



Affordable, Safe and Reliable Electricity

AN OVERVIEW OF OUR PLANS
1 JULY 2019 TO 30 JUNE 2024



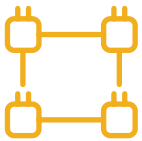


Endeavour Energy connects 2.4 million people across Sydney's Greater West, the Blue Mountains, Southern Highlands, the Illawarra and South Coast to the safe and reliable electricity they need to live, work and play.

Endeavour Energy is 50.4% owned by an Australian-led consortium of long-term investors in the private sector operating the network under a 99-year lease and the remaining balance is held by the State of NSW. The private sector consortium comprises of funds and clients managed by Australia's Macquarie Infrastructure and Real Assets, AMP Capital on behalf of REST Industry Super, Canada's British Columbia Investment Management Corporation and Qatar Investment Authority.

We must maintain a vast network of electricity infrastructure for our diverse customer base*

164 zone substations



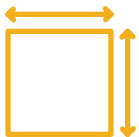
10 growth areas



433,100 power poles



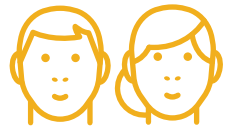
24,980km² area



59,300km of power lines



2.4m people



Almost **1m** customers



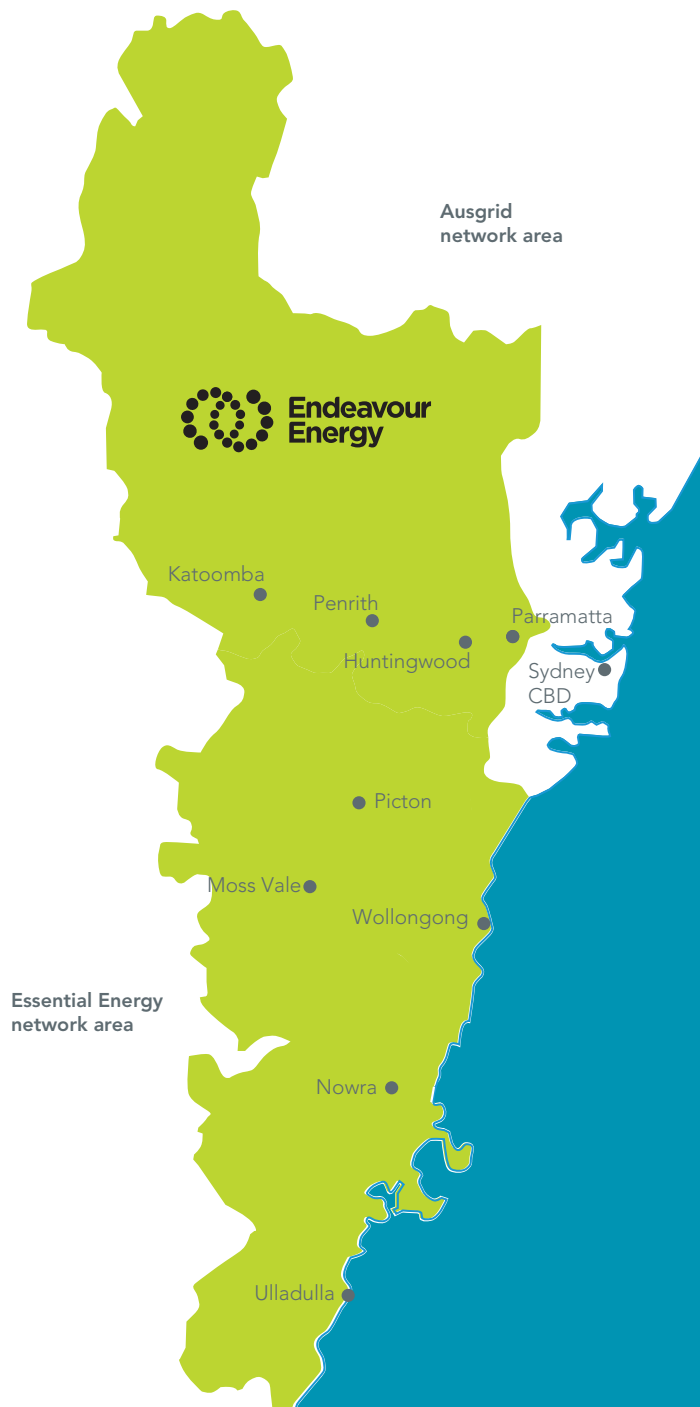
120,000 customers with renewable generation



20,000 life support customers



85% of our area is bushfire prone



*Figures as of 30 June 2017



Your power, your say

Powering the third largest economy in Australia and some of Australia's fastest growing communities means we are constantly planning for the future so electricity is available when and where it is needed to support new homes, new jobs, essential services and new technologies.

Every five years, we work with customers and stakeholders to prepare investment plans to build, operate and maintain a vast electricity network. That plan is reviewed by the Australian Energy Regulator (AER) which considers feedback, and then decides the final revenue we can recover from customers to fund our operations. These costs make up about 30% of the average residential electricity bill, so it's vitally important that every dollar we spend aligns with customers' priorities.

Customers and stakeholders have identified their top priorities for us over the next five years and asked us to concentrate on:

- providing an affordable, safe and reliable electricity supply
- containing investment to support new customer connections and economic growth
- enabling customers' future energy choices.

Now we want to share these plans with all our customers so as many people as possible can contribute to our plans before they are finalised.

What we've heard so far is that affordability is the number one concern for our customers, but they don't want us to sacrifice safety, or reliability either. As a result, we've made affordability, safety, and reliability our key deliverables for all customers.

Over the past few years, we've worked hard to bring our costs down. These efforts mean our annual network charge is now \$75 less than it was in FY13, even though wholesale and retail costs have been rising. Endeavour Energy's network charges have remained the lowest in NSW, which means people across Greater Western Sydney, the Illawarra and the other areas we supply are paying less for network services than those in other parts of NSW.

We also know there is more to be done.

Under our plans, for the period 2019-24 network charges will decrease by 1% each year in today's dollars.

We will continue to put downward pressure on electricity bills whilst servicing population growth and facilitating new ways for our customers to control the electricity they use and what they pay. It means improving how we work; long-term planning; investing for the future while reducing our overheads; and developing new ways for our customers to reduce electricity bills using new technologies like smart meters and battery storage.

It also means understanding our future is linked to meeting the needs of our customers and enabling their energy choices. That's why we're committed to placing customers at the heart of all decision making.

I encourage you to find out more about what's planned and what it means for customers' electricity bills on the pages that follow. Then I invite you to have your say on how you want us to meet your electricity needs and operate in the future.

Tony Narvaez
Chief Executive Officer



Our plan

Over the next five years we will continue to put downward pressure on electricity bills whilst maintaining a safe and reliable network, servicing population growth, and facilitating customer choice and control over the electricity they use and the technology they choose. We plan to do this in four key ways:

By containing investment

This means focusing only on the investment required to ensure safe and reliable electricity for our rapidly growing region. Where necessary, we will replace ageing equipment built in the 1960-70s with new, more efficient technology and only build the infrastructure needed to support an expected 105,000 new residents, businesses and essential services when it is absolutely needed.

By becoming more efficient

We will offset the costs of this necessary investment as far as possible so we can pass savings onto customers. We will adopt the AER's 2013 Rate of Return Guideline which will lower prices. We will delay expensive capital investment with demand management programs, reduce overheads, develop a flexible workforce and an agile, innovative, business culture. We will continue efficiency programs which have seen staff numbers decrease by 994 since 2012.

By giving customers choice and control

We will develop new ways for customers to control their own electricity costs by preparing the network to connect solar, batteries, microgrids and smart meters, and offer customers a greater variety of tariff options. This will provide new ways for households to save money and help customers to reduce bills by shifting electricity to off-peak periods.

By planning for the future

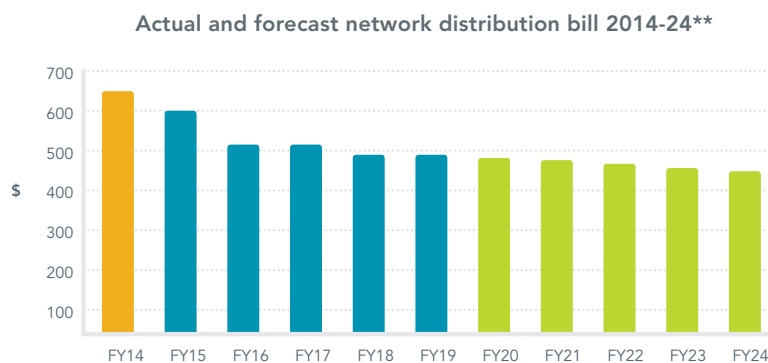
We will maintain our long-term planning approach by developing contingency plans for future developments such as the Western Sydney Airport. That means customers won't pay for new infrastructure until it's needed.

What it means for you

Under our proposal our customers will benefit from the following:

Customers will benefit from a **↓1%** decrease in network charges each year, in today's dollars, for 2019-24*.

99.9% average reliability will be maintained without compromising safety.



105,000 connections will become available for new homes and businesses in 2019-24.

16 new substations will be built to power new growth areas similar in size to Wollongong and Canberra.

** for an average residential customer consuming 5,000kWh per annum

*See page 26 for detailed explanation.

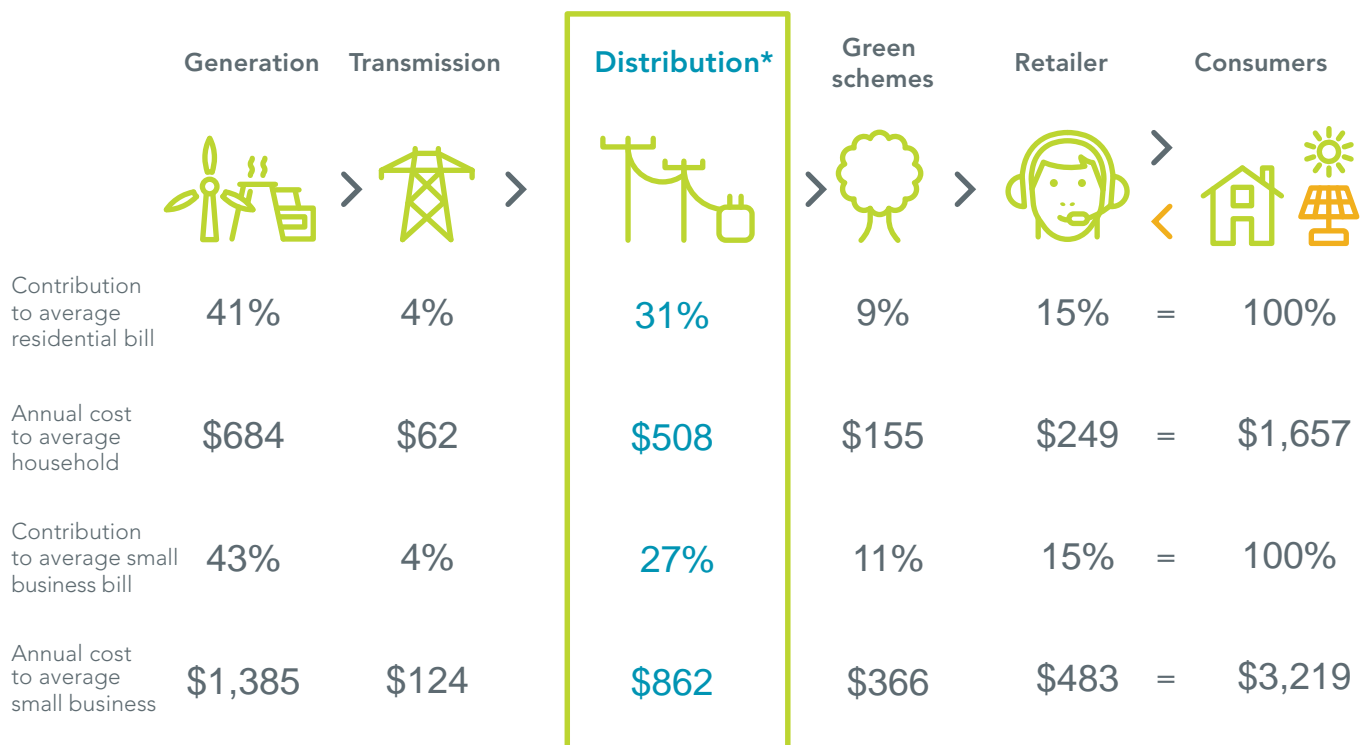
About Endeavour Energy

We plan, build, operate and maintain distribution assets that power some of the fastest growing regional economies in Australia. The timely and efficient provision of these services creates and sustains jobs, fosters prosperous economies and keeps communities safe.

Our role is to deliver electricity affordably, safely and reliably to our existing and new customers.

Our network is primarily used to transport electricity from the high voltage NSW transmission network (managed by TransGrid) directly to the homes and businesses of our customers in a form they can use. Increasing numbers of solar panels mean our network is also used to transport energy from these 'distributed' energy sources back into our network and to other customers. This means our industry is transforming and our role is changing as we enable customers to exercise choice and control over technology and usage.

The components of the electricity network and how they contribute to customers' bills:



Bill totals have been rounded.

*Endeavour Energy's role

Because safety and reliability of electricity is so important, we also:

- inspect and safely maintain poles and wires and substation equipment
- build new substations, and poles and wires to accommodate demand in growing suburbs
- respond to emergencies like storms which bring down power lines and poles
- trim trees to maintain safety clearances, manage bushfire risk and prevent blackouts caused by falling trees
- research, trial, and install new technology (e.g. batteries) to delay expensive infrastructure investment wherever possible
- install and maintain street lights
- undertake various 'user pays' services like meter testing and design certification.

Our customers

Almost 1 million customers are served by Endeavour Energy's network. Most of our customers are households and small to medium sized businesses located within urban and surrounding rural areas. We also serve large urban centres, medical precincts, and manufacturing and industrial customers who have specific needs for an affordable, safe and reliable electricity supply.

We power one of the fastest growing and most dynamic regions of Australia.

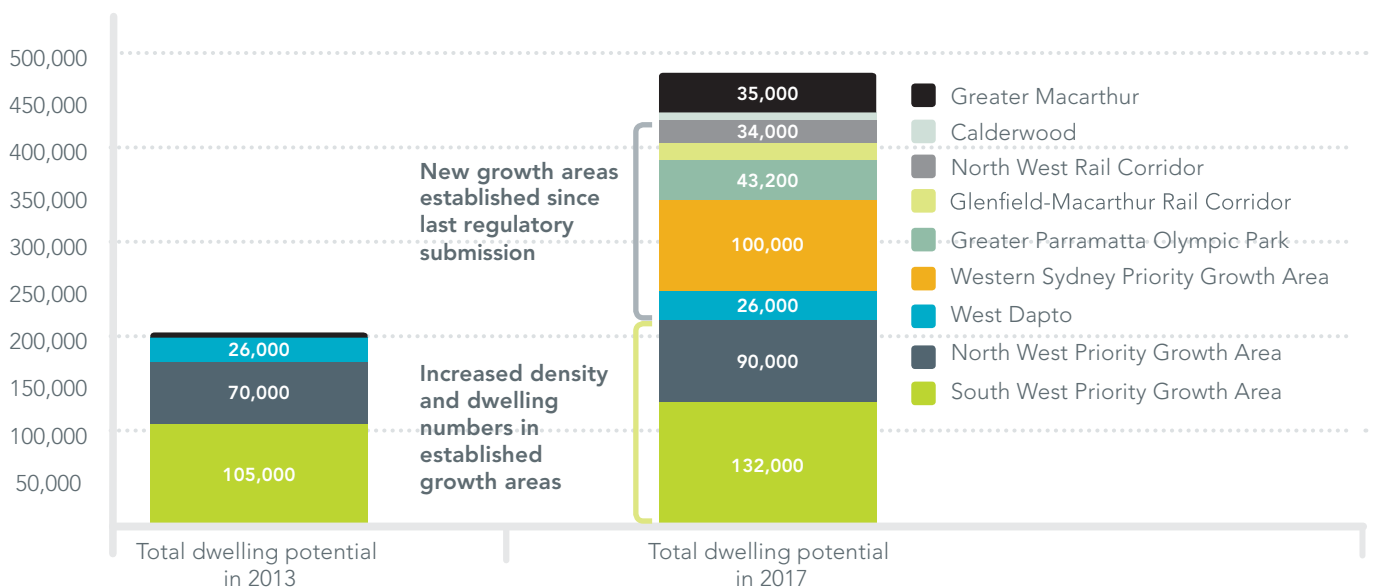
Our network includes Sydney's North West and South West Priority Growth Areas, which are planned as new release areas to become home to communities similar in size to Wollongong and Canberra. The population of Western Sydney is expected to increase by 900,000 over the next 20 years. That means that each year over the next decade, more than 20,000 new customers will require new electricity services.

In addition to population growth, our customers have the third highest energy and demand density in the National Electricity Market (NEM), largely due to a combination of higher summer temperatures (around 10 degrees higher on average than the Sydney CBD) and energy-intense economic activity.

As the electricity industry undergoes rapid transformation, many customers are changing the way they interact with the network and we are seeing more small scale renewable forms of generation connecting to the network. As of June 2017, over 120,000, or about 12% of our customers had connected their own small scale renewable generation (mostly solar panels) to our network. The NSW Government's *A Plan for Growing Sydney* includes a vision for Western Sydney that will secure the region's productivity into the future – so that Western Sydney can meet its full potential, build strong centres and be an even greater place to live. This includes:

- growing Greater Parramatta as Sydney's second Central Business District
- building new housing and urban renewal around strategic centres in Western Sydney
- building on the investment and building opportunities provided by the Western Sydney Employment Area
- building on the development of Sydney's second airport at Badgerys Creek, establishing a 'Third City' for the Sydney metropolitan area.

Total dwelling potential of growth areas within the Endeavour Energy network

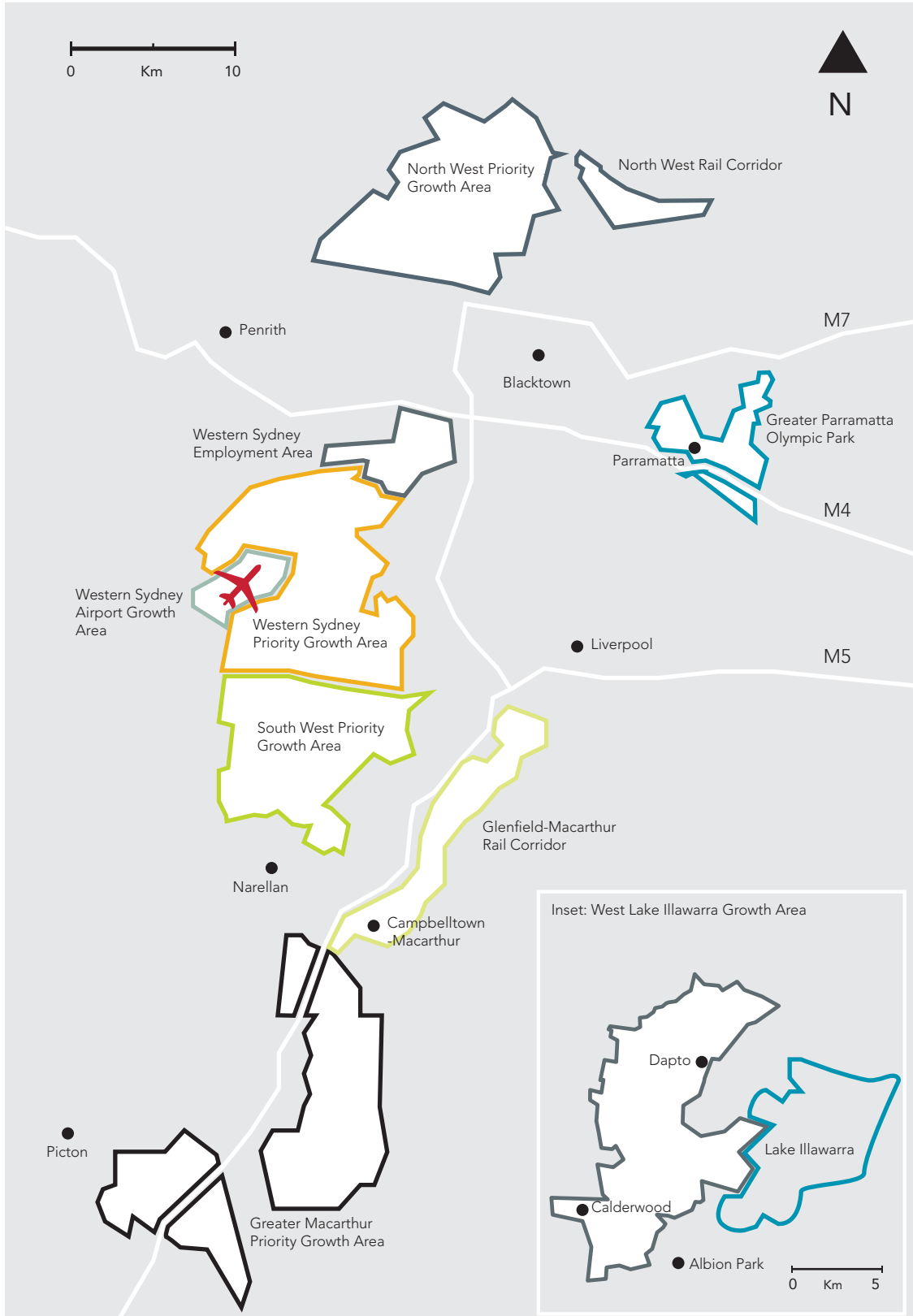


Data source: NSW Planning and Environment

Growth

Growth in customer numbers across our network is a key driver of our investment plans.

Location of growth areas within the Endeavour Energy network



Source: NSW Planning and Environment



How we have consulted with you

We have engaged extensively with a diverse group of customers and stakeholders using a variety of communication channels and engagement practices in developing our expenditure and pricing plans.

Endeavour Energy has a long tradition of engaging with customers and stakeholders through day-to-day activities such as its Customer Consultative Committee (now operating for over 20 years), regular meetings with councils and Accredited Service Providers, and correspondence on many levels with our customers regarding network operations and maintenance.

Our goal over the past two years has been to improve our engagement approach to better reflect customers' long term interests. We spent more time consulting, and less time informing. We listened harder and adjusted our plans based on what we heard.

We agreed on a principle of 'no surprises' and focused conversations on tough issues in our expenditure proposals, explaining risks and trade-offs and teasing out realistic alternatives where possible. This helped to build genuine respect and understanding, and narrow the gap where opinions differed.

We also sought expert advice, broadened the involvement of our top team and increased resources.

Finally, we tried some new engagement processes that had not been used by network businesses before. We responded to feedback and ran a series of 'deep dive workshops' which we designed to examine our expenditure plans in great detail with our regulator, shareholder, customer representatives, retailers, state and local government representatives, developer associations and Endeavour Energy's senior management team.



Establishment phase: January - June 2016

- We reviewed our engagement approach from our previous regulatory proposal against international utilities and decided to use more informal approaches to increase participation.
- Mapped the stakeholders and consumer groups we needed to engage with.
- Began a strategic review of our Customer Consultative Committee.



Research phase: June - December 2016

- Partnered with Brisbane City Council and QLD University of Technology to better understand consumer behaviour around tariff reform.
- Reviewed Australian research to understand how consumers and stakeholders wish to be engaged in the electricity sector (in partnership with Ausgrid and Essential Energy).
- Increased executive involvement to give consumers direct access to decision makers.



How we have consulted with you

Engagement phase 1: January - December 2017

Consumers:

- Met with consumer representatives to better understand their key issues.
- Held 10 focus groups to explore residential and business priorities.
- Held deliberative planning forums and an 'online community' for residential and business customers.

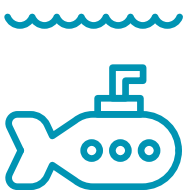
Informed stakeholders:

- Convened a forum to explore changes to the Framework and Approach for the 2019-24 regulatory determination (followed by feedback on a draft paper).
- Discussed key issues during peak consumer group and retailer roundtables.
- Held three Customer Consultative Committee meetings and a growth centre site visit.
- Briefed and sought feedback from Regional Organisations of Councils and councils on street lighting and tariffs.
- Sought feedback on a 'Directions Paper' which set out our high level plans and invited feedback.
- Met one on one with large retailers to discuss their key priorities, with an emphasis on tariff reform.
- Commissioned an internal audit of engagement against the AER Consumer Engagement Guideline at our Board's request.
- Conducted regular health checks on our approach to engagement to make sure we were on the right track, talked to our regulator's consumer representatives about our approach to engagement and surveyed stakeholders formally.



Engagement phase 2: Deep dive phase January - June 2018

- Sought a three month extension from the AER to undertake more intense engagement on the details of proposed capital and operating expenditure with informed stakeholders as we did not feel we had sufficient time to demonstrate customer support for our plans, due to the large effort needed to transition to private ownership in July 2017.
- Pioneered a new engagement process using four deep dive workshops with the AER, the AER's Consumer Challenge Panel, state and local government, retailers and consumer advocates, to test that our plans were based on sound evidence and justified by customer feedback.
- Held a formal feedback workshop to let people know how we responded to their preferences and explain in detail the reasons where we couldn't.
- Continued regular one on one meetings with our regulator, retailers, councils and customer groups to listen and respond to feedback.
- Submitted our regulatory proposal on 30 April 2018, with a clear expectation we will continue to hold conversations and seek feedback.



Putting your views into action

The views of our customers and stakeholders have significantly shaped the development of this revenue proposal for 2019-24. Their insights have been key in identifying how we improve, maintain and operate our network in the most efficient way. We also applied our knowledge of the network and our licence and regulatory obligations to frame our responses.

You said

We will

Affordability



Affordability is the number one concern for many of our customers, but not at the sacrifice of safety or reliability. Electricity is valued because it provides security and lifestyle benefits to residential customers and communities, and because it connects new homes and underpins prosperous businesses and regions. There's a clear expectation that Endeavour Energy's plans should reflect measures to continue downward pressure on our part of electricity bills, containing the level of capital investment without compromising safety.

- Deliver a decrease in network charges of 1% each year, in today's dollars, for the period 2019-24. This figure includes our proposed remittal.*
- Return \$240m (FY19 dollars) to our customers through these reduced charges during the next regulatory period.
- Deliver these decreases while implementing pricing reforms that will provide increased opportunities for customers to control their bill.
- Lock in and maintain our real price decreases throughout the next regulatory period building on our demonstrated history of responding to incentive regulation.
- Continue to reduce underlying costs which will continue to reduce prices for customers.
- Deliver real price decreases for our public lighting customers.
- Encourage greater efficiency in the way our network is used by introducing an opt-out seasonal demand tariff for new customer connections.
- Offer customers who replace their old basic meter with a smart meter the opportunity to opt-in to our seasonal demand tariff to secure the savings it can offer.
- Promote programs like *SolarSaver*** and *CoolSaver*** to educate customers through tangible personal experiences about the benefits smart meters, batteries and pricing can offer.
- Facilitate the connection of distributed energy resources including solar and batteries to help consumers control their bills.

*See page 26 for detailed explanation.

**Visit endeavourenergy.com.au for more information.

Putting your views into action

You said

We will

Reliability

Customers were generally satisfied with current reliability with most customers, on average, having supply 99.9% of the time. Customers do not want bills to increase so as to fund improved reliability, nor are most willing to trade lower bills for lower reliability.

- Focus on maintaining reliability across the existing network and limiting reliability improvements to the poorest performing areas, consistent with licence conditions.
- Trial new technology like battery storage so that reliability is not compromised as we connect and utilise new generation and storage technologies in accordance with the *CSIRO/ENA Electricity Network Transformation Roadmap**. This industry roadmap is designed to prepare electricity distributors for a dramatically different future and save customers money.

*Visit ena.com.au for more information

Safety and Security

Customers are concerned about the impact of extreme weather events on the network.

Customers and regulators expect us to maintain high standards of workplace and community safety. We also have an obligation to protect customers from cyber security risks and this requires new technology investment.

- Ensure asset management strategies are robust and efficient, with capital and operating expenditure designed to deliver a safe, reliable and secure network.
- Promote demand management technologies to delay and offset capital investment. We will continue to implement technology trials (like our battery storage initiatives in West Dapto and Sydney's North West) and use lessons from these initiatives to guide our future decisions.



Putting your views into action

You said

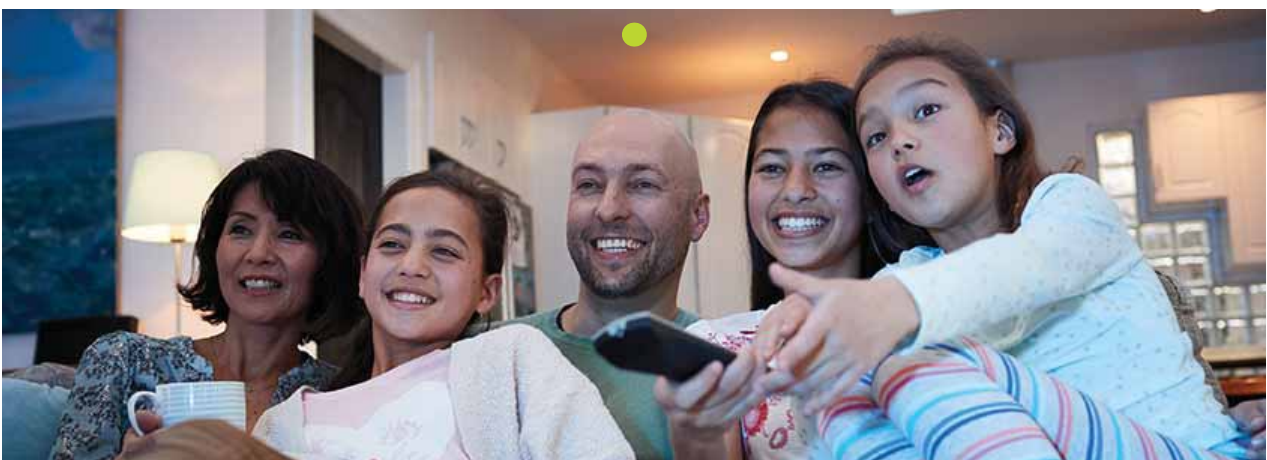
Fair pricing



Customers understand they can benefit from new user pays ways of charging for electricity. They generally support transitioning to more efficient, cost reflective pricing with an opt-out option to the existing flat tariff as it gives them choice and control. Customer groups had concerns that charging windows were too wide and included shoulder periods, which could dilute pricing signals. Retailers wanted simplicity and uniformity in order to be able to develop a marketable product and pass through our tariffs to customers.

We will

- Introduce a seasonal demand tariff.
- Replace seasonal Time Of Use (TOU) energy charging with a flat energy rate to simplify our proposed seasonal demand tariff structure.
- Give customers greater ability to respond to price signals by shortening our peak demand window from 1-8pm to 4-8pm on weekdays, excluding public holidays.
- Assign all new customers and existing customers who upgrade their network connection to three-phase or bi-directional flow, to the cost-reflective tariff with the option to opt out to the flat energy tariff.
- Make the transition as easy as possible for customers, with a ten-year transition for the opt-out seasonal demand tariff and introduction of a voluntary seasonal demand tariff with no transition period.
- Work with retailers to help educate customers on tariff choices, and with the industry as a whole to facilitate uniformity of tariff design in response to retailers' feedback.



Putting your views into action

You said

We will

Growth

Business groups, councils and developers want timely and affordable construction of new networks to facilitate housing, jobs and growth and have clearly advocated this as a priority.

Customer advocates want a fairer capital contributions policy that does not burden existing customers.

- Ensure demand, energy and customer growth forecasts are robust using the latest available information, independently verified methods and expert economic advice.
- Make better use of demand management programs to offset capital expenditure required for each project.
- Use existing network capacity (where feasible) or temporary and mobile substations to stage new infrastructure builds.
- Coordinate growth investments with asset renewal projects to achieve scope efficiencies.
- Continue to minimise the costs to all customers for new connections.
- Commit to supporting a 'beneficiary pays' framework for capital contributions.
- Commit to developing an industry working group to continue the conversation about capital contributions.



Kellyville approximately 15 years ago.



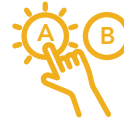
Image of the future Kellyville Station Precinct Town Centre, part of the Endeavour Energy network (courtesy: NSW Planning and Environment).

Putting your views into action

You said

We will

Transformation, choice and control



Customers are keen to know more about smart meters, solar and batteries as a means to reduce and/or manage their consumption and their bills. They want our network to be ready to meet their future energy needs.

Local councils have shown strong support for investment in new, greener technology, like extending battery storage trials to include council and commercial premises, and want the grid prepared for electric vehicles.

Stakeholders expect Endeavour Energy to be innovative and trial new technologies, largely to keep downward pressure on capital expenditure, and to prepare the grid for greater customer choice and to improve sustainability.

- Prudently invest in new technologies to improve automation, asset information, communication and monitoring systems. This will increase our capacity to host distributed energy resources, including electric vehicles, and utilise demand side responses to manage network demand.
- Align our direction with the *CSIRO/ENA Electricity Networks Transformation Roadmap* to provide more choice and control for customers and reduce the need for network investment in the long term.
- Partner with local councils on technology trials and initiatives to reduce urban heat.
- Prepare the network so customers can connect and use new technologies to offset their own usage and feed excess back into the network for the benefit of other Endeavour Energy customers.



Putting your views into action

You said

We will

Vulnerable customers



Vulnerable customers want us to keep network costs as low as possible. Assisting the vulnerable is seen as the responsibility of the whole energy sector, particularly retailers. Customers have told us we should focus on assisting life support customers, as they depend on reliable power for life-sustaining medical equipment.

Customer advocates encouraged us to take a broader view of vulnerability.

- Continue our business efficiency programs to reduce costs, which translate to savings for all customers.
- Propose network prices that help keep bills predictable.
- Minimise the risk of outages for life support customers through improved technology and information.

Vegetation management



Customers generally want us to maintain the status quo with vegetation management, with safety to take priority over appearance, although councils would like to see more sensitive tree trimming in the interests of amenity and urban heat.

- Maintain our current approach on vegetation management and bushfire prevention using laser scanning technology and aerial patrols to identify trouble spots where trees may impact reliability and act on these areas as a priority.
- Partner with councils to jointly promote planting of appropriate species under power lines and the relocation of assets, at their cost.



Putting your views into action

You said

Street lighting



Local councils strongly support the roll out of LED street lights and would like to see earlier details of pricing, replacements, repairs and explore future technologies to assist in their decision making. Endeavour Energy should provide a clear plan for LED replacement in its proposal.

We will

- Propose an overall real reduction in public lighting charges in the order of 8% followed by annual CPI increases until the end of the period. This reflects the flow through of operating cost reductions and lower rates of return in the current market conditions.
- Propose to introduce a pricing differential between LED and non-LED technology of 15% to reflect the expected maintenance savings from the increased density of LED lighting. We expect that the network pricing benefits and energy cost savings will see all councils increase their take-up of LED lighting in their area.
- Deepen engagement with councils on long term planning, street lighting technologies and the future of the grid.



Education and engagement



Increased education and consultation are seen as important in building trust and addressing issues such as bill impacts, reducing peak demand, consumer empowerment and ensuring that the roll out of assets is timely and meets demand. The AER is seeking a frank, respectful and open conversations on customer benefits, risks and trade-offs.

- Implement a 'no surprises' approach to our expanded engagement program with all stakeholders.
- Work more closely with retailers on customer education to increase their understanding of pricing and managing consumption.
- Strengthen our relationship with Regional Organisations of Councils to assist them in their various local government initiatives like reducing urban heat, street lighting and vegetation management.
- Adopt a long-term approach to engagement and embed effective processes in our day-to-day operations in order to keep customers' interests at the centre of our decision making.

Our plans in detail

The section summarises our proposed expenditure plans over the next five years and explains changes from the previous five year period.

Over the next five years, our total revenue proposal is \$3.9 billion compared to \$4.1 billion over the current five years. This means that network charges will decrease by 1% each year, in today's dollars.

Our revenue is made up of building blocks, or different types of costs that we need to recover through network charges. Capital expenditure, operating expenditure and our rate of return (or borrowing costs) have the greatest impact on customers' network charges. We look at these three building blocks below.

Capital expenditure

Focusing only on the investments required to ensure safe and reliable electricity for our rapidly growing region.

We are proposing capital expenditure for the 2019-24 period of \$2.16 billion (real, 2018-19), an average of \$432m per year.

This forecast is about 30% higher than our allowance for the 2014-19 period to enable the necessary investment for growth across the region, replace ageing infrastructure built in the 1960-70s, and invest in technology needed to transform the business and improve customer service. This forecast remains 25% less than the actual expenditure between 2009-14.

\$m real FY19	2009 to 2014 Actual	2014 to 2019 Actual / Forecast	2019 to 2024 Proposal
New connections	85	125	309
Growth and augmentation	1,190	256	417
Replacement	814	617	800
Reliability	60	19	20
Other network	69	49	41
Overheads	540	363	400
Total System capital	2,758	1,429	1,998
Information Technology	94	121	91
Vehicles	71	18	22
Other – including building, plant and equipment expenditure	110	51	57
Total Other	275	190	170
Total Capital	3,032	1,619	2,158

Totals may not add up exactly due to rounding.
Does not include equity raising costs.

Our plans in detail

There are four main types of capital expenditure planned for 2019-24.



New connections: \$309m
An increase of \$184m on 2014-19 actual of \$125m.

When customers seek approval to connect to our network, augmentation or extension work may be required to accommodate their connection. This falls into one of two categories:

A) Capital contributions: for dedicated network assets, like the service line connecting a house to our network, a customer is required to fund these at their own cost and then 'gift' them to us to maintain and operate. These contributions are not included in our forecast capital expenditure.

B) Connections capital expenditure: large residential developments and new commercial and industrial sites can require augmentation and extension of the shared network, like a substation or feeder, which services our broader customer base. Modifications to the shared network are funded by us and therefore our customers.

Our total cost (i.e. capital contributions plus connections capital expenditure) per customer connected is amongst the lowest in the NEM. Our cost per customer is improving over the 2019-24 period as we become more efficient. The increase in our connection capital expenditure is driven by the increasing number of new customers and a change in the mix between connection capital expenditure and capital contributions.

We received feedback from developers that we were requiring connecting customers to contribute a greater amount to shared assets compared to other networks in Australia. We reviewed this and found that our practices had unintendedly moved from 'beneficiary' pays to 'causer' pays due to the larger scale and pace of development in our network area. We have corrected this to ensure that our approach is fairer – with connecting customers funding the assets dedicated to them and all customers funding assets that provide a broader, shared benefit to the network.

This change reduces prices in the 2019-24 period for existing customers as the reduction to capital contributions (which are taxed at 30%) has a larger revenue impact than the increase to connection capital expenditure. In the longer-term the connection capital expenditure will increase costs to existing customers but the costs to connecting customers will be lower. We consider this is appropriate as the vast majority of our existing customers were connected on this basis, or even more favourable terms. We held robust discussions with customer advocates and our regulator and these conversations continue as we seek to reconcile our views on how to fairly and efficiently fund these investments.



New homes in Doonside, one of the growing urban areas in Endeavour Energy's network.

Our plans in detail



Growth and augmentation: \$417m
an increase of \$161m on 2014-19 actual of \$256m

The need to augment or strengthen our network is driven by demand growth, from either new customers connecting, or existing customers using more energy at peak times.

Growth and augmentation over the next five years is principally driven by new greenfield developments in Western Sydney. To support sufficient supply for two new cities the size of Canberra or Wollongong we need to build 16 new substations, double the number compared to the last five years. We'll continue to use our 'as needs' approach for this investment to minimise costs for our customers. Increased electricity connections will also help to lower electricity costs for all customers.

Despite the growth of solar and demand management initiatives which encourage large energy users to reduce their energy use at peak times, we need to also augment the network to ensure there is sufficient capacity to meet peak demand across the network.

This typically occurs on the hottest days. On 30 January 2017, we recorded record demand on our network of 4,107MW after several consecutive days of 40 degrees Celsius temperatures in Western Sydney. This was 105MW above the previous record set in 2011, and 252MW greater than the last peak recorded in 2015-16.

Over the next five years, we're proposing the following projects to ensure the network is sufficiently resilient and is able to connect forecast demand growth.

Location	Forecast cost (\$m)	Description	New dwellings	New industrial land	New town centres
North West Priority Growth Area					
Box Hill Zone Substation	34.8	New zone substation for the North West Priority Growth Area (previously deferred).	17,000	122 Ha*	2
Marsden Park Zone Substation	8.9	Install the second transformer within the Marsden Park Zone Substation to allow connections to continue in new residential precincts in the Marsden Park area.	13,000	Residential	1
Riverstone East Zone Substation	20.6	New zone substation to enable further development of the Riverstone and Vineyard Precincts.	5,800	100 Ha	1
South Marsden Park Zone Substation Stage 2	9.6	The second stage of South Marsden Park is required to supply the growing load of Sydney Business Park and surrounding developments.	2,000	317 Ha	

*1 Ha = 10,000 sqm
 Figures are approximate



Location	Forecast cost (\$m)	Description	New dwellings	New industrial land	New town centres
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Western Sydney Employment Area and Priority Growth Area / Western Sydney Airport

Oakdale Industrial Zone Substation	27.3	New zone substation to enable further development of the Western Sydney Employment Lands.	Industrial	440 Ha	None
Sydney Science Park Zone Substation	40.5	New zone substation to supply a new education and research precinct with integrated residential developments.	3,000	300 Ha	1
Western Sydney Employment Lands Zone Substation	23.5	An initial zone substation is required to service the developments surrounding the Western Sydney Airport.	Industrial	300 Ha	None

South West Priority Growth Area

Catherine Park Zone Substation	9.6	New zone substation for the South West Priority Growth Area (previously deferred).	12,500	Residential	1
Edmondson Park Zone Substation	1.9	Zone substation has been established to supply the Edmondson Park release area. A second sub-transmission feeder is the major portion of remaining works.	10,600	Residential	1
Maryland Zone Substation	20.8	New zone substation for the South Creek West release area.	22,000	Residential	1
North Leppington Zone Substation	2.9	Supply Leppington Town Centre and surrounding developments within the North Leppington precinct.	10,000	220 Ha	1
South Leppington South Zone Substation Stage 2	14.1	Service developments occurring in parallel within the South Leppington and East Leppington Precincts.	14,000	Residential	1

Greater Macarthur Priority Growth Area

Menangle Park Zone Substation	33.5	New zone substation for new residential area.	4,000	28 Ha	1
Mt Gilead Zone Substation	19.3	New zone substation for the Greater Macarthur South release area.	6,000	Residential	1
Nepean to Douglas Park feeder	6.1	Augment feeder to improve security supply and address network constraints on the existing 66kV network.	35,000		
South Gilead Zone Substation	3.9	New zone substation to support South Campbelltown development.	5,000	Residential	1



Location	Forecast cost (\$m)	Description	New dwellings	New industrial land	New town centres
West Lake Illawarra Growth Area					
Calderwood Zone Substation	15.7	New zone substation for West Lake Illawarra State Significant Site.	7,000	Residential	1
West Dapto Zone Substation	12.3	New zone substation for new greenfield residential area	17,000	20 Ha	
Projects in other areas of our network					
North Bomaderry Zone Substation	18.5	New zone substation for new residential subdivisions in North Nowra, North Bomaderry and Cambewarra.	5,000	Residential	None
South Penrith Zone Substation	28.1	New zone substation to enable new developments as the existing Penrith Zone Substation which is at capacity.	2,000	Redeveloping established area	Increasing density
Termeil	7.9	New zone substation to address increased connections and network constraints in the Bawley Point area.	Established area	Established area	Established area
Westmead Zone Substation	12.8	Augmentation of existing zone substation required to meet demands of Westmead Hospital expansion and multi-unit residential developments.	Established area	Established area	Established area



**Replacement: \$800m
an increase of \$183m on 2014-19 actual of \$617m**

This investment is needed to replace or update equipment that is wearing out and may fail. It is crucial to ensuring a safe and reliable network.

We're using a risk-based approach to balance the need to meet demand over the next five years, comply with licence conditions and regulatory obligations, while not compromising on safety. By doing this, we can deliver a secure, reliable and sustainable supply of electricity to our customers at least cost.









We're building on our proven history of network management and drawing on risk management insights gleaned from our new owners' international experience; benchmarking the practices used by other utilities; and investing in new technology tools. This will help us better understand risk and make better investment decisions. By gathering more accurate and detailed information about the network, we can make better decisions about how we run it.

It's on this basis we don't believe our customers need to fund the higher investment level of \$1.1billion that the historic approach to applying the AER's replacement expenditure model has indicated.

Most importantly, we manage risk carefully as failure of a major part of our network can lead to serious injury and in the worst case, fatalities. It creates significant inconvenience to customers and often higher costs due to urgent repairs. Due to the large consequences of network failure, we aim to replace most high voltage assets before they fail and as close as possible to the end of their life.

Our plans in detail

The table below provides a breakdown of replacement costs associated with our revenue proposal.

Category	Proposed cost (\$m)	Volume
 Transformers	107	66 power transformers 550 distribution transformers and distribution substation associated works
 Underground cables	66	60km of original cable laid in 1960-70s in residential streets
 Poles	159	14,000 pole replacements and pole top structure associated works
 Services	47	60,000 service lines to homes and businesses
 Substations	170	4 substation renewals and substation associated works
 Switchgear	114	400 circuit breakers and about 1000 Air Break Switches
 Overhead conductors	89	300km of distribution steel mains and overhead conductor associated works
 Supervisory Control and Data Acquisition (SCADA), Network Control	48	400km of pilot cables needed to monitor the network 24/7

Total replacement cost \$800m



Non-network costs: \$170m for IT, property and fleet a decline from \$190m in this period

It includes \$91m of further technology investment to protect customers from new cyber security risks and replace outdated systems that have been nursed for several years and can no longer be supported.

This investment in modern technology will also improve customer service, deliver efficiencies and lift performance across the business.

Our plans in detail



**Operating expenditure: \$1,485m
a decrease of \$19m on 2014-19 actual/forecast of \$1,502m**

Offsetting the costs of necessary investment as far as possible by reducing our operating costs.

Operating costs make up about one third of the revenue our regulator allows us to collect from customers. It is largely labour costs needed to inspect and operate the network and manage vegetation around power lines, particularly in bushfire prone areas. It's also driven by network maintenance, including the need to make repairs after storms and natural disasters. It also covers other supporting costs such as customer service and back office support.

We are proposing to connect 105,000 new customers in the next period while reducing our operating expenditure by \$19m in real terms compared to the current five-year period. We have worked hard to reduce our operating expenses significantly over the current period to the point where our 2017-18 operating expenditure is \$64 million (real, 2018-19) lower than it was in 2013-14 and is now better than the benchmark amount set by the AER. These savings have been achieved through a whole of organisation focus on efficiency improvements in our corporate overheads and labour costs. Since 2012 we have safely reduced our workforce by 994 full-time employees.

This reduction will directly flow through to lower prices for customers while maintaining service quality and our ability to comply with our licence obligations such as vegetation management, back office processes and facilities maintenance. We market tested and outsourced some functions over the 2014-19 period where they could be delivered at a lower cost without compromising safety or service, and improved our efficiency through our organisation-wide transformation program called Endeavour 2020 to ensure our workforce and practices are right sized, efficient and prudent.

Customers and stakeholder groups expect us to meet or better the AER's operating expenditure target and to use the AER's preferred 'base-step-trend' model to forecast our operating expenditure requirements for 2019-24.

We have met these expectations and improved our benchmarking performance. This performance is the best in NSW, but eighth in Australia. We know this is not good enough and we intend to improve this ranking.

Our long term efficiency program means we can pass on savings to customers.

Our average operating expenditure per customer for the 2014-19 period was \$306 per annum (real, 2018-19). This compares to the \$274 per annum (real, 2018-19) we are forecasting in the 2019-24 period.

\$m; Real FY19	2009-14	2014-19	2019-24
Actual / forecast (\$m)	1,618	1,504	1,485
Average customer numbers (000's)	909	985	1,085
Average cost per customer	\$356	\$306	\$274

Tariff reform

Helping customers to reduce their electricity costs through cost reflective pricing, new technologies and demand management.

The way customers are using Endeavour Energy's network is changing dramatically in response to increasing electricity prices.

It has become more important to make sure that network charges, or tariffs, provide signals that allow customers to make informed choices about how and when they use the network based on the costs of providing the services they use.

This has the potential to result in lower costs for everyone, where network investments can be avoided due to customers responding to price signals. The range of potential savings was set out in the *CSIRO/ENA Electricity Network Transformation Roadmap*; you can visit www.energynetworks.com.au for more information.

Network charges are passed onto retailers, who in turn charge customers through their electricity bills. These bills generally do not show Endeavour Energy's network charges, which makes it difficult to send price signals to customers without the assistance of retailers.

We're required to set out the way in which we intend to structure network charges, or tariffs, to recover revenue from each of our customers through our Tariff Structure Statement (TSS). In April 2017, the AER approved our first TSS which will apply until 30 June 2019.

Key changes we made in our first TSS as a result of customer feedback

Flat energy tariffs

Transitioned to a flat energy tariff for residential customers from our declining block tariff – implemented 1 July 2017.

Shoulder charge

Remove the proposed shoulder charging windows for residential TOU customers on non-business days – implemented 1 July 2017.

Our second TSS proposal applies to the period 1 July 2019 to 30 June 2024 and builds on our first by setting out our plans to improve existing tariff structures by moving to more cost reflective tariffs.

To help frame our second TSS, we engaged early with customer advocates to design a set of tariff principles. We then simplified these to be:



Fairness

Tariffs are reflective of the consumers' network costs.



Transparency

Ensure tariffs are simple and transparent.



Empowerment

Consumers are empowered to make efficient consumption choices.



Predictability

Prices are stable and predictable over time.



Tariff reform

How we engaged on tariffs

We wanted to make a step change improvement in the way we engaged on network charges and tariff structures in this TSS by shifting our approach from ‘announce and defend’ to ‘involve and consult.’

Stakeholders asked us to broaden our engagement effort to include more regular and less formal conversations with key stakeholders and to increase the involvement of our senior executives in order to give stakeholders access to decision makers.

Stakeholders also asked us to engage early so there were no surprises. Acting on this feedback, we published a *Directions Paper* which set out our early thinking on tariffs, and undertook a structured engagement program, led by senior executives, while seeking input from peak consumer groups in shaping discussion guides and issues to cover at retail customer forums.

We also sought to better understand customers’ likely behavioural choices to three different tariff structures through a sophisticated deliberative planning program focused on price and behaviour trade-offs. You can see a short video and report on customer feedback at www.endeavourenergy.com.au/yourviews.

We held one-on-one meetings with retailers, and invited their feedback on our proposed tariff structures as outlined in our *Directions Paper*. We also provided private retailer briefings on request to overcome competitive tensions.

After hearing many different perspectives over the past two years, we brought together our regulator, state and local government representatives, peak consumer groups, environmental advocates, our Customer Consultative Committee and key retailers. We used a deep dive process to explore in detail the thinking around our proposed tariff design, areas of common support and areas yet to be resolved.

What we heard

After detailed explanation at deliberative planning forums, residential customers told us they understood the need for cost reflective pricing and supported time of use and/or demand based pricing to help us manage peak demand as it would help us delay more investment in the network.

The most vulnerable customers told us that they prefer flat tariffs because they are easy to understand and not likely to penalise vulnerable customers, like large families, who can’t adjust their usage during the peak.

Councils are already on time of use pricing but supported our proposal to amend tariffs to keep bills affordable for the people that live in their area.

What we will do as a result of feedback

We will introduce a transitional seasonal demand tariff for new and upgrading customers. Customers will maintain the ability to opt-out to a flat tariff if demand based pricing is not right for them.

If they have a smart meter, existing customers’ may voluntarily elect to be on a transitional seasonal demand tariff.

Tariff reform

What we heard

Retailers and customer advocates told us it is important that changes in tariffs should be moderately paced to give customers time to adapt their behaviour and ensure vulnerable customers are not left behind.

Regulators and stakeholders asked us to think about speeding up the transition period to cost reflective pricing, arguing that if customers don't see pricing signals, we will need to continue to invest in the network. This in turn, needs to be funded by customers which means it will take many years for customers to enjoy the benefits of tariff reform.

Environmental advocates asked us to introduce a demand tariff for customers with the right technology and understanding to manage their bill.

Retailers also wanted us to simplify our demand based tariff to make it easy for customers to understand their bill and increase the likelihood of them passing on network tariffs as price signals.

Several groups of stakeholders asked us to amend our initial peak window timing of 3pm to 8pm in order to send a sharper price signal.

Customer advocates and regulators asked us to think more creatively and work more closely with retailers to help design practical customer products and improve education on how to manage bills.

What we will do as a result of feedback

We will manage the transition to seasonal demand based pricing for customers over a 10 year period to give customers time to understand the benefits of smart meters and other new energy technologies, while offsetting capital investment through demand management programs where feasible.

We propose to introduce a voluntary seasonal demand based tariff for customers who can respond to demand price signals without the need for a transition period.

We have simplified our proposed seasonal demand tariff by removing the time of use energy component and replacing it with a flat rate energy component.

We have also removed the 5 day averaging period for the monthly demand calculation.

We will narrow our peak window to 4pm to 8pm in order to send more precise price signals to residential customers.

We will work with Energy Consumers' Australia and energy retailers to design innovative ways to package new consumer offerings to assist customers to make a smooth transition to cost reflective pricing

We will undertake more in depth customer segmentation analysis to better understand which customers will win, or lose, according to changes to tariff structures.

Tariff reform

Our proposed tariff structures

Tariff	Network access charge	Energy	Demand
Flat Tariff			N/A
Seasonal Demand Tariff	Fixed dollar per day charge	Flat cent per kWh rate	\$ per kW per month during the seasonal 4pm to 8pm peak window on weekdays, excluding public holidays

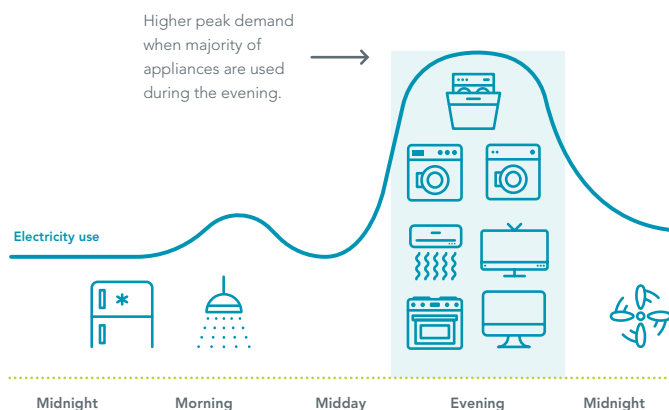
Our proposed tariff allocation

Tariff	Existing customer	New & upgrading customer
Flat Tariff	✓	Opt-in
Seasonal Demand Tariff (Transitional)	Opt-in	✓
Seasonal Demand Tariff	Opt-in	Opt-in

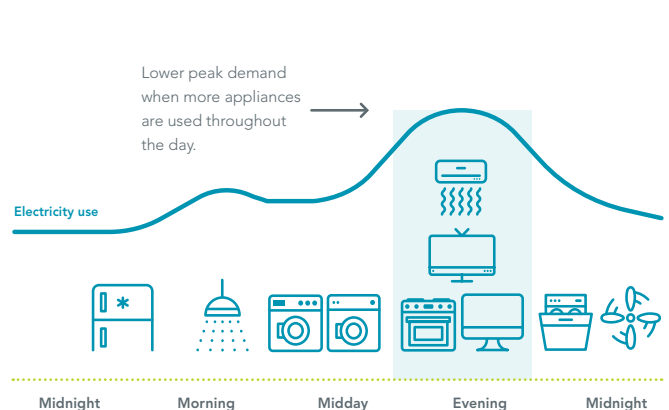
How will customers benefit from this proposal?

Our plan to introduce a seasonal demand tariff is intended to simply and accurately signal to customers when their consumption is likely to contribute to peak demand and drive increases in our future network expenditure. If this improved price signal is passed through to customers by their retailers, customers will have greater control over their individual electricity bills while lowering the future price of electricity for all customers. Where possible, customers may be motivated to change their consumption patterns to reduce their bills and also help to reduce peak demand, as shown below.

Majority of appliances used during the evening



More appliances used throughout the day





Major projects contingency planning

Developing contingency plans for future development such as the Western Sydney Airport means our customers aren't paying for new infrastructure until it's needed.

We are constantly planning for the future growth of our community and investigating ways energy can be supplied in the most efficient way. In some cases, this means identifying those projects that we expect will be required, but uncertainty around costs and timing means that they can't be properly budgeted at this stage.

These are called 'contingent projects'. Their costs won't be included in our capital expenditure proposal, nor passed through to our customers, unless a 'trigger' event occurs which requires them to proceed. Customers will be advised if a contingent project is required to proceed during the proposal period and the implications for any network costs. We have one contingent project we are tracking carefully: the Western Sydney Airport Growth Area.

Set to open in 2026, the Western Sydney Airport located in Badgerys Creek is a major, nationally significant infrastructure project designed to meet Sydney's growing population and aviation needs. The airport is forecast to generate economic activity and create thousands of employment and business opportunities.

The site of the airport is largely rural and new major electricity network infrastructure will be needed as existing surrounding network infrastructure is inadequate to support airport development. We have estimated the total project cost at around \$60 million and await further advice on whether this cost will need to be met by Endeavour Energy.

Revenue requirements

Meeting our customers' expectations on affordability by lowering our borrowing costs.

The rate of return, or cost needed to fund over \$6.5 billion of assets - is the single largest cost we face. Given the significance of this cost, we are only allowed to include a benchmark cost of funds in our prices to customers. This ensures that we apply strong discipline to how and when we raise debt and what investments we make in the network.

The clear message from many customer advocates and industry regulators and commentators over the past few years is that they expect our benchmark rate of return to be efficient in order to put downward pressure on electricity prices and apply models consistent with the approach published by the AER.

In response to this feedback, we are proposing a rate of return of 6.11%, consistent with the AER's 2013 Guideline. This proposed rate of return is 50 basis points lower than the average rate of return which applied during the 2014-19 period, and over 40 basis points lower than the initial estimate included in the *2019-24 Directions Paper*. Ensuring that our proposal reflects an efficient cost of funds that incorporates market conditions is key to keeping downwards pressure on network charges.

We're also in the process of working with the AER to settle Endeavour Energy's 2014-19 Regulatory Determination after a legal challenge in 2015. By finalising the 2014-19 revenue, we will be able to return \$240m to customers through lower future network charges in 2019-24. After we retain \$110m in revenue in order to meet the necessary costs of running the network, we will forego \$434m (real \$FY19) in potential revenue. Also, our customers will not have to pay for \$146m in operating costs incurred in 2014-19 as shareholders will absorb this expense.

Customer advocates asked us to make clear the impact of the 2014-19 regulatory proposal on proposed network charges for the period 2019-24. Endeavour Energy's plans will deliver a decrease in network charges of 1% each year, in today's dollars, for the period 2019-24. Our proposed decreases reflect our lower rate of return and our ongoing efforts to reduce operating costs. They also reflect the efficient addition of 20,000 new customers each year.

Our proposed pricing outcome for 2019-24 is maintained at a decrease of 1% when we also consider the incentive payments from the Efficiency Benefit Sharing Scheme of \$235m and our remittal proposal to return \$240m to customers. Therefore the impacts of the 2014-19 regulatory period on our 2019-24 proposal are offset.



Benefits and risks of this proposal

There is a National Electricity Rule that asks us to outline the benefits and risks of our proposal to our customers. This proposal makes note of the following possible benefits:

Affordability



For the period 2019-24 network charges will decrease by 1% each year in today's dollars. This will help keep our part of the bill stable and predictable.

Efficiency



We'll continue to drive efficiency programs over the next five years so that we can pass on the savings to our customers.

Safety



We'll continue to design and operate our network to standards that protect the safety of all workers, our customers and the communities we serve. This includes programs to minimise bushfire risk.

Growth



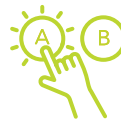
We'll help connect homes and businesses across the NSW Government's Priority Growth Areas, which in turn will foster economic growth, create prosperous communities and secure local jobs.

Reliability



We'll strive to maintain current reliability levels for customers and will only improve reliability in areas that have the worst performance.

Choice and control



We'll design tariffs that benefit customers who adjust their behaviour or invest in technology to better manage their own electricity use.

This proposal also makes note of the following possible risks:

Poorer reliability



In order to deliver reduced prices to customers we are managing additional risks which may impact reliability in unexpected ways.

Dramatic growth



If the rate of growth outstrips current forecasts it may impose additional infrastructure investments or delay existing programs.

Energy policy and NEM rules



Material changes may lead to unintended consequences, the costs of which would ultimately be borne by customers.

Retailer response to *Power of Choice* and tariff reform



In order for customers to benefit from smart meters and tariff reforms, retailers need to provide new meters in a timely manner and pass through price signals to customers.

Customer choice and control



Some customers may not be able to afford new technologies that help to manage energy bills like solar and batteries and so may be disadvantaged.



Notes





Have your say

This document provides a summary of our draft proposal for the revenue required to operate our network from 2019-24. A copy of our full proposal is available at www.endeavourenergy.com.au/RegulatoryProposal2019-24. We welcome feedback on our proposal, including this Overview Paper.

This proposal is now being considered by the AER. As part of its review, the AER will publish an issues paper, hold a public forum and invite submissions about our proposal from customers and other stakeholders. These submissions will be considered by the AER before it publishes a draft decision in September 2018. There will then be a further opportunity to comment on that draft decision and we will submit a revised proposal taking the AER's feedback into account, before a final decision is made. For further details visit www.aer.gov.au

Contact us

We want to hear from you about our plans for 2019-24. You can provide feedback by emailing our Manager, Network Regulation. His details are:

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