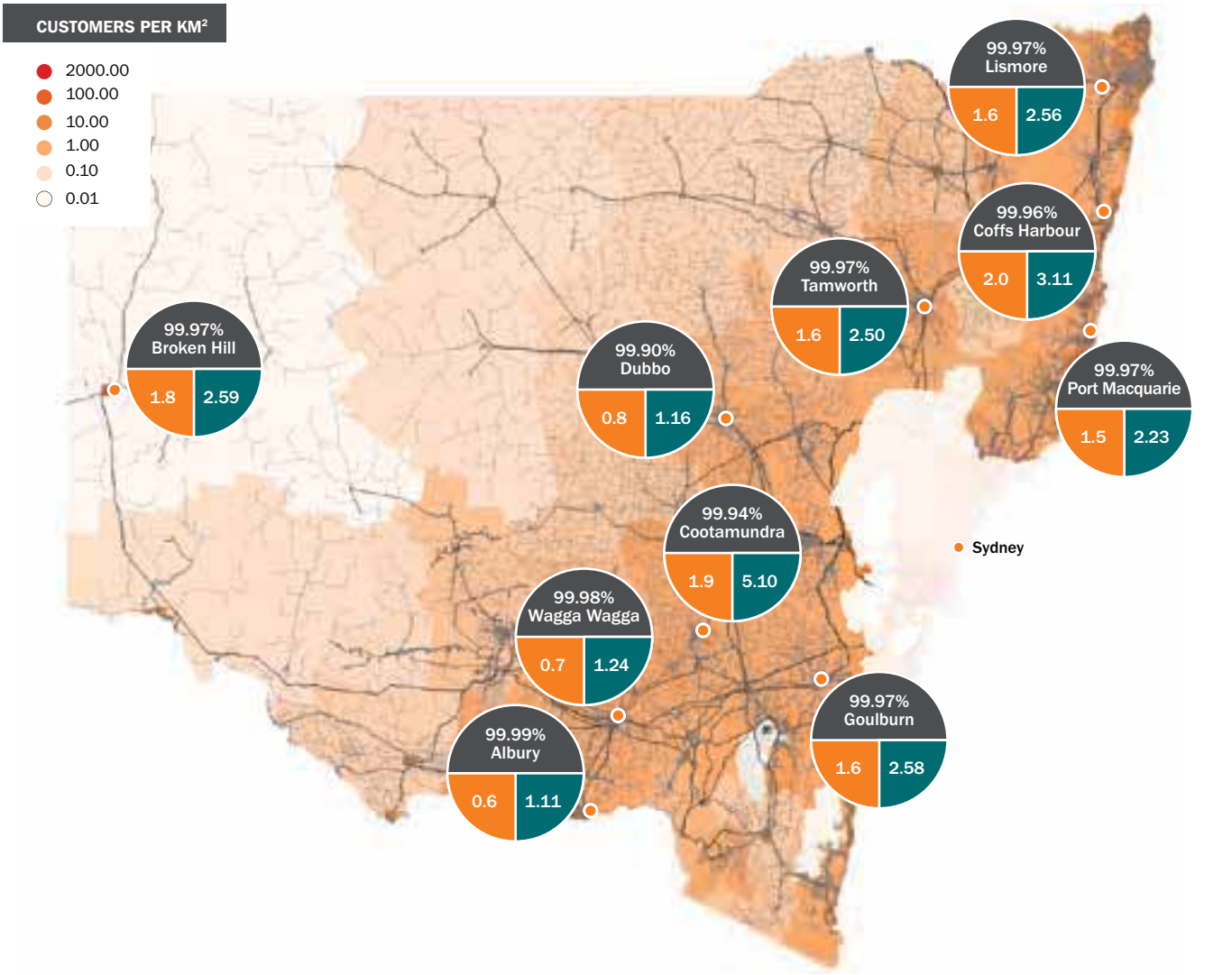
The breadth of Essential Energy's network and its exposure to the elements mean our customers can experience differing levels of reliability in different areas, so our SAIDI and SAIFI performance varies slightly according to where customers are located on the network.

"I was surprised how high the percentages were. For a business that is so vast, they are doing a good job."

Cootamundra customer

Electricity reliability on our network 2016-17

This map was shown to customers throughout our community deliberative forums. Despite the variations in reliability performance, the majority of participants at our forums were satisfied with the reliability of the network, with almost 90 per cent stating the supply was reliable. While some told of long stretches of eight hours or more without electricity, the majority reported few outages.



Power availablity %	Average power outages per year (SAIFI)	Average unplanned power outage time per year (SAIDI) *hours.minutes*	For the 2012 to 2016 period

"If I am shearing and have an outage, I lose income. I don't get paid for the days that I can't work."

Goulburn customer

What drives our costs

Most of our network costs are driven by the number of assets required to deliver electricity to each point of the network, irrespective of the number of customers connected or the peak demand for electricity. Each asset requires inspection and maintenance, and eventually replacement at the end of its life.

The larger and more widespread the network, the greater the costs to build, develop and maintain it.

Essential Energy's regional, rural and remote landscape, the vegetation and the weather patterns are different to many other distributors, and our geographic spread means we require a greater number of assets to distribute electricity to each customer. These factors have a considerable impact on our operating costs.

Key challenges affecting our costs and service levels

Scale and number of assets built over time

Scale of network

Working with a network built over time

Number and age of assets

Essential Energy has one of the largest electricity distribution networks in Australia. It is costly to inspect and maintain because of the number of physical assets and the size of the area we service.

Our network was built over many decades, at a lower voltage than modern networks.

About 70 per cent of our costs are driven by the number of assets and their spread across our large network area.

Largely regional and rural network

40 million kms travelled by our employees each year

10 powerline sections >1,000km long

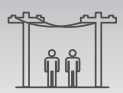
The rural and remote nature of our network area also set us apart from most other distributors – 80 per cent of our network is rural. This can make it difficult to locate and repair faults.

Our crews can travel hundreds of kilometres over challenging terrain to investigate and repair faults. Wildlife and vegetation also inhibit access and present a driving hazard.

We often have to invest and maintain larger, more expensive assets than required, because manufacturers don't build components to serve just a few customers.

Ten sections of our powerlines are more than 1,000 kilometres long. It is harder to maintain power quality over long distances and to restore power quickly after supply interruptions, as there is no alternative supply source.

Low population density



Low customer density

High cost to serve

Our network service area has one of the lowest average customer densities for Australian distributors.

When there is a low population and the area is isolated from the main network, the cost per customer to deliver electricity is high.

Extreme environments

15,409 lightening strikes per year on the network

Extreme variations in both weather and terrain

Vegetation management

Our network covers most of NSW, from the coast to the hinterland, mountains and plains. This means different parts of our network experience different, and sometimes extreme, seasonal weather conditions.

These can impact our network performance and cause electricity demand spikes e.g. air conditioners and heaters.

Environmental hazards such as bushfires and encroaching vegetation are significant risks to our network and are the largest single cost to our business.

Comparing our efficiency

Given the low customer density in many areas and resulting higher costs, the characteristics of our network make it difficult to compare our efficiency to that of other distributors. For example, we do not benchmark favorably against urban distributors when the efficiency measure is based on customer numbers.

On the other hand, we benchmark as the most efficient Australian distributor in terms of running costs per kilometre when the comparison is based on the size of our network.

The size of Essential Energy's network is comparable to the combined size of three other rural distributors: AusNet Services, PowerCor and South Australia Power Networks. This provides a robust comparison for comparing key elements of this Proposal.

This comparison highlights that managing a network such as ours requires the efficient management of capital and operating expenditure that is commensurate with the assets we need to maintain.

LINE LENGTH

The length of our powerlines is comparable to the total combined network length of our peers

CUSTOMERS

Essential Energy has 37 per cent of their combined customer base to pay for our network operating costs

CAPITAL EXPENDITURE

We are spending 38 per cent less capital expenditure than the others combined

OPERATING EXPENDITURE

We are spending 52 per cent less operating expenditure than the others combined

Essential Energy Combined: Powercor, AusNet Services, SA Power Networks

1. Data sourced from AER 2016 Category Analysis RIN data – Essential Energy, Powercor, AusNet Services and SA Power Networks

* Excludes capcons

Our current performance already compares favorably with that of other distributors identified by the AER as being efficient and we will continue to improve on this result.

The use of benchmarking and comparisons to other distributors is discussed in further detail in the Benchmarking chapter of this Proposal.

Delivering Value

Continuing our customer value journey

Chapter Summary

- Safety, affordability, and reliability are clear priorities for Essential Energy's customers and have underpinned the preparation of this Regulatory Proposal
- We believe providing safe, affordable and reliable network services is key to ensuring we deliver value for customers
- This approach continues Essential Energy's ongoing commitment to prioritising customer value

Delivering value

Essential Energy is building a smarter network and a better business that meets the needs of our customers and shareholders. As we do this, we consult regularly with our customers so we can reflect their needs and deliver value when planning and delivering services.

We regard delivering value as an ongoing commitment. Essential Energy's four core business objectives embed value into every aspect of how we deliver our services so we can serve the long-term interests of our customers, shareholders and other stakeholders.

Our customer engagement program for this Proposal has provided our business with a better understanding of what value means to our customers, with safety, affordability and reliability emerging as the top priorities. This increased understanding has informed our approach to developing this Proposal and our future expenditure and service plans.

Striving for network sustainability and price stability

During the 2014-19 regulatory period to date, we have demonstrated our ability to continuously and significantly improve the efficiency of our network service delivery. These reforms provide a sound foundation for Essential Energy's long-term plans to further improve our efficiency; maintain downward pressure on network charges; and provide effective stewardship for our electricity assets.

These are all major drivers for the initiatives in our 2019-24 Regulatory Proposal. They build on the work we have undertaken during the current regulatory period and continue our journey towards long-term network sustainability and pricing stability.

Since the commencement of our transformation journey in 2012, we have delivered substantial reductions in both operating and capital expenditure. One of the most important outcomes for customers has been that, in real terms, Essential Energy's network prices are much lower than they were three years ago and are forecast to remain around these lower levels until at least the end of the next Regulatory Period.

This network cost moderation reflects our continued response to the strong electricity affordability concerns of our customers, as well as to emerging competition for our network from alternative energy sources such as microgrids and off-grid supply.

Why our charges are increasing

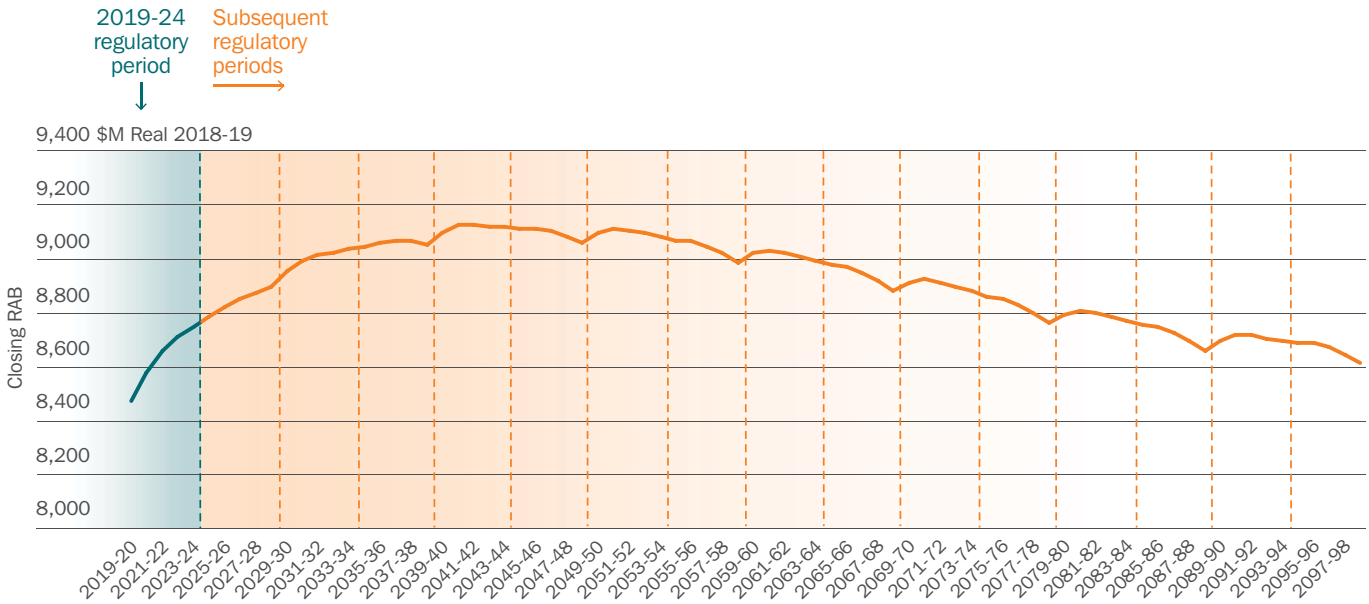
Despite the decline in our operating costs, capital expenditure and expected rate of return, our charges will increase for this regulatory period by 1.43 per cent per annum above CPI. This is primarily attributable to ongoing growth in the value of our network, i.e. investment in the network is greater than depreciation in the value of the network during the same period; and the prescribed rate of return we receive on the Regulated Asset Base (RAB).

Our network has been built over many decades to meet customer connection requirements, peak demand growth and reliability standards. This allows us to supply electricity on the hottest days or provide backup power for a house with solar panels. Even if you don't use the network often, we still have to provide and maintain the poles and wires.

In addition, we are required to repay borrowings and provide a satisfactory return to our shareholder, the NSW Government, over the useful life of the network.

The picture on the next page highlights the longevity that investment decisions have on our RAB. It assumes our forecast capital expenditure through to 2023-24 with the 2023-24 level continuing into the future. Even with this proposed capital expenditure, which is materially lower than historical levels, the RAB continues to grow for at least 20 years. This is because, each year, new capital expenditure is greater than depreciation of the total RAB.

RAB trajectory



With these key points in mind, we are working hard to further reduce our costs. Reducing costs will go some way to meeting our objective to deliver real reductions in network charges, however cost reductions alone cannot offset the effect of the Regulated Asset Base on network charges. To this end, we are working to identify other solutions that will provide the appropriate balance of safety, affordability and reliability to benefit customers. We have proactively sought to investigate and analyse the underlying causes of RAB growth which include, but are not limited to:

- replacement of assets that were originally gifted or customer contributed assets;
- the original valuation of the RAB;
- past investments on assets with lengthy standard lives (over 90 per cent of our RAB has a standard life of greater than 40 years); and
- changes in input costs (materials and labour).

During the customer and stakeholder engagement program, many stakeholder groups expressed significant concern that prices are increasing despite operating costs and capital expenditure falling. [1] However, all stakeholder groups appreciated the genuine effort Essential Energy is making to make further sustainable reductions to its cost base. We appreciate the concerns raised by our stakeholders, and although the construct of the regulatory framework and mechanisms to deal with future RAB growth (outside of cost reductions) are outside the scope of the AER's regulatory determination processes, we remain committed to striving to reach our core business objective of delivering real price reductions into the future.

For the 2019-24 period, we have identified opportunities to improve value for customers through targeted initiatives and investment in enabling technologies. When compared to our most recent financial year (2016-17), by 2023-24 we forecast a:

- 10 per cent real reduction in operating expenditure; and
- 7 per cent real reduction in capital expenditure.

How we will achieve these reductions is discussed below.

Creating long-term value

Our strategic plan will deliver long-term efficiencies through new technologies (see the Capital Expenditure and the Operating Expenditure chapters) and best practice systems and processes. This ongoing reform is dependent on considerable technological improvements and investment. Our forecast expenditure reductions are not achievable without this investment.

By focusing on safety, reliability and affordability, the proposed business improvements will create future value for all Essential Energy's stakeholders, avoid pricing spikes for our customers, and help us to build a sustainable distribution network.

During our Phase 3 customer engagement program, we sought feedback from customers who attended our deliberative forums and participated in our online and phone surveys. 96 per cent of customers supported our proposal to invest in technology that will improve efficiency and lower operating costs.

1. Cotton Australia, *submission to Draft Regulatory Proposal,* 2 March 2018, New South Wales Irrigators Council, *submission to Draft Regulatory Proposal,* 1 March 2018 and Caravan and camping industry association, *Draft Regulatory Proposal,* 1 March 2018

Our initiatives aim to invest $130M to deliver benefits of $273M during 2019-24. The ongoing annual expenditure reductions peak at $84M by 2023-24

> Deploy modern core systems	> Build advanced data analytics capability	> Enable transformation with technology and data

TECH AND DATA ENABLER FOR...

OPPORTUNITY	VALUE DELIVERED		
Capital projects 	> Optimised risk-based approach to asset management > Review and improve governance > Consider alternative technologies	✓ Improved safety ✓ Improved affordability ✓ Maintain reliability	$4M by 2024
Maintenance and replacement 	> Optimised risk-based approach to maintenance strategy > Integrate works planning and despatch > Improve and utilise data and analytics to inform decision-making	✓ Improved safety ✓ Improved affordability ✓ Maintain reliability	$14M by 2024
Vegetation management 	> Review and optimise delivery methodology > Use big data and advanced analytics to improve decision-making > Improve the health of the vegetation clearance envelope	✓ Improved safety ✓ Improved affordability ✓ Maintain reliability	$14M by 2024
Outage response 	> Improve control room systems and processes > Better schedule planned outages > Continue to refine and enhance rostering	✓ Improved affordability ✓ Maintain reliability	$1M by 2024
Field force productivity 	> Scheduling and dispatch automation > Reduce time in depot > Optimise fleet and propert management	✓ Improved safety ✓ Improved affordability ✓ Maintain reliability	$27M by 2024
External spend 	> Continually review procurement processes and delivery model > Enhance data analytics	✓ Improved affordability	$7M by 2024
Support functions 	> Improve processes > Align operating model to serve the field > Leverage new technology to improve customer service	✓ Improved affordability ✓ Improved customer performance	$17M by 2024

Numbers may not add due to rounding. All figures relate to the Standard Control component only.

Innovation

Enabling customer value and empowering communities in an evolving energy market

7

Chapter Summary

- Our business is undergoing a significant period of change in response to a rapidly evolving energy market
- We plan to make use of innovative technologies to reduce costs, refine the way our assets are managed and improve how we interact with customers
- We are embracing new asset management and energy market technologies including a wide range of pilots and trials directed at delivering value to customers in this evolving environment

Innovation

The electricity landscape is becoming more complex than ever before, with rapidly evolving technologies, innovative business models and a shifting regulatory landscape. In addition, the availability of technology solutions with the potential to deliver sustainable efficiency gains is growing. As we reshape our business we are placing an increasing level of importance on enabling a network of the future.

This chapter summarises how we are leveraging technology to reform our operations and play a central role in the evolving energy market.

Adapting to a Changing Energy Market

Energy Networks Australia and CSIRO jointly released the Electricity Network Transformation Roadmap (the Roadmap) in 2017 to outline a pathway to help guide the electricity industry, including network businesses like ours, through the changing industry and market conditions. This Roadmap supports the potential for Australia to pursue an objective of zero net emissions by 2050 and emphasises the critical ongoing role of networks.

In addition, Dr Alan Finkel's Blueprint for the Future for the National Electricity Market was released in June 2017. This report outlined recommendations to support a secure and reliable energy supply, make energy affordable and achieve environmental goals. It also highlighted that network businesses need to adapt in an orderly way to the integration of clean energy sources.

The key drivers that are impacting the changing role of our network include:

- the fast pace of innovation in energy generation, with increasing volumes of renewable generation being connected to our network;
- increasing consumer knowledge and desire to control how they source and use electricity;
- a growing choice of options for energy supply for customers which is changing the way customers use our network;
- new energy products and services underpinned by innovative technologies; and
- the need to further develop the ways we keep our customers informed and interact with them.

Essential Energy plans to be at the heart of this emerging energy market where generation and storage embedded across the network plays a key role in the energy ecosystem. As the provider of the network 'platform' through which energy is exchanged, we also recognise the need to collaborate with multiple participants who are likewise critical to this transformation.

In addition, as technology solutions mature, customers will have an increasing number of cost-effective alternatives for meeting their energy supply needs. For example, customers who are located on the edge of the network and supplied through lengthy powerline assets may be more efficiently supplied through alternatives making them less dependent on the network. Changes to the regulatory framework are needed to ensure that all customers can benefit in the future from more efficient alternative technology solutions.

Participants at our community deliberative forums were provided with information on alternative technologies, such as microgrids. At the end of this session, participants were asked to indicate whether they agreed that Essential Energy should invest in researching microgrids as an option. Almost three quarters of customers at the forum agreed with this notion.

The growing take-up of technologies that interact with and support the network will also create opportunities for Essential Energy to procure these services as an alternative to investment in traditional network only solutions.

> ***"This is the ideal solution for the likes of Bourke or places at the end of the feeder lines. Surely it would improve the reliability of their supply and cost less to service"***
>
> **Port Macquarie customer**

Reducing Costs Through Innovation

We plan to continue to deliver value to customers through better network investment decisions and through improving management of our day to day operations. For instance, advances in how we model our network and its surrounds can provide insights into how the network will perform and can also eliminate the need to travel long distances to carry out some day to day operations. In addition, the use of technology will allow us to consistently rank risks across our entire network and increase the level of sophistication applied to decisions that impact expenditure. Three key outcomes lie at the centre of our 2019-24 plans to leverage innovation.

Reduce costs by transforming core systems

Implement core business technology systems to streamline our field and support operations.

We recognise the need to modernise our core information systems so we can continue to streamline our business. Coupled with this initiative is the re-engineering of processes so that we are better able to manage our assets and efficiently deliver services that support this delivery function.

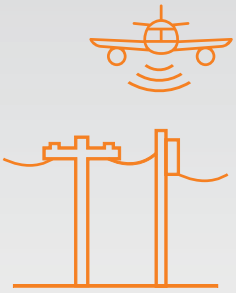
We plan to develop our information analytics capability to take advantage of the rapidly growing availability of large data sources that can help us manage our risks much better and refine our approach to our investment.

Reduce costs by efficiently bundling work tasks

Bring many of our work programs together into one process by implementing a best of breed scheduling system.

Through the implementation of targeted technology investments, we have begun the process of integrating the many work programs that are carried out on our network. The introduction of this technology will continue to mature beyond its implementation and is a key enabler of our proposed level of expenditure. This technology will also reduce the number of planned outages our customers' experience.

Reduce costs by enhancing our insights on network risks



Where appropriate, use advanced technology to better understand the condition of our network and to model risks consistently across the whole network.

With such a vast network, it is important to continually adapt technologies that can efficiently gather data and provide information about its condition and behaviour. We plan to make greater use of remote sensing technologies, such as Light Detection and Ranging (LiDAR). LiDAR allows us to develop and build a three-dimensional model of our network and to apply much greater sophistication to the identification of risks and how they are managed.

Enabling a network of the future

The electricity landscape is becoming more complex than ever before, with rapidly evolving technologies, innovative business models and a shifting regulatory landscape. The availability of technology solutions that have the potential to deliver sustainable efficiency gains is growing. As we reshape our business we will place an increasing level of importance on enabling the network of the future.

Trial new technologies

We will trial new technologies, including microgrids and small-scale renewables.

We will explore alternatives to traditional network solutions. We plan to trial new technologies, including microgrids and small-scale renewables, that will improve efficiency and lower network expenses for all customers. We will work with policy makers and regulators to overcome regulatory limitations that currently exist.

During our Phase 3 customer engagement, 97 per cent of customers supported this approach, with many customers ranking this approach in their top 5 outcomes.

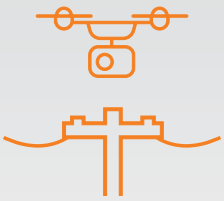
Research and development

Supporting and investing in new technologies.

We plan to support and invest in new energy technologies that reduce infrastructure expenditure. Our proposal includes expenditure on research and development.

During our Phase 3 customer engagement, 83 per cent of customers at our deliberative forums supported this approach.

Using new technologies to manage our network



We will leverage new technologies (such as drones) to help us inspect and maintain the network. Maintenance practices of assets spread across our vast network will improve as a result of these developing technologies in the future.

As technologies emerge our customers' needs will also evolve. Our strategic responses will be directly informed by ongoing consultation with our customers and stakeholders.

> *"Using microgrids would be successful, if we don't have to spend the money to service a few people then it will bring down the cost of keeping the line"*
>
> Wagga Wagga customer

Framework and Approach

Establishing the right framework and incentives for the next regulatory period

Chapter Summary

- The classification of our distribution services by the AER affects how we structure our prices
- There is a direct link between the AER's decisions about our allowable revenue and the prices we charge for our services
- Several of our services are being reclassified to meet the AER's new Distribution Ring Fencing Guideline

Framework and Approach

Responding to the AER's Framework and Approach paper

To improve the consistency of how electricity networks are regulated, the AER is required to publish a Framework and Approach paper (F&A paper) for each Regulatory Period. [1]

In its F&A paper for the 2019-24 Regulatory Period, the AER has already made several decisions and set out its proposed approach on matters affecting Essential Energy's distribution determination. This Regulatory Proposal sets out where we agree with the AER's decision or approach, and where we propose an alternative.

The following AER decisions affect elements of our Proposal:

- Classification of our distribution and other services.
- The mathematical formulae for the revenue and price control mechanisms for our various distribution services.
- Application of the NER's incentive schemes, which are designed to deliver long term value to the customers:
  - Service Target Performance Incentive Scheme (STPIS);
  - Efficiency Benefit Sharing Scheme (EBSS);
  - Capital Expenditure Sharing Scheme (CESS);
  - Demand Management Incentive Scheme (DMIS); and
  - Demand Management Innovation Allowance (DMIA) mechanism.
- Application of the Expenditure Forecast Assessment Guideline, which the AER will use to assess the expenditure forecasts we have proposed in this Proposal.
- Application of forecast depreciation to the roll-forward of our regulatory asset base at the start of the next (2024-29) Regulatory Period.

Our Proposal adopts most of the AER's decisions in the F&A paper. This includes decisions on service classification, subject to proposed minor amendments that are discussed further below.

Classification of our services

The AER is responsible for determining whether the services provided by Essential Energy should be regulated or unregulated.

Unregulated services are those that customers can obtain from other providers, so the prices are set by market forces and competition, not the AER.

Regulated services are not offered in a competitive market so they are subject to revenue and/or price controls approved by the AER. Most of our services are Direct Control Services under the NER, which are regulated services.

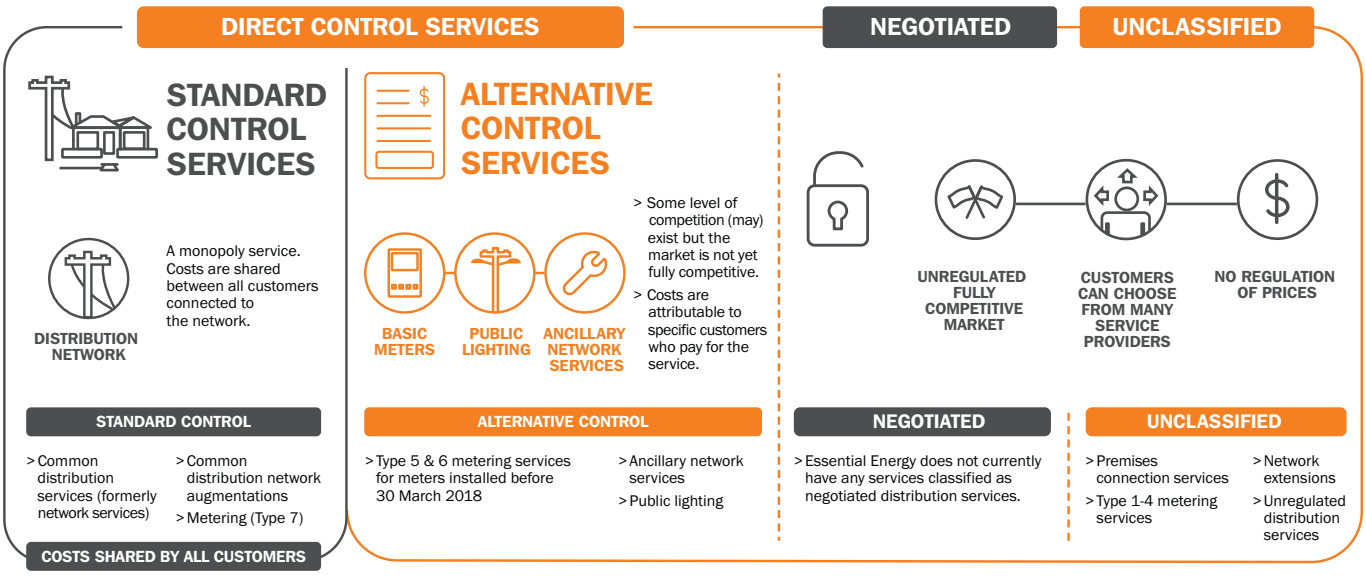
There are two classes of Direct Control Services:

- **Standard Control Services** are the core services we provide through the shared distribution network, which supplies electricity to all customers using poles, wires and associated equipment.
- **Alternative Control Services** are those provided directly to a specific customer, who pays the full cost. These services include some metering services, public lighting and ancillary network services (such as customer connections).

1. See AER, *Framework and Approach: Ausgrid, Endeavour Energy and Essential Energy Regulatory Control Period Commencing 1 July 2019*, July 2017.

Classification of our services

AER AUSTRALIAN ENERGY REGULATOR



We worked with the AER to group our distribution services as shown in the diagram above. In general, we agree with the AER's final service groupings, with a few minor exceptions.

- We have developed cost-effective approaches so that regional and remote customers continue to be able to access services captured by Ring Fencing Guidelines where other providers are not available. To do this we have proposed some changes to our service classification.
- We have proposed to reclassify some services that we deem to be non-contestable due to safety or reliability factors in completing works for large scale connections

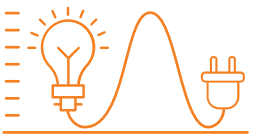
Additional detail on our classification of services can also be found in Attachment 8.1 Classification of Services.

Price control mechanisms

The AER decides whether the prices for standard control services will:

- Operate to achieve a set amount of revenue (revenue cap); or
- Adjust each year by a set average percentage price increase/decrease (price cap).

Regardless of the mechanism applied, our consumption forecasts play an important role.



Revenue cap

If customers use more or less energy than expected, prices are adjusted up or down in a following year.

Price cap

If customers use more or less energy than expected, then we receive higher or lower revenue than expected.

As part of our customer engagement program for this Proposal, we sought customer views and preferences, regarding the revenue cap and weighted average price cap for our Standard Control Services.

What our customers said

Customers who attended our community deliberative forums indicated a revenue cap was advantageous because its predictability made it easier for Essential Energy to plan work. However, they also felt customers would have less control and never gain in cost terms because, even if they became more energy-efficient, prices would still increase the following year to compensate for lower than expected electricity demand.

They generally liked a weighted average price cap because it provided them with pricing certainty, but acknowledged the risks to our business.

Almost half the online survey respondents (48 per cent of residents and 49 per cent of businesses) preferred a weighted average price cap over a revenue cap, which was only preferred by 19 per cent of residents and 21 per cent of businesses. Although there were mixed views among other stakeholders, most respondents believed the AER would not move from a revenue cap to a weighted average price cap.

> *"Possibility of more bill shock for the revenue cap."*
>
> Broken Hill customer

> *"Essential Energy needs a certain amount of money in order to do their maintenance. If that is set through a revenue cap then they can do this."*
>
> Tamworth customer

> *"If I had a shop and I don't sell everything then I make a loss. That is how business works so it should be the same. That is a price cap. Then the risk is theirs."*
>
> Goulburn customer

> *"Price cap means that we could be paying too much and we would never get it back. Revenue cap seems more in the customers' interests."*
>
> Cootamundra customer

AER decision — Standard Control Services

In its F&A paper, the AER decided to set a revenue cap control for Essential Energy's Standard Control Services. This decision maintains the control mechanism that currently applies.

The AER considered that, unlike a weighted average price cap, a revenue cap would benefit consumers by ensuring the recovery of no more than efficient costs of Standard Control Services.

In preparing this Proposal, we have adopted a revenue cap for Essential Energy's Standard Control Services.

AER decision — Alternative Control Services

In its F&A paper, the AER approved price cap controls for our Alternative Control Services. This decision maintains the control mechanism that currently applies.

The AER approved two formulae for calculating the price caps. We accept the AER's formulae for calculating price caps for Alternative Control Services.

Incentive schemes

The regulatory framework allows rewards and penalties to encourage network distributors to be more efficient, improve service standards, and better manage network peak demand.

During Phase 1 of our customer engagement program, we interviewed stakeholders, with some supporting the AER's incentive schemes as they provide long-term value and benefits to customers. Some stakeholders had limited understanding of incentive schemes, such as the Service Target Performance Incentive Scheme (STPIS), and did not support increasing the incentives available. Some stakeholders expressed a view that we should not be incentivised/rewarded for doing what is expected of us.

In our Draft Regulatory Proposal, we proposed to increase our STPIS revenue at risk from 2.5 per cent to 5 per cent, to strengthen the accountability and incentives applied to our business.

During Phase 3 of our customer engagement program, we sought feedback on increasing our STPIS revenue at risk from 2.5 per cent to 5 per cent. 71 per cent of customers who attended our deliberative forums supported the change with 5 per cent of customers ranking the proposal in their top 5 outcomes.

Based on customer feedback and support, this Proposal includes an increase from 2.5 per cent to 5 per cent STPIS revenue at risk which is consistent with our Draft Regulatory Proposal.

Our proposed approach to STPIS, and other incentives schemes, is summarised below. Additional information on STPIS can be found in Attachment 8.2 Service Target Performance Incentive Scheme. For all other incentive schemes, we propose to apply them in accordance with the relevant guidelines.

Incentive schemes that could apply to Essential Energy

INCENTIVE SCHEME	HOW DOES IT WORK?	HOW DOES IT AFFECT A CUSTOMER?	OUR PLANS
EBSS Efficiency Benefits Sharing Scheme	Encourages us to improve efficiency of operating expenditure.	Rewards and penalties are shared around 70 per cent with customers and 30 per cent with us and lead to long-term cost reductions.	The EBSS does not currently apply to us and we are seeking to apply the scheme for 2019-24.
CESS Capital Expenditure Sharing Scheme	Encourages us to improve efficiency of capital expenditure.	Rewards and penalties are shared around 70 per cent with customers and 30 per cent with us and lead to long-term cost reductions.	The CESS currently applies to us and we are seeking to continue the scheme for 2019-24.
STPIS Service Target Performance Incentive Scheme	Encourages us to meet reliability and customer service targets through rewards and penalties.	If reliability and customer service improves, your bill will increase and if they decline, your bill will reduce.	The STPIS applies now with a maximum change in network charges of + or – 2.5 per cent. We are seeking the scheme to continue at a maximum change in network charges of + or – 5 per cent.
DMIS Demand Management Incentive Scheme	Encourages us to investigate alternative solutions to manage network demand.	New alternative technologies can be implemented on the network leading to long-term cost reductions.	The AER is currently reviewing the DMIS – we intend to apply the revised DMIS once it is finalised.
DMIA Demand Management Innovation Allowance	Encourages trials of innovative technologies to manage network demand.	Stimulates research and development opportunities that will lead to lower network charges.	The AER has recently revised the DMIA and our annual allowance will rise from $600,000 to about $1 million.

Expenditure Forecast Assessment Guideline

We support the AER's appropriate application of the suite of tools in the Expenditure Forecast Assessment Guideline.

However, we remain concerned about any assessment approach that is solely reliant on the results of economic benchmarking at the expense of other assessment techniques in determining Essential Energy's forecast operating expenditure. In our response to the AER's preliminary F&A paper, we commented on principles relating to the use of such high-level assessment tools, including:

- the inherent limitations of using economic benchmarking models;
- the best way to use benchmarking models to inform regulatory decisions; and
- suggested criteria to explain the effectiveness of a benchmarking model.

The Benchmarking chapter provides greater detail on Essential Energy's proposed approach to benchmarking.

Depreciation

We support the application of forecast depreciation to establish our Regulatory Asset Base at the start of the 2024-29 Regulatory Period. In conjunction with the CESS incentive scheme, we agree this approach will create an appropriate incentive for Essential Energy to incur only efficient capital expenditure.

Our Revenue Requirement

Balancing safety, reliability and affordability

Chapter Summary

- We are proposing to limit the real increase in revenue to 1.43 per cent a year over the 2019-24 regulatory period
- Our proposed revenue requirement:
  - balances our need to invest in and maintain a network today and tomorrow, that is safe and reliable while meeting customers' expectations regarding electricity affordability
  - reflects the impact of further efficiencies, building on those we began in the current regulatory period

Our revenue requirement

Essential Energy is a regulated business so we make an estimate of how much revenue we will need to generate to cover costs, invest for the future and provide a return to our shareholder. This is then presented to the AER to assess whether it is appropriate.

The total standard control revenue Essential Energy proposes to recover from customers over the 2019-24 regulatory period is $5,142 million (Real $2018-19).

$Million, Real 2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	**Total 2019-24**
Proposed annual revenue	999	1,014	1,028	1,043	1,058	**5,142**
Proposed annual real revenue increase	1.43%	1.43%	1.43%	1.43%	1.43%	**7.35%**

Numbers may not add due to rounding

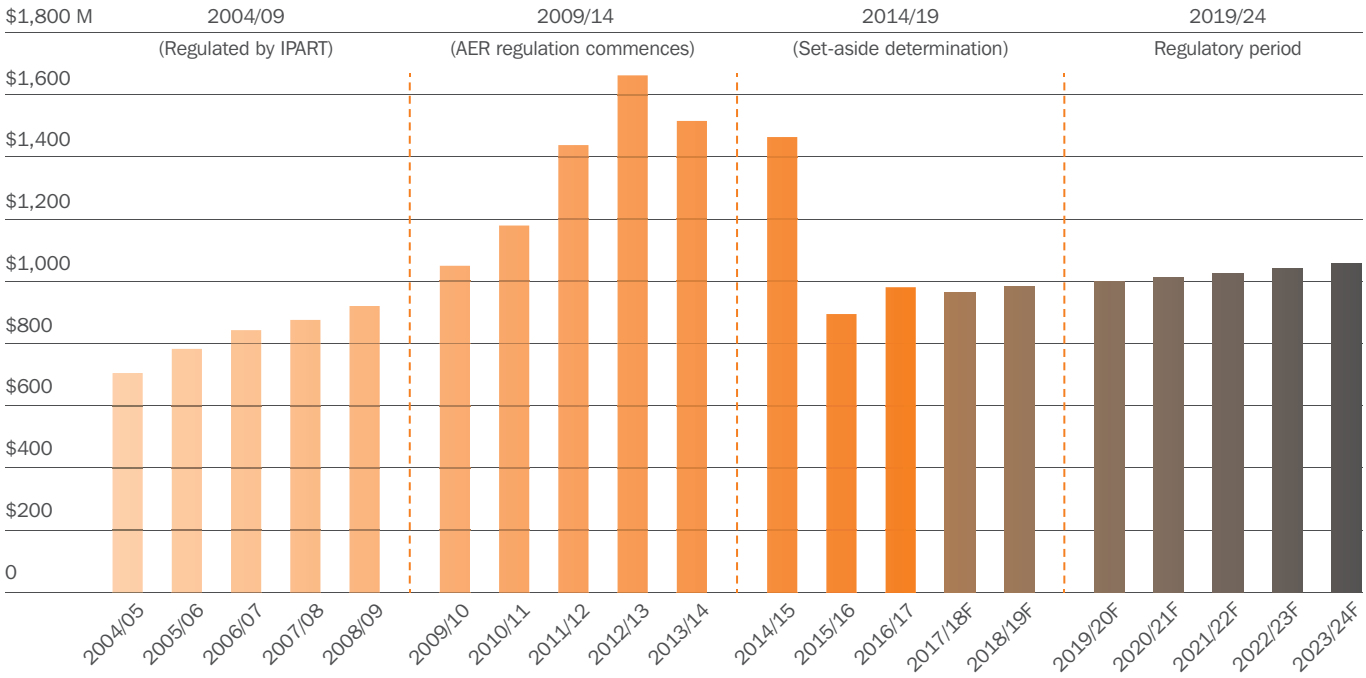
The proposed total is $183 million (Real 2018-19) lower than the AER's allowance in our set-aside determination for our current regulatory period.

We have calculated this requirement in accordance with the National Electricity Rules, using the AER's prescribed revenue model, the Post Tax Revenue Model (PTRM). Our PTRM, including the forecast amount of our Demand Management Innovation Allowance (DMIA) adjustment in 2020-21, can be found in Attachment 9.1. The inputs used to calculate the revenue requirement are detailed in Appendix A, and include the roll-forward model (RFM) of the regulatory asset base in Attachment 9.2 and the capital expenditure sharing scheme carryover amounts in Attachment 9.3.

The chart below graphically represents the actual standard control revenue received by Essential Energy up until 2016-17. Forecast revenue is included from 2017-18, with 2019-20 through to 2023-24 forming the basis of this Proposal.

The 2019-24 period provides further efficiency and productivity savings and by 2023-24 our costs will be at their lowest levels in 20 years. These costs will place us in the best position to deliver real reductions in network charges in the 2024-29 period.

Standard Control Revenue ($M real 2018/19)



TOTAL REVENUE REQUIREMENT 2019-24
$ MILLION
(Real 2018-19)

$2,544
RETURN ON CAPITAL
To repay our debt and equity holders for the funds invested in our network

$39
REVENUE ADJUSTMENTS
Incentive scheme rewards/penalties and other adjustments

$632
RETURN OF CAPITAL
Reflects the decline in asset value as they age

$1,718
OPERATING EXPENDITURE
Recovery of our efficient operating costs

$203
TAX ALLOWANCE
Allows us to meet our corporate income tax liabilities

$5
REVENUE SMOOTHING

$5,142
(average annual req $1,028 p.a)

Numbers may not add due to rounding

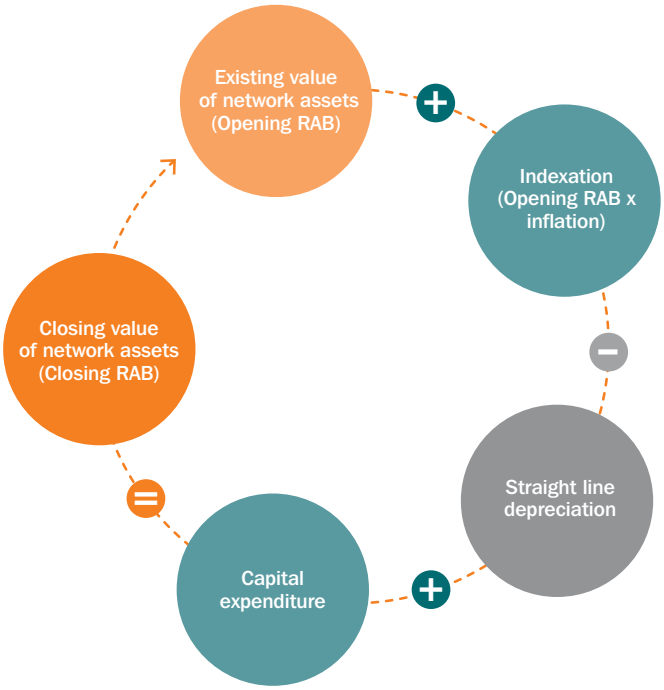
How we calculate the revenue we need

To work out our revenue requirement for a regulatory period, we use four components: operating expenditure, capital expenditure, rate of return and regulatory asset base (as at 1 July 2019). Then we combine them using the AER model.

Under the NER, this is known as the 'building block' approach. The components are added together to determine the revenue we need to recover our costs and provide a return to our shareholder.

Our expenditure levels can be a little lumpy, depending on when projects start, so we 'smooth' our revenue requirement to help limit variations in customer prices. We then use customer consumption forecasts to establish the prices we need to charge to reach our revenue requirement. The proposed prices are shown in our draft TSS.

How the regulated asset base is calculated



Further information

For further information regarding our revenue requirement components please refer to Appendix A.

Pass through events

During a regulatory period circumstances can change which may affect the amount of revenue Essential Energy's requires to operate. The pass through provision in the NER provides a mechanism to ensure substantial cost increases or reductions resulting from material unforeseen events can be reflected in our revenue requirement.

The events we are proposing to continue as nominated pass through events include:

- an insurance cap event
- a natural disaster event
- terrorism event
- an insurer's credit risk event

The events we are proposing to be added as nominated pass through events include:

- a war event
- a major cyber event
- insurer credit risk event
- major supplier credit risk event

Our proposed nominated Pass Through Events are included as Attachment 9.4 – Pass Through Events Proposal.

Further information

For further information regarding our revenue requirement components please refer to Appendix A.

Risk Management

Optimising our planning and investment decisions

Chapter Summary

- The safety of customers, communities and staff is our highest priority when making asset and network management decisions
- Taking a risk-based approach improves value for our customers
- We are becoming increasingly sophisticated and tailored in how we approach risk management

Risk management

Delivering value to our customers

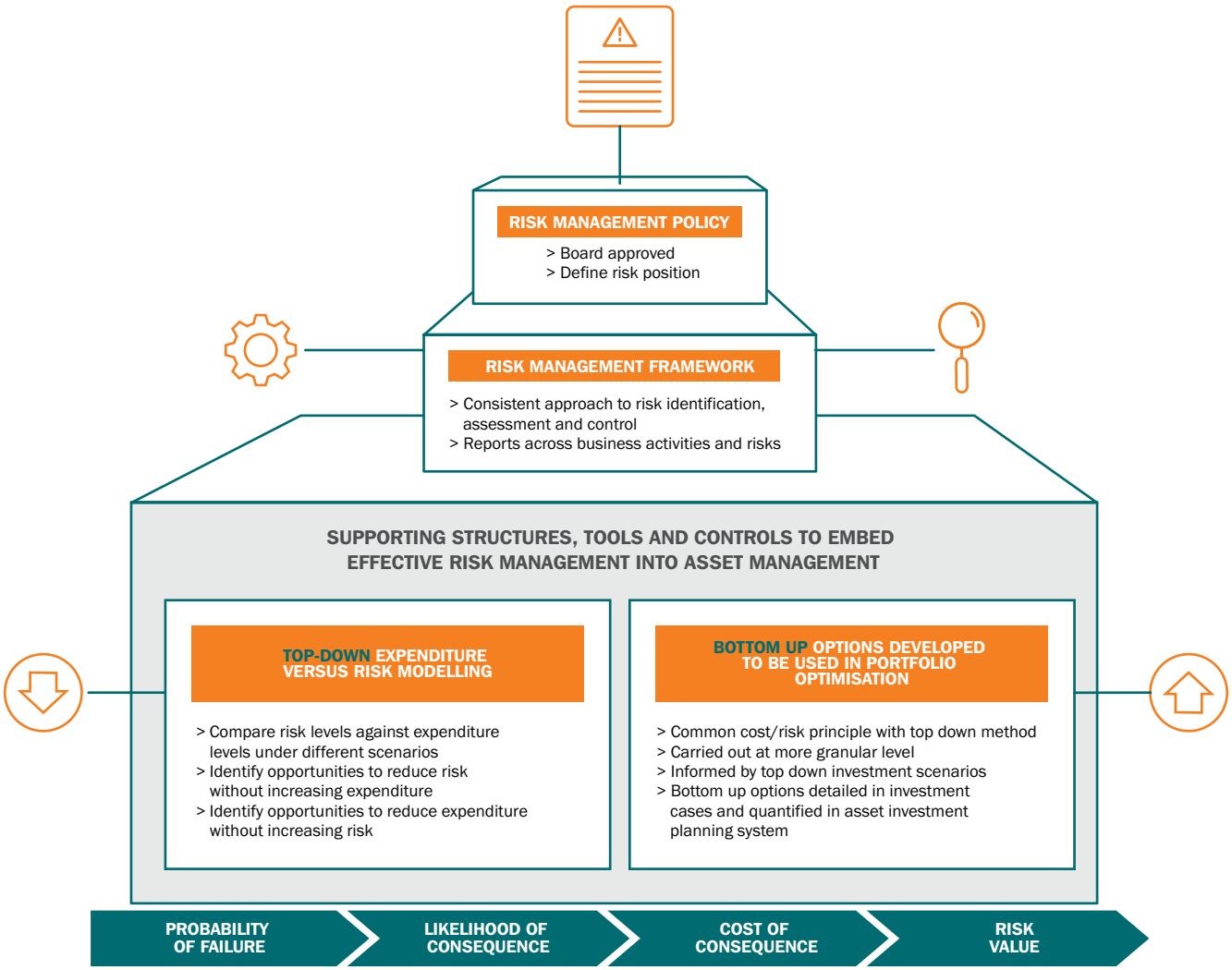
Essential Energy manages many poles, power lines and other assets so we can distribute electricity safely, reliably and affordably to our customers. The geographic spread of our network and its exposure to the elements mean our assets are vulnerable to multiple risks. These risks include rust, rot, termites, impacts from vehicles, excavation, vegetation, fires, storms, floods and lightning. When assets are damaged, this can cause safety risks in the form of contact with live electricity, damage to property from electricity or fires, and power outages affecting customers.

To maximise customer value, we aim to manage our assets and operations in a way that ensures these risks are managed at an affordable cost to our customers.

This Proposal is supported by a robust risk framework that links these risks to day-to-day decision-making. The framework will help us to continually improve Essential Energy's safety, network performance, service delivery, and business sustainability.

We plan to further improve how we use data and technology to identify opportunities to better manage risks, make us more efficient and extend the useful life of our assets. This risk-based approach will support an ongoing sustainable reduction in expenditure into the future.

Developing a risk-based approach requires increasingly sophisticated and tailored approaches to how we manage our assets and network, to ensure our planned expenditure creates the most value for our customers. This includes a combination of 'top down' modelling to identify opportunities to improve risk and expenditure, and 'bottom up' modelling of alternative investment options to deliver value and manage risk.



Creating opportunities and controlling risks

Electricity distribution networks are complex, and it is not possible to fully quantify or anticipate every current or future risk. For example, the severity and frequency of severe weather events is uncertain and can cause damage to assets before their planned replacement. We have designed our risk management approach to create opportunities and control known and foreseeable risks through several processes:

- identifying, assessing, understanding and communicating risks and opportunities;
- making informed, transparent and customer-focused decisions, including when we set strategic and organisational objectives;
- identifying and prioritising controls that are tailored to specific risks so we can use our resources effectively and efficiently; and
- regularly reviewing and reporting on how effective our risk controls are and considering whether these controls are as prudent and appropriate as possible given practical constraints.

These risk management processes are linked.

While we ensure we have controls for foreseeable risks, we recognise that we cannot practically or cost-effectively eliminate all possible risks.

We regularly review these controls based on:

- the expected costs and benefits to our customers;
- compliance with relevant legislation and regulations;
- relevant industry standards, emerging best practices and established sound practices;
- the availability of alternative controls or insurance to mitigate risk impacts;
- relevant findings from internal and external reviews, reports and investigations; and
- our ability to respond to changes in the external environment.

We continually strengthen our existing controls and establish new ones, wherever it is prudent, efficient and in the long-term interests of our customers. We support these decisions with a detailed and robust assessment of alternative options, including removing or deferring controls with insufficient customer value.

Risk management principles

Essential Energy's customers and stakeholders expect a safe, affordable and reliable electricity supply and we manage risk so far as is reasonably practicable to meet these expectations.

We redirect or reprioritise resources to meet expectations and align our activities with our risk management principles.

Safety

- Provide a healthy and safe environment for our employees and for the public.
- Promote a culture which empowers employees to effectively manage safety risks.

Customer Service

- Provide affordable and reliable electricity to our customers through continuous improvement in operations, prioritising allocation of resources to activities that deliver the greatest value.
- Manage reliability risks through planning
  - targeted investment and maintenance that generates the largest improvements in reliability
  - contingency for critical resources including incident response to unplanned events, and
  - resilience and security of critical systems including communications and information technology.

People

- Appropriate planning to empower employees to achieve organisational objectives and to attract, retain and develop qualified and commercially capable people.

Environment

- Manage our operations and partner with our stakeholders to protect and enhance the environment.

Strategy 	> Develop objectives and plans in response to opportunities and risks in our environment. > Embed appropriate governance and monitoring to support the delivery of benefits from initiatives and change programs.
Compliance 	> Comply with obligations and ensure timely and appropriate action plans are in place to support known regulatory changes or in response to actual or potential compliance and regulatory issues.
Reputation 	> Proactively engage with stakeholders including customers, the community, suppliers, government and regulators to ensure our priorities appropriately balance stakeholder expectations and concerns.
Finance 	> Maintain appropriate controls and reporting to support sound financial management and stewardship of our resources and satisfactory returns for our shareholders.

Principles in practice – asset risk management

Essential Energy's electricity distribution network covers 95 per cent of NSW. It includes approximately 1.4 million power poles and almost 200,000 kilometres of overhead powerlines.

We use robust risk and asset management strategies to ensure the network is sustainable in the long-term, including continually improving whole-of-life asset planning that prioritises where and when we spend money during each asset's lifecycle.

When developing these strategies, we need to consider the expenditure required for assets that typically last for many decades and are exposed to significantly varying operating conditions. For example, power poles and other overhead network assets require inspection, refurbishment and replacement programs that account for known deterioration and risk from weather and other environmental factors.

Robust controls ensure assets are designed and installed appropriately before being connected to the network, and that the assets are appropriately inspected, maintained and replaced, including urgent fault repairs.

The higher costs associated with operating a large and geographically dispersed network mean we must adopt a risk-based approach to managing our network and operations efficiently and within available resource constraints

We tailor and prioritise our actions towards activities that provide our customers with a safe, affordable and reliable electricity supply

"I don't want them cutting corners to make it cheaper. High quality products and practices are needed to ensure safety."
(Wagga Wagga customer)

During our Phase 1 customer and stakeholder engagement program, our customers identified safety, affordability and reliability as the most important values in an ideal electricity supplier. We have used these values to help shape this Proposal, while being mindful of potential conflict between them. For example, replacing existing overhead powerlines with underground cables would deliver improved reliability and a strong safety performance but would make our services unaffordable.

Our asset management strategies are supported by thorough assessments of alternative strategies and options.

Our Approach to Asset Risk Management

Top-down assessment considers the impact of expenditure on safety, affordability and reliability. This assessment informs the upper limit of expenditure on our assets by valuing risk versus the costs and benefits of mitigating the risk and the impact of our expenditure on customer affordability.

Values

Safety

- We design, procure, install, inspect, maintain and replace our assets in accordance with relevant safety standards and industry practice.
- Sample testing, inspection and monitoring controls are in place to identify assets that fail to meet these standards before they are connected to the network and during their lifetime.
- We ensure appropriate contingencies and resourcing are in place to repair and replace assets in emergency situations.

Affordability

- We manage the costs of our assets and operations to ensure long-term affordability for our customers.
- We tailor our approach to the whole of the asset lifecycle including design, procurement, installation, inspection, maintenance and replacement.
- We use alternative assets to suit the environment.
- We use automated approaches and technology to increase the efficiency and availability of our operations.
- We aim to reduce the long-term costs of managing assets through targeted activities.
- We extend the useful life of existing assets by deferring replacement or refurbishing them.

Reliability

- We procure and install assets only where they are expected to meet minimum standards of reliability and performance.
- To ensure assets continue to operate reliably following installation, we actively inspect, maintain and prioritise replacement.
- We direct activities and resources to quickly and efficiently respond to supply interruptions and restore power to customers afterwards.
- We review unplanned supply interruptions and reliability issues to identify patterns and trends so we can consider if a change in our inspection and maintenance controls would improve the future reliability of our network.

Creating and protecting value

Bottom-up assessment details all reasonable options and alternatives to design, procure, install, inspect, maintain and replace our assets. This assessment ranks individual work programs by valuing risk versus the costs and benefits of mitigating the risk. We use it to make decisions about prioritising, deferring or cancelling programs.

Operating Expenditure

Improving efficiency

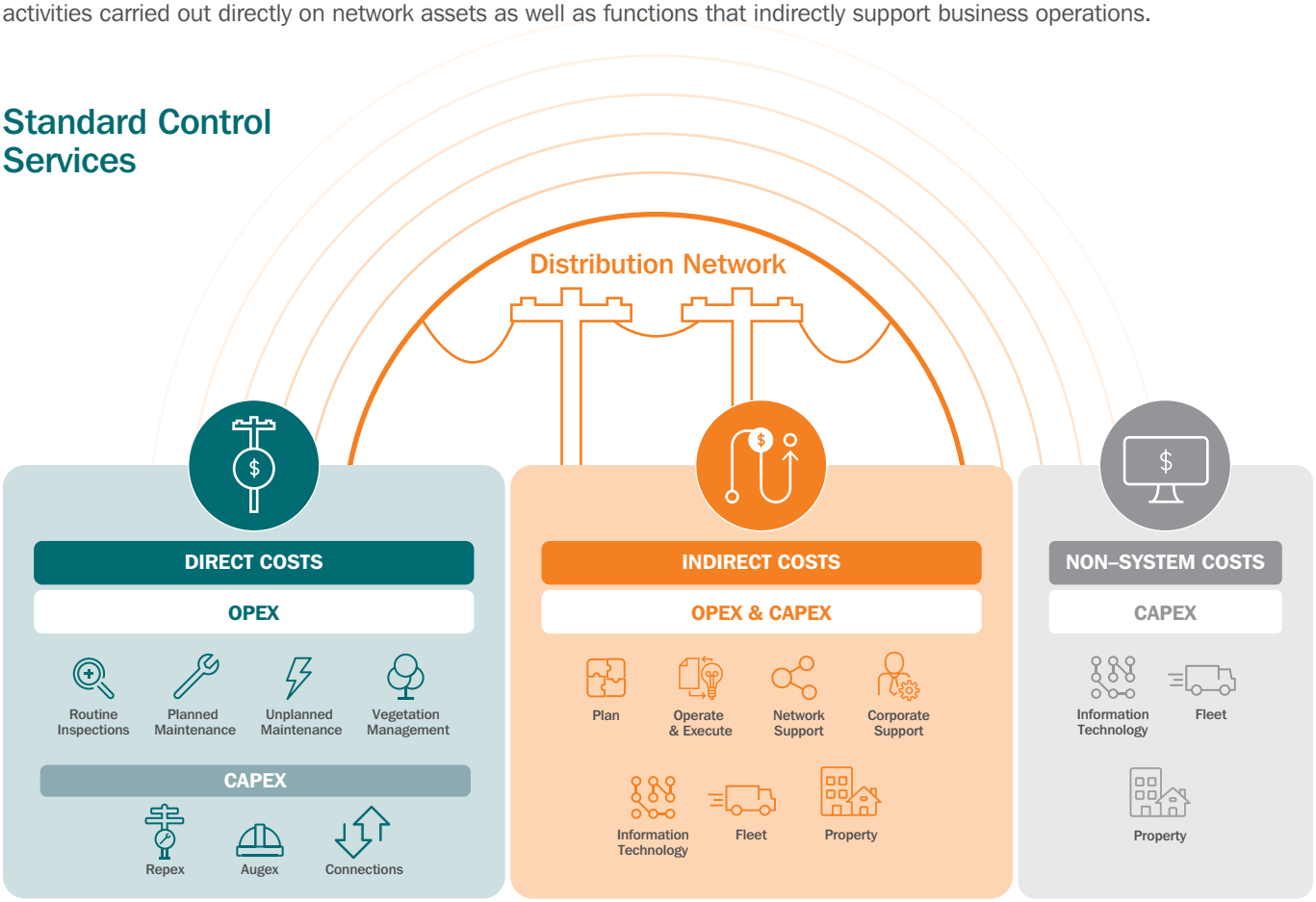
Chapter Summary

- In 2012, we began transforming our operations and plan to become even more efficient during 2019-24 through the use of technology and more sophisticated asset management approaches
- By 2024, we forecast our level of operating expenditure will be 47 per cent lower (in real teams) than 2012 expenditure
- Customers support our drive to make services more affordable – this has informed the development of specific asset management strategies

Operating expenditure

Essential Energy's operating expenditure plan for 2019-24 will enable us to deliver Standard Control Services more efficiently, as outlined in the Delivering Value chapter. It is made up of direct and indirect costs, because operating expenditure funds activities carried out directly on network assets as well as functions that indirectly support business operations.

Standard Control Services



The operating expenditure outlined in this Proposal will play a significant role in making our services affordable and have a direct impact on the reliability performance of the network.

For example, once the asset maintenance strategy is set, condition monitoring programs – which are funded by operating expenditure – help inform decisions to replace, refurbish, rebuild or retire an asset, and these decisions impact network reliability.

> *"If you need it to be maintained then you need it to be maintained."*
> (Dubbo customer)

> *"Not waiting for something to break before mending them."*
> (Tamworth customer)

As part of our customer engagement program, participants at our community deliberative forums told us that network maintenance is closely related to ensuring good customer service. This is because regularly maintaining the poles and wires was considered important as a means of prevention of supply issues in the future.

We are proposing a level of expenditure that balances cost with the reliability and service levels that customers told us they expect.

As with capital expenditure (Capital Expenditure chapter), underpinning this approach is our drive to make every dollar count – a key Essential Energy corporate value.

The way in which our expenditure is allocated between direct control services, negotiated services and unregulated distribution services is outlined in Attachment 11.1 Cost Allocation Methodology.

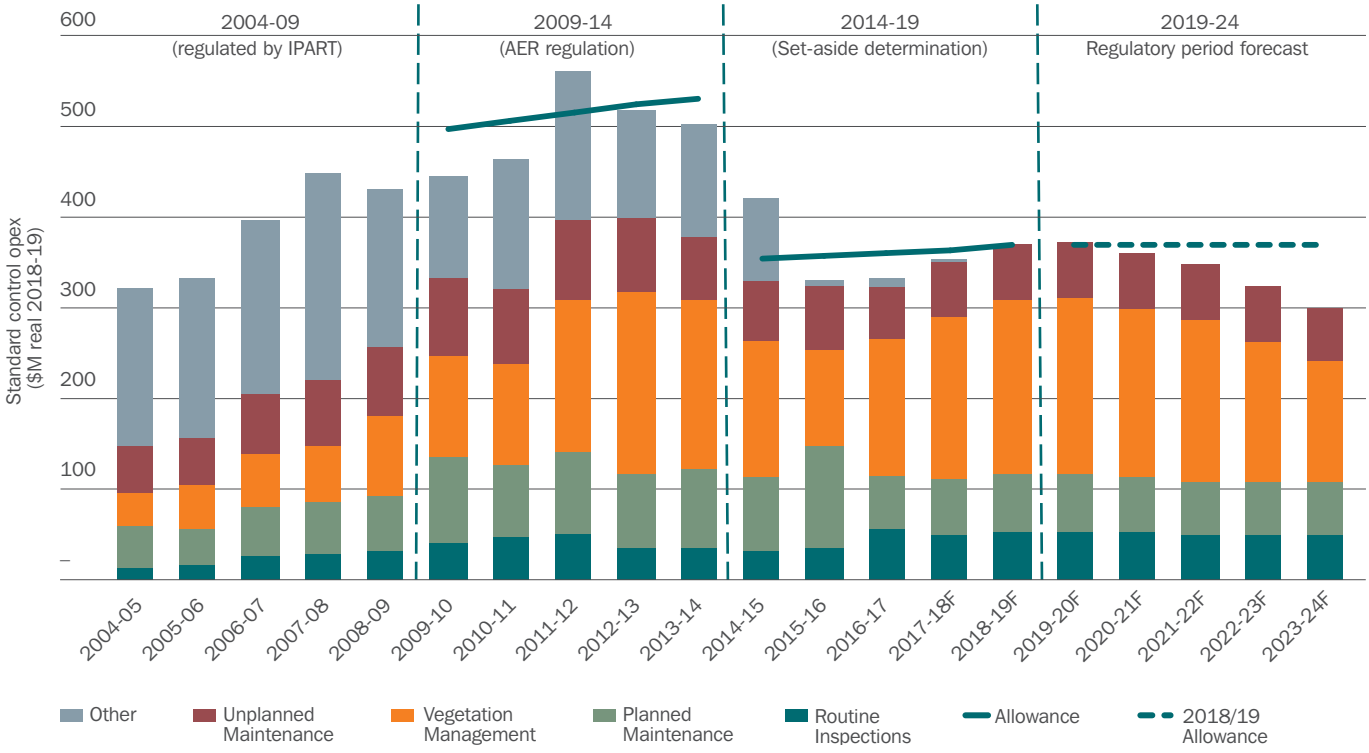
Delivering value through ongoing expenditure reductions

We have significantly transformed our operations since 2011-12 and throughout the current regulatory period and we forecast further efficiencies throughout the next regulatory period.

From 2011-12 to 2016-17, we reduced operating expenditure by 41 per cent. Further reductions of 10 per cent are planned by the end of the 2019-24 regulatory period. Our 2023-24 proposed operating expenditure will be 7 per cent lower, in real terms, than 2004-05.

As discussed in the Delivering Value and Innovation chapters, these reductions will be achieved by using technology to streamline our operations and become smarter and more targeted in how we manage network assets. Our forecast expenditure reductions are not achievable without this investment. This approach is in line with the value our customers place on putting downward pressure on network charges and our plans to manage our business efficiently. It strikes an appropriate balance between expenditure, risk and customer service levels.

Proposed Operating Expenditure Compared to Historical Expenditure



Proposed Operating Expenditure for the 2019-24 Regulatory Period

$M, Real 2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	Total 2019-24
Routine inspections	53	52	51	51	50	257
Planned maintenance	64	60	57	57	57	295
Vegetation management	193	185	177	156	133	843
Unplanned maintenance	62	61	60	60	59	302
Total	**371**	**358**	**346**	**323**	**299**	**1,698**

Numbers may not add due to rounding

Operating costs are a key enabler for delivering customer value

Essential Energy's operating expenditure programs play a major role in network management by funding asset inspections (to assess the condition of the network) and planned maintenance (to address issues that affect service levels).

These activities deliver significant customer value because they identify what we need to do at every stage of the asset management cycle to deliver the highest value and most efficient outcomes for customers. The diagram below illustrates the role that operating expenditure programs have in informing investment decisions within this asset management cycle.

How we manage assets to deliver customer value

Plan

Deliver customer value by thinking strategically about our assets

What customer needs are the assets meeting?

What level of performance do customers require?

What is the best solution (network or other) to address the need at the lowest cost?

What are the risks customers want us to manage?

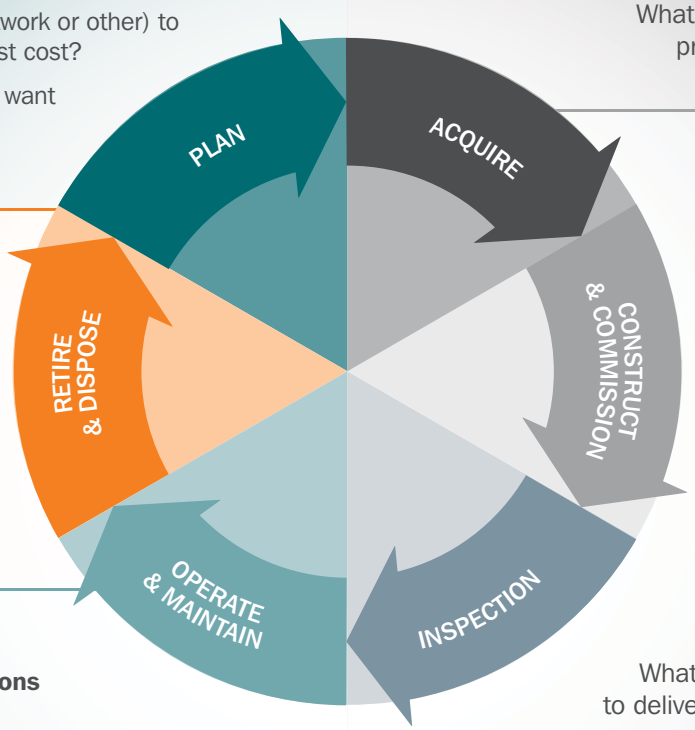
What resources are required?

Asset Acquisition

Match asset selection to customer needs at lowest cost

What technically and practically delivers on customer requirements?

What competitive asset selection process ensures lowest cost?



Construct and Commission

Deliver customer value through efficient delivery

Is it cost-effective to use internal or external resources?

Can we reduce cost delivery by optimising work programs?

Can extra value be obtained by delivering other work at the same time?

What lessons learnt can be used to deliver better value in the future?

Retire and Dispose

Provide best value when assets are retired

Can assets be reused, recycled or repurposed?

How can cost be minimised when disposal occurs?

Inspections

Obtain sufficient asset knowledge to deliver on customer expectations

What is the optimal maintenance strategy?

What inspection activities are required to manage asset performance?

How can the most cost-effective way of maintaining our assets be achieved?

Operate and Maintain

Deliver customer expectations and value through asset maintenance

Does the asset's performance match our customers' expectations?

How does the failure of an asset affect our customers?

What are the risks when it fails to our customers and the public?

Is there a need to realign our asset management strategies to meet customer expectations?

Our operating expenditure plan

Direct operating expenditure

Direct operating expenditure primarily relates to vegetation management, routine inspections, planned maintenance, and unplanned maintenance of the network. We have prepared a forecast for this expenditure in 2019-24 using a detailed (bottom-up) process combined with a top-down 'revealed costs' method that uses industry benchmarking and expert analysis.

Combining these two methods has delivered a robust forecast that provides sufficient funding to balance safety, affordability, and reliability.

Vegetation management

A significant portion of our network is constructed in temperate and subtropical climatic zones where average rainfall supports strong vegetation growth. This impacts how frequently we need to treat vegetation given any contact with the network can cause supply interruptions and is a major bushfire risk. Our goal is to maintain a healthy vegetation clearance envelope, with relatively few intrusions that represent an unacceptable level of risk.

We manage the vegetation clearance envelope in the same way that we manage other assets: by carrying out a detailed local risk assessment, preparing and implementing a management plan, and regularly checking the outcomes. This approach also involves targeting the highest risks based on geographic location and the risk posed by individual vegetation intrusions. In taking this targeted risk based approach, we are able to prioritise the treatment of higher risks whilst we transition our vegetation programs.

We treat the vegetation clearance envelope around our network as an asset and we are implementing a program to improve the health of this asset. This program involves increased expenditure late in the 2014-19 regulatory period and early in the 2019-24 regulatory period to establish vegetation clearances that are compatible with lower ongoing costs. The cost of managing vegetation close to our network is higher than for vegetation that is further away, so transitioning to a healthier vegetation envelope asset will also transition our vegetation management operations to a sustainably lower cost base for customers.

When developing this strategy, we used sophisticated costing models and predictive analytics to forecast a reduction in vegetation management expenditure of 21 per cent in 2023-24 compared to 2011-12, when our transformation journey began.

Vegetation management is of high interest for our customers, so we consulted closely with them about proposed approaches during our Phase 2 customer engagement program. At our community deliberative forums held during Phase 2, we tested the support of varied approaches to vegetation management, as shown overleaf.

Summary of customer feedback about vegetation management

Specific proposal	Level of customer support	Our response and planned actions
Reduce ongoing costs by permanently removing inappropriate vegetation and selectively replanting more appropriate types of vegetation.	Strong	Proactively target more costly vegetation to reduce costs.
Increase the average trimming cycle by about six months in urban areas.	Mixed	Adjust vegetation trimming cycles based on informed analytics regarding vegetation growth rates.
Pass on costs of vegetation maintenance to local Councils and private landowners where inappropriate vegetation was planted after the power line was constructed.	Mixed	Where possible, use technology solutions to monitor unsuitable plantings. Continue working with Councils and other landowners to explore other solutions and improvements.
Safely stack cut vegetation in some rural areas rather than processing it on-site into wood chips.	Mixed	Stack where landowner agrees.

As part of our Phase 3 customer engagement, we tested our proposal to remove specific vegetation where appropriate with selective replanting. 96 per cent of customers who attended our forums and participated in our online and telephone surveys supported this approach.

As a result of strong customer support for selective vegetation removal and replanting, our operating expenditure forecast includes an allowance for:

1. Removing high-cost trees

Scaling up our high-risk/high-cost tree removal program from approximately 4,000 to 9,000 trees a year will reduce ongoing vegetation management costs in the future and, although the majority of trees removed are likely to be self-seeded, we will seek landowner consent before removing them.

2. Removing inappropriately planted trees

Due to the aesthetic value of trees, removal is just one of several options for managing urban vegetation. We plan to scale up this program from approximately 1,300 to 2,200 tree removals a year to reduce ongoing vegetation management costs in the future. Essential Energy's Vegetation Management Consultation Group will help with developing appropriate strategies and practices.

Routine Inspections

Inspections include all preventative maintenance and inspection programs. These keep us informed about the condition of our assets and are carried out across our overhead and underground network and our zone substation assets. Regular inspections detect where assets have deteriorated, so the frequency and level of inspection detail are major drivers of network safety and reliability.

The scale of our inspection programs is significant: more than 300,000 of our 1.4 million power poles are inspected every year. The frequency of these inspections varies with known risk factors and involves a visual assessment of the pole and the components attached to it, such as cross-arms, insulators and network switches.

Our zone substations – which are critical for supplying large numbers of customers - contain complex equipment located at more than 300 sites across NSW. Our routine inspection program for these assets also involves regular on-site inspections.

Planned maintenance

We carry out planned maintenance to repair or replace defective assets. This ongoing maintenance program is directly linked to our asset inspection activities.

The 100,000 planned maintenance tasks each year are funded through operating expenditure and are generally minor or involve replacing lower-value assets. Repairs on major assets (e.g. poles, cross-arms, transformers, conductors and switches) are generally funded through capital expenditure.

Unplanned maintenance

Unplanned maintenance involves reactive work tasks and restoring supply.

Typically, it is caused by events outside our control such as storms, equipment failures, vandalism and vehicle collisions.

Indirect operating expenditure

Operating expenditure also funds indirect or support functions for network operating and capital expenditure investment programs.

These functions include planning, operating and support services that underpin Essential Energy's key operations. This expenditure is apportioned between direct operating and direct capital programs using Essential Energy's Cost Allocation Methodology.

Key cost drivers include the size of our workforce, types of network investment programs, the size of our asset base and our compliance obligations.

Our forecasts are based on a set of material assumptions. These assumptions are included in Attachment 11.2 – Key Assumptions.

More information on our operating expenditure plans can be found in Attachment 11.3 – Standard Control Opex Approach.

Capital Expenditure

Maximising value for our customers, while maintaining safety and reliability

Chapter Summary

- We are applying increasingly sophisticated approaches to asset management to improve our decision making
- Our value framework continues to help us prioritise and plan our investment in replacing and refurbishing assets and enables customers to play an active role in our investment decisions
- We are conscious of the changing role of our network in facilitating energy exchange between customers who generate and consume electricity
- In line with customer expectations, our proposed network investment for 2019-24 aims to maintain network reliability while ensuring our services remain affordable

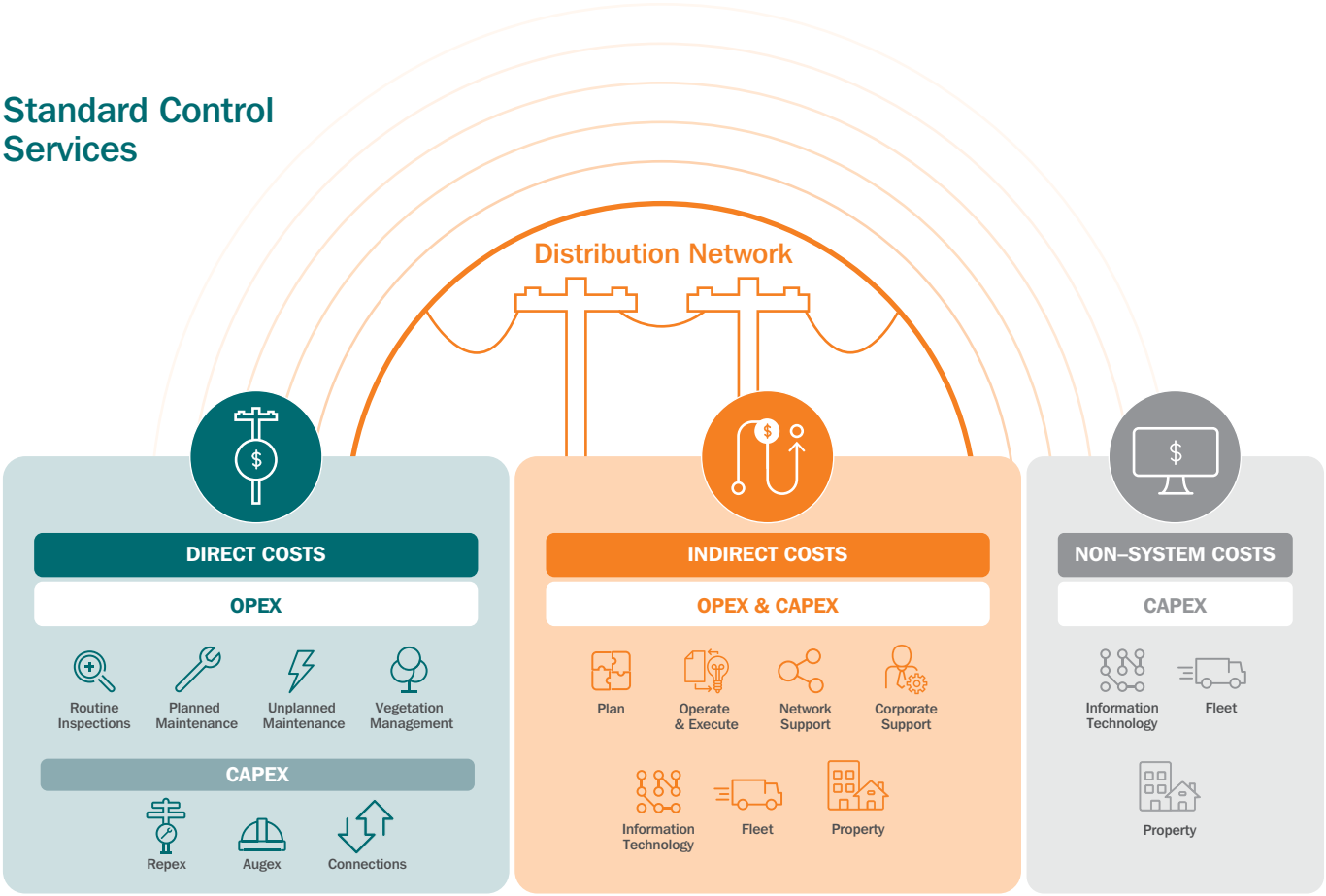
Capital expenditure

Essential Energy's capital expenditure plan for 2019-24 will enable us to deliver Standard Control Services, as outlined in the Framework and Approach chapter.

It will fund the installation, replacement and augmentation of network assets and functions that indirectly support business operations, including non-system assets such as vehicles, technology and property.

The total capital expenditure forecast in this chapter therefore consists of direct, indirect and non-system components.

Standard Control Services



The customer themes of safety, reliability and affordability have driven our capital expenditure planning for 2019-24.

Our forecast capital expenditure for network and non-network related costs during this period is $2,100 million. We forecast that by 2024 our direct capital expenditure will be 55 per cent lower than in 2012, when our transformation journey began.

We have developed our Strategic Asset Management Plan, found at Attachment 12.1 Strategic Asset Management Plan, to direct our asset management decision making in order to achieve our objectives. As such, we will continue to take an informed, risk-based approach to capital expenditure, as this plays a significant role in making our services affordable. For example, we will manage defects that are identified in inspection regimes in a way that is low cost and minimises planned outages while maintaining the reliability and safety of the network.

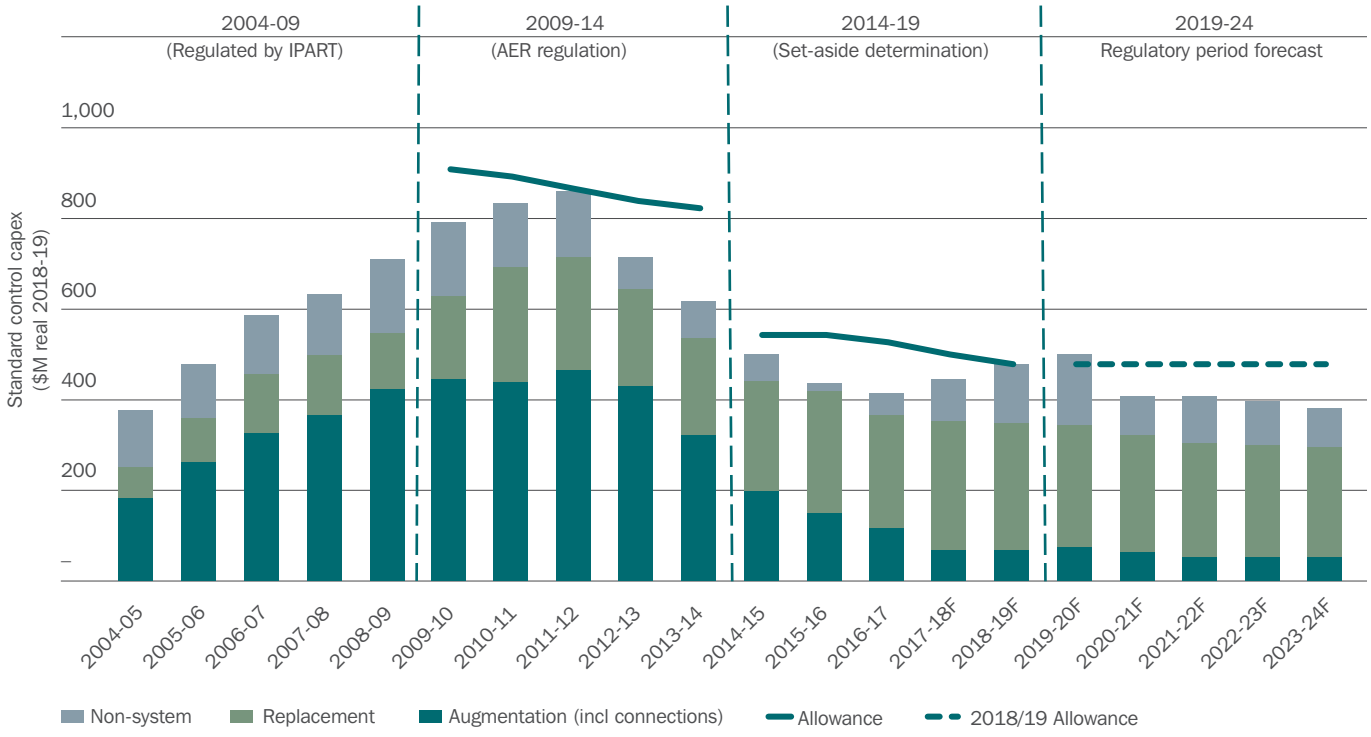
Delivering value through ongoing expenditure reductions

Between 2012 and 2017, our Standard Control capital expenditure reduced by 52 per cent. Further reductions of 7 per cent are planned for the remainder of this period and the 2019-24 regulatory period. This means our 2023-24 proposed capital expenditure will be lower, in real terms, than 2005-06.

These reductions are planned to be achieved through the implementation of best practice systems and processes and by continually developing more sophisticated asset management techniques.

One of the key enablers behind these reductions is our expanded use of risk-based decision-making, as discussed in the Risk Chapter, which weighs up the costs of each proposed investment with the value to customers across a range of factors. As discussed in the Delivering Value Chapter, increased use of technology will also allow us to streamline our operations. Ongoing reductions in capital expenditure are dependent on considerable technological improvements and investment in information technology. Our forecast expenditure directly reflects the benefits delivered by this investment.

Capital expenditure for Standard Control Services



Proposed Capital Expenditure for the 2019-24 Regulatory Period ($M, Real 2018-19)

$Million, Real 2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	Total 2019-24
Replacement	272	260	255	247	241	**1,275**
Connections	8	8	8	8	8	**39**
Augmentation	65	54	46	48	46	**259**
IT	59	29	34	21	21	**164**
Property	41	11	13	16	13	**94**
Fleet	31	30	34	40	34	**169**
Other non-system	24	19	19	16	22	**100**
Total	**499**	**411**	**409**	**396**	**384**	**2,100**

Numbers may not add due to rounding

Establishing an appropriate level of expenditure

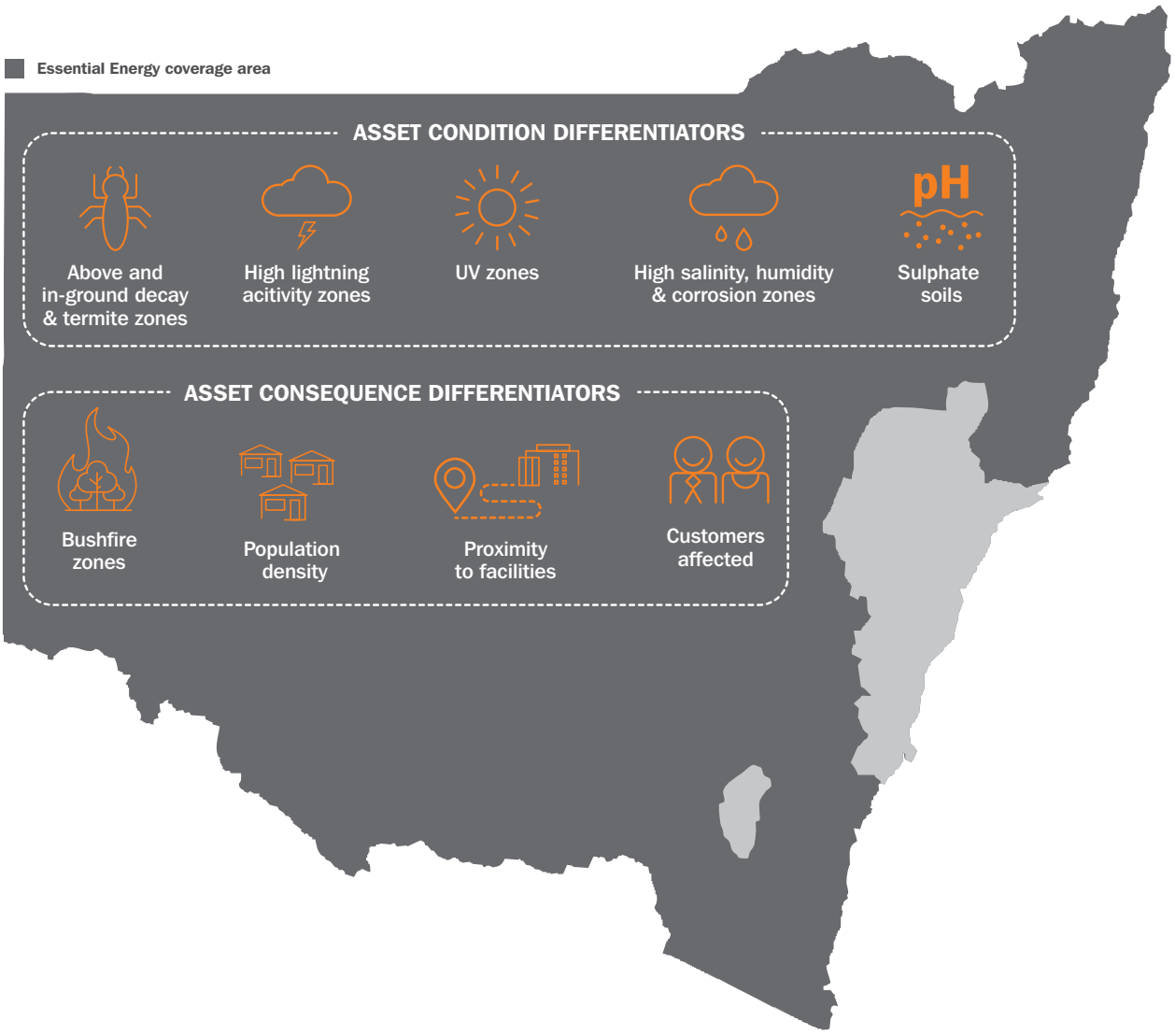
With a sharp focus on affordability for our customers, we have used two different methods to determine our capital expenditure forecast. Both methods have used sophisticated modelling techniques, with their outcomes challenging each other to ensure our final Proposal is targeted and prudent. Utilising both techniques has ensured we can meet our customers' expectations (affordability and reliability) in delivering network services. When establishing an appropriate level of capital expenditure, the impact on customer prices was a key consideration.

Recognising the diverse nature of our network

While our risk framework allows us to consistently value risk and benefits for our assets, we also need to consider the size and diversity of our network. As it spans a significant portion of NSW, many factors influence the performance and condition of our assets. We use asset condition and asset consequence differentiators to tailor investments based on the varying circumstances.

By understanding this variability, we can target investment at high-risk areas and maintain safety and reliability, while also helping to place downward pressure on prices. Our proposed investment is leading to a controlled increase to our network asset age profile, but with the use of asset conditions and consequence differentiators, we are able to maintain the same level of risk.

As an example, by taking into account conditional differentiators that occur across our network, like inground decay and consequence differentiators like bushfire risk zone, customers affected, proximity to public facilities, population density (as shown below) we are able to use these different risk factors to ensure we balance cost and risk effectively.



Using new technologies to solve traditional network challenges

Replacing existing assets on a like for like basis is not cost-effective in all locations. We will continue to explore alternative solutions for our most remote customers and undertake pilots and trials of non-network solutions, recognizing some regulatory barriers exist to implementing alternative solutions.

We will work with policy makers and regulators to ensure the regulatory framework enables non-network solutions. We are doing this to identify more cost-effective options where these continue to deliver existing consumer protection obligations and reliability standards.

We believe these pilots and trials, in conjunction with the initiatives shown below, will deliver long term value for all customers. Throughout our customer engagement process, we found that customers strongly supported this approach.

Develop platforms and methods to share information with customers and other utility service providers

Enable the use of microgrids and standalone power systems as an alternative to traditional grid connection

Ensure investments are based on customer value, improving service performance and response times, and enabling more flexible network products

Procure grid services from customers' electricity storage, solar and other generation systems as an alternative to grid investment

Safely, reliably, and efficiently operate the grid with a high level of distributed energy resources

Our capital expenditure plan

We have designed Essential Energy's proposed capital expenditure plan for the 2019-24 regulatory period to serve the long-term interests of our customers while allowing us to adapt to our changing role in an evolving electricity industry.

To reduce pricing pressures on our customers, our plan directs expenditure to where it will deliver the most value whilst sustainably managing our existing asset base through carefully targeted replacement and refurbishment programs.

The proposed capital expenditure plan significantly reduces our expenditure on network augmentation and new connections relative to the previous regulatory period, deferring expenditure for as long as reasonably possible.

During our customer engagement program we sought views and feedback on the reliability of our network. Key insights identified during Phase 1 included:

- safety, affordability and reliability are the most important values;
- customers were satisfied with the current reliability of the network;
- there was no clear preference on the frequency and duration of outages – roughly half would prefer more outages of shorter duration and half would prefer fewer outages but longer duration indicating the current situation is optimal;
- the vast majority of customers were not willing to pay more to reduce their outage duration; and
- due to the current satisfaction with reliability, in the community deliberative forums, two thirds were willing to accept slightly lower levels of reliability for a lower cost. The online participants did not have the benefit of the information and discussion given in the forums and without this knowledge they slightly preferred maintaining the status quo.

During Phase 2 of our customer engagement program we explored the value of reliability further and identified:

- there was little support for extending unplanned outages in rural/remote areas.;
- forum participants were empathetic towards the situation of others and were unlikely to support changes that might negatively impact others (especially farmers, home run businesses, the elderly, and those with a lower income);
- there was little support for changing duration of planned outages when compared to current practices; and
- there was strong support to improve network performance in areas with lower reliability.

Following consideration of feedback received from customers in Phase 1 and Phase 2, we proposed in our Draft Regulatory Proposal to maintain reliability on average for our network but aim to improve reliability by 25 per cent in worst performing areas.

In response to our Draft Regulatory Proposal, some stakeholders have requested that we reduce our reliability in order to reduce costs, as two thirds of customers in our Phase 1 forums supported a slight increase in the number of outages for a lower cost. 91 per cent of customers who attended our Phase 3 forums and surveys supported an improvement by 25 per cent in some of the worst performing parts of our network.

Given the wide ranging and differing feedback we have received, and the new value-based approach to managing our network, we propose to maintain current reliability levels on average across our network, with targeted reliability improvement for our worst performing areas.

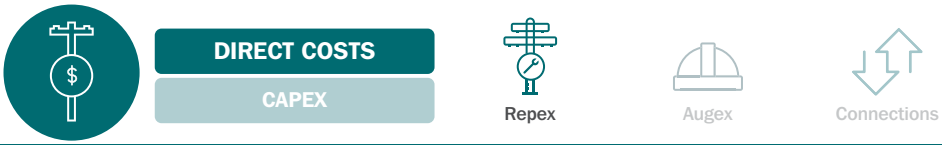
"They need to look at the infrastructure, and use technology such as batteries, solar, wind farms. It could be cheaper to hand someone a solar kit instead of running the line for thousands of km's – to have a power generation source there"

Dubbo customer

"They should be treated the same. If they are living in a remote location they should be entitled to the same service. The costs should be shared amongst everyone in the state"

Cootamundra customer

Network replacement and refurbishment

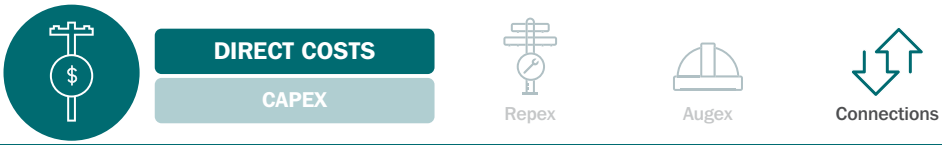


Network replacement and refurbishment expenditure includes funding for replacement of assets that are approaching their end of life. We use value-based decision-making to determine the optimal time to replace or refurbish an asset, with many factors that influence our decisions, including network reliability, safety, industry regulation, asset ageing and degradation and obsolescence. These are all considered in our asset condition and consequence differentiators.

The level of replacement expenditure proposed by Essential Energy is aimed at delivering a sustainable balance between the risks associated with an ageing asset base and the long-term interests of customers. In taking our value-based approach to decision-making, the average age of our network assets is expected to increase by approximately four years over the regulatory period.

With investment in technology to further improve our decision making through better data and systems, we will target investment to minimise high consequence customer outages. This new approach means we will prioritise where we invest to best deliver value and manage the controlled increase to our asset age profile while maintaining our current risk levels.

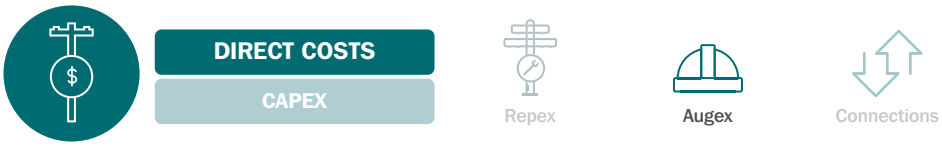
Connections



Connections expenditure includes funding network activities that help to establish new customer connections or increase the capacity of existing customers with specific requirements.

Our Connection Policy, Located at Attachment 12.2– Essential Energy Connection Policy, requires developers who request the work to pay for it, keeping bills lower for other customers.

Augmentation



There are two types of components for augmentation expenditure: load-driven and non-load-driven.

Load-driven expenditure seeks to address new and existing load changes in our network. This can be created by new customers connecting or existing customers changing their usage patterns. When this occurs, we may need to upgrade our network to match this new demand or look at using non-network alternatives such as utilising customers' solar generation and/or storage.

Non-load-driven augmentation focuses on safety and compliance programs, network metering and monitoring, and ensures we have adequate powerline protection. Our traffic Black Spot Program is an example of this.

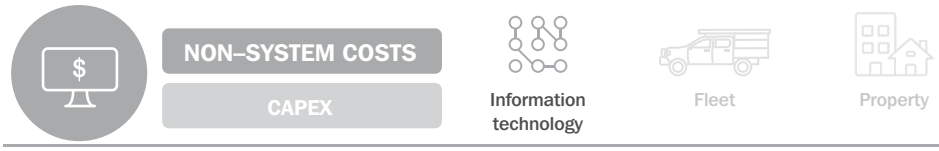
We sought feedback from customers on our proposal to include a traffic Black Spot Program that targets power poles at high risk of being involved in a vehicle accident. During phase 2 of our engagement program, over 70 per cent of customers agreed with implementing this program. When tested again during Phase 3 engagement 88 per cent of customers supported the approach.

However, some stakeholders expressed concern for this program because there was a view that Roads and Maritime Services or Local Government should bear the costs, not Essential Energy or its customers.

After careful consideration, we have opted to include the traffic Black Spot Program in this Proposal because customers strongly supported this safety initiative and the fact that we believe we are well placed to undertake this work in conjunction with other drivers such as replacement to deliver a cost-effective outcome.

Non-system expenditure

Information and Communications Technology (ICT)



During the 2019-24 regulatory period, Essential Energy will leverage ICT as the primary enabler for business transformation. The efficiencies underpinned by our ICT strategy directly link with the service affordability that our customers value. During Phase 3 of our engagement program, customers who attended our forums strongly supported our investment in technology to improve efficiency and lower operating and capital costs.

This strategy involves adopting modern alternatives to traditional, longer-term ICT capital investments and rationalising existing legacy applications and infrastructure. The outcomes we seek include:

> transformed core asset management practices;

> transformed back office operations;

> efficiently-bundled and scheduled work tasks;

> advanced technology that provides asset health and asset management insights; and

> better ways of communicating with customers and other distributors.

Further detail is provided in the Delivering Value chapter.

Fleet

Most of our network programs are carried out using heavy and light commercial vehicles, so managing our fleet assets efficiently is vital and the impact of fleet reliability on work program efficiency is part of our fleet asset management strategy.

We have forecast a steady investment in our fleet, to ensure customer prices reflect the optimum balance between new vehicle costs and maintenance and repair costs.

Property

Essential Energy manages 111 properties across an area covering 95 per cent of NSW. We decide the number and location of our depots by balancing site costs (e.g. property, furniture, fittings, leases) with the costs of mobilising resources for planned and reactive network programs. This balanced approach ensures we deliver customer value through efficient work program delivery and response times (outage durations) that maintain the level of reliability customers value.

Each site requires ongoing investment and maintenance to ensure we comply with relevant workplace safety legislation and to support the efficient delivery of network investment programs.

Benchmarking

Making a fair comparison

Chapter Summary

- The size and diversity of our network means there are few truly comparable Australian or international networks
- Despite this, Essential Energy's benchmarked performance has improved during the current regulatory period
- A range of alternative economic benchmarking techniques show that our forecast operating expenditure in 2017-18 is efficient, so it is an appropriate base year for our operating expenditure forecasts for the 2019-24 regulatory period

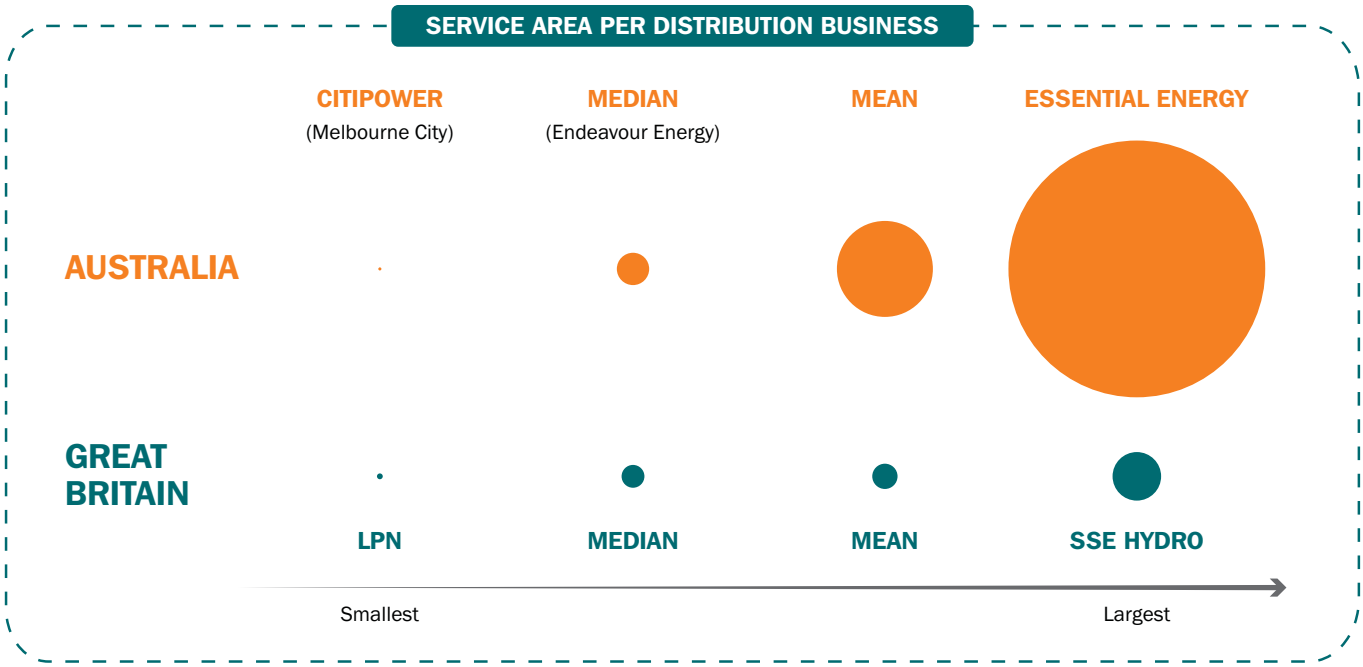
Benchmarking

Benchmarking techniques can be a useful tool to assess the efficiency of different network providers and is used extensively by regulators around the world. It is also a useful tool to identify areas where further investigation may be warranted to identify the underlying reason for benchmarking performance.

By providing a guide to our overall efficiency and identifying where our performance can be improved, benchmarking helps us to operate at best practice and we support it as a means of driving continued value for money for customers.

The effect of small sample sizes and key business variables (e.g. size, geographic area and customer density) make it imperative to choose the right businesses as benchmarking peers. Using small sample sizes and businesses with diverse operating conditions can restrict the strength of benchmarking models. This is particularly true in Australia, where there are vast differences in scale compared to smaller countries.

Context of scale



We have sought expert advice on benchmarking results derived from a wide range of recognised techniques.

A challenging operating environment

As one of Australia's largest and most dispersed electricity distribution networks, there are relatively few truly comparable distribution networks in Australia or internationally. Potentially, our expenditure can be assessed as inefficient due to the sheer volume of assets required to supply relatively few customers.

When making decisions about electricity distributors' expenditure and revenue, the AER adjusts for the high degree of diversity in Australian distribution networks by applying operating environment factors (OEFs). OEFs are adjustments to allowed operating expenditure that take into account unique circumstances of each distribution business. The AER adjusts benchmarking results using OEFs to enable more accurate efficiency comparisons between distributors with different operating circumstances.

For this Regulatory Proposal, Essential Energy engaged Frontier Economics to undertake an assessment of specific and material OEFs that affect our network. Frontier Economics found that specific OEFs should be included in the AER's adjustments to its benchmarking results, such as:

- general differences in weather conditions;
- differences in network configurations, such as proportion of the network that is sub-transmission; and
- effect on assets of environmental conditions, such as termite exposure, corrosion and decay.

Overall, based on the detailed assessment of these specific and material OEF's, Essential Energy proposes that OEF adjustments are appropriate. Frontier's assessment of OEFs that relate to Essential Energy can be found at Attachment 13.1.

Assessing our efficiency performance

For this Regulatory Proposal, Essential Energy also engaged Frontier Economics to undertake a detailed economic benchmarking analysis of our operating expenditure performance. Frontier's full benchmarking report is available at Attachment 13.2.

A range of techniques were used to assess the efficiency of our base year operating expenditure for the 2019-24 regulatory period.

To provide a high degree of confidence regarding the relative efficiency performance of Essential Energy since 2006, Frontier generated several benchmarking results using different models and formulations, using data from across Australia, New Zealand and Canada. They differentiated the models based on:

- Alternative samples (e.g. all electricity distributors, or just rural networks).
- Alternative cost drivers.
- OEF adjustments before and after applying each benchmarking technique.
- Application of a wide range of economic benchmarking techniques.

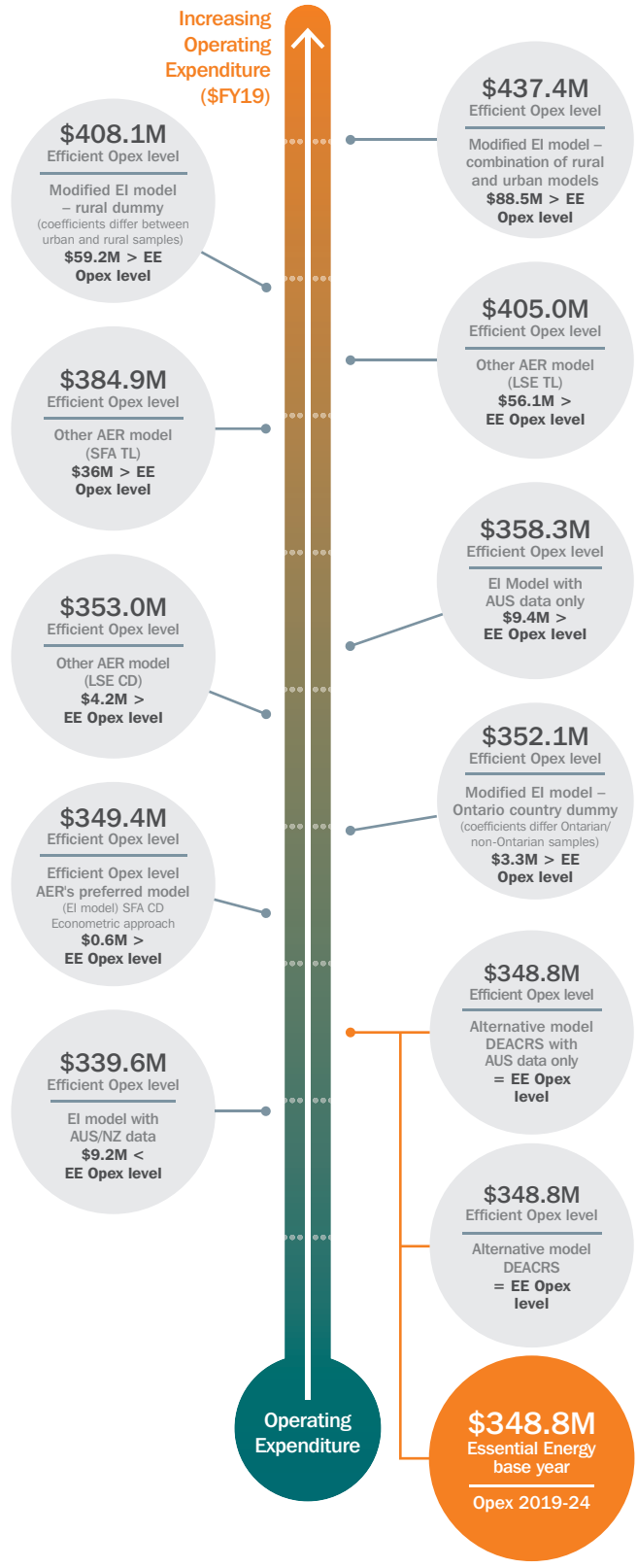
Presenting and interpreting the Benchmarking results

Frontier's benchmarking results are shown in the diagram to the right, where each circle represents a benchmarking approach and the efficient level of operating expenditure associated with the top fifth distribution network. The results highlight that Essential Energy's 2017-18 base year operating expenditure is at or better than the efficient frontier (target) set by all but one of the benchmarking techniques.

These efficiency results are apparent even without applying any special factors (OEFs). When OEFs are applied, Essential Energy's efficiency performance is better.

The benchmarking approaches above use a variety of models and statistical techniques with various data sets.

Essential Energy's 2017-18 operating expenditure (real 2018-19) compared to various benchmarked operating expenditure



Efficient starting point

The wide range of econometric benchmarking techniques undertaken by Frontier indicate that Essential Energy's forecast base year operating expenditure for 2017-18 is efficient. Our forecast operating expenditure includes further savings and although we are measured as efficient compared to our peers today, we plan to make our business even more efficient.

Our forecast 2017-18 operating expenditure sets us up to attain a sustainable lower level of spend by 2023-24 and into the future. We consider this to be efficient and appropriate to use as the base year in the AER's base-step-trend operating expenditure forecasting methodology.

Our strategic plan and cost saving initiatives will drive further operating expenditure improvements, delivering a further 14 per cent reduction by 2023-24 when compared to 2017-18.

For further information about how we have forecast our operating expenditure for the 2019-24 regulatory period, see the Operating Expenditure chapter.

Expanding the suite of benchmarking tools

Benchmarking is considered by Essential Energy as a valuable tool that can provide meaningful insights into the relative performance of network businesses. However, benchmarking is also seen as a tool that must be 'sense checked' using a bottom-up approach, to ensure that the selected model parameters are representative of the actual business being reviewed.

We recommend a broad range of approaches and techniques are used in assessing the efficiency of distribution businesses to ensure individual characteristics are captured as part of a benchmarking assessment. These include:

- bottom up benchmarking and analysis of individual costs and their drivers;
- assessment of potential large genuine differences in operating environments;
- careful consideration of the constraints of the various approaches and techniques, such as underlying differences in cost drivers;
- balancing benchmarking results with other performance indicators including safety and reliability;
- a work program should commence across the industry to develop better cost driver variables;
- a considered approach in the application of benchmarking results is required, including:
  - reviewing how overseas regulators use benchmarking; and
  - understanding the differences between urban and rural distributors.

Energy and Demand Forecasts

Accurate forecasting that supports better investment and operating decisions

Chapter Summary

- Maximum demand and customer number forecasts underpin a portion of our capital expenditure planning and help to set network charges
- We build our network to meet customer connection requirements and system and location-based maximum demand, which is becoming increasingly sensitive to weather patterns
- Over the 2019-24 Regulatory Period, we expect relatively modest growth in system maximum demand and customer numbers, and for electricity consumption to remain steady

Energy and Demand Forecasts

Overview

This chapter summarises how Essential Energy has developed forecasts for maximum demand, energy consumption, customer numbers and smart meters for the 2019-24 Regulatory Period.

Maximum demand is a measure of the highest total energy use that occurs at a single point in time – our network is designed to ensure enough energy can be supplied to all customers at these times. Energy consumption is a measure of total energy used by all customers over time, regardless of how much is used at any point in time.

To ensure the capacity of our distribution network can meet the growing and changing needs of customers, we engaged the National Institute of Economic and Industry Research (NIEIR) to develop:

- Maximum demand forecasts at zone substation and transmission connection level, as well as aggregated to Essential Energy's total system load for a most likely scenario.
- Energy and customer number forecasts by customer segment, tariff and location (zone substation) for a most likely scenario.

NIEIR's report detailing these forecasts can be found at Attachment 14.1.

The resulting forecasts for our energy consumption, customer numbers and maximum demand all indicate either relatively stable or moderate growth over the 2019-24 Regulatory Period, as shown in the table below. This estimates the probability of exceeding electricity demand (Probability of Exceedance, or PoE) for summer and winter. PoE is a useful indicator of the probability of our forecast being exceeded, for example, a PoE of 50 indicates that 50 per cent of the time our actual maximum demand on the network will be at least at forecast levels.

Base Case Forecasts for the 2019-24 Regulatory Period

	2019-20	2020-21	2021-22	2022-23	**2023-24**
50 PoE maximum demand (MW) – Summer	2,284	2,291	2,290	2,298	2,294
50 PoE maximum demand (MW) – Winter	2,310	2,309	2,314	2,312	2,332
Customer numbers (excluding Controlled Load)	872,866	880,324	887,743	895,070	901,423
Energy consumption (GWh)	12,289	12,272	12,249	12,280	12,307

1. Source: NIEIR, Electrical energy and customer number projections for Essential Energy in New South Wales to 2029-30, June 2017

Demand forecasts

Satisfying demand means that at any given time, we can supply the maximum amount of electricity that all our customers are using. This typically only occurs for short periods when it is either very cold or extremely hot.

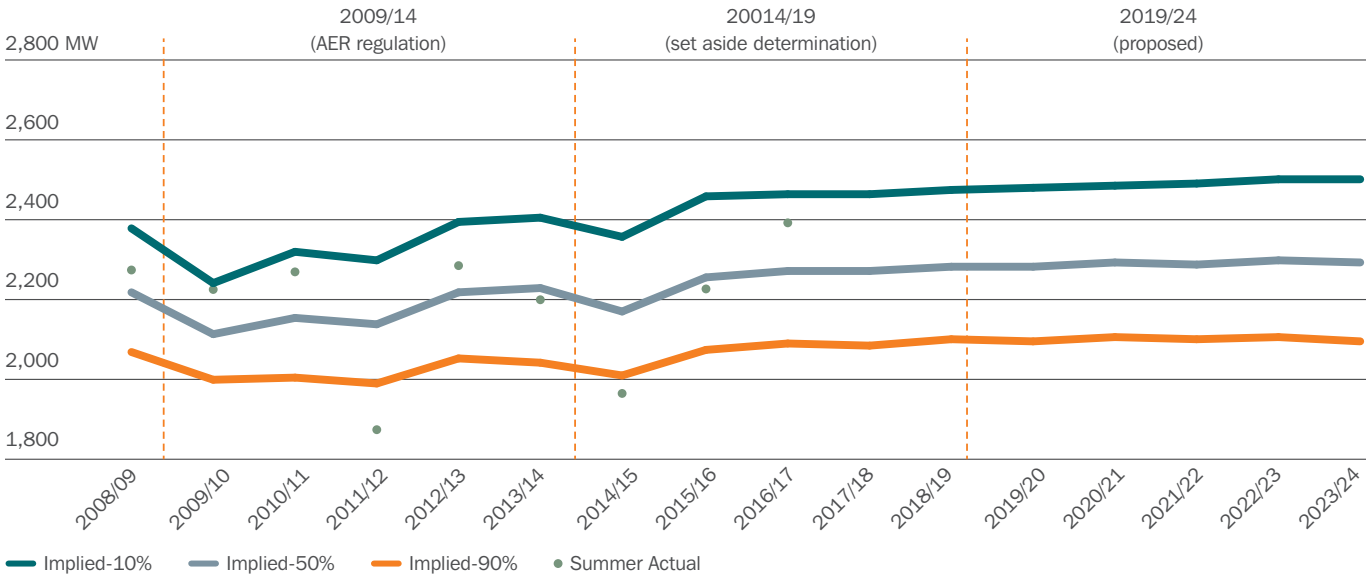
The NIEIR Report shows that demand on our network is likely to increase each year over the next five years at a very small but steady rate. We do not expect demand during our winter or summer peaks to differ much unless there are extreme weather events. When these occur, the summer peak is more likely to exceed the average forecast in demand than the winter peak.

Demand forecasts are an input into Essential Energy's capital works planning and vary by location across our diverse network.

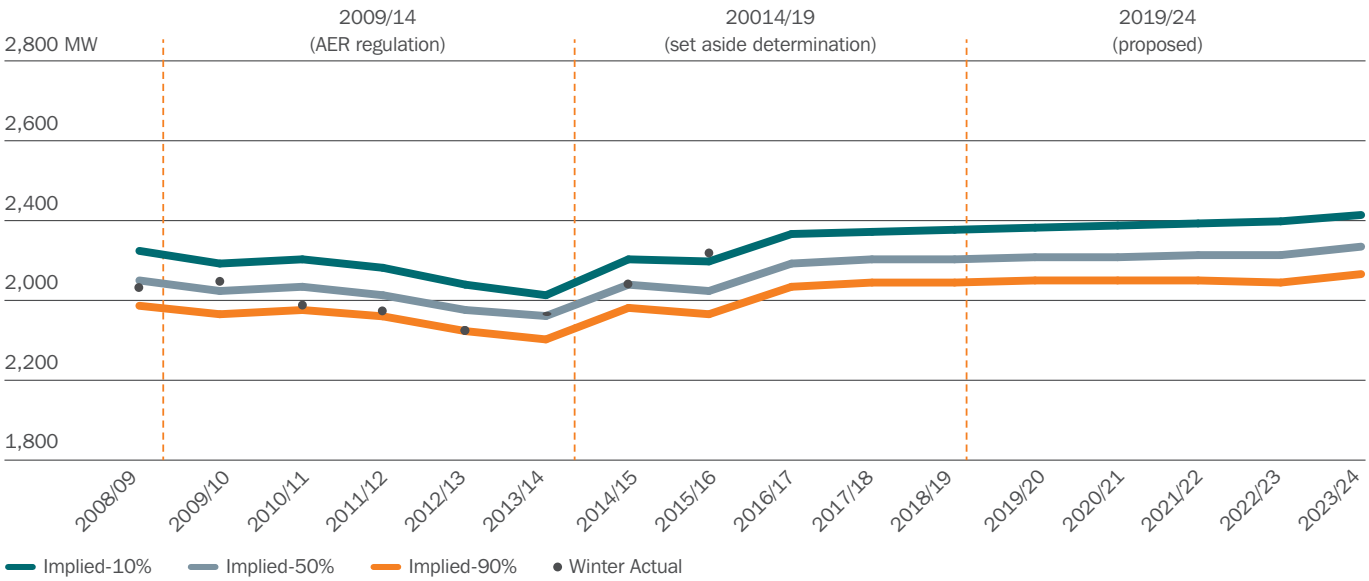
2,300 MW
Maximum demand
by 2024

Essential Energy Total Forecast Demand by Season

Forecast demand during Summer



Forecast demand during Winter



Consumption forecasts

Distributors use electricity forecasts to set annual network pricing plans so we can recover the allowable revenue approved by the AER.

Our consumption forecasts for 2019-2024

We forecast that the total amount of electricity (MWh) our customers will use during 2019-24 will be almost the same as during the present Regulatory Period, despite increased customer numbers. This is due to a slight decline in the average consumption by Residential and Small Business customers. Large customer consumption is forecast to increase slightly.

We have identified several reasons for changes in consumption:

- The economic outlook for our network in terms of local economy, population, income and housing stock forecasts.
- Projections for future use of small-scale solar systems and battery storage.
- Electric vehicle take-up rates.
- Electricity price impacts on business and residential usage.
- Increasing use of more efficient appliances and lighting.

Throughout the community deliberative forums we undertook when developing this Proposal some participants said they found new technologies challenging and would not pursue them, but most were interested in at least one technological advance, mostly solar, batteries, electric vehicles and smart meters.

How we develop these forecasts

Our residential consumption forecast takes into consideration factors such as real income per capita, electricity prices, changes in solar use (including the move from gross to net metering) and short-term weather impacts.

We forecast business consumption by looking at industry types and output by industry type and current and lagged electricity price increases.

Under the current pricing control mechanism applied by the AER – a revenue cap (see the Framework and Approach chapter) – we use these sales forecasts to determine our prices. This means that, to achieve Essential Energy's agreed revenue allowance each year, we need an accurate forecast of sales units.

Inaccurate forecasts can lead to more – or less – revenue being recovered in any one year and we are required to subtract or add the difference between this and our allowed revenue to future years' pricing, creating price swings for customers.

12,300

GWh per annum
by 2024

"It's still early days with battery storage. Nobody really knows the longevity of those things,so I'm not sure that I would want to jump on board just yet."

Dubbo customer

"They're advancing all the time (electric cars), but I'm not sure they're at the stage where we could use them out here."

Tamworth customer

"Look at where we are. This sort of location is ideal for solar generation. I know there's some of it here, but there should be more. Much more."

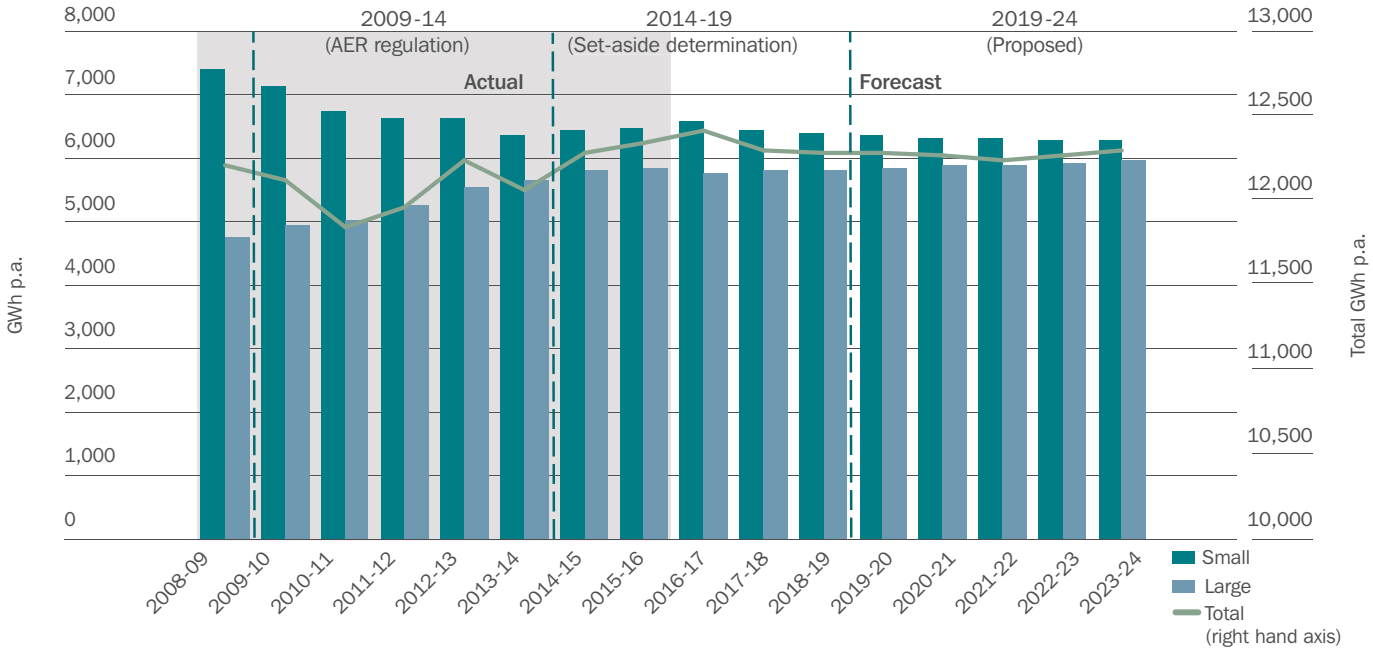
Broken Hill customer

2. Source: NIEIR, Summer and winter peak demand projections for Essential Energy in New South Wales to 2029-30, Volume 2, p.65

Network electricity consumption by types of customer

Small (Residential and Small Business) versus Large Customer total consumption is shown in the graph below. The slight decline we forecast in small customer total consumption is in line with recent years. This has been driven by a reduction in average annual residential electricity consumption, most likely because of the growing popularity of domestic solar power. By contrast, very large customers have been consuming more electricity in total. This is due to an increase in large customer numbers, especially with recent growth in the mining sector and very large industrial companies. We forecast this trend will continue, resulting in a gradual increase in total consumption.

Small versus large customer total consumption

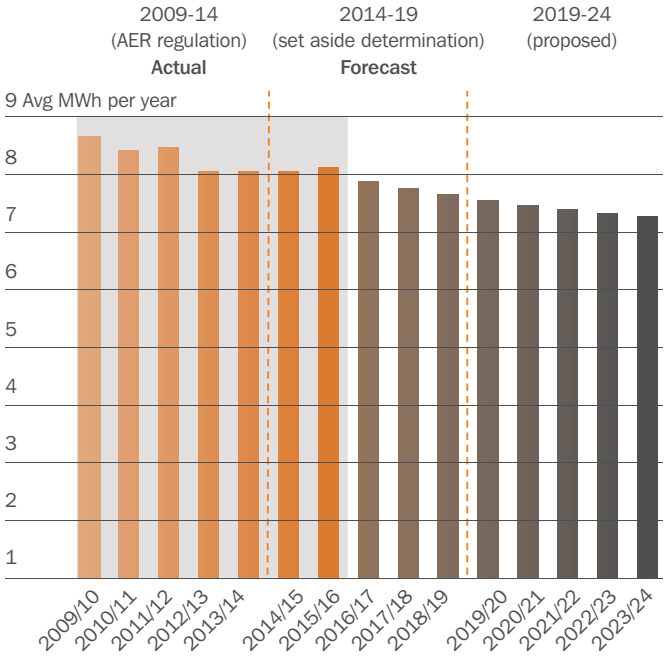


Average consumption per customer for Small (Residential and Small Business) and Large Customers is shown in the graphs below. As noted above average annual small customer electricity consumption has decreased over time. For example, over the last two regulatory periods, i.e. since 2009-10, an average residential household consumed around 6.9 MWh a year. We forecast this will drop to 5.6 MWh in 2023-24. For a small business customer, the average consumption in 2009-10 was 21.34 MWh; and we forecast this will drop to 18.7MWh in 2034-24.

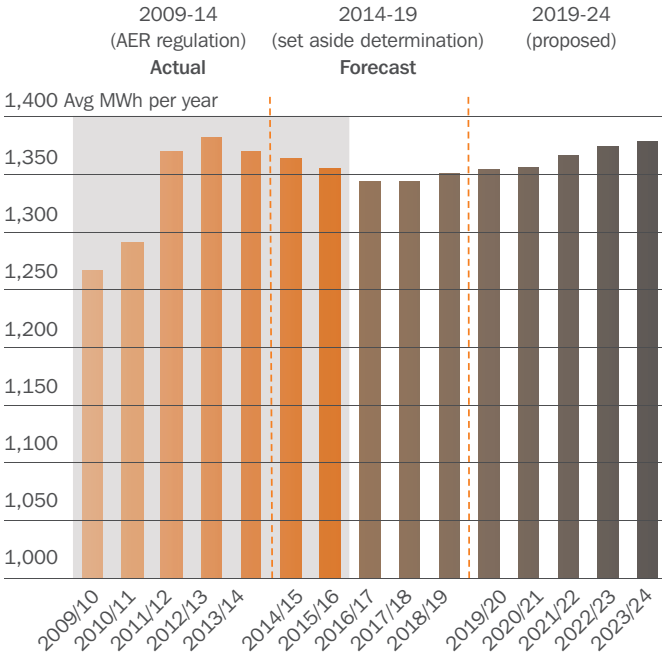
Despite total consumption for large customers increasing over the last couple of years there has been a gradual reduction in average consumption per large customer over the same period. However, we are forecasting this trend to turn gradually upwards over the next regulatory period due to growth in several industries such as mining, and the inclusion of several very large known consumption increases for specific customers that are expected over the next two years.

Average Annual Consumption per customer

Residential and small business



Large business



Customer number forecasts

When forecasting residential customer numbers we consider:

> residential building commencements and completions;

> projected dwelling numbers; and

> local economic indicators.

We use this information for planning and forecasting the required expenditure for network improvements and connections.

From 2019-24, we forecast our customer numbers will grow by 7,300 customers (0.8 per cent) per year. By 2024, we expect around 900,000 customers will be connected to our network. This growth is forecast to occur in our more densely populated centres.

900,000
Customers
by 2024

Smart meter penetration forecasts

We forecast that greater than 400,000 smart meters will be connected to our network by the end of 2024. This represents around 30 per cent of meters installed on small customers premises across our network. So, we must consider the role of smart meters when designing and implementing our pricing strategies.

The smart meter forecasts also form the basis for Essential Energy's projected metering expenditure in this Proposal.

A smart meter records how much electricity is used and when, and communicates this information to electricity retailers and network businesses remotely. It also enables two-way communication between the meter and retailer systems.

Since 1 December 2017, retailers are responsible for the installation of smart meters at their customers' premises.

We have forecast the penetration of smart meters across our network based on:

> number of smart meters installed at April 2017;

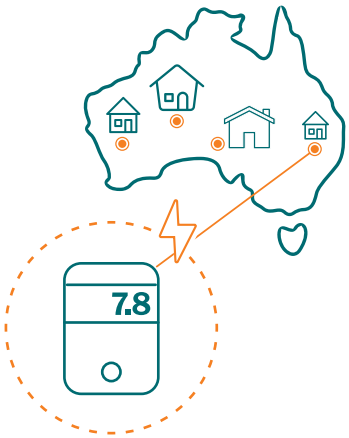
> projected solar meter replacement program (switching from gross to net metering);

> meters currently identified as requiring replacement due to failing to comply with accuracy requirements;

> new connections; and

> failure rates for existing meters.

There were mixed reactions to smart meters from participants at our customer forums. Some people were skeptical, believing these meters could give retailers too much direct control over customers' electricity supply and consumption and that their introduction would lead to lost jobs. However, some welcomed smart meters, particularly if they were currently receiving bill estimates rather than accurate readings.



400,000
Smart meters
by 2024

"Does that mean a retailer can just switch your supply off remotely if you are having a dispute with them over a bill?"

Dubbo customer

Allowed Rate of Return

Balancing the need to attract investment with customers' concerns about affordability

15

Chapter Summary

- We are proposing a rate of return of 6.34 per cent for 2019-20
- The allowed rate of return makes up a significant portion of the revenue Essential Energy needs to operate and maintain the network
- We have listened to community feedback and are keenly aware that electricity affordability is a key concern
- We believe the rate of return in this Proposal balances the needs of our customers and our shareholders

Allowed rate of return

What is the rate of return?

The rate of return is the estimated amount we need to pay to those who provide the funding for investments to maintain a safe and reliable network.

Two sources of funds are available: equity and debt. The cost of equity is the return expected by a shareholder when they invest money. The cost of debt is the interest rate that Essential Energy pays when we borrow money to invest.

The AER expects an efficient business to fund investments at a ratio of 60 per cent debt to 40 per cent equity.

When Essential Energy invests in assets, the value of the new asset is added to the existing Regulatory Asset Base (RAB). The RAB is the depreciated value of all our capital investments related to our electricity distribution network.

The RAB multiplied by the allowed rate of return determines the amount (Return on Capital) to be passed on to our customers.

Why is the rate of return important?

The rate of return makes up approximately 50 per cent of the revenue allowance that we need to operate and maintain the network.

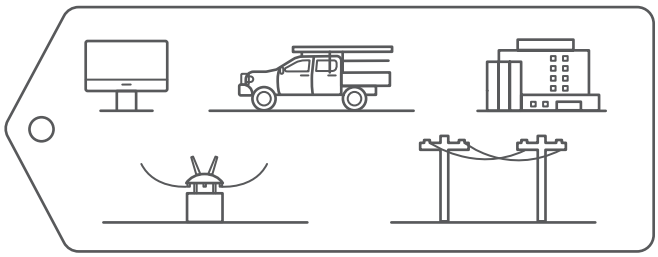
If the rate of return is set too low, we may not be able to secure the funds needed to invest in the network. This could negatively impact network reliability and the customer service levels we can provide.

If the rate of return is set too high, our customers may pay unreasonably high prices.

Our proposed rate of return

In this Proposal, we have applied the AER's current Rate of Return Guideline [1] to estimate an indicative rate of return of 6.34 per cent for the first year of the 2019-24 regulatory period.

Essential Energy submits forecast Capex spending plans to the AER, to be added to the RAB



AER applies financing ratios to the RAB

AER calculates appropriate rate of returns on the RAB

		Proposed WACC rate 2019-20
Gearing	60%	6.34%
Cost of debt	5.77%	
Cost of equity	7.20%	

The rate is based on placeholder rates for certain parameters that will be updated with current market information before and during the regulatory period.

1. Gamma has been based on recent AER determinations. Please refer to Appendix B for further detail.

Our proposed inflation rate

We are proposing an annual inflation rate of 2.50 per cent over the 2019-24 period. This is a placeholder rate and based on the AER's current inflation methodology.

AER's Rate of Return Guideline

Our rate of return estimate is a weighted average of our cost of equity and cost of debt estimates – the weighted average cost of capital (WACC).

In this Proposal, we have based our estimate on the AER's current Rate of Return Guideline, which was published in December 2013. This non-binding Guideline sets out how the AER estimates the return on debt, return on equity and the value of imputation credits (gamma).

The AER applied that approach to estimating the return on debt and equity when setting Essential Energy's rate of return for the 2014-19 regulatory period.

A new 2018 Rate of Return Guideline is due to be finalised in December 2018 and is expected to apply to this determination. The timing means that we have been unable to incorporate the new 2018 Guideline into our rate of return estimates, and have instead relied on the December 2013 Guideline.

Future operation of the Rate of Return Guideline

In July 2017, the Council of Australian Governments (COAG) Energy Council announced changes to the future operation of the Rate of Return Guideline. The Council agreed to implement a binding Guideline for the rate of return components of the AER's regulatory determinations for electricity and gas networks, to be carried out through amendments to national energy laws.

We understand the new Guideline will be binding on all determinations delivered by the AER after the relevant legislation is passed, regardless of when the determination process began.

The announcement was made as the AER began its scheduled review of the current Rate of Return Guideline, which must be completed by 17 December 2018. It is expected that this determination will be subject to the AER's 2018 Rate of Return Guideline.

We are therefore anticipating that we will need to change our proposed rate of return once the 2018 Rate of Return Guideline is finalised.

Consulting with customers

While preparing this Proposal, Essential Energy has invested in customer and stakeholder engagement to ensure that, wherever possible, it reflects the requirements of all our customers. One of the key themes to emerge has been affordability.

Given that return on capital is the major component of our allowable revenue, it has a large impact on pricing and therefore affordability, so it is a focus area for this Proposal.

Before submitting our proposal for the remittal of the 2014-19 Determination, we consulted several consumer groups, including Energy Consumers Australia, Public Interest Advocacy Centre, Energy Users Association Australia, NSW Farmers Association, Essential Energy's Customer Advocacy Group and the AER's Consumer Challenge Panel. We received positive feedback and support from all these groups.

During Phase 3 of our customer engagement program, customer feedback to this Proposal has also been positive. 83 per cent of customers participating in our Customer forums and online and telephone surveys supported Essential Energy's decision to fully apply the AER's Rate of Return Guideline. Some stakeholders provided feedback that the resulting Rate of Return was far too high.[1] However, we require a reasonable allowance to meet cost of debt and provide a reasonable return to shareholders as determined by AER and believe that following the AER's Rate of Return Guideline provides the right balance between customers and shareholders.

> ***"We fully support Essential Energy's proposal for the revised 2014-2019 revenue determination, and they should be commended for acting in a manner that has customers and affordability front of mind. We believe this is a very responsible course of action by Essential Energy."***
>
> (NSW Farmers' Association).

1. Cotton Australia, *submission to Essential Energy's Draft Regulatory Proposal,* 2 March 2018 and New South Wales Irrigators' Council, *submission to Essential Energy's Draft Regulatory Proposal,* 1 March 2018

Expert consultation

When preparing this Proposal, we engaged the Competition Economists Group (CEG) to provide an expert opinion on the best estimate for the rate of return. Their report provided estimates based on recent economic data; highlighted where there were different values being observed for some parameters; and then compared these values to the estimates derived from the AER's 2013 Rate of Return Guideline. CEG's report can be found at Attachment 15.1.

CEG advised that a higher rate of return could be proposed (best estimate) than that estimated using the AER's Rate of Return Guideline and recent AER determinations. Over time, the differences between the two approaches will become smaller.

However, given that:

> energy affordability is a clear priority for our customers;

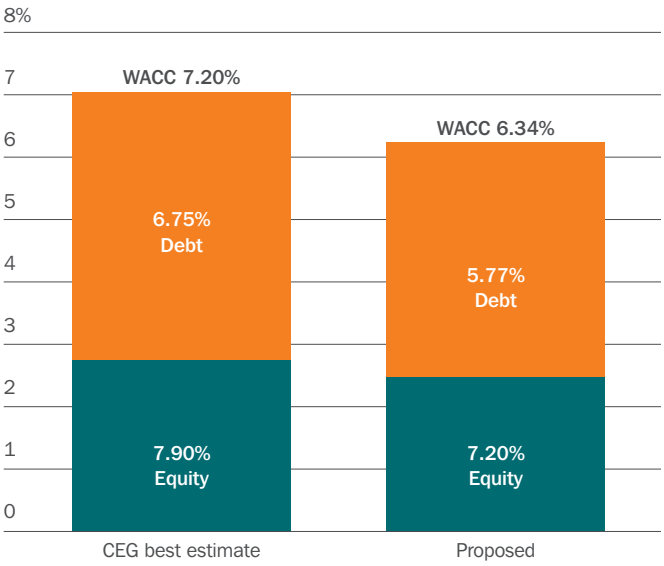
> Essential Energy has a strategic objective to deliver real cost reductions in the long term; and

> customers strongly supported that this Proposal applies the AER's Rate of Return guideline;

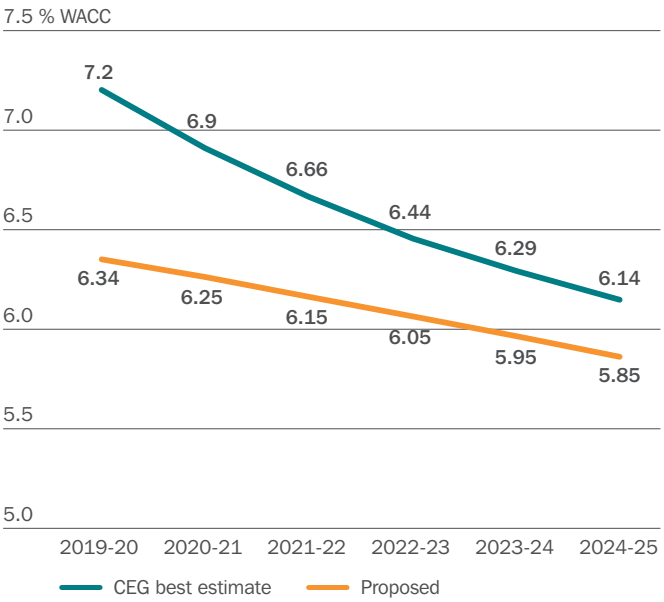
we are proposing the lower rate determined under the AER's current Rate of Return Guideline. We consider this approach will appropriately balance the interests of both customers and our shareholder, the NSW Government, in the 2019-24 regulatory period.

Please refer to Appendix B for further detail.

Rate of return composition for 2019-20
CEG best estimate versus proposed



Rate of return 2019-24
CEG best estimate vs proposed



Our Approach to Pricing

Evolving prices to better reflect our costs

Chapter Summary

- The average real change in distribution prices will be limited to 1.43 per cent a year over the 2019-24 regulatory control period
- By 2024 prices will be 26 per cent lower in real terms than in 2012, when we began our transformation
- As requested by customers, we are applying a slow and steady move towards cost-reflective pricing
- We have consulted customers about the proposed changes and made decisions based on their feedback

Evolving network charges to better reflect our costs

Network Charges

Essential Energy's approach to network charges identifies the charges (tariffs) we will apply in the 2019-24 regulatory period, how they comply with NER requirements, and the associated reporting arrangements for our annual pricing proposal.

Pricing structures that better reflect the costs of providing network services to customers play an important role in encouraging customers to utilise the network in a more efficient manner. This in turn will promote efficient network investment and help in the reduction of long-term average prices.

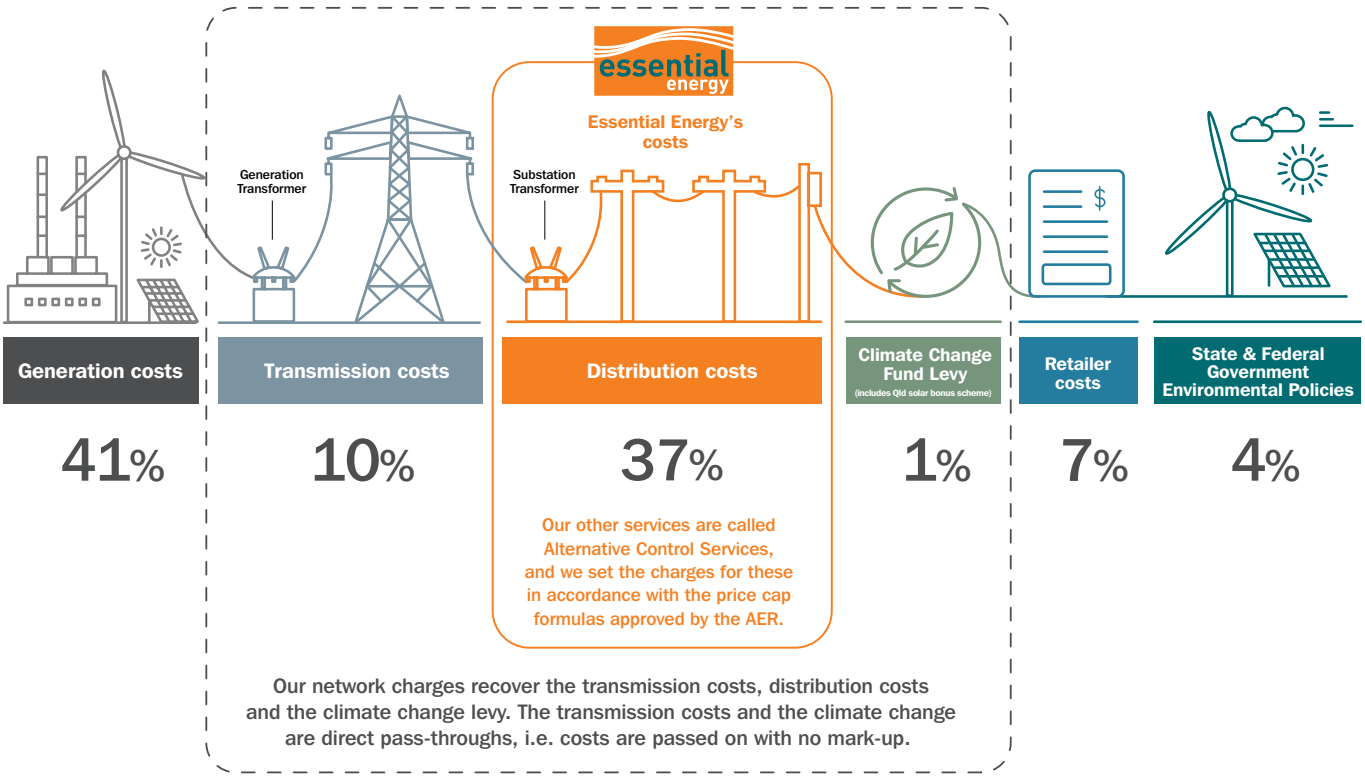
We distribute electricity through our Standard Control Services. As explained in the Our Network chapter, we recover the costs through distribution network charges, which account for approximately 37 per cent of a typical customer's electricity bill.

These enable us to recover our allowed revenue, as determined by the AER.

Our charges include Essential Energy's distribution costs as well as recovery of two additional components:

> Transmission costs, which are the responsibility of TransGrid and Powerlink to operate the transmission networks and are directly passed through to customers by Essential Energy and no additional mark-ups are applied.

> Climate Change Fund Levy and contributions to the Queensland Solar Bonus Scheme that are passed through to customers by Essential Energy and no additional mark-ups are applied.



TSS

Our TSS explains how we will apply network charges to our customers over the regulatory period. The TSS for 2019-24 can be found at Attachment 16.1 – 2019-24 Tariff Structure Statement.

The AER uses our TSS to assess our compliance with the NER, which require us to develop network charges that reflect the efficient cost of providing network services to individual customers. Once the TSS for 2019-24 is approved by the AER, it will replace our current TSS. [1]

Informed by consultation

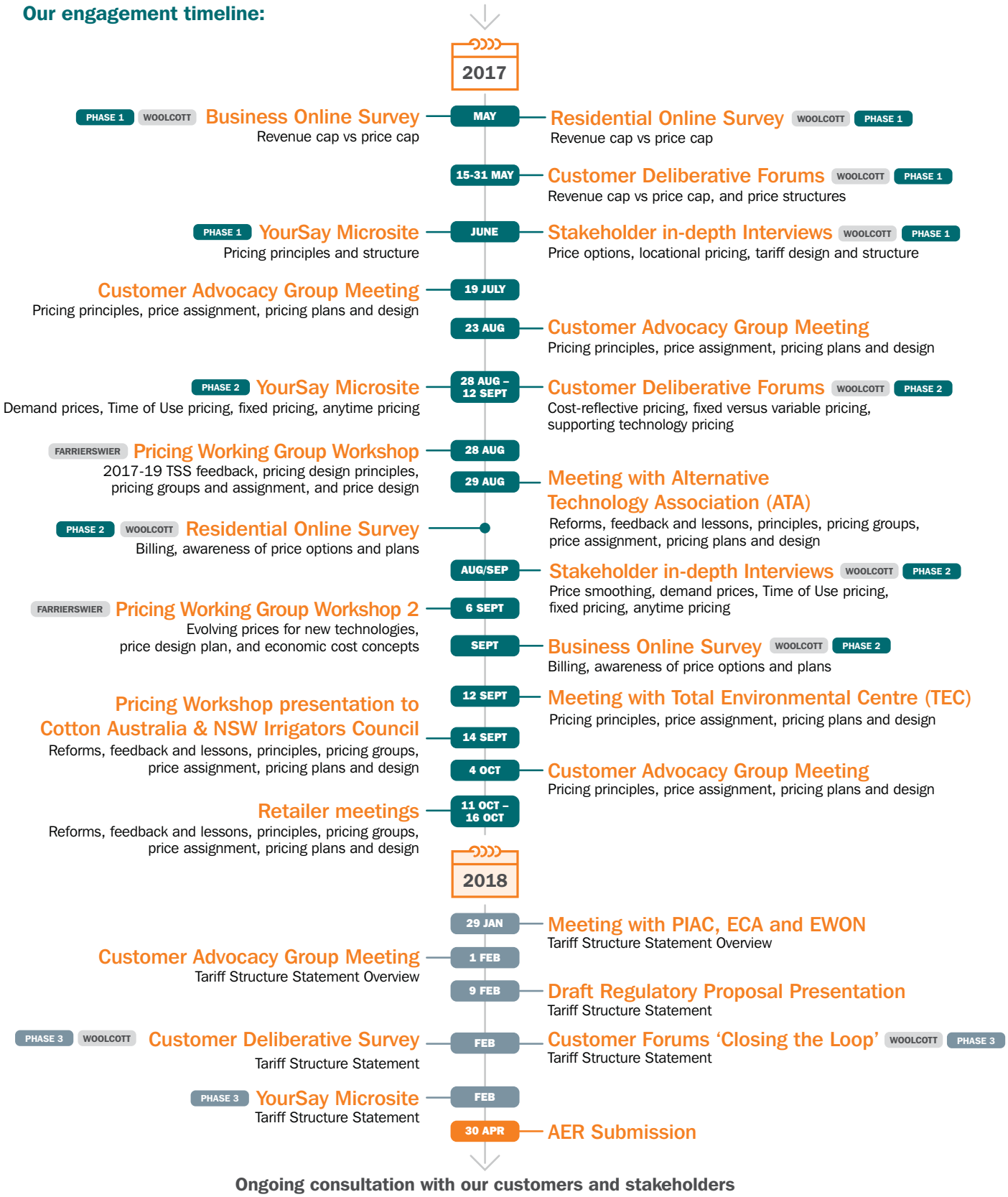
As with our entire Regulatory Proposal, we consider consultation with customers and stakeholders to be an important part of developing our approach to network charges for 2019-24 and our TSS. See the Our Customer Engagement Chapter for more detail about our rationale.

We have carried out an engagement program around pricing with customers (Residential and Small Business) and a range of other stakeholders, including electricity retailers, large business customers, the AER, the AER's Consumer Challenge Panel and consumer representative groups.

Their feedback on general pricing themes and specific topics has been incorporated into our TSS. Please refer to our TSS for more information.

1. The life of our current TSS is the three financial years from 2016-17 to 2018-19.

Our engagement timeline:



Engagement Outcomes and our Responses

TSS Requirement/ Section	Current TSS	Proposal in 2019-24 Draft TSS	Proposal in this 2019-24 TSS
Purpose and context (section 2)	Provided a foundation for future progression to cost-reflective prices.	We developed and consulted on our cost-reflective pricing principles. The Draft TSS presented these principles.	Stakeholders requested further information on our longer term strategy. We have updated our TSS to include this together with business initiatives to promote the principles and approaches set out in this TSS.
How we engaged to develop this TSS (section 3)	Our current TSS was heavily influenced by stakeholders with significant changes made based on their feedback.	We developed our Draft TSS based on feedback from: > customers > customer advocates and industry groups > retailers The Draft TSS was released for consultation on 9 February 2018.	We provide further information on our customer engagement program
Our customer classes (section 4)	Our customers are grouped into five classes for charging purposes.	Retains our existing five classes, as customers requested.	Retains our existing five classes, no further feedback received.
Assigning customers to customer classes (section 5)	Residential and Small Business customers are assigned to either Anytime consumption charge or Time of Use charge, depending on their meter type. Large Customers (>160 MWh per annum) are assigned to a cost-reflective network charge.	No changes to our network charge assignment approach for existing customers. Minor changes to default assignment proposed for customers installing innovative technologies (solar, battery storage etc.) that will potentially place additional demand on our network. These customers can opt-out of their assigned network charge to a less cost-reflective one. Larger-scale innovations such as microgrids will be provided with specific pricing solutions.	Customers who participated in our deliberative forums and stakeholders generally supported our default charging assignment proposal. Some, however, were concerned with the default option for customers installing new technologies and the lack of options for customers (>160MWh per annum). Following consideration of this feedback, we have retained the default charging assignment set out in our Draft TSS.

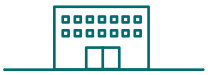
TSS Requirement/ Section	Current TSS	Proposal in 2019-24 Draft TSS	Proposal in this 2019-24 TSS
Our proposed network charge structures (section 6)	Our current charges generally comprise a fixed daily (network access) charge and a consumption charge. The more cost-reflective network charges also have a demand charge. We offer a range of charges within each class for Residential and Small Business customers, ranging from less cost-reflective (flat rate consumption-based) through to more cost-reflective (demand-based). All Large Customer network charges are cost-reflective and demand-based. Seasonal or locational charges are not available.	We propose not to introduce any new network charges and to maintain existing structures in this proposed TSS. Our approach reflects little support from customers and stakeholders for more complex charges, such as seasonal or locational pricing. There were mixed views on demand charging methods, capacity charges, and critical peak charges. Customers supported our existing charging windows, including the peak component of demand pricing, and increasing incentives for customers who adopt cost-reflective charges. We will slowly increase the fixed component of Small Customer network charges as part of the progression towards aligning residual costs and revenue. We have committed to conducting network charge trials in the next regulatory period to better inform our future pricing decisions.	Customers who participated in our deliberative forums generally supported the charges and structures in the Draft TSS with unanimous support for increased and enhanced education on network charges. Stakeholders provided conflicting views, and some highlighted the difficulty in customers being able to reduce or change the way they use energy and noted choice between pricing options was important. There was limited support from stakeholders for a $5 per annum increase in the fixed charge, however 76 percent of customers either slightly or strongly supported this. After considering the feedback, we are proposing to maintain the approach outlined in the Draft TSS, however we will provide a stronger commitment to conduct trials and customer testing.
Our pricing proposals methodology (section 7)	The Long Run Marginal Cost (LRMC) component of each of our network charges was calculated using an average incremental cost approach with a time horizon of five years. Marginal costs were based on estimates of augmentation-related capital expenditure and growth-related operating expenditure. We have addressed the AER's recommendations to apply a 15-year time horizon and include relevant replacement capital expenditure in the LRMC calculations used in our network charge formulation.	Stakeholders generally supported our LRMC approach but requested we explain what costs are included in the marginal cost 'bucket'. Some stakeholders suggested it may be appropriate to recover residual costs in the consumption charge only. In response, we have allocated residual costs to both the consumption charge and the fixed charge across our network prices.	We received limited feedback on our LRMC methodology. We are not proposing any changes to the methodology outlined in our Draft TSS.

Our proposed network tariff structures for 2019-24

Low voltage distribution – Residential and small business

	ACCUMULATION METER	TYPE 5 METER	INTERVAL/ SMART METER	SMART METER WITH NEW TECHNOLOGY*	
MANDATORY	Network access charge				MANDATORY
DEFAULT	Anytime charge	Anytime charge	Time of use charge	Time of use charge with demand component	DEFAULT
OPTIONAL		Time of use charge	Time of use charge with demand component	Time of use charge	OPTIONAL
			Anytime charge		

* New technologies such as embedded generation (solar or wind etc) and storage (batteries and electric vehicles etc).



Low voltage demand – Business

	INTERVAL/SMART METER	
MANDATORY	Network access charge	MANDATORY
MANDATORY	Time of use price charge demand component	MANDATORY

High voltage demand – Large business

	INTERVAL/SMART METER	
MANDATORY	Network access charge	MANDATORY
MANDATORY	Time of use price charge demand component	MANDATORY

Indicative changes to our network charges

The actual prices that customers will pay in the next regulatory period will depend on:

- The AER's final distribution determination for Essential Energy for the 2019-24 regulatory period, including any updated energy consumption forecasts;
- Any changes in the relative portion of revenues recovered from each tariff and tariff component during the 2019-24 regulatory period;
- The transmission costs and the climate change levy passed through to Essential Energy;
- Cost of debt placeholder rates (based on current information) updated annually, as discussed in the Allowed Rate of Return chapter; and
- The application of incentive schemes as discussed in the Framework and Approach chapter.

Whilst we cannot predict the exact impact of these factors on our charges, the NER require us to provide a pricing schedule as part of our TSS that sets out the indicative charges we will apply for each year of the regulatory period.

We propose to limit real average annual increases in the distribution component of customers' electricity bills to 1.43 per cent for the 2019-24 regulatory period. This contributes approximately 0.5 per cent in real terms to the average retail bill.

Forecast changes to average charges

The average changes to network charges are calculated by dividing our proposed annual revenue requirements by the total energy consumption forecast for each regulatory year. Average changes may vary for each customer, depending on their level of consumption.

Forecast Changes in Average Distribution Charges (% change in Real charges)

	2019-20	2020-21	2021-22	2022-23	2023-24
Average change in distribution charges (Real)	1.43%	1.43%	1.43%	1.43%	1.43%

Customer bill impacts

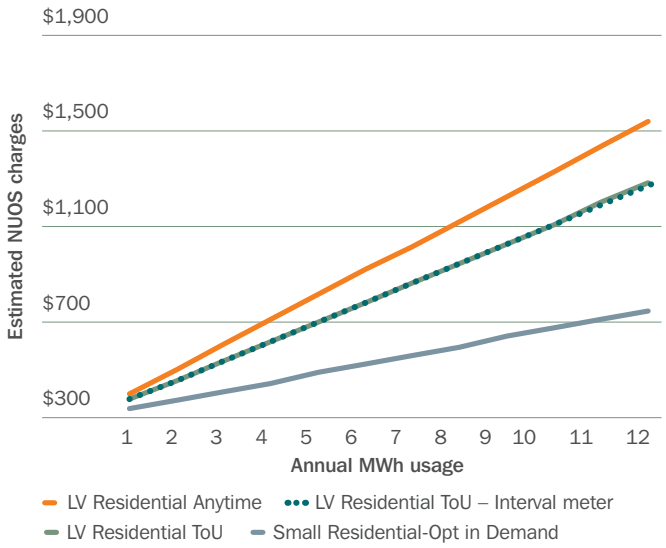
Our proposed network charging approach is different for the 2019-24 regulatory period than in our current TSS and will lead to changes in customers' network charges.

Average price changes may vary for each customer, depending on their level of consumption.

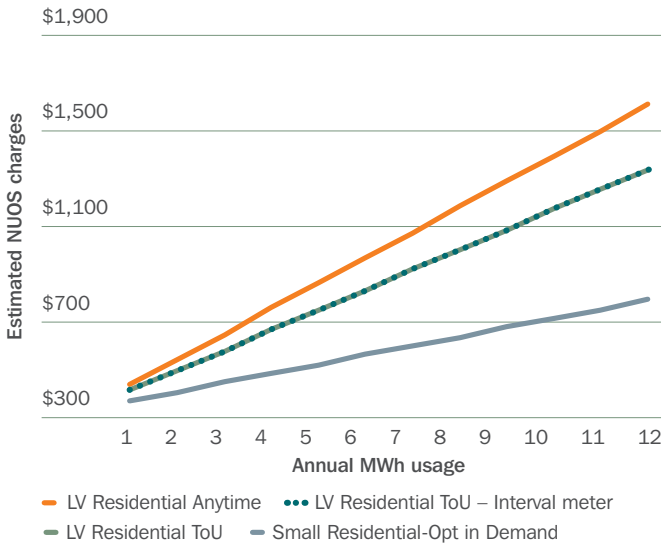
Residential and Small Business customers

Comparison of proposed 2019-24 Residential and Small Business network charges by network charge

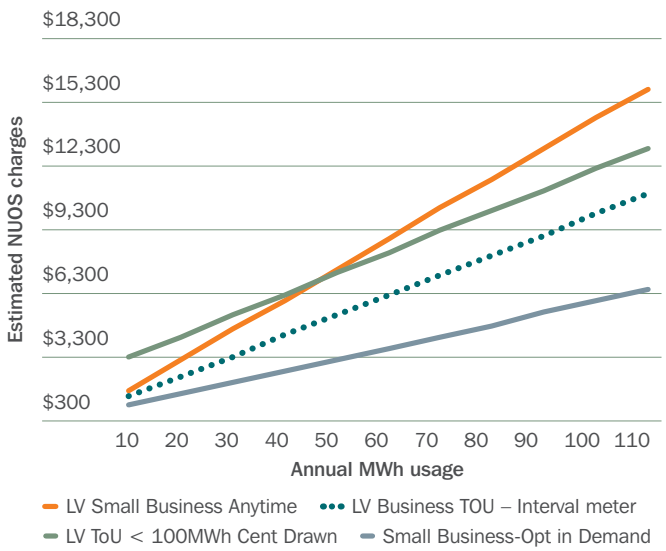
Residential Tariffs 2019/20



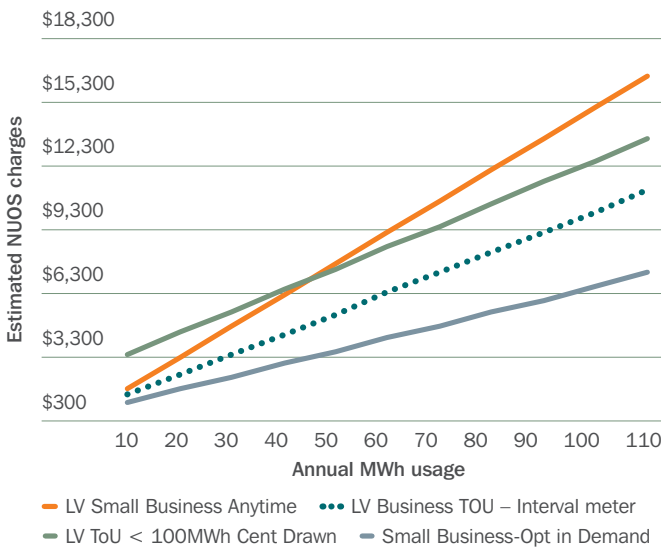
Residential Tariffs 2023/24



Small Business Tariffs 2019/20



Small Business Tariffs 2023/24



Forecast changes to individual charges

Please refer to Attachment 16.1 – 2019-24 Tariff Structure Statement for our indicative charges.

Working with the AER to assess our revenue and pricing compliance

We will demonstrate compliance with the AER's controls

The AER applies controls to each of our distribution services, as discussed in the Framework and Approach Chapter and sets out how Essential Energy is to demonstrate compliance with these controls.

Our proposed approach to demonstrating compliance is as follows:

> For Standard Control Services, our annual pricing proposal will demonstrate that the forecast revenue based on our proposed network charges is equal to the maximum allowed revenue calculated in accordance with the AER's revenue cap formula.

> For Alternative Control Services, our published price lists will demonstrate compliance with the price cap requirements.

If for any reason we under or over recover our allowed revenue, we propose that the AER's existing controls should be applied. Attachment 16.2 Control Mechanisms provides further detail.

We will retain existing arrangements for certain payments

As discussed at the beginning of this chapter, Essential Energy is required to pay transmission businesses and other electricity distributors, and to pay avoided transmission charges to eligible embedded generators.

We propose to retain the existing AER-approved approach for recovering these types of charges.

In addition, the NER allows us to recover jurisdictional scheme payments relating to obligations imposed by governments. These payments are not related to the network services we provide and are separate to the maximum revenue we can raise or charges we can make for Direct Control Services.

For the 2019-24 regulatory period, we will have a continuing jurisdictional scheme obligation to make payments to the NSW Government for the NSW Climate Change Fund.

We propose to retain the existing AER-approved approach for recovering these types of payments.

Attachment 16.2 – control mechanisms provides further details on these arrangements.

We will retain our existing negotiating framework

We can provide some services on a negotiated basis. Under the NER, we must prepare a negotiating framework that sets out the procedure to follow during these negotiations.

We have proposed to make minor administrative amendments to our current negotiating framework. Our proposed framework can be found at Attachment 16.3 – Negotiating Framework.

Alternative Control Services

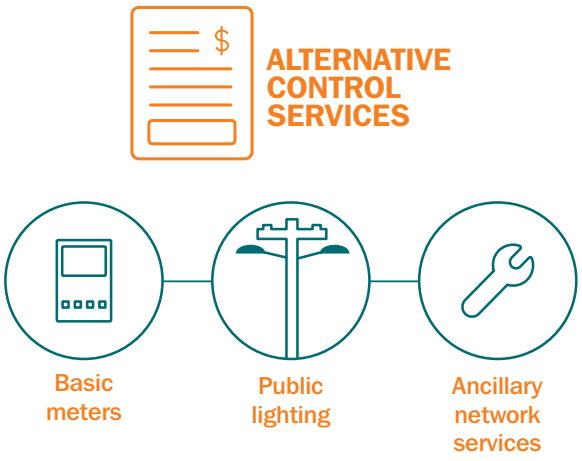
Providing customer requested services whilst minimising costs

Chapter Summary

- Our proposed prices for metering services recognise that we no longer install meters for Residential and Small Business customers in accordance with recent legislative changes
- To provide customers with greater pricing transparency, we propose to introduce component-based pricing for public lighting services
- We have developed new prices for a range of ancillary services – this includes services that have been reclassified as regulated by the AER due to introduction of Ring Fencing

Alternative Control Services

Alternative Control Services are typically provided directly to a specific customer, who pays the full cost. These services include some metering services, public lighting and ancillary network services (such as customer connections).



Metering services

Essential Energy currently provides metering services to Residential and Small Business electricity consumers using Type 5 and 6 meters (basic meters). These are basic accumulation meters that measure the total amount of electricity used and are read manually.

Under Power of Choice legislation, which came into effect on 1 December 2017, a number of changes were introduced:

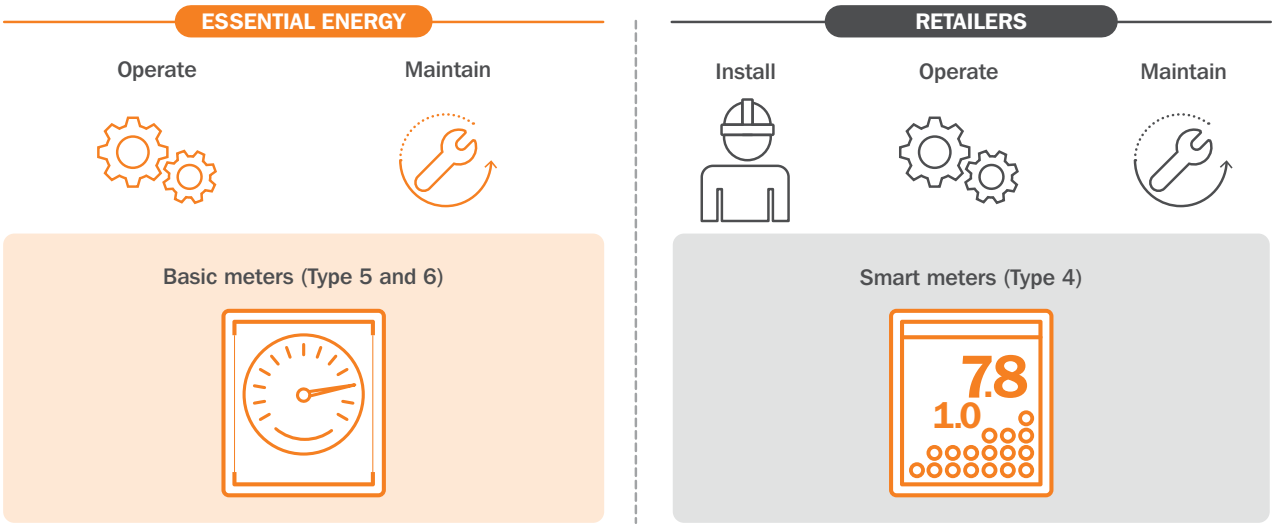
- Retailers will facilitate the provision of metering services for new and replacement meters through contestable metering coordinators.
- New and replacement meters will be a minimum of a Type 4 (smart) meter.
- Essential Energy will no longer be able to install basic meters.

We forecast that approximately 20 per cent of basic meters will be replaced by smart meters during the 2019-24 regulatory period. Our role in meter service provision will therefore decline over time as our basic meters are gradually replaced by smart meters serviced by competitive metering service providers.

While electricity distributors cannot install new basic meters from 1 December 2017, we continue to be responsible for operating and maintaining our existing basic meters until they are replaced. Consequently, this Regulatory Proposal relates solely to our existing basic meters. [1]

Our forecast costs of providing basic metering services for the 2019-24 regulatory period is $90 million. Further information is available in Attachment 17.1 – Type 5 and 6 Metering Services Proposal, Attachment 17.2 – Metering Model, and Attachment 17.3 – Metering PTRM.

Our proposed basic metering services prices are provided as Attachment 3 – Indicative Metering Services Pricing Schedule in our TSS.



1. Type 7 meters (these are unmetered supply points, like street lights) remain a monopoly service and the AER has proposed to continue regulating these meter services as Standard Control Services in the 2019-24 regulatory period.

Public lighting services

Essential Energy provides public lighting services to local councils which include the operation, maintenance, and replacement of public lighting assets. These services are vital to the communities we service.

160,000 Public lighting assets

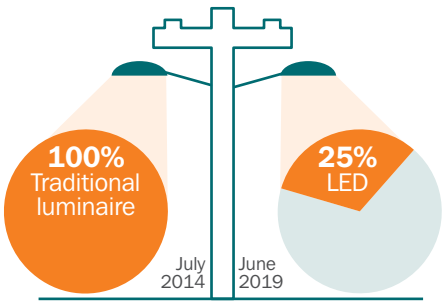
80 Local Government areas

During the current regulatory period, we introduced Light Emitting Diode (LED) lighting into our standard public lighting infrastructure, with negotiated pricing to support early take-up by Councils. Several Councils have taken this opportunity to conduct bulk upgrades of traditional lights to LEDs, contributing to improved maintenance outcomes and lowering their energy costs.

We consulted with our customers as part of our Phase 3 engagement program for this Regulatory Proposal, with 99 per cent of customers supporting the use of LED technology with 36 per cent of customers rating this initiative as a top 5 outcome.

We will continue to explore new public lighting technology solutions and work with our customers to facilitate the transition to new technologies. As such, the rapid take-up of LED technology for public lighting is forecast to continue into the 2019-24 period.

Forecast uptake of LED technology



In recognition of ongoing advancements in public lighting technology, the AER's 2019-24 Framework and Approach paper classifies emerging public lighting technology as an Alternative Control Service and enables new services to be introduced mid-period within the regulatory framework.

In addition to introducing more efficient lighting technologies, we also propose to improve scheduling efficiency so we can minimise public lighting charges even further. We propose to extend our average timeframe for completing scheduled streetlight repairs from four days to seven days in the 2019-24 regulatory period. During our Phase 3 engagement program, we also sought feedback from our customers on whether they supported the move from four to seven days, with 94 per cent of customers supporting this approach.

Essential Energy also continually engages with Local Councils and Regional Organisations of Councils (ROCs) regarding our public lighting services. We established a Streetlighting Consultative Committee (SCC) in 2014 that enables us to work closely with customers on service delivery and pricing issues. The SCC meets every quarter and will continue to evolve to ensure we engage effectively. For this Regulatory Proposal, Essential Energy also invited all our Council public lighting customers to participate in an online engagement forum, at engage.essentialenergy.com.au.

Throughout our engagement with Local Councils, greater pricing transparency has been identified as a priority. In response, we propose to introduce component-based pricing for the 2019-24 regulatory period. We have consulted extensively with our public lighting customers about this and they are strongly supportive of this approach.

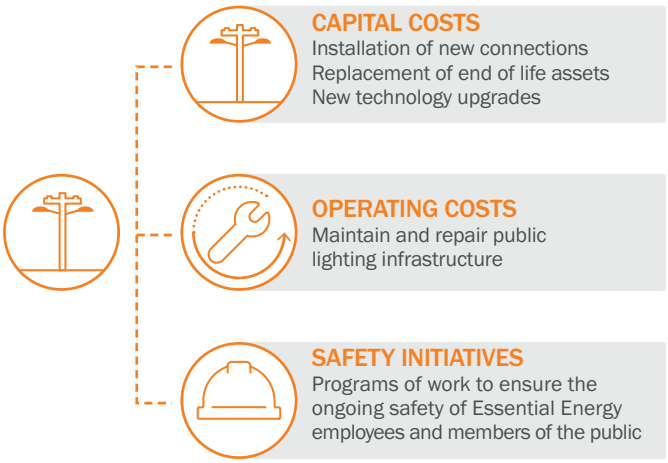
For the 2019-24 regulatory period, the component-based model will provide cost-reflective pricing in an uncomplicated and transparent manner. Charges will be separated into maintenance and capital recovery charges for each lighting component, including light, bracket and pole.

It is worth noting that the NSW Department of Industry is currently proposing changes to the NSW Public Lighting Code, including making the code mandatory. Consultation is presently underway; however proposed changes have not been formalised at the time of preparing this Proposal. Where available, changes will be incorporated into Essential Energy's revised Proposal.

There are three main costs that are incurred in providing public lighting services as highlighted in the diagram below. These include initiatives to ensure the ongoing safety of the public and our employees, including the removal of redundant assets that pose safety risks. Our public lighting prices are designed to recover the efficient costs associated with these three activities.

Further information is available in Attachment 17.4 – Public Lighting Proposal, and Attachment 17.5 – Public Lighting Model.

Our proposed public lighting prices have been developed in accordance with the AER's price cap formula and are provided as Attachment 4 – Indicative Public Lighting Price Schedule in our TSS.



Ancillary network services

Ancillary network services are diverse, non-routine services we provide to customers on an as-needs basis. The prices are either fee-based, labour-based or quoted, depending on the service.

Several of our unclassified services are proposed to be reclassified for the 2019-24 regulatory period. This change is driven by the implementation of the AER's Distribution Ringfencing Guideline and the resulting need for us to separate contestable and monopoly service provision. The reclassified services are:

- Network safety services
- Rectification works to maintain network safety
- Provision of training to third parties for network-related access
- Emergency recoverable works
- Security lighting
- Customer-initiated asset relocations
- Termination of cable at zone substations – distributor required performance (i.e. we are not allowed to give access to our zone substations to an approved service provider and the connection is fully dedicated to the specific customer connecting).

During consultation for our 2014-19 regulatory period, we received feedback from our customers regarding application of Disconnection/Reconnection fees, with a preference expressed to have these fees applied separately. In line with customer preference, we intend to implement this change for the 2019-24 period, with a separate disconnection and reconnection fee proposed.

As an Alternative Control Service, the cost of each ancillary network service must be recovered from the individual customer requiring it. These costs have been forecast based on an hourly rate for the type of employees who perform the service and an estimate of the time it takes to carry out that service, including travel time, and the cost of fleet or other resources. We used these costs to calculate the total direct cost for each ancillary network service. We then apply overheads and a return equivalent to the rate of return detailed in the rate of return chapter.

Further information is available in Attachment 17.6 – Ancillary Network Services Proposal, and Attachment 17.7 – Ancillary Network Services Models.

Our proposed ancillary network services prices are provided as Attachment 2 – Indicative Ancillary Network Services Pricing Schedule in our Tariff Structure Statement Attachment 16.1 – 2019-24 Tariff Structure Statement.

New Services Identified within a Regulatory Period

From time to time a new service is identified during a Regulatory Period that does not have an approved price. Historically these services would have been viewed as unregulated. However, with the introduction of Ring Fencing, there are new obligations on us that would potentially prevent us from providing unregulated services.

In order to provide greater flexibility to us, and to customers, where a new service is identified that falls within an existing service group classification, but for which no price has been approved, we propose to develop pricing in a manner that is consistent with other services in the same grouping.

This provides us with the flexibility to provide new, unforeseen services to our customers and provides customers with the protection of a regulated pricing mechanism.

Glossary

18

18 Glossary

(2018-19 dollars)	$XXXXX ($2018-19), Real dollars. This denotes the dollar terms as at 30 June 2019
2009-14 regulatory period	The regulatory control period commencing 1 July 2009 and ending 30 June 2014
2014-19 regulatory period	The regulatory control period commencing 1 July 2014 and ending 30 June 2019
2019-24 regulatory period	The regulatory control period commencing 1 July 2019 and ending 30 June 2024
Alternative control services / ACS	User-requested services e.g. public lighting and residential and small business customer meters
AEMC	Australian Energy Market Commission
AER	Australian Energy Regulator – the national regulator that oversees the electricity industry
AMP	Asset management plan
AMS	Asset management system
ASP	Accredited Service Provider
ATO	Australian Tax Office
Augex	Augmentation Expenditure
CAM	Cost allocation method
CCP	Consumer Challenge Panel
Capital expenditure / Capex	Funds used to buy or upgrade physical assets such as power poles or buildings
CESS	Capital Expenditure Sharing Scheme
COAG	Council of Australian Governments
CPI	Consumer Price Index
Cross-arm	Horizontal arm fixed to the top of a power pole
Customer engagement	Program of two-way communications through which Essential Energy collects customer feedback
DEA CRS	Data Envelopment Analysis with Constant Return to Scale
Demand charge	Charge based on the maximum amount of electricity a customer uses at any one time, measured in kW
DMIA	Demand Management Innovation Allowance
DMIS	Demand Management Incentive Scheme
DNSP	Distribution Network Service Provider
DUoS	Distribution Use of System. Charge for using the distribution network
EBSS	Efficiency Benefit Sharing Scheme
Energy exchange	The two-way flow of electricity across the network from consumption and generation
Energy Networks Association	National industry association representing Australian electricity networks and gas distribution businesses
F&A	Framework and Approach paper
Finkel Report	Review of the national electricity market commissioned by Federal and State energy ministers and presented in 2017 by Australia's chief scientist, Dr Alan Finkel, as a blueprint for national energy security
FTE	Full-time equivalent: the paid hours worked by one full-time employee. Used to convert hours worked by part-time employees into what their equivalent would be in full-time employees

18 Glossary

HV	High Voltage
Imputation credit	A tax credit passed on to shareholders by a company
IPART	Independent Pricing and Regulatory Tribunal of NSW
kWh	Kilowatt-hour: a unit of energy
LiDAR	Light Detection and Ranging: remote sensing method that uses pulsing laser light to measure distances between objects
LSE	Least Square Estimation
Load	The demand for electricity on the network
LV	Low Voltage
Maximum allowable revenue	Maximum revenue that the AER allows Essential Energy to recover from customers (revenue cap)
Microgrid	Local energy grid where energy is locally exchanged between customers that is connected to the traditional grid but can operate separately
MWh	Megawatt hour: unit of energy equivalent to one thousand kilowatt-hours
NER	National Electricity Rules
NMI	National Metering Identifier
NUOS	Network Use of System
Operating expenditure /Opex	Funds to inspect, maintain and operate our network
Outage	Planned or unplanned loss of electricity service. Also known as supply interruption
Peak load	The maximum electricity demand customers place on the network
Price cap	Set by the AER, the maximum increase that Essential Energy can apply to customer prices
Pricing	What Essential Energy charges customers to recover the efficient cost of providing network services. Commonly referred to as a 'tariff'
PTRM	Post Tax Revenue Model
Regulatory allowance	The AER's decision on components of our Regulatory Proposal
Regulatory Asset Base (RAB)	Value of the assets Essential Energy uses to provide services
Regulatory proposal	Essential Energy's regulatory proposal for the 2019-24 regulatory control period submitted under clause 6.8 of the NER
Repex	Replacement expenditure
Return on capital	Return on investment generated for the funds (capital) invested. Used to fund repayment of debt and measure profitability
Revenue cap	Controls the maximum revenue that the AER allows Essential Energy to collect for each year of the regulatory period
RFM	Roll Forward Model
RIN	Regulatory Information Notice
SAIDI	System Average Interruption Duration Index
SAIFI	System Average Interruption Frequency Index
SFA	Stochastic Frontier Analysis
Smart meter	Digital device that measures and records each customer's electricity usage every half an hour and transmits the data to their electricity provider

Solar PV system	Collection of photovoltaic (PV) panels that harnesses power from the sun and converts it into electricity
Smoothed revenue	Forecasting method that smoothes out fluctuations
Solar farm	Large-scale solar PV projects, often connected to the grid
Standard control services / SCS	Essential Energy's core activities when providing customers with access to electricity
STPIS	Service Target Performance Incentive Scheme: AER's financial incentive scheme, which rewards or penalises Essential Energy for reliability and customer service outcomes
Tariff	See Pricing
Tariff class	Group of customers who share common characteristics so they pay similar prices
Temperature-sensitive load	Load that fluctuates in certain environmental conditions e.g. high use of air conditioners
TUOS	Transmission Use of System
VCR	Value of Customer Reliability
WACC	Weighted Average Cost of Capital: a way to work out the expense of funding future capital projects. The lower the WACC, the cheaper the funding

Our Revenue Requirement Components

Appendix A

Building Block Components for our Unsmoothed Annual Revenue Requirement

$M, Real 2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	Total 2019-24
Return on capital	508	514	512	508	502	**2,544**
Return of capital	85	113	132	153	148	**632**
Operating expenditure	375	362	350	327	303	**1,718**
Revenue adjustments	8	7	8	8	8	**39**
Tax allowance (net)	37	38	40	45	43	**203**
Total proposed unsmoothed revenues	**1,014**	**1,035**	**1,042**	**1,041**	**1,005**	**5,137**

Proposed revenue requirement

We will recover our revenue requirement for 2019-24 by charging customers for our Standard Control Services.

To minimise pricing variations caused by fluctuations in our expenditure, we have smoothed our proposed revenue. The resulting revenue profile has been calculated using the AER's post tax revenue model at Attachment 8.1. It ensures our smoothed revenue for 2019-24 is equal to the unsmoothed revenue for the same period in net present value terms.

Smoothed Annual Revenue Requirements

$M, Real 2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	Total 2019-24
Proposed smooth revenues	999	1,014	1,028	1,043	1,058	**5,142**

Smoothed and unsmoothed annual revenue requirement profile

We propose that our approved cost of debt should be updated annually during the 2019-24 regulatory period, in accordance with the AER's Rate of Return Guideline. This means that for each year, the allowed rate of return will be different, depending on the annual cost of debt. We will apply the revenue adjustment using the AER's approved revenue cap control mechanism formula. For more information, see the Framework and Approach Chapter.

Our approach

We have used the AER's Post Tax Revenue Model (PTRM) at Attachment 8.1 to develop our building blocks and the associated revenue requirement. For more detailed explanations of the expenditure and rate of return components, see:

- Capital Expenditure Chapter
- Operating Expenditure Chapter
- Allowed Rate of Return Chapter

Regulatory Asset Base

We use the Regulated Asset Base (RAB) to calculate the return on capital and return of capital components of our annual revenue requirement by:

- Multiplying the opening RAB for each year of the regulatory period by the approved Weighted Average Cost of Capital (WACC) to determine the return on capital.
- Offsetting straight-line depreciation against the indexation of the opening RAB each year to determine the regulatory depreciation.

The estimated starting value of our RAB as at 1 July 2019 is $8,215 million (in nominal terms). We have calculated this amount using the AER's roll forward model (see Attachment 8.2) and in accordance with the National Electricity Rules (NER).

The RAB value reflects the roll forward of actual capital expenditure for 2014-15 to 2016-17 and estimated capital expenditure for 2017-18 and 2018-19.

Indicative Opening RAB Values as at 1 July 2019

	Actuals			Forecast	
$M, Nominal	2014-15	2015-16	2016-17	2017-18	2018-19
Opening RAB	6,774	7,157	7,388	7,577	7,860
Add: Actual and estimated capital expenditure	479	417	411	450	494
Less: Regulatory depreciation	96	186	222	167	134
Less: Adjustments for 2013-14 actual capital expenditure					5
Closing RAB	**7,157**	**7,388**	**7,577**	**7,860**	**8,215**

Note: Numbers may not add up due to rounding

Capital expenditure

More information about our capital expenditure plans can be found in the Capital Expenditure Chapter.

Proposed Capital Expenditure

$M, Real 2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	Total 2019-24
Capital expenditure	499	411	409	396	384	**2,100**

Regulatory depreciation

Essential Energy has applied the AER's preferred approach to the calculation of regulatory depreciation, as shown in the roll forward model. The AER's approach applies a Weighted Average Remaining Life (WARL) calculation to all existing and forecast new assets in the RAB using the straight-line depreciation methodology. Within the AER's PTRM, the value of regulatory depreciation is calculated as WARL-based straight-line depreciation less the indexation of the RAB value for inflation.

To calculate the RAB indexation values, we have used a forecast inflation rate of 2.50 per cent. This is a placeholder rate and is based on the AER's current inflation methodology.

Proposed Regulatory Depreciation

$M, Real 2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	Total 2019-24
Straight-line depreciation	286	319	341	363	359	**1,668**
RAB indexation	(200)	(206)	(208)	(210)	(211)	**(1,036)**
Regulatory depreciation	**85**	**113**	**132**	**153**	**148**	**632**

As required by the NER, we have developed this Proposal using our nominated depreciation schedules.

RAB roll forward

To calculate the return on capital building block component, we started with the RAB value as at 1 July 2019 and rolled it forward over each year of the 2019-24 regulatory period, using our proposed capital expenditure and regulatory depreciation values.

Forecast RAB Roll Forward Values for 2019-24 Regulatory Period

$M, Nominal	2019-20	2020-21	2021-22	2022-23	2023-24
Opening RAB	8,215	8,648	8,970	9,276	9,551
Add: Forecast capital expenditure	520	440	448	445	442
Less: Forecast regulatory depreciation	88	119	143	169	168
Closing RAB	**8,648**	**8.970**	**9,276**	**9,551**	**9,825**

Note: Numbers may not add up due to rounding.

Allowed rate of return

Our proposed rate of return of 6.34 per cent was calculated in accordance with the AER's Rate of Return Guideline.

We forecast the rate of return will decline over the 2019-24 regulatory period and have modelled the decline in this Proposal. As such, our modelling is based on an average rate of return of 6.14 per cent.

In accordance with the PTRM, this rate of return estimate is multiplied by each year's opening RAB value to estimate the return on capital building block component.

Proposed Rate of Return

Rate of return parameters	2019-20	2020-21	2021-22	2022-23	2023-24
Overall rate of return	6.34%	6.25%	6.14%	6.04%	5.95%
Cost of equity	7.20%	7.20%	7.20%	7.20%	7.20%
Cost of debt	5.77%	5.61%	5.44%	5.27%	5.11%
Gearing	60%	60%	60%	60%	60%
Utilisation of imputation credits	40%	40%	40%	40%	40%

The Allowed Rate of Return Chapter provides further information.

Operating expenditure

The table below shows the proposed operating expenditure relating to the provision of Standard Control Services. Our operating expenditure plans are detailed in the Operating Expenditure Chapter.

Proposed Operating Expenditure

$M, Real 2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	Total 2019-24
Operating expenditure	371	358	346	323	299	**1,698**

Corporate tax

To estimate the cost of corporate tax, we have used the current corporate tax rate of 30 per cent and a value for imputation credits of 40 cents per dollar of tax paid, in accordance with the AER's Rate of Return Guideline. Our estimates have been calculated using the PTRM.

The imputation component of our calculations is discussed in the Allowed Rate of Return Chapter.

Proposed Corporate Tax Allowance

$M, Real 2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	Total 2019-24
Corporate tax	37	38	40	45	43	**203**

Revenue adjustments

The NER allow us to adjust our proposed annual revenue requirement for revenue increments or decrements arising from the impact of:

- Incentive schemes that apply during the current regulatory period.
- Residual under or over-recovered revenues associated with applying the revenue cap mechanism in the current regulatory period.
- Using shared assets to provide unregulated services in the 2019-24 regulatory period.

Efficiency Benefit Sharing Scheme (EBSS)

As part of its determination for the 2014-19 regulatory period, the AER decided not to apply the EBSS to Essential Energy's operating expenditure. Consequently, we have not forecast any EBSS revenue increments or decrements for the 2019-24 regulatory period.

Capital Expenditure Sharing Scheme (CESS)

As part of its determination for the 2014-19 regulatory period, the AER applied the CESS to Essential Energy's capital expenditure for the first time, beginning in 2015-16.

We have calculated our CESS revenue increment in accordance with the AER's expenditure incentives guideline and the associated template, and applied our forecast rate of return to the associated discounting formula.

CESS Revenue Increment

$M, Real 2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	Total 2019-24
CESS reward	12	12	12	12	12	**60**

Note: Numbers may not add up due to rounding.

Demand Management Innovation Allowance (DMIA)

The AER's DMIA allowance encourages the trial of innovative demand management projects. Essential Energy plans to undertake research to identify, develop, refine and implement lower cost solutions (both technology and non-technology based) relating to network capacity that meet the demand and energy needs of customers whilst maintaining acceptable safety, reliability, security and power quality standards of the network compared to both traditional augmentation and replacement solutions. For the current regulatory period, the AER approved an annual DMIA of $0.6 million for small-scale innovative demand management projects. We must return to customers any cumulative underspend of this allowance as well as any expenditure that is not deemed appropriate by the AER. At this stage, we are forecasting a DMIA underspend for the 2014-19 regulatory period of $1.1M and this has been included as an adjustment in the 2020-21 year.

The AER updated the DMIA guideline in December 2017. The revised mechanism applies to our 2019-24 regulatory period and will provide increased funding for important demand management project trials. The new annual allowance will be the sum of $0.2 million (Real 2016-17) plus 0.075 per cent of the annual revenue requirement for that regulatory year.

The forecast DMIA that is included in our revenue calculation is shown below.

DMIA Increment

$M, Real 2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	Total 2019-24
DMIA	1	(0)	1	1	1	**4**

Forecast over-recovery of revenue for the 2014-19 regulatory period

As part of our 2014-19 remittal proposal submitted to the AER, any revenue recovered from customers in the 2014-19 regulatory period that exceeds the $100M is to be returned to customers. We are currently forecasting an over-recovery above this amount of $22M which converts to an annual revenue adjustment of $5M in Real 2018-19 for each year of the 2019-24 regulatory period.

Current period forecast over-recovery

$M, Real 2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	Total 2019-24
Over-recovery amount	(5)	(5)	(5)	(5)	(5)	**(25)**

Proposed shared asset revenue reduction

Shared assets are regulated network assets that we use to provide both regulated and unregulated services. The AER may reduce Essential Energy's forecast annual revenue requirement in any regulatory year to reflect the forecast costs of using shared assets that are being recovered from unregulated revenues. In making this decision, the AER must have regard to its shared asset principles and guideline.

According to the shared asset guideline, the use of shared assets is material when a distributor's annual unregulated revenue from shared assets is expected to be greater than one per cent of its total smoothed revenue requirement in any year of the relevant regulatory period. [1] If the materiality threshold is met, the AER determines cost reductions based on forecast revenues from unregulated services expected to be provided by the distributor. If this materiality threshold is not met, no shared asset cost reduction applies. [2]

We have applied the AER's shared asset guideline and calculated the materiality of our expected use of shared assets to earn unregulated revenue over the 2019-24 regulatory period. The guideline states that "If the total unregulated revenue is expected to be greater than 1 per cent of the regulated revenue, we will apply a cost reduction". The table below indicates that our forecast unregulated revenue from shared assets does not exceed the 1 per cent materiality threshold of our proposed regulated revenue. It is, therefore, not necessary to apply any shared asset cost reduction to our proposed annual revenue requirement for any year in the 2019-24 regulatory period.

Materiality of Shared Asset Use

$M, Real 2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	Total 2019-24
Proposed annual revenue	999	1,014	1,028	1,043	1,058	**5,142**
Materiality threshold (1%)	10	10	10	10	11	**51**
Forecast unregulated revenue from shared assets	5	5	5	4	4	**23**

Note: Numbers may not add up due to rounding.

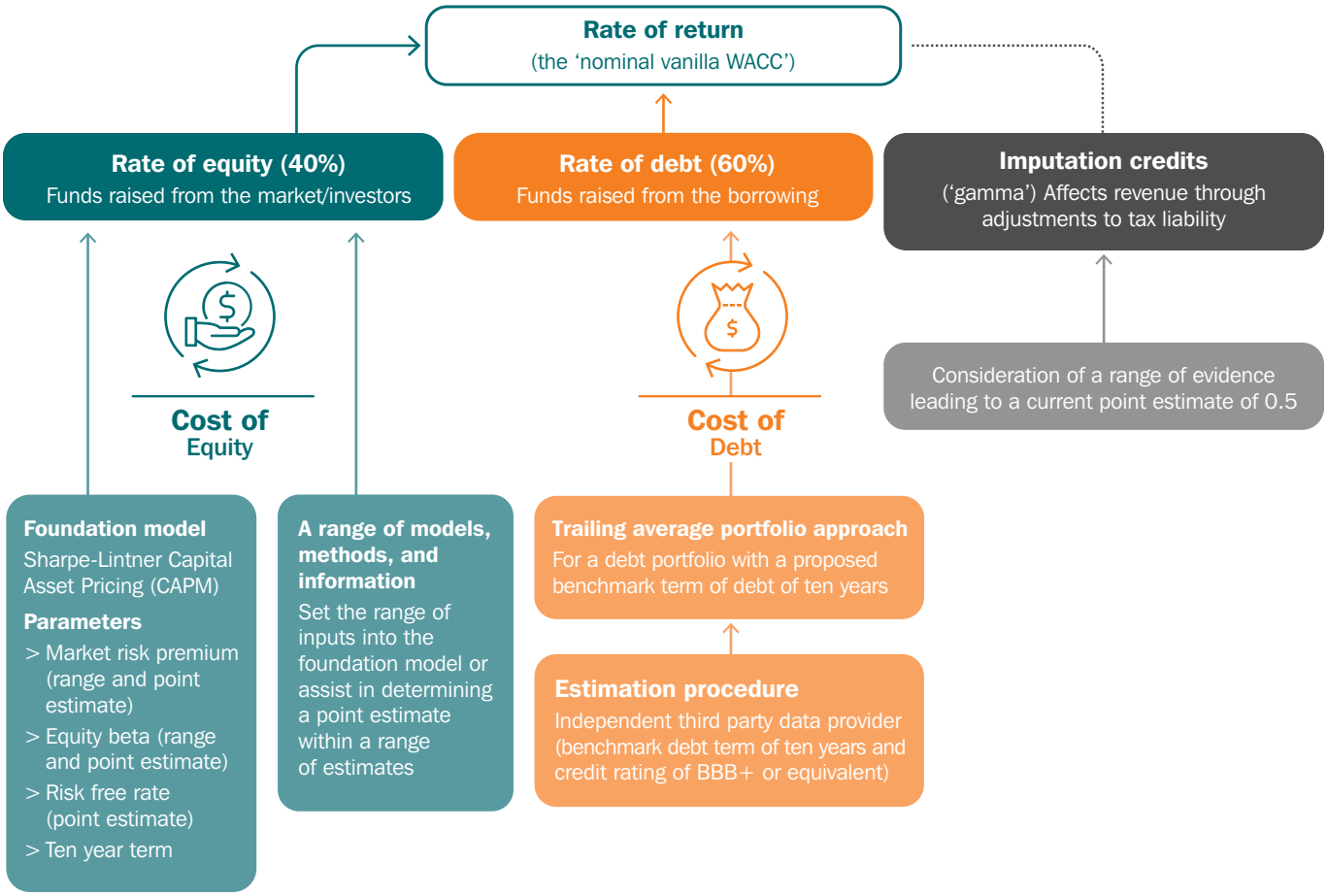
1. AER, *Better Regulation, Shared Asset Guideline,* November 2013, p.8
2. AER, *Better Regulation, Shared Asset Guideline,* November 2013, p.6

Allowed Rate of Return

Appendix B

Appendix B – Allowed Rate of Return

This diagram outlines the AER's 2013 Rate of Return framework as set out in the current Guidelines. A new 2018 Rate of Return Guideline is due to be finalised in December 2018 and is expected to apply to this determination. The timing means that we have been unable to incorporate the new 2018 Guideline into our rate of return estimates, and have instead relied on the December 2013 Guideline.



Source: AER, Essential Energy

The following parameters either align directly with the 2013 Guideline or with determinations issued by the AER since the release of the 2013 Guideline.

Benchmark parameters

We have applied the estimation parameters from the 2013 Rate of Return Guideline in this Proposal.

Benchmark parameters	Value
Gearing	60%
Credit rating	BBB+
Debt maturity term	10 years

Our rate of return estimate is a weighted average of our cost of equity and cost of debt estimates – the weighted average cost of capital (WACC).

Appendix B – Allowed Rate of Return

Cost of debt

Applying the AER's current Rate of Return Guideline, we propose an allowed cost of debt of 5.77 per cent for the first year of the 2019-24 regulatory period. This has been calculated in accordance with the AER's preferred 10-year trailing average approach, incorporating the 10-year transitional period. This rate is the result for year six of the 10-year transitional period of the trailing average calculation. It uses the market rates for 1 January 2017 to 31 October 2017 as placeholder rates for each future annual update through to the start of the 2019-24 regulatory period.

Consistent with the 2013 Guideline, our proposed cost of debt will be subject to annual updates throughout the 2019-24 regulatory period.

Debt raising costs

The process of raising debt finance incurs transaction costs that should be recognised in regulated revenue allowances over the 2019-24 regulatory period. Debt raising costs of $21M (Real 2018-19) have been included in this Proposal. We have determined these costs by using the standard benchmark methodology reflected in the AER's Post Tax Revenue Model (PTRM).

Cost of equity

We propose an indicative allowed return on equity of 7.2 per cent, which has been calculated using the AER's preferred methodology and the following formula:

Cost of equity = Risk-free rate + (equity beta x market risk premium)

Risk-free rate – based on current market prices for 10-year Australian Government bonds. We have used a placeholder rate of 2.68 per cent that will be updated closer to the start of the 2019-24 regulatory period.

Equity beta – measures the sensitivity of a business's return compared to movements in overall market returns. We have used a beta of 0.7, which has been used by the AER in all its electricity and gas determinations since the current Rate of Return Guideline was released in December 2013.

Market risk premium – expected return above the risk-free rate for an investor to invest in a well-diversified portfolio of risky assets. The AER has assumed a rate of 6.50 per cent for all its electricity and gas network determinations since December 2013.

Cost of equity parameters	Value
Nominal risk-free rate	2.68%
Equity beta	0.7
Market risk premium	6.50%
Cost of equity	7.20%[1]

Value of imputation credits

Under the NER, the value of imputation credits (gamma) should be taken into account when modelling revenues for a regulated business like Essential Energy. This reduces the projected revenues so they more closely reflect the impact of the corporate income tax expected to be retained by the government. The higher the value of imputation credits (ranging from 0-1, or 0 per cent to 100 per cent) in a determination, the lower the revenues the business can expect to receive in compensation for paying corporate income tax.

1. Total return on equity is rounded to 1 decimal place (from 7.23 per cent to 7.2 percent) as per the current Rate of Return Guideline.

The AER's Rate of Return Guideline (December 2013) specified the value of gamma as 0.5 and the AER subsequently reviewed and updated this value to 0.4. This value has been applied in all subsequent electricity and gas determinations so we have also applied it for this Regulatory Proposal.

Value of inflation

We have used the estimated average annual rate of expected inflation over a 10-year period to align with the term of the rate of return.

Essential Energy accepts the use of the AER's current approach to estimating expected inflation for this Proposal, which is based on the geometric average of 10 annual expected inflation rates. This calculation uses the latest Reserve Bank of Australia (RBA) forecasts of inflation for the first two years of the 2019-24 regulatory period and the mid-point of the RBA's inflation target band for the remaining eight annual rates.

The current placeholder estimate for this Proposal is 2.50 per cent per annum, which will be updated closer to the beginning of the 2019-24 regulatory period.

Summary

We used several key parameter values to calculate our WACC estimate for the first year of the 2019-24 regulatory period. These will be updated as prescribed, following the finalisation of the AER's 2018 binding Rate of Return Guideline in December 2018.

Rate of return parameters	Value
Cost of equity (nominal post-tax)	7.2%
Cost of debt (nominal pre-tax)	5.77% [1]
Gearing	60%
Gamma	0.4
Inflation	2.50%
Nominal vanilla WACC	6.34%

1. This return on debt value will be updated annually over the 2019-24 regulatory period.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