# Customer and Stakeholder Engagement Activities and Findings Part C

Endeavour Energy

Part C

# Contents

## Engagement Phase 1 (cont.)

# ENDEAVOUR ENERGY

## DIRECTIONS PAPER FOR CONSULTATION

1 JULY 2019 – 30 JUNE 2024



Endeavour Energy

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# WELCOME

## We're inviting you to have your say

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

The AER reviews our proposal, considers feedback from interested parties, and then decides the fair revenue we can recover from customers to operate a safe, secure and reliable network.

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

Ultimately, our proposal affects the lives of 2.4 million people living and working in Sydney's Greater West, the Blue Mountains, the Southern Highlands, the Illawarra and the South Coast regions of NSW.

Our objective is to provide a service that meets the long term interests of customers and reflects their priorities and preferences. We're in the process of preparing our plans to achieve this objective, ahead of its submission to the AER by 31 January 2018. Based on the feedback we have received to date from customers, we have developed our initial plan in accordance with the following principles:

1. Affordable, safe and reliable network
2. Investing for growth
3. Enabling customers' choices

I'd like to invite your comments by 1 September 2017 on our preliminary thinking about key elements of our plans, and welcome your interest and participation in this process, via the contacts provided.

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Chief Operating Officer


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Follow us

# PURPOSE

Endeavour Energy was one of the first Australian network businesses to submit a five year regulatory proposal under the AER's Consumer Engagement Guideline in 2014.

At the time, we looked to the experience of utilities in other parts of the world, including the United Kingdom, and committed to a set of engagement principles aligned to best practice.

While we have a long tradition of listening to our customers regarding our day to day operations, we also recognise that continuous improvement is required in further embedding and strengthening engagement across our business and in our regulatory planning process.

Recently, Endeavour Energy was partially privatised under a 99-year lease. Our new operators bring a wealth of experience on customer engagement from other jurisdictions around the world, which we also look forward to learning from and integrating into our engagement approaches going forward.

We want to build on our early experience, improve the way we communicate our plans, and act on the feedback we gather from our customers and stakeholders on our plans for the future.

Our stakeholders told us they want to hear about our regulatory plans in more detail and would like to engage in a deeper conversation with us about how our plans align to the interest and priorities of the people they represent. This document forms parts of our commitment to facilitate those conversations.

We believe this will generate better customer and business outcomes, and look forward to hearing your views.

## Where we would like your feedback...

**What are the priorities of the stakeholders that you represent?**

**What can we do to best deliver on these priorities?**

**What changes to our price tariff design should we be considering?**

**How should we be engaging with customers and stakeholders in developing our proposal?**

**What should be our role in the future energy market that will provide customers greater choice and control?**

1

# WHO WE **ARE**

We manage an electricity distribution network for 2.4 million people across Sydney's Greater West, the Blue Mountains, Southern Highlands, Illawarra and South Coast of NSW

# ABOUT US

Endeavour Energy is an electricity distribution company serving some of the largest and fastest growing regional economies in the state. Our growth centres are projected to accommodate an additional 500,000 residents over the next 30 years.

Endeavour Energy manages a $6.0 billion electricity distribution network for 952,000 customers, or 2.4 million people, in households and businesses across an area spanning 24,500 square kilometres in Sydney's Greater West, the Blue Mountains, Southern Highlands, Illawarra and South Coast of NSW.

On 14 June 2017, an Australian-led consortium of long-term investors with significant global experience in managing energy infrastructure businesses, acquired 50.4% ownership of the rights to manage Endeavour Energy's network assets under a 99-year lease.

Our customers are central to our plans. We're committed to making a serious and sincere effort to deliver better value for customers by reducing our costs, without compromising safety or services.

WE SERVE*

**2.4** MILLION PEOPLE

**24,500** SQ KM AREA

**952,000** HOMES AND BUSINESSES

**20,000** LIFE SUPPORT CUSTOMERS

* Figures as at 30 June 2016

Endeavour Energy builds and operates the network that transports electricity from the high voltage transmission system to homes and businesses. We recover costs from customers through network tariffs. Our bills comprise about a third of a typical customer's electricity bill.

There are significant costs in maintaining a network of our size and complexity. Our core activities include:

- Safely maintaining distribution lines and substations to keep the lights on
- Building new substations, poles and wires, including in new suburbs
- Responding to emergencies like storms which bring down power lines and poles
- Tree trimming to maintain safety clearances, manage bushfire risk and prevent blackouts caused by falling trees
- Facilitating the connection of new customers to the network
- Researching, trialling, and installing new technology, like batteries, to use as alternatives to poles and wires
- Installing and maintaining street lights
- Various 'user pay' services like meter testing, off-peak conversion and design certification.

## WHERE DOES YOUR DOLLAR GO?

About a third of your electricity bill goes to network distributors like Endeavour Energy who build and maintain poles, wires and substations.This amounts to about

$510 a year for the average household and

$1750 a year for the average small to medium sized business

The remaining two-thirds pays for the cost of generating electricity, transmission, funding green schemes, and retail costs – which include managing your account, billing, and buying electricity from generators.


OUR NETWORK*

**185**
MAJOR SUBSTATIONS

**32,000**
DISTRIBUTION SUBSTATIONS

**50,000**
KM OF POWER LINES

**432,000**
POWER POLES

* Figures as at 30 June 2016

# HOW WE'VE BEEN ENGAGING – AND NEXT STEPS

Endeavour Energy is committed to improving its engagement with customers and stakeholders. We have aligned our engagement with the AER's Consumer Engagement Guideline and IAP2 Public Participation Spectrum. We engage with stakeholders using this framework. We will respond to the feedback we receive from this consultation process, including feedback on this directions paper, in our proposal to the AER due in January 2018.

Jan – Jun 2016

## Identification

Stakeholder and customer mapping. Establish who we will talk to and why.

### What we did …

- Proactively sought and actioned feedback from key stakeholders via an indepedent review on how we could improve our engagement approach to suit the needs of stakeholders and customers.Implemented major recommendations
- Held an internal workshop to 'map' our stakeholders and their main priorities. This feedback was used to inform our
- enagagement for the 2019-24 proposal. priorities

Began a strategic review of our Customer Consultative Committee.

reform.

Partnered with Brisbane City Council and Queensland University of Technology (QUT) to better through digital channels on tariff

understand effective engagement

Jun – Dec 2016

## Research

Understand customer and stakeholder needs & preferences, engage customers in setting priorities.

### What we did…

- Partnered with Ausgrid and Essential Energy to study worldwide research into consumer insights and opinions of the electricity sector
- Increased executive involvement

Jan – Dec 2017

## Engage & educate

Involve customers and stakeholders in developing network strategies and plans, and regulatory submissions.

### What we did …

- Framework and Approach issues paper & stakeholder forum
- CCC meetings
- Qualitative research focus groups
- Defined residential and Small to Medium Enterprises (SME) priorities in 10 focus groups
- Meetings with each local council
- Forums with Accredited Service Providers (ASPs)

- Deliberative planning forums for residential and SME customers
- Online community roundtables with peak consumer groups, and retailers
- Engagement with Regional Organisation of Councils (ROC) and councils

regarding street lighting, tariffs and

Jan – Jun 2018

## Review & embed

Inform customers on progress via feedback loops, and embed engagement in day-to-day operations.

### What's coming up…

- Review and assess engagement
- Online survey following deliberative forums
- Your Say feedback loops online
- Feedback on this paper will be incorporated into our initial regulatory proposal and Tariff Structure Statement (TSS)

# WHO WE ENGAGE

Endeavour Energy engages with diverse groups of customers and stakeholders using a variety of communication channels and engagement practices.

In 2016, we built on existing knowledge and brought together people from across the business to complete a customer and stakeholder mapping exercise which identified customer and stakeholder groups, considered their interests, and assessed the impact and influence each group had on customer and business outcomes.

# WHAT WE'VE HEARD

Through our formal and informal stakeholder engagement activities to date, including a series of customer focus groups held in May 2017, affordability remains key – people care about bills, not electricity itself. We have also heard the following key themes:

| | |
|---|---|
| **Residential customers** | • Value safety and reliability at least cost<br>• Are confused about why electricity prices are going up<br>• Are increasingly concerned about security of supply<br>• Are wary of industry messaging about tariffs, question motives and find language confusing<br>• Have little knowledge and interest in the industry, how it works and how it is regulated<br>• Interest in renewable technologies is driven mainly by potential to reduce bills<br>• Want us to prepare the network for new technologies, such as batteries and electric cars |
| **Customer advocates and regulators** | • Support tariff reform but want to limit vulnerable customer impacts |
| **Retailers** | • Value consistency and simplicity in tariff reform |
| **Small businesses** | • Value reliability and want outages planned out-of-business hours |
| **Local and state governments and developers** | • Want us to support and enable economic development |
| **Councils** | • Interested in the efficiency and environmental benefits of new lighting technologies |
| **The community** | • Want us to restore power quickly after major storms, minimise the risk of bushfires and reflect community values |

We've summarised these into three themes for further engagement

**1 PROVIDING AFFORDABLE, SAFE AND RELIABLE ELECTRICITY**

**2 INVESTING FOR CUSTOMER AND ECONOMIC GROWTH**

**3 ENABLING CUSTOMERS' ENERGY CHOICES**

# WHAT WE'RE DOING

### AFFORDABILITY

We have reduced our contribution to the average residential electricity bill by $75 over the last five years. Recent price increases have instead been driven by generation, retail services and government green schemes.

Based on the forecasts contained in this paper[1] our contribution to electricity bills will increase on average by between $1 to $2 per year over the 2019–24 period.

### AFFORDABILITY

We have worked hard over several years to reduce our costs through numerous efficiency initiatives, most recently the *Endeavour 2020* program.

Our forecast operating costs will be based on a starting point that puts us within the AER's efficiency frontier.

### SAFETY

Safety continues to be our number one priority. Our safety performance has been steadily improving over recent years.

We have achieved these improved results while managing to reduce our costs and without compromising our service levels and performance.

### RELIABILITY

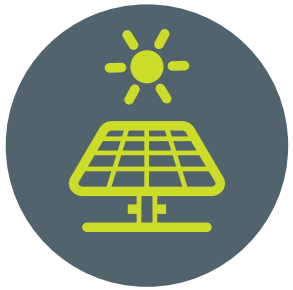
Our average reliability has been steady over the last five years. Our network investment program and targeted reliability projects have made the network more reliable and more resilient for customers.

Our objective is to sustainably invest in the network to maintain its reliability and resilience.

### INVEST FOR GROWTH

We service the 3rd largest economy in Australia and the fastest growing communities in NSW, with the population of Greater Western Sydney to grow approximately 46 per cent by 2031 and the development of the Western Sydney Airport at Badgerys Creek.

We will continue to invest in the network in an efficient and timely manner to support this ongoing network growth.



### ENABLE CUSTOMER CHOICE

We support the CSIRO/ENA[2] Electricity Network Transformation Roadmap.

Our objective is to facilitate customer choice and control. This will be achieved by improving our price signals, leveraging the connectivity of the network, implementing asset monitoring systems and introducing pilot network connected energy storage projects.

1. This forecast does not consider the potential impacts of the AER's yet to be determined re-made determination for FY15–19.
2. Commonwealth Scientific and Industrial Research Organisation and Energy Networks Australia

# STRATEGY & **PLANS**

We are responding to customer and stakeholder feedback and a changing environment. We are piloting innovative solutions, and are focusing on efficiency programs

# AFFORDABLE, SAFE & RELIABLE NETWORK

When developing our strategic priorities we consider our operating environment (including customer affordability concerns), network health indicators, and future drivers of growth in our network. Our customers have told us that the affordability of electricity remains a key priority and that they value a safe and reliable supply of electricity. In the following sections we provide more detail on our commitment to providing an affordable, safe and reliable supply of electricity to our customers and the challenges we face in doing so.

## Affordability

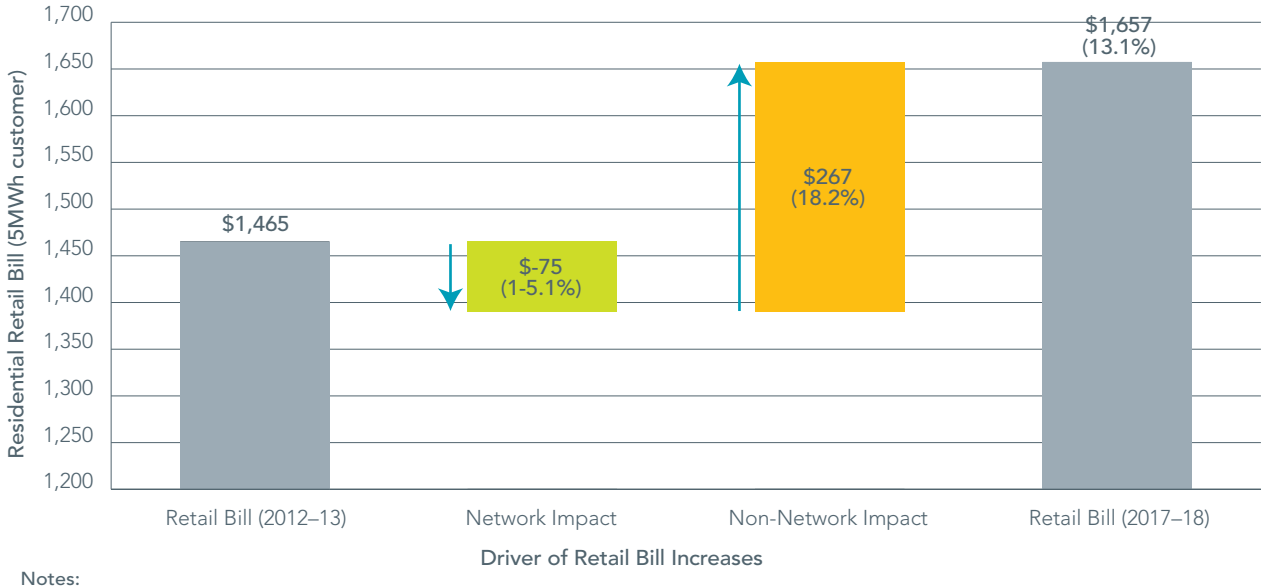
Endeavour Energy has worked hard since 2013–14 to keep downward pressure on network prices. We have focused on making our workforce more competitive, improving the commercial aspects of our asset management decisions, and making our business more efficient. As a result:

- Our services now contribute about 30 per cent (down from 43 per cent in 2016–17) of the final average electricity bill of a typical residential customer.
- The average residential bill is rising but customers are paying $75 less in 2017–18 compared to their bill in 2012–13 for the network share.

Going forward, our focus for the 2019–24 period is maintaining a reliable and safe network in a sustainable and affordable way for customers.

Over the last 5 years network charges have been reduced by 11.2% – a 5% ($75) reduction for the average residential customer's retail bill.

### Increase in average residential retail bills over the last 5 years




Notes:
- Calculated on the basis of Origin Energy's standing offer for residential customers in Endeavour Energy's network
- Network impact includes Distribution, Transmission and Climate Change Fund contributions
- Non-Network impact includes Generation, Government Green Schemes and Retail Services

# HOW DID WE ACHIEVE THESE SAVINGS?

One of our key strategic priorities is to transform the business to ensure our portion of the electricity bill remains affordable to customers. We recognise that affordability is vital to maintain our commercial value. In a rapidly changing market, we need to ensure our prices remain competitive with new technologies.

We have a strong track record in driving continuous efficiencies in our business (across capex and opex activities) without compromising on the quality of services provided to our customers.

We recognise the need to continuously pursue efficiencies to constrain future electricity prices. For this reason, we commenced a specific productivity drive to find efficiencies in all aspects of our operations. This helped us to contain our expenditure between the 2009 and 2012 period.

Industry reform in 2012 provided further impetus to our transformation programs. Since the peak of our investment, we have reduced total expenditure by 38 per cent from $907 million in FY12 to $559 million in FY16.

Our efficiency programs have provided sustainable reductions in our costs over time.

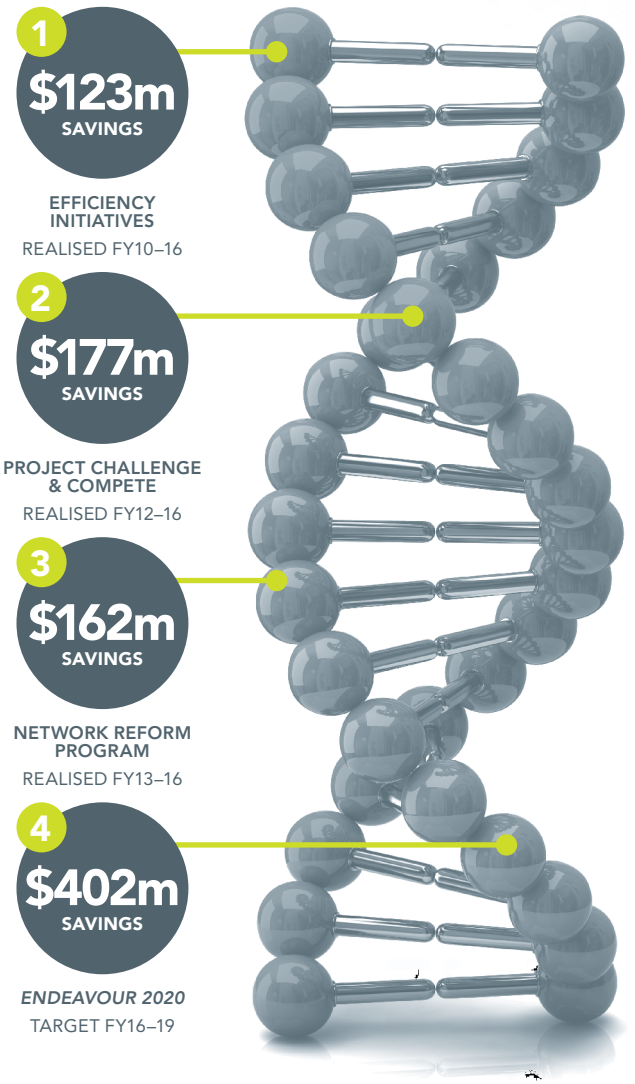
## *Endeavour 2020* transformation program

*Endeavour 2020* is the current stage of the efficiency transformation journey. It is designed to reduce the cost of building and maintaining our network over the next ten years while positioning us to efficiently deliver services to customers of the future by focussing on the following areas:

- Optimising asset management to safely and sustainably improve work on our network.
- Improving the efficiency of works management on our network.
- Improving the efficiency of our support teams and back office functions; and
- Continued enhancement of procurement practices to drive ongoing savings.

We expect our expenditure forecasts for the 2019–24 period will fully reflect the projected cost savings of the *Endeavour 2020* transformation program.

*Endeavour 2020* transformation program



# WHAT DRIVES OUR COSTS?

## Network Health

Our network maintenance and replacement costs, as well as the quality and reliability of our service, are largely driven by the age and condition of our network. Our objective is to maintain a safe and reliable service over the long-term. Reliability is a key outcome for customers and remains an important focus for Endeavour Energy in the future.

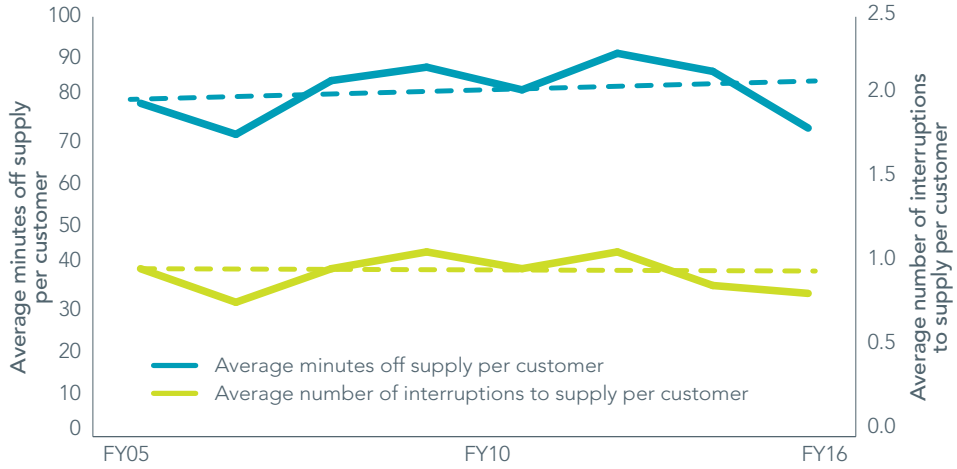
This requires a network that is resilient to weather events, targeted and efficient maintenance activities and sustainable replacement. This effectively involves balancing the need to replace assets before they fail with the requirement to ensure the costs of doing so are efficient.

**Reliability:** Over the past decade, Endeavour Energy's substantial network investment program and targeted reliability improvement projects have made the network more reliable and more resilient for customers compared to the early 2000s. As the chart below illustrates, our reliability performance has been slightly decreasing in recent years. Our plans for 2019–24 will seek to maintain these service levels and, as far as practicable, reduce the potential for any further deterioration.

**Maintenance:** Endeavour Energy's network is well maintained. Over recent years, we have made significant capital investment in the network to replace aged assets and provide sufficient capacity to service organic growth as demonstrated by the size of the blue blocks in the chart below.

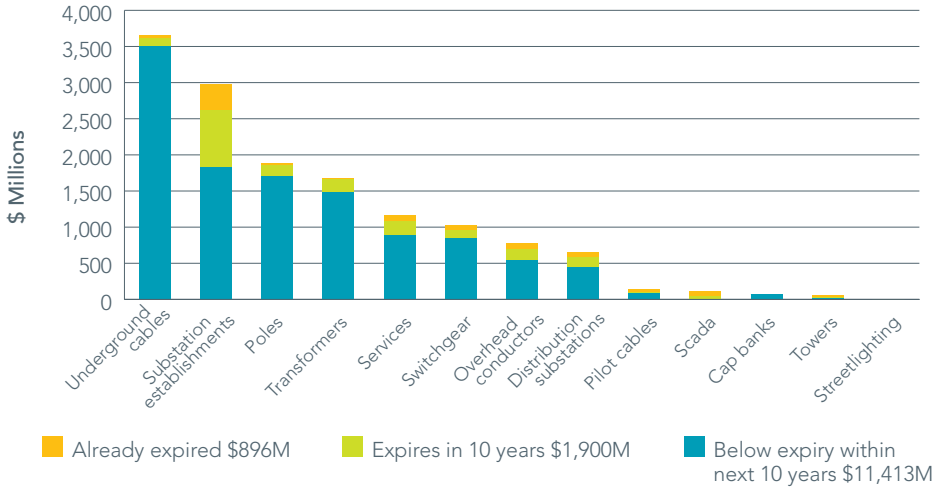
**Replacement:** In making these investments, we have lowered the age and risk profile of the network making it more sustainable. Our aim is to continue to manage the network and replace assets in a sustainable way in order to avoid any decline in performance or create future investment pressures. Based on the AER's replacement model, which analyses the standard and technical life of assets (discussed later in this paper), there continues to be significant replacement needs within our network that we will need to manage over the next several years as demonstrated by the size of the green and orange blocks in the chart below.

### Endeavour Energy reliability performance




Source owner: Hari Shukla

### Endeavour Energy asset replacement cost



## Bushfire Risk

Over 85 per cent of Endeavour Energy's franchise area is bushfire prone as identified by the NSW Rural Fire Service. Endeavour Energy's franchise area includes the Blue Mountains which has been identified as one of the highest areas of bushfire risk in NSW. As a result, vegetation management is a substantive and critical activity in providing a safe and reliable service.

If we fail to properly maintain safe clearances there is an increased risk of bushfire and outages from trees coming in to contact with, or falling on, powerlines. This can have catastrophic consequences for customers and increase the strain on essential government services like Fire and Rescue NSW and the NSW Rural Fire Service who have previously noted our important role in vegetation management.

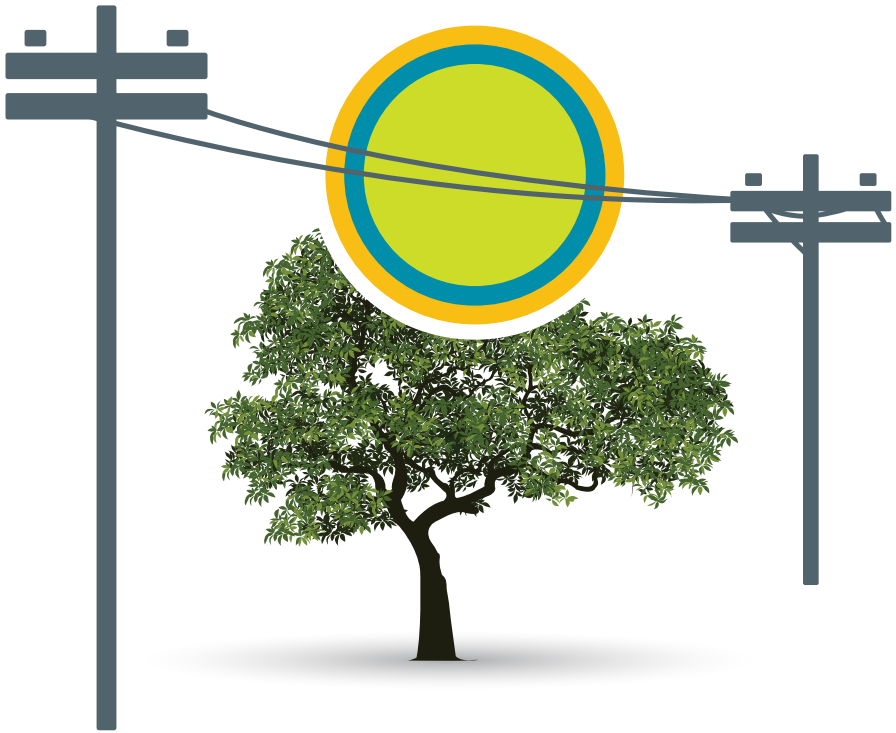
> *"Vegetation management around electricity poles, wires and infrastructure is a critical bushfire mitigation measure. Historically the NSW Rural Fire Service (NSW RFS) has been satisfied that electricity distribution businesses have been appropriately addressing bush fire risks"*
>
> – Commissioner NSW Rural Fire Service – December 2014

We have a comprehensive program of works to manage the risk of bushfires being initiated by the network. We employ leading edge radar based technology to accurately identify vegetation that is too close to the network. Our pre-summer program includes annual inspections of our assets in bushfire prone areas and associated maintenance work, vegetation management, and capital works to target specific high risk assets.

This program is one of Endeavour Energy's largest operating costs at approximately $60 million per year. To ensure we deliver value for money services we externally source this function.

Councils and customers may have different views about the frequency, the impact on streetscapes and the cost-benefit trade-off of tree-trimming. However, we are required to trim trees according to mandatory industry standards (Industry Safety Steering Committee Guideline 3 for managing vegetation near power lines). The ongoing use of the latest technology allows us to better target vegetation management programs in order to strike the right balance between the frequency, impact on streetscapes and compliance of tree-trimming.

### Tree-trimming clearance requirements



- **2.0M – 3.5M SAFETY CLEARANCE**
- **1.0M FOR REGROWTH**
- **CUT TO POINT THAT PROTECTS TREE FROM INFECTION**

# INVESTING FOR GROWTH

A key driver of our capital program in the current and next several regulatory periods will be servicing the significant growth in our network as a result of population growth. A growing network brings the benefit of economies of scale which help to keep network prices affordable. In the following sections we provide more information on how we plan to service new growth that is occurring in our network area over the 2019–24 period.

The population of Greater Western Sydney will grow by 1 million people between 2011 and 2031, an increase of 46 per cent. Our network area includes the North West and South West priority growth areas in Greater Western Sydney which are projected to accommodate 500,000 new residents, the equivalent to two cities the size of Canberra and Wollongong, over the next 30 years. These priority growth areas are the result of the biggest coordinated land release in the state's history. Additionally, we will need to support the development of the Western Sydney Airport at Badgerys Creek and the large surrounding residential, commercial and industrial areas planned to support the Greater Sydney Commission's vision of a 'third city' for Sydney.

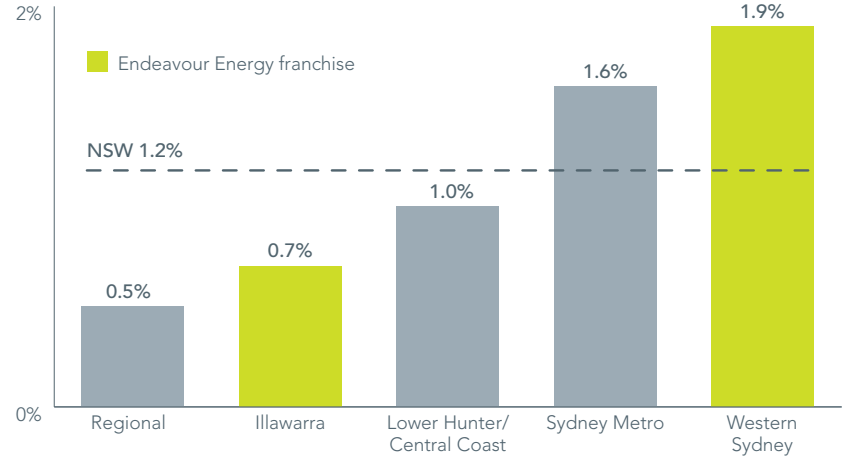
We are already seeing the impact of this growth on both energy consumption and demand.

**Energy consumption** Over the period from FY17 to FY24 we expect an annual compound growth in customer numbers and electricity consumption of 1.7 per cent and 0.9 per cent respectively, largely a result of increased connections and increased commercial activity.

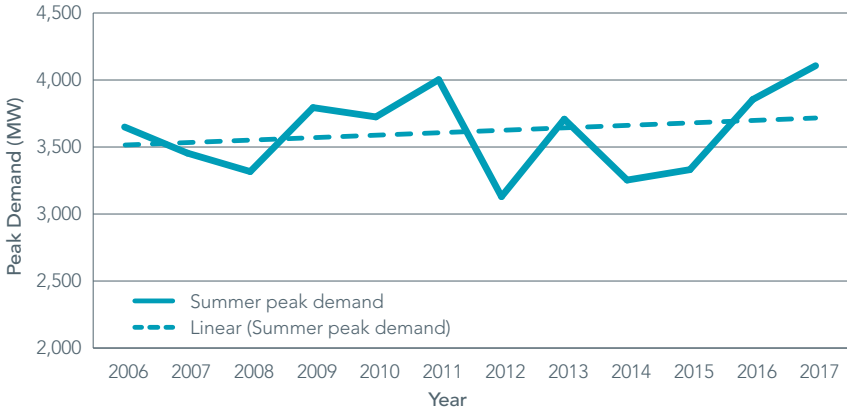
**Peak demand** in the last two summers has increased each year. Localised peak energy demand is a key driver of network investment. This is primarily driven by warmer weather and growth from new connections, principally in priority growth areas. Preliminary data suggests that the decline in the industrial sector has also plateaued. The peak demand for the FY17 summer was over 4,187 MVA. This is the highest peak since FY11, and followed several days of 43 degrees plus temperatures in Western Sydney.

Our role is critical in supporting this growth. Our plans and processes will ensure that Endeavour Energy connects new development areas and customers to the network in an efficient and timely manner. This will support affordable housing, employment opportunities and economic growth in our network area. We work closely with the NSW Government and developers to ensure that our capital program is well targeted and adequate in meeting this expected growth.

## Annual population growth rate FY11–31




## Summer Peak Demand for FY06–17



# WHAT'S HAPPENING IN YOUR AREA

## North West Priority Growth Area

The North West Priority Growth Area is approximately 10,000 hectares of mostly rural land that is progressively being urbanised with greenfield development. It is within the boundaries of three local government areas of The Hills, Blacktown and Hawkesbury, which will ultimately have 90,000 homes and over 500 hectares of commercial and industrial development.

The NSW Government aims to facilitate delivery of 33,000 homes by 2026 by investing into road, rail and water infrastructure to release land in this area for development, for example the Sydney Metro North West rail line due to be completed in 2019. The State Government is also actively pursuing increased housing supply to tackle housing affordability via policy changes and provision of infrastructure. In addition there has been strong growth in commercial/industrial areas such as the Sydney Business Park at Marsden Park where larger businesses have moved in. Investing in electricity capacity to connect greenfield development is necessary to supply these investments and developments

Western Sydney has a hotter climate than coastal areas, often 10 degrees warmer than the coast, with temperatures above 40 degrees occurring during most summer periods. Demand is summer peaking driven by air conditioning demand. Although penetration of solar PV continues to grow, the peak generation of output of solar at midday does not align with the evening peak, when air conditioners and other household appliances are used.

Endeavour Energy has invested prudently to support growth in the North West Growth Area, however capacity constraints for greenfield development remain in specific locations. This is because new precincts are released over time, creating new development frontiers; higher densities are being encouraged; and the fact that previous investment has been efficiently staged.

During a five year period starting from 1 July 2019 Endeavour Energy plans to invest approximately $100 million on growth projects to ensure continuing connection capacity is available in the North West Priority Growth Area.

# South West Priority Growth Area

The South West Priority Growth Area is approximately 10,000 hectares of mostly rural land that is progressively being urbanised with greenfield development similar to the North West Priority Growth Area.

The area is located within the boundaries of the Liverpool, Camden and Campbelltown local government areas. It will ultimately have 132,000 homes and over 450 hectares of commercial/industrial lands including the new Leppington and Edmondson Park Town Centres.

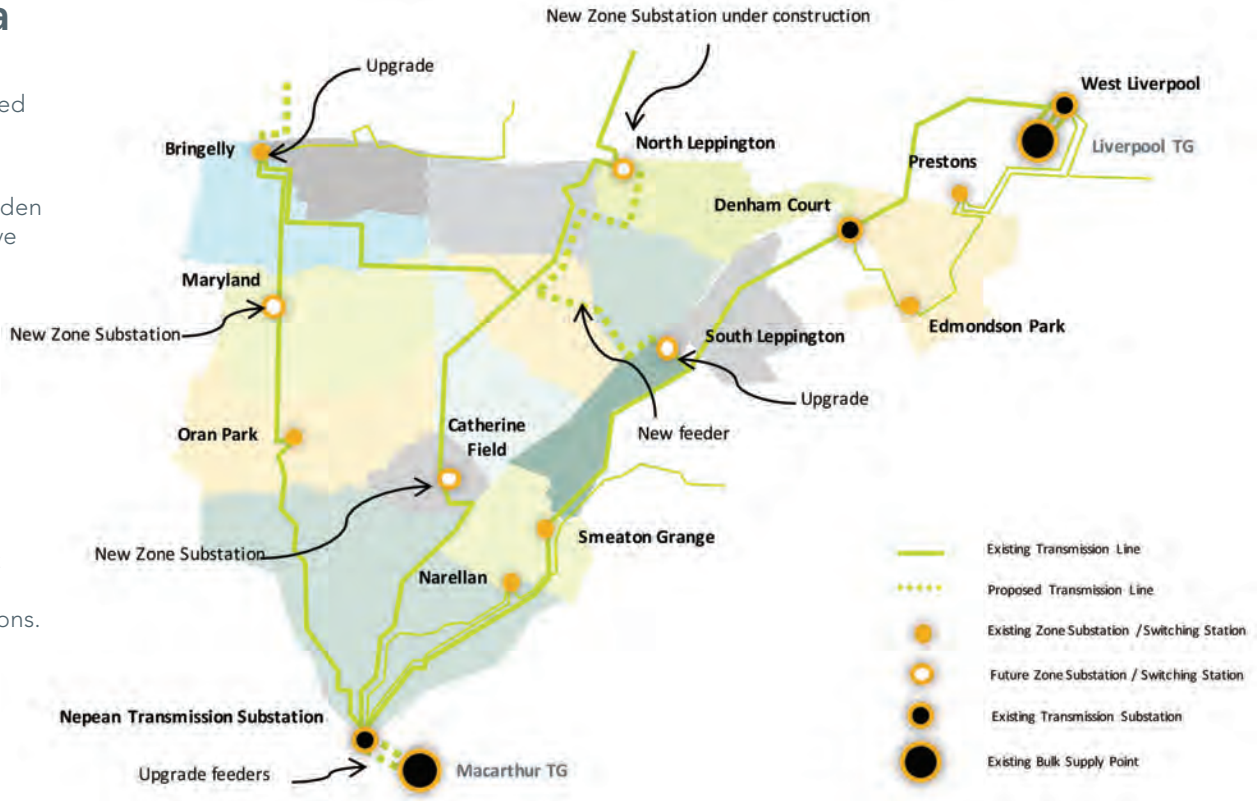
The NSW Government has delivered the South West Rail Link from Glenfield to Leppington via Edmondson Park to stimulate residential and commercial development in this priority growth area. Investment into road, rail, sewer, water, gas, telecommunication and electricity infrastructure is occurring to meet demand as each precinct is released.

Endeavour Energy has previously invested prudently to support growth in the South West Growth Area however capacity constraints for greenfield development remain in specific locations.

This is because new precincts are released over time creating new development frontiers; higher densities around transport corridors and town centres; and the fact previous investment has been staged.

During a five year period starting from 1 July 2019 Endeavour Energy plans to invest approximately $85 million on growth projects to ensure continuing connection capacity is available in the South West Priority Growth Area.

The ultimate development of the South West Growth Area will take place over a 40 year period and will require ongoing investment by Endeavour Energy to provide a forecast electricity capacity of 600MVA.



# Western Sydney Employment Area

The NSW Government is working with local councils and service utilities to develop employment opportunities, residential and supporting infrastructure and services around the planned Western Sydney Airport at Badgerys Creek in Sydney's west. This forms the basis of the Greater Sydney Commission's vision of a 'third city' for Sydney, after Sydney CBD and Parramatta.

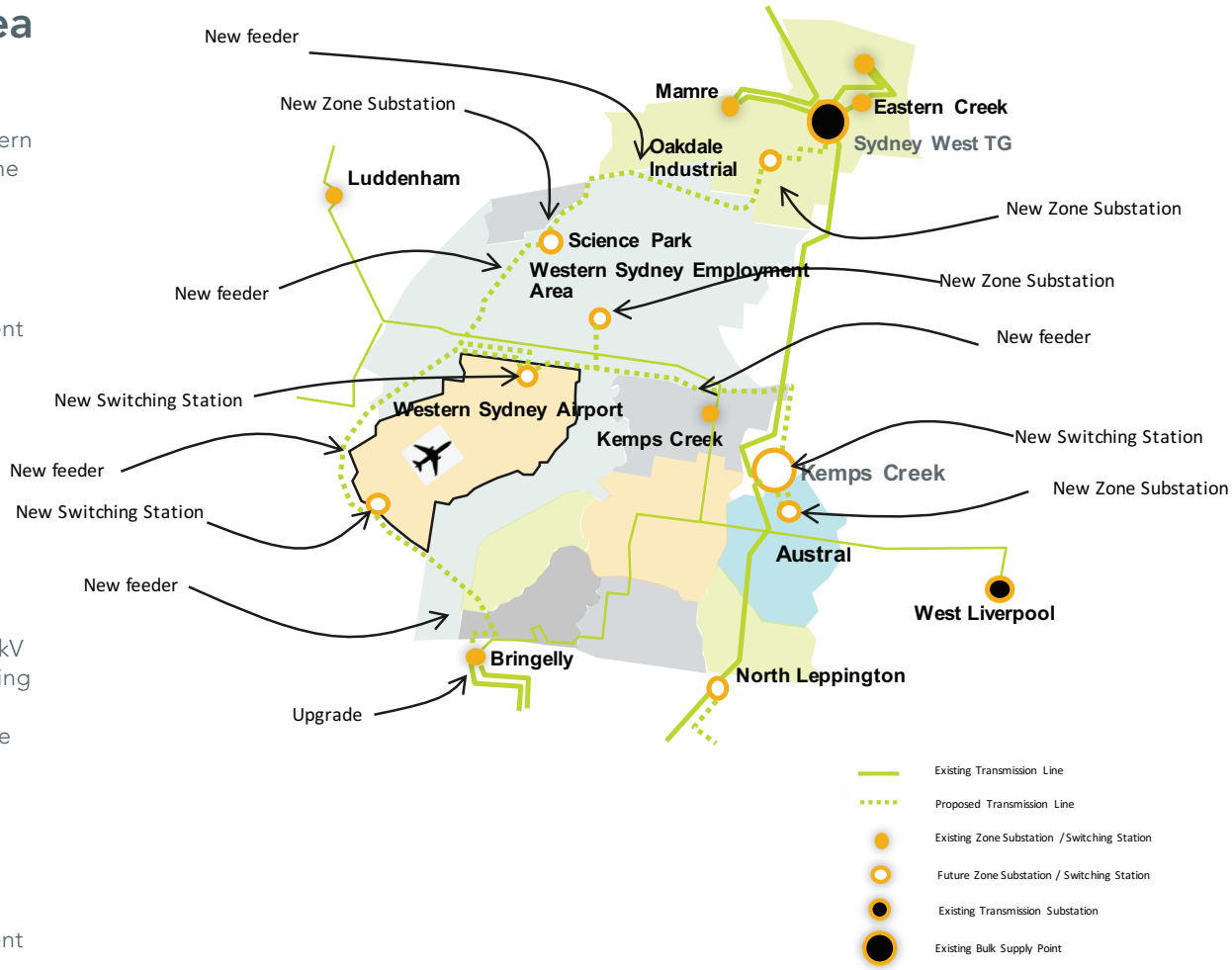
The new Western Sydney Priority Growth Area is approximately 10,300 hectares of rural land that encompasses the proposed airport, the Sydney Science Park and Western Sydney Employment Lands extending from Eastern Creek to Austral, Leppington and Bringelly.

The area is shared between Blacktown, Fairfield, Liverpool and Penrith local government areas with Liverpool and Penrith sharing the majority of the area.

Since the announcement of the construction of the airport, development interest in the surrounding lands continues to increase significantly. The airport is expected to be operational by 2026, however works to clear the site of existing electricity infrastructure will begin in 2018–19, while construction of the 132kV electricity infrastructure to support the airport and the surrounding development areas will need to begin in 2020–21. The airport developer, rather than our customers, will be required to fund the dedicated assets of this network infrastructure.

During the five year period commencing 1 July 2019, Endeavour Energy plans to invest approximately $150 million on growth projects to support development of the Western Sydney Priority Growth Area.

As the 'third city' vision begins to take shape, further development of the growth area will take place over a 40 year period and will require ongoing investment to provide a forecast capacity of 850MVA.



# Greater Macarthur Priority Growth Area

The Greater Macarthur Priority Area is approximately 17,600 hectares of mostly rural lands across Campbelltown and Wollondilly local government areas.

Of this area, the NSW Government has identified approximately 7700 hectares of land that can be developed in the short term and will be priority growth precincts.

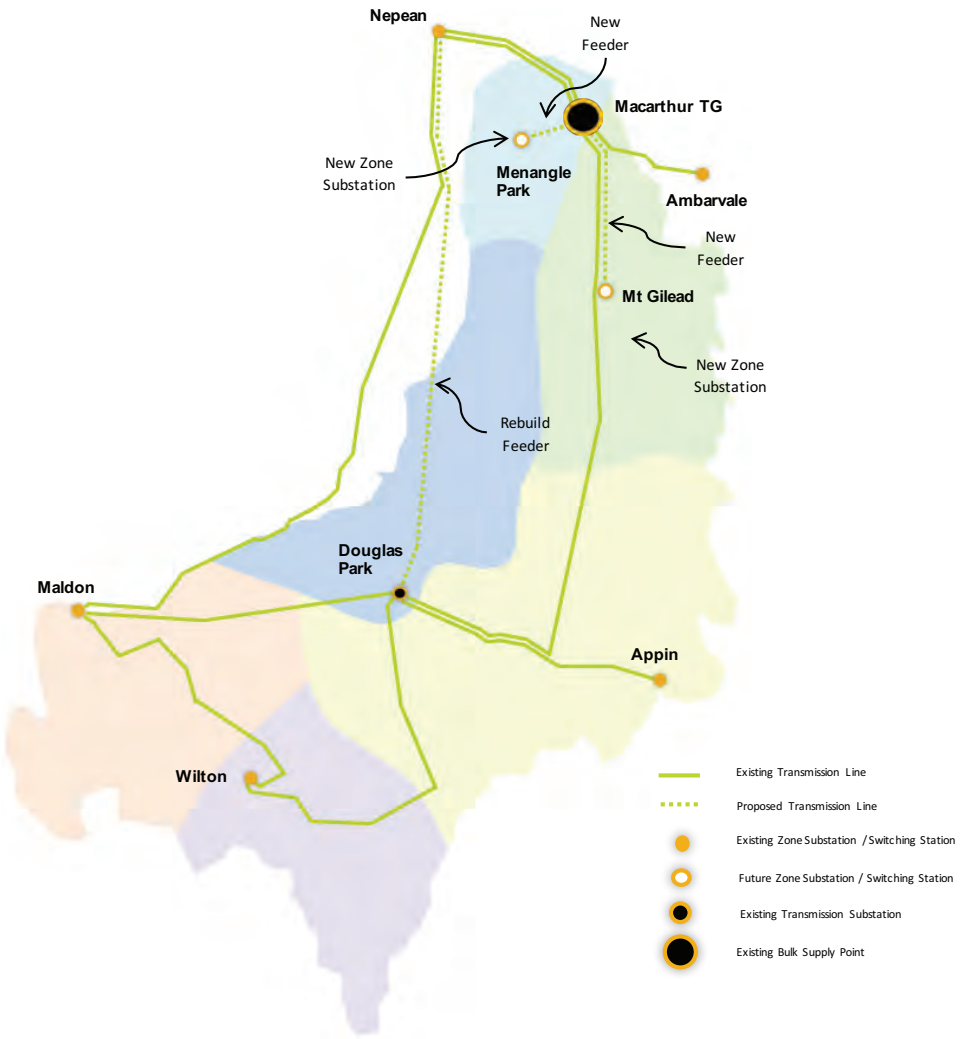
Developments at Menangle Park, Mount Gilead, Wilton New Town and the West Appin precincts are expected to establish over 60,000 new homes and 700 hectares of commercial/industrial lands.

There has also been more recent interest in developing areas south of Mt Gilead and this will result in the construction of additional new homes. Collectively this will ultimately impose network demand in excess of 300MVA.

Development in the precincts listed is predominantly driven by large single developers and landowner consortiums and consequently could develop at a faster pace than fragmented precincts.

During a five year period starting from 1 July 2019 Endeavour Energy plans to invest approximately $50 million on growth projects to ensure continuing connection capacity is available in the Greater Macarthur Priority Area.

Further investment will be required as this new development frontier gathers pace.



# West Lake Illawarra Growth Area

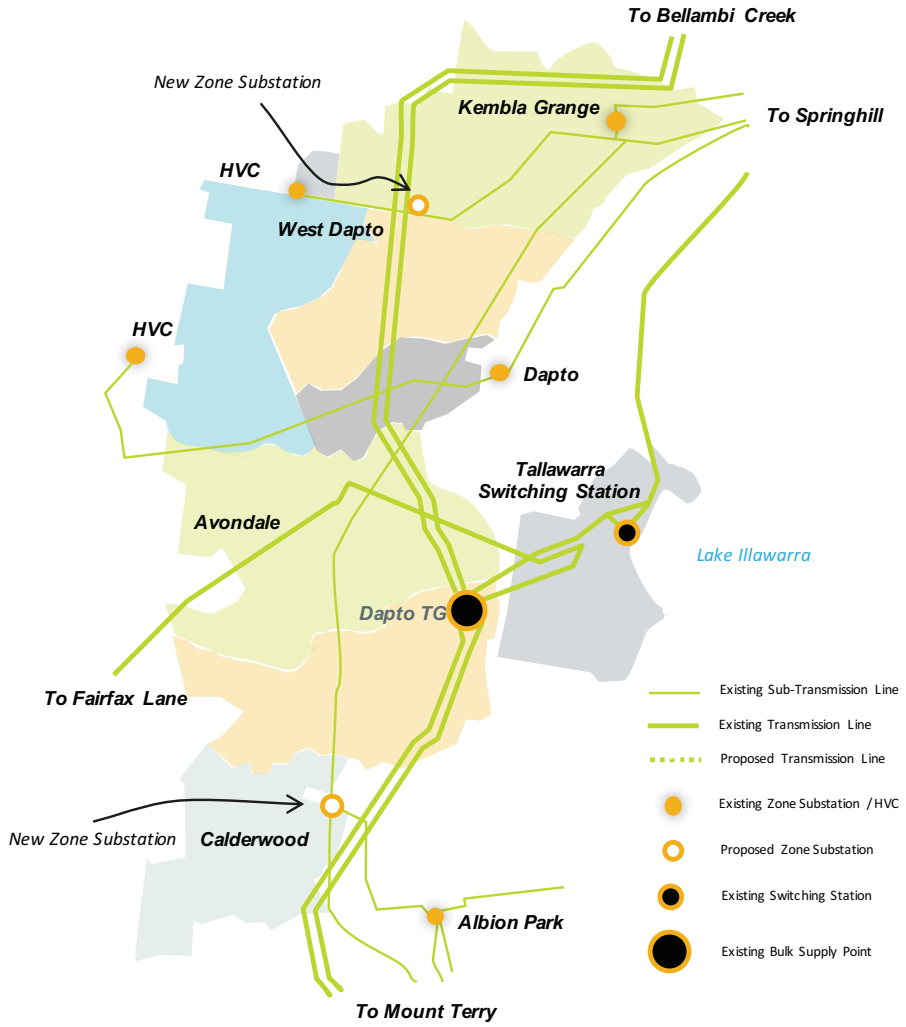
The West Lake Illawarra Growth Area is approximately 5,500 hectares of mostly rural land across Wollongong and Shellharbour local government areas. It will ultimately accommodate an estimated 26,000 residential dwellings and comprise 3.1km$^2$ of commercial/industrial lands. Based on the total number of dwellings and commercial/industrial lands, the ultimate imposed network demand is estimated at 128MVA.

There are four main greenfield development precincts in the area. These are Calderwood, West Dapto, Tallawarra and Avondale. These precincts are located within the boundaries of the Illawarra escarpment to the west, the existing suburbs of Horsley, Dapto and Tallawarra to the east, the existing Kembla Grange employment lands to the north and Albion Park to the south.

Current developer activity within the Calderwood precinct is driven by a single large developer whereas the larger West Dapto precinct comprises fragmented land ownership with small developments. Initial development activity has commenced in the Avondale precinct, but there is presently no activity in the Tallawarra precinct.

The NSW Government through the Wollongong office co-ordinates the Illawarra Shoalhaven Development Program. It aims to manage continued land and housing supply in the Illawarra and Shoalhaven region through implementation of regional strategies.

During a five year period starting from 1 July 2019 Endeavour Energy plans to invest approximately $52 million on growth projects to ensure continuing connection capacity is available in the West Lake Illawarra Growth Area. Further investment will be required as development matures.



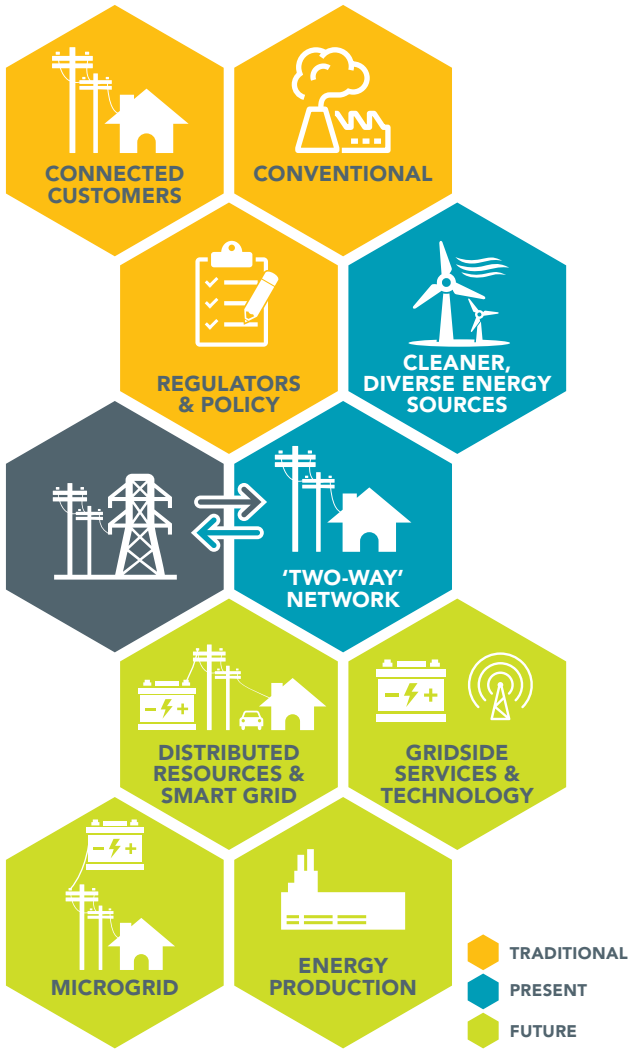
# ENABLING CUSTOMERS' CHOICES

How customers use, produce and value electricity services provided by Endeavour Energy is dramatically changing. Increasingly, customers have more choices about how they access electricity, which in turn is transforming how our network operates. In the following sections we provide more detail on this changing energy landscape and our role in enabling customers' choices.

Until recently, Endeavour Energy's network was a centralised electricity network, with limited customer involvement. However, the rapid uptake of solar photovoltaic (PV) panels, new energy storage developments and usage data offer our customers new energy choices.

To reliably and efficiently serve our customers in the future, Endeavour Energy will need to better understand what customers and stakeholders value. In addition to consuming electricity, customers will be able to generate and/or store their own electricity from solar PV and battery storage devices. Our network will need to adapt so that more than 2.4 million electricity customers, have the flexibility to both consume and sell electricity. This will require a network where customers are interconnected in a way that continues to ensure reliable 24/7 electricity at a fair price for all, and where customers can access high quality, personalised energy information through self-service channels. For Endeavour Energy, this requires the transformation of a business culture based on a traditional network business model to a strong customer-centred culture and business model.

Our objective is to facilitate customer choice and control. Below we provide a summary of some the key technological changes and advancements occurring on our network. We see our role as ensuring that customers who wish to connect these devices to the network can do so safely and without adversely impacting the service other customers receive. Also, we will seek to provide customers with a cost-reflective price signal so that they can best manage their device. This will help reduce our investment needs and prices in the long-term.



## A Transformed Electricity System by 2050

CSIRO/ENA predict that Australia's electricity system will change significantly with growth in distributed energy resources. By 2050:

- Customers will produce almost 45 per cent of generation in the National Electricity Market
- Customers retain electricity supply security and reliability essential to lifestyle and employment
- Networks pay distributed energy resources customers over $2.5 billion per year for grid support services
- Electricity sector achieves zero net emissions
- $16 billion in network infrastructure investment is avoided by orchestration of distributed energy resources
- Reduction in cumulative total expenditure by electricity networks of $101 billion
- Network charges 30 per cent lower than 2016
- $414 annual saving in average household electricity bills (compared to the current state business as usual)

Endeavour Energy fully supports the Electricity Network Transformation Roadmap and will seek to contribute to its achievement over the next several years.

## Solar Generation

Rooftop solar PV systems will become an increasingly dominant element of the generation mix in the National Electricity Market (NEM).

NSW solar PV energy production remains relatively low (2.1 per cent) and is expected to grow to 11 per cent of total NSW consumption in 20 years (compared to 12 per cent for the NEM overall). About 13 per cent of homes within Endeavour Energy's franchise area have installed solar PV, slightly more than the 12 per cent total for NSW as a whole.

## Battery Storage

The cost of batteries is declining and poses both challenges and opportunities. For customers, lower-cost battery storage options would enable them to store cheaper off-peak energy to utilise in peak periods. It is also expected that battery storage will enable increased utilisation of network infrastructure and minimise investment in the network to cater for future growth in demand.

## Electric vehicles

We expect an increase in the uptake of electric vehicles over the coming decade and beyond. We will need to consider how to utilise and expand the capacity of the network (including demand management options) to meet the demands of electric vehicles. In particular, we will need to innovatively consider commercial model options to facilitate and share in the deployment of charging points within Endeavour Energy's network. We will also have to consider optimal tariff designs for additional electricity demand consumed outside of peak periods.

# FUTURE NETWORK STRATEGY

A key focus of our asset management strategy is to commercially adapt to a changing industry. As noted above and outlined in the CSIRO/ENA Electricity Network Transformation Roadmap, the industry has been changing rapidly in response to emerging technology and greater customer choice in the way customers consume and produce electricity.

A key challenge for the industry is how to best facilitate the emergence of new technologies. By 2050, we estimate that the customer will produce almost 45 per cent of generation in the NEM. The challenge is further complicated by uncertainties on the forces that drive change such as technology direction and competition.

We intend to ensure that our network meets the future challenges of customers' energy supply needs by renewing and creating a network that enhances customer's energy supply experience. We will achieve this through integrating traditional network supply arrangements with distributed renewable generation, and enabling the provision of energy storage capability to assure supply security.

Endeavour Energy is committed to contributing to the achievement of the Electricity Network Transformation Roadmap. We intend to commercially integrate supply side and demand side technology by assessing new products and finding new ways to leverage the connectivity of the network, implementing cost efficient asset monitoring systems to capture and analyse asset information, and introducing pilot network connected energy storage projects.

## Key principles

In accordance with the CSIRO/ENA Electricity Network Transformation Roadmap:

- Our number one priority remains a safe and secure network that continues to provide the high level of reliability expected by our customers.
- We need to enable customers' future energy choices.
- Pilots and trials provide an efficient way to find solutions that realise the full value of emerging technologies for customers. In doing so, we should seek approval from the AER for adequate allowances to fund research and development activities.
- We need to consider fairness among our diverse customer base, with protections for our vulnerable customers.

## How do we see our role changing?

Our network will play a significantly different role in the future. Traditionally our network provides a one-way electricity transport service to our customers. Generation such as coal and gas are produced in bulk, and transported through networks to the premises of our customers.

Endeavour Energy is well placed to move forward with our customers in their evolving energy supply needs, particularly facilitating the uptake of embedded renewable generation and the need for energy storage. Our network will require ongoing renewal to transform it from its traditional bulk-generation to end-use supply framework to become a neural network of interconnections of multiple distributed generation sources, peer-to-peer energy transfer solutions, and to meet the emerging requirement for bulk and distributed energy storage.

In the future, we see that the backbone of the network will play a significant role in ensuring energy security at an affordable price. However, with increasing generation and storage installed by customers, our network will increasingly become a two-way platform as we become a conduit between households. In some cases, this may be through microgrids where a group of customers are independent to the grid, but connected to each other through distribution infrastructure.

The additional supply provided into the network by customers with generation and storage devices will assist in reducing bills for all customers by allowing Endeavour Energy to meet low demand without having to incur additional expenditure that would ordinarily be required to increase the capacity of the network.

## How does the future impact our plans today?

In the short run, our focus continues to be providing a safe, reliable and sustainable service by implementing our maintenance and investment plans. At the same time, we need to think ahead to the new world:

- We are thinking of more efficient tariff structures such as peak demand changes and seasonal time of use tariffs.
- We invest in electricity assets that can have a technical life of 50 years and over. Our investment plans consider how these assets will be utilised, and whether there are temporary or more flexible solutions available.

## Innovative Trials at Endeavour Energy

### Residential Battery Storage

Endeavour Energy is currently developing a battery energy storage trial for residential customers within Sydney's North West Priority Growth Area. This will involve a number of customers who will have a battery energy storage system installed within their premises. The trial aims to identify customer uptake levels and quantify network demand reduction. We will be using third party suppliers to help us with the trial, with the storage system owned by the customer.

Under the trial, customers are being incentivised to install energy storage in a future constraint area of the network. In return, the customer will allow Endeavour Energy to remotely control the operation of the system during peak days to aid in peak demand management. It is expected that the customer will be able to use the battery outside of event days in a manner of their choosing. The trial will run for two summer periods commencing the summer of 2017–18.

### Grid Scale Battery Storage

Endeavour Energy is investigating an innovative method to provide capacity for the first stages of new release areas. This has traditionally been addressed by mobile zone substations or full substation builds. A grid scale Battery Energy Storage System (BESS) will potentially allow modular and rapid deployment of network capacity increases to defer network investment.

A containerised BESS is being considered for installation on a site reserved for a new zone substation at West Dapto to connect into the existing 11kV network. A team of engineers are currently developing a pilot solution for deployment prior to the 2017-18 summer. The proposed battery would charge during low load times and discharge during high load times, such as afternoons and evenings. The team is also investigating the potential for the battery to regulate voltage and run a small area in 'island' mode when required. If successful, the proposal will keep costs down while providing reliable supply sooner to customers.

The results of these pilots will be published in the Distribution Annual Planning Report and Demand Management Innovation Allowance report.

# REGULATORY REFORMS AND ENHANCING COMPETITION

Endeavour Energy is subject to a number of obligations that guide the way we do business. We are required to meet reliability standards and minimise risks to safety and the environment, together with corporate obligations.

There are a number of important developments that are influencing the regulatory landscape that may have an impact on our customers and stakeholders, including a review of our 2014–19 determination, opening up competition, and empowering customer choice.

## Finalising review of last determination

We sought a merit review of the AER's determination for 2014–19 at the Australian Competition Tribunal (Tribunal). The Tribunal found that the AER had made errors in its decision and asked that changes be made. The AER appealed the Tribunal's decision to the Federal Court but all but one of its grounds of appeal were rejected

The AER will now need to reconsider its decision on operating expenditure and the rate of return. Following this, we may need to recover necessary revenue from our customers to correct the AER's errors.

**Customer Impact:** We have taken steps to minimise the impact of any re-determination by consulting with stakeholders on a rule change to minimise price impacts. A decision by the Australian Energy Market Commission (AEMC) on this rule change is expected in August 2017.

## Power of Choice

Regulators understand that new technologies such as solar generation, battery storage and smart meters are providing greater choice for customers in the way they consume and interact with their electricity services.

There have been a number of changes in the market to promote customer choice. These include:

- installation of smart meters under the Power of Choice reforms;
- new demand management incentives; and
- requirements to develop cost-reflective network tariffs to support informed customer energy choices.

**Customer Impact:** The metering services we currently provide will be transitioned to 'Metering Coordinators' over time. The rollout of 'smart' metering services by Metering Coordinators will lead to greater customer choice and control over their energy services and usage.

## Enhancing Competition

With a range of new technologies on the market, regulators have been looking at ways to open up competition in new markets. Recently, the AER issued ring-fencing guidelines that ensure network monopolies do not use their market power to gain a competitive advantage in unregulated activities.

We support changes that enable us to compete in new markets on an equal playing field without adding costs for customers. We are actively looking at how we can diversify our business to compete in broader markets while complying with the National Electricity Rules (NER).

**Customer Impact:** Fair competition will lead to greater customer choice for new energy products and services.

# UPCOMING **PROPOSAL**

We want to explore your views on our methods and potential prices, expenditure plans and other building block inputs

# OUR CHARGES IN 2019–24 PERIOD

## YOUR BILL

Our 2019–24 proposal will provide an indication of the network charge that our customers will pay each year of the period. We understand that affordability is top of mind when it comes to customers and the stakeholders who represent their interests. For this reason, we want to provide early visibility on potential charges, and call out where this may change or be impacted by other events.

When thinking about our proposal for 2019–24, we've worked to keep charges affordable and fair. We have balanced this objective with the need to maintain and sustain the network for the long-term interests of customers. Our experience is that unsustainable short-term investment reductions can be counter-productive and lead to price shocks for future generations.

The forecasts provided in this section are indicative only at this stage, as many factors remain uncertain. By providing this information before our formal proposal, we hope to have open discussions with our stakeholders on our expenditure methods and programs, and how they influence final bills and service outcomes.

An average residential customer's network charge will increase by between $1 to $2 a year on average over the 2019–24 period based on our directions paper forecasts

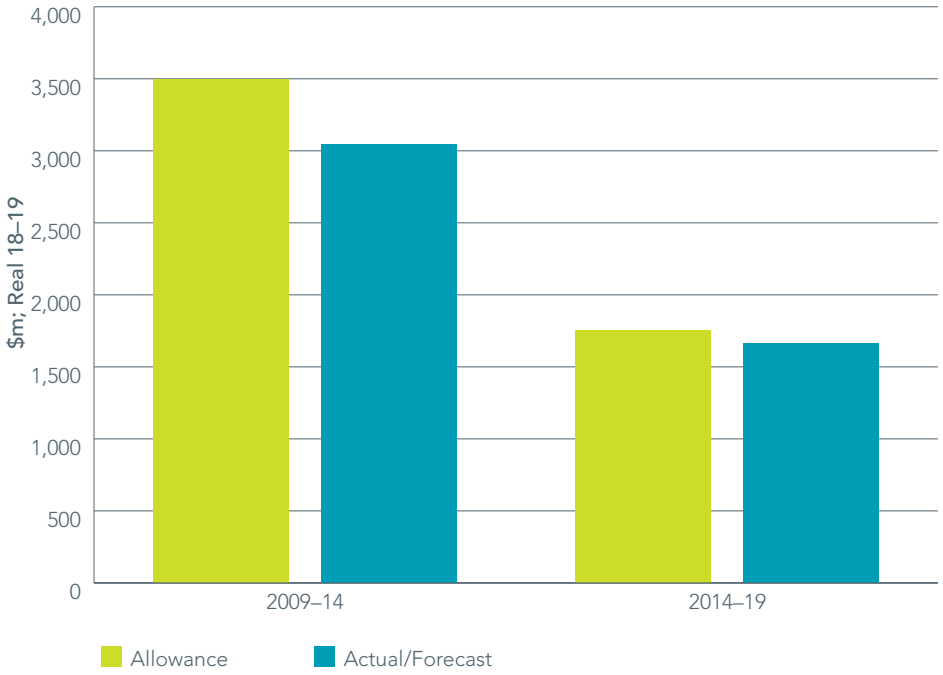
# CAPITAL EXPENDITURE

Capital expenditure is a significant driver of our network prices in the long term. Capital expenditure involves building the essential network infrastructure, like poles, wires, substations and transformers, that delivers electricity to our customers. The majority (about 80 per cent) of our investment in the network is driven by replacing ageing assets nearing the end of their useful life and augmentations to increase the capacity of the network for increased demand from existing or new customers.

A snapshot of our performance in the current and previous periods.

- In 2009–14 a large increase in expenditure was required to meet mandatory licence conditions and large expected increases in demand.
- Following this investment, we sought to return to a more sustainable level, during 2014–19. We estimate that our expenditure for the 2014–19 period will be 45 per cent lower than the 2009–14 period and a return to a sustainable level of expenditure that will avoid the need for 'boom' and 'bust' investment cycles if maintained.
- Overall, we estimate that we will have underspent the AER's capex allowance by approximately 5 per cent by the end of the 2014–19 period.

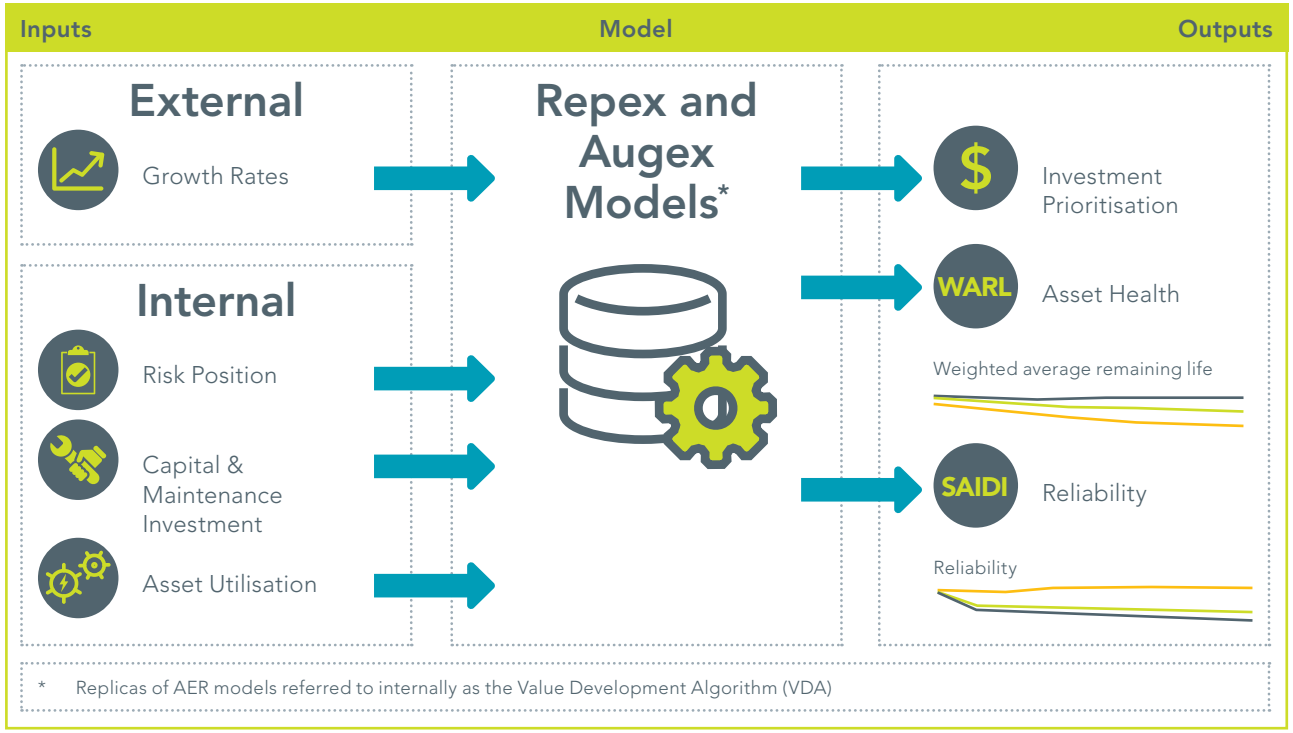
## Total capex by period



# CAPITAL EXPENDITURE FORECAST METHODS

We develop long-term capital projections as part of our annual business planning approach. Our Forecast Methodology Statement was submitted to the AER on 30 June 2017 explaining this approach in detail.

The AER's preference is for top down models as these account for efficiencies. Bottom up methods are more technical in nature and therefore consider safety and reliability more directly. We will primarily rely on the AER's top down models tested against our detailed understanding of the network to ensure an efficient forecast is developed that maintains a safe and reliable network.




## Replacement expenditure (Repex) model 101

The Repex Model is a predictive model developed by the AER. It is used to predict the likely asset replacement volumes and expenditure based on:

- the number and age of assets in service;
- the assumed age of replacement of these assets; and
- their corresponding unit costs.

## Augmentation expenditure (Augex) model 101

The Augex Model compares utilisation thresholds with forecasts of maximum demand to identify parts of a network that may require augmentation. The model then uses capacity factors to calculate the required augmentation, and unit costs to derive a forecast. It can also be used to identify general trends in asset utilisation over time and outliers in an augex proposal.

# CAPITAL EXPENDITURE IN 2019–24 PERIOD

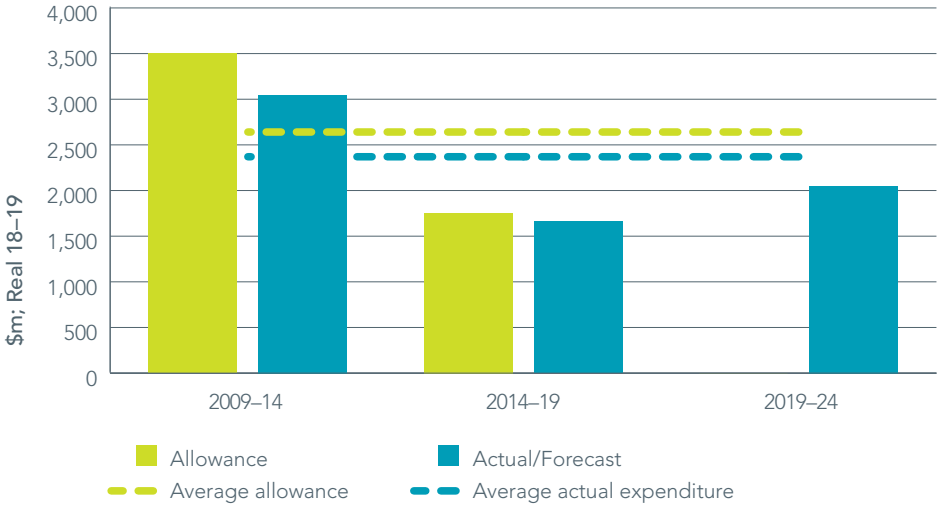
We have developed a preliminary capex forecast for the 2019–24 period. We consider this is a starting point that is subject to change following further analysis and stakeholder feedback.

This initial forecast is for an average of $410 million of capex per year. The preliminary forecast is below the average annual capex we have both received and spent over the previous two regulatory periods combined.

Our objective is to target a level of capex that is both efficient and sustainable over multiple periods to avoid a 'boom and bust' investment cycle that drives prices up and down over time. The drivers of the capex program will be:

- **Replacement:** the majority of our program will be to replace ageing assets on our network. Our forecast will be based on the AER's Repex Model to develop a level of investment that is sustainable in the long-term.
- **Augmentation and connections:** spatial demand growth and our customer growth centres will drive augmentation and connection capex.
- **Non-network:** we will invest efficiently in fleet, property and equipment to support the capital program. The quality and security of our IT systems will be improved over the current period and the next recognising the importance of data as an asset in support of efficient network investment and future grid enablement.

## Total capex by period




### Considerations for stakeholders

**A one-year 10 per cent reduction in capex would reduce prices by approximately 85 cents per customer per year**

- Benefits: lower prices over 2019–24
- Potential downside: risk of reduced reliability and/or higher prices post 2019–24 and slower realisation of the benefits from new technologies.

**A one-year 10 per cent increase in capex would increase prices by 85 cents per customer per year**

- Benefits: maintain reliability, faster realisation of the benefits from new technologies, steady contribution to prices over time
- Potential downside: higher prices over 2019–24.

# OPERATING EXPENDITURE

Operating expenditure makes up about a third of the revenue we collect from our customers. The majority of our expenditure is on inspecting and maintaining our network assets, and vegetation management to avoid bushfires, outages and other safety incidents. We also have other supporting costs such as customer service, and back office support.

While capital expenditure is project-driven, operating expenditure is more recurrent in nature. This means the most recent year of actual expenditure is used for the purposes of forecasting the following regulatory period.

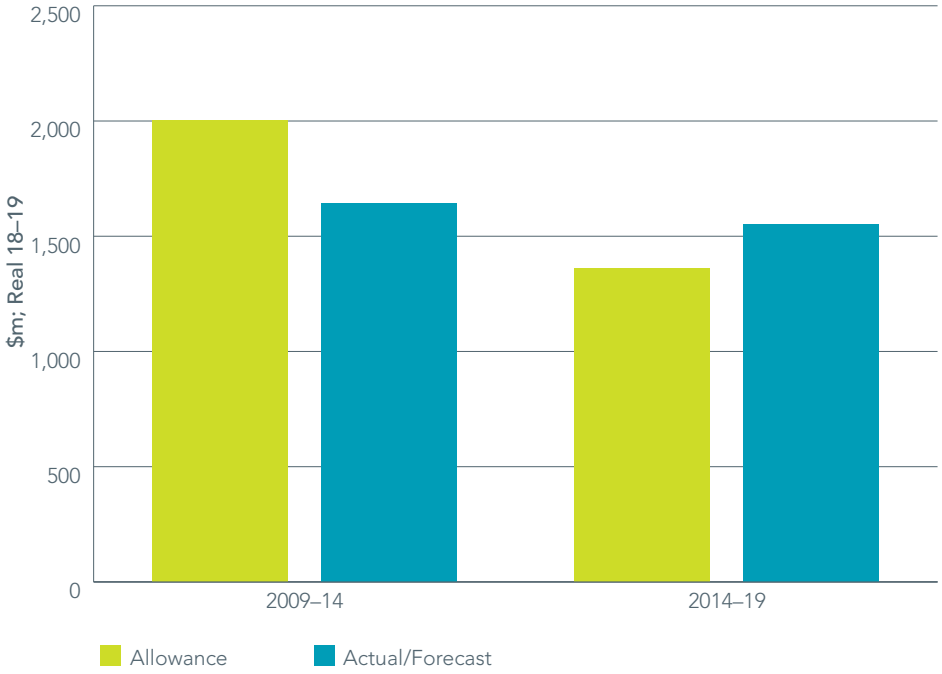
This forecasting base amount is typically assessed for efficiency and whether any adjustments are required for one-off costs, new obligations and for the forecast trends in costs over the forthcoming period.

Our focus for the previous and current period has been increasing our efficiency. We have implemented a number of transformation programs since 2009. These improvements have enabled us to maintain our opex from the start of the 2009–14 period despite the following cost pressures we faced:

- We had to increase our vegetation management costs by about $250 million to ensure compliance with the required safety standards.
- We had to absorb a short-term increase in costs to fund the *Endeavour 2020* efficiency initiatives and redundancy costs.
- We had an increase in our maintenance, repair, and inspections activities as would be expected with an increasing number of network assets over time.
- We had an increase in emergency response due to storm and other abnormal events.
- We had to absorb the increased corporate support costs arising from the sale of our Retail business.

We note that our operating expenditure is forecast to be above the AER allowance for the 2014–19 period as presented in the chart. This is because the AER's allowance in 2014–19 was reduced significantly following the use of a new benchmarking method, which resulted in additional vegetation management costs required to comply with mandatory standards being rejected. Following a decision from the Tribunal, which was confirmed by the Federal Court, the AER will need to re-assess Endeavour Energy's 2014–19 operating expenditure allowance. This may result in an improvement in our 2014–19 operating expenditure performance.

## Our opex performance for FY10–19



# OPERATING EXPENDITURE FORECAST METHOD

Our opex forecast approach for the 2019–24 period will use the AER's established method and model to determine opex; the 'base-step-trend' approach. The AER's Efficiency Benefit Sharing Scheme (EBSS) incentivises networks to lower their costs on a consistent, sustainable basis over time. If a network is responding to the EBSS as intended this provides evidence to the AER that historical costs can be relied upon for setting future allowances. This is because operating expenditure has been reduced which will result in a lower forecast to the benefit of customers.

We note the EBSS is not solely relied upon to produce efficient opex. At the time of a determination the AER tests the efficiency of the base year expenditure in more detail. At this time networks also need to assess whether the base year will be reflective of future costs or whether adjustments are required.


| 1. Base | 2. Step | 3. Trend | Forecast Opex |
|---|---|---|---|
| • We will be using our FY18 estimate of opex as our base year.<br>• We will test the efficiency of the base year against AER models and our own benchmarking analysis. | • We will use the AER's definition of a step change to identify any adjustments required to the base opex.<br>• This typically includes regulatory change events (i.e. impacts from rule changes) and capex-opex trade-offs (e.g. leasing rather than procuring assets). | • We will use the AER's calculations to trend our opex from the base year.<br>• This is derived from forecast increases in labour prices, customer numbers, demand, and circuit line length.<br>• We will also consider the productivity adjustment we should factor into our forecasts. | **Once an opex allowance is set, a network is incentivised over the regulatory control period to outperform this allowance via the EBSS.** |

We note that benchmarking is a key tool in assessing the efficiency of the base year. We consider improvements can be made to the AER's previous approach based on the expert opinions and findings of the Tribunal and Federal Court. For instance, relying on multiple models, using comparable, normalised data and incorporating reasonableness checks. We are interested in the views of stakeholders as to what improvements could be made to the AER's benchmarking approach.

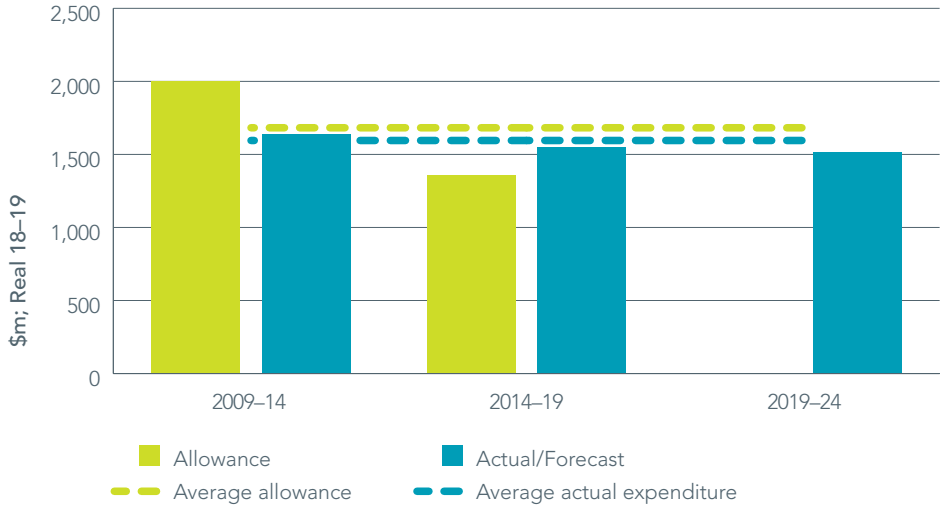
# OPERATING EXPENDITURE IN 2019–24 PERIOD

We have developed a preliminary opex forecast for the 2019–24 period. This forecast is subject to change following further analysis and feedback from stakeholders. Our objective is to efficiently meet our obligations and maintain existing service levels.

The preliminary forecast is approximately $303 million per year. This is below the forecast average spend over the current period of $311 million per year and below both the average allowance and average actual spend over the last two regulatory periods combined. Details on the preliminary forecast are provided below.

1. **Base:** Our forecast starting point (or "base") is equal to the AER's final year (FY19) opex allowance for the current period. This will most likely involve an efficiency adjustment to our actual base year (FY18) opex to align it with the AER's allowance figure. We consider this is a reasonable starting point as it relies on an opex amount that sits within the AER's previously determined efficiency frontier. Our main concern for the current period was the lack of a transition to a substantively lower allowance amount rather than the amount itself. We have worked hard over the current period to reduce our opex to reach the efficient frontier and we will be in a position to meet the efficient opex allowance in the future.
2. **Step:** As a placeholder, we have included a benchmark step-change amount based on the average amount each network received in the most recent AER decisions. We are undertaking a robust assessment of whether there are any step changes in the forecast that could cause our opex to increase or decrease in the next period (e.g. Power of Choice impacts). We are also assessing whether any non-recurrent costs needs to be removed from the forecast. We will confirm whether any step changes or non-recurrent opex need to be added/removed from the base year in our detailed January 2018 initial proposal.
3. **Trend:** Our trend adjustments are based on the labour price growth in the AER's most recent decision (for Powerlink). Output growth is based on internal forecasts of customer numbers, demand, and circuit line length (applying the AER weightings to these three factors). We have not included a productivity factor as the AER has typically not applied productivity factors to firms within the efficiency frontier.

## Total opex by period




**Considerations for stakeholders**

**A 10 per cent reduction in opex would reduce prices by approximately $3 per average residential customer per year**

- Benefits: lower prices over 2019–24, strong incentive to reduce costs
- Potential downside: risk of reduced reliability, increased bushfire risk, reduced scope for non-network alternatives.

**A 10 per cent increase in opex would increase prices by approximately $3 per average residential customer per year**

- Benefits: maintain service levels and meet obligations, increased scope for non-network alternatives.
- Potential downside: higher prices over 2019–24.

# REVENUE BLOCKS

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

The NER establish a building block method for determining our revenue requirements. The building block method recognises the different types of costs that we need to recover through our network charges, namely:

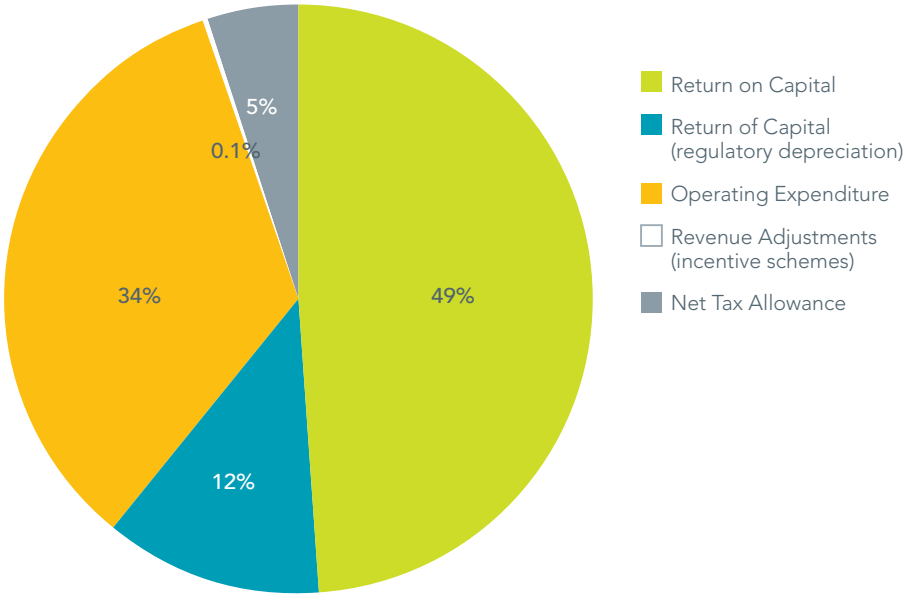
- operating expenditure
- return of capital or depreciation
- return on capital
- corporate tax

The first of these relates to our indicative operating requirements. We refer to the remaining three components as 'financial' because they are only slightly influenced by our expenditure plans (including capital expenditure). The financial building blocks are driven by factors that are largely beyond our control, such as the:

- value of the existing asset base, reflecting historic investment in the network
- remaining life of our assets
- financial markets data, which is used to assess the current cost of capital
- corporate tax rate.

Our indicative forecast capital and operating expenditures do contribute to our total revenue requirement in the next regulatory period, but the majority of our revenue is determined by the above mentioned financial factors based on historic expenditure. As we have discussed our expenditure plans in the sections above, this section focuses on the financial building blocks

## FY20–24 forecast revenue breakdown



# FINANCIAL BUILDING BLOCKS

## Return of capital (Depreciation)

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

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

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

We have applied the standard, straight-line depreciation approach and standard asset lives approved by the AER in previous periods. We are considering whether to adopt the 'year-by-year' tracking approach used by some South Australian and Victorian networks and approved by the AER.

This approach produces depreciation schedules that better reflect the nature of the assets and their economic life and it ensures that total depreciation (in real terms) equals the initial value of the assets. Overall this approach is neutral in net present value terms.

## Return on capital

It is difficult to develop a more detailed and final position while the AER 2014–19 re-determination process is ongoing. For the purposes of developing pricing impact analysis, in order to meaningfully engage with stakeholders, we have estimated a Weighted Average Cost of Capital (WACC) in the range of 6.25 per cent to 6.75 per cent based on current market conditions, recent network proposals and AER decisions.

The rate of return is made up of a weighted average of the return on equity and return on debt. A reasonable rate of return that meets the requirements of the NER will:

- enable Endeavour Energy to attract debt and equity funding to undertake necessary investment in our network
- contribute to the achievement of the National Electricity Objective (NEO) to promote efficient investment in, and efficient operation and use of, electricity services for the long-term interests of electricity customers.

In recent decisions, the AER has applied its Rate of Return Guideline to estimate the return on equity and the return on debt. We continue to support a 10-year trailing average for calculating the Cost of Debt with no transition required from the previous 'on-the-day' approach based on our individual circumstances. The Tribunal and Federal Court have both confirmed this approach.

However, the issue has not yet been remitted back to the AER to review and determine a Cost of Debt for the 2014–19 period. Given this uncertainty, we have developed a notional rate of return range for modelling purposes. We will monitor market conditions and the outcomes of various appeals and reflect the latest information in our initial proposal for submission in January 2018.

## Corporate tax

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

We note that the Tribunal decided on a gamma value of 0.25. However, the AER sought judicial review of this decision. The AER were successful on this ground. This means that a gamma of 0.40 is likely to apply to the 2014–19 re-determination. However, appeals in other jurisdictions like Victoria are still underway at the time of drafting this document. We will therefore continue to monitor the ongoing appeals and take into account any further developments prior to finalising our position for the January 2018 submission.

## Forecast inflation

For the purposes of this directions paper, we have applied an indicative forecast of inflation of 2.50 per cent. It is important that a reasonable inflation forecast is applied in determining forecast revenues. While some components of the forecast will be subject to a 'true-up' for actual inflation at the end of the regulatory period, other components are not. If actual inflation turns out to be materially different to the forecast, this can result in a material revenue variance over the period.

In the AER's recent decisions, the approach has been to forecast inflation relying on a combination of the Reserve Bank of Australia's (RBA) short term forecast of inflation and the mid-point of the longer term target range of inflation.

The AER is currently reviewing its approach to inflation based on concerns with the accuracy of the previous approach and the inability to 'true-up' differences. Given the uncertainty, we have simply adopted an estimate of 2.50 per cent at this stage. We will take into account the outcomes of the AER's review before deciding on a methodology for calculating inflation for our January 2018 submission.

## Incentive arrangements

The AER has developed the following incentive arrangements in accordance with the NER:

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

We propose to apply these schemes in the forthcoming regulatory period in accordance with the AER's prevailing guidelines.

# 4

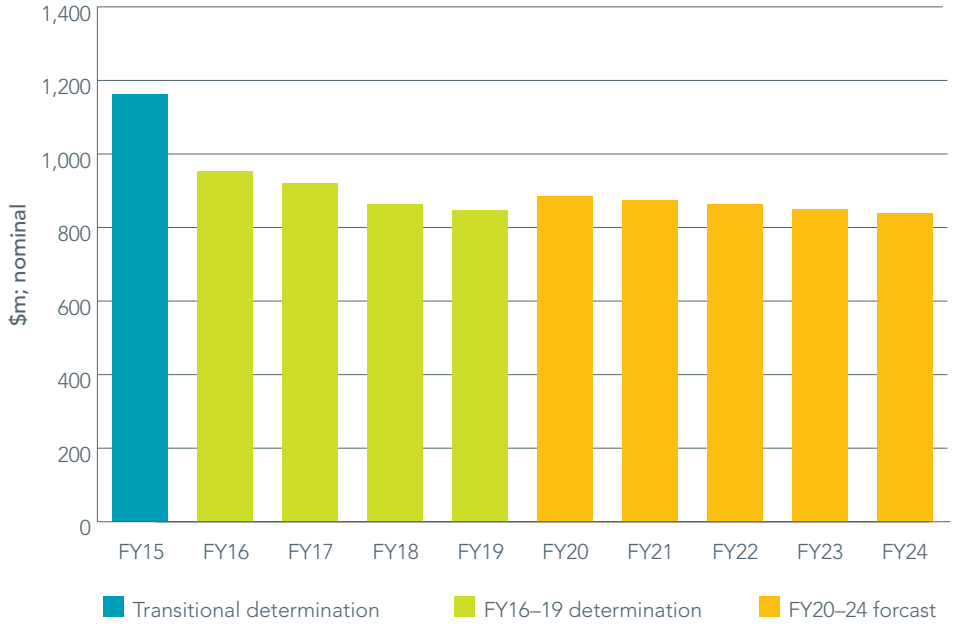
# TARIFF **DESIGN**

We have been listening to our stakeholders on how we could improve tariff design. We are interested in your views on the ongoing transition to more efficient, cost-reflective tariff structures.

# WHAT FACTORS INFLUENCE THE NETWORK CHARGES PAID BY A CUSTOMER?

| 1. Total revenue we collect based on our finance, operating and tax costs | 2. Tariff design to collect revenue |
|---|---|
| 2019–24 Forecast Revenue = approx. $968 million per annum | Total Customers (as at 30 June 2016) = 952,000 |

## Average revenue per customer




Our Tariff Structure Statement (TSS) provides the design principles for how we recover revenue from each of our 952,000 customers.

In collaboration with stakeholders, we are looking to improve the key principles guiding the design of our tariffs. Our current principles are:

- Ensure our tariffs are simple and transparent
- Fairly allocate costs between customers based on their share of relevant network costs
- Maintain predictable and relatively stable prices over time
- Empower customers to make efficient electricity consumption choices

We develop our network tariffs each year in our annual pricing proposal.

# IMPROVEMENTS TO OUR TARIFF DESIGN

The way customers are using Endeavour Energy's distribution network is changing.

It has become more important to make sure that network prices provide signals to electricity retailers that in turn (if passed through by retailers) allow customers to make informed choices about when and how to 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 investment is optimised.

Efficient pricing needs to signal to customers the cost of consuming the next unit of the product. This price is the variable or usage component of a tariff and is referred to as the Long Run Marginal Cost (LRMC) of supply. A more efficient price structure would have:

- recovery of the costs of the network as it stands today in the fixed component of tariffs, which would imply an increase in the fixed component of tariffs; and
- price signals to consumers as to the cost of needing to augment the network in the future in the variable charge. This is currently low, as there is available capacity in the network at certain times throughout the year.

In April 2017, the AER approved a TSS, which will apply until 30 June 2019. Our proposal sought to make improvements to our existing tariff structures to promote more efficient price signals. Some stakeholders wanted us to include demand based tariff options for residential and small business customers. Endeavour Energy said it would consider this in its 2019–24 TSS proposal.

In future years, as metering and meter data systems with advanced capabilities become installed on a more widespread basis, we envisage that we will be able to continue the process of transitioning to more efficient tariff structures. In considering our future tariff strategy, Endeavour Energy needs to balance:

- prices that promote the efficient use of the network and network investment into the future;
- recovery of the regulated revenue the AER has allowed us; and
- the short-term impacts on customers from moving away from current tariff structures towards more efficient structures.

| Key changes we made in our 2017 TSS | |
|---|---|
| **Flat block tariffs** | Transitioning to a flat tariff for residential customers rather than declining block – implemented 1 July 2017 |
| **Time of Use default** | All new customers, and those existing customers who upgrade their connection from single to three phase, will default to a Time of Use (TOU) tariff from 1 July 2018 – with an ability to opt-out to a flat block tariff |
| **Shoulder charge** | Remove the proposed shoulder charging windows for residential TOU customers on non-business days – implemented 1 July 2017 |

# WHAT OUR CUSTOMERS HAVE TOLD US SO FAR

Engagement to date has identified the following customer priorities for the development of tariffs.

| | Residential Customers | Small to Medium Enterprises (SME) |
|---|---|---|
| **Characteristics** | Are the bulk of our 2.4 million customers and includes families, large and small energy users. | Employ between 2 and 200 people in a range of industries with a mix of energy usage profiles. |
| **Priorities** | • Primary concern remains the affordability of electricity.<br>• Keen to see the likely dollar impacts on their bills of time of use, seasonal time of use and peak demand pricing.<br>• Interested in smart meters – many want to know how to get them and make the most of them.<br>• Support efficiency programs that can reduce costs. | • Very keen to find out how smart meters could potentially benefit their business.<br>• Some indicated they may shift the times they operate (if their business model allowed them to do so) to take advantage of time of use tariffs. |
| | **Innovators and early adopters/solar** | **Vulnerable Consumers** |
| **Characteristics** | First to adopt new technologies, have solar panels, investigating battery storage or electric vehicles. | Financial difficulty; most/all income is government payment; receive energy concession; chronic illness or disability in household. |
| **Priorities** | • Strong interest in smart meters and the introduction of time-of-use pricing as it would give them more control and choice over their bills and energy consumption.<br>• Primarily driven by cost savings and return on investment.<br>• Concerned about lower feed-in tariffs after the closure of the NSW solar bonus scheme. | • Very concerned with rising prices<br>• Have moderate their energy usage, but are not noticing significant reductions to their bill.<br>• Very interested in education programs and initiatives that will help them save money.<br>• There is some scepticism about the introduction of new tariffs without clearly explaining the bill impacts. |

# TARIFF OPTIONS FOR 2019–24

As part of our upcoming regulatory proposal, we will be submitting a new TSS that provides the framework for how we will develop network tariffs for the 2019–24 regulatory period. A key focus of our engagement for the 2019–24 proposal will be on tariff design, as we seek feedback from stakeholders on improvements in our tariff design, protections for vulnerable customers, and speed of transition. Some of the tariff structures that we would like your views on are outlined below:

## Option 1: Flat Tariff

This is our default tariff structure as approved by the AER in April 2017.

### How is it structured?

The flat tariff includes a fixed daily rate and an energy based charge (i.e. a charge on each unit of energy consumed). All energy is charged at the same rate, irrespective of the time of day or year that energy is consumed.

### What do we believe are the benefits of this tariff structure?

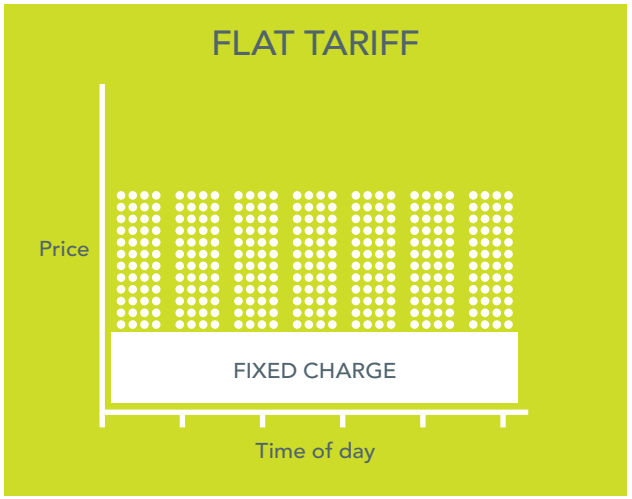
It is simple for consumers to understand.

### What do we believe are the short-comings of this tariff structure?

The flat tariff does not enable customers to make more informed choices about when and how to use the network, based on the costs of providing the services they use.

The flat tariff is based on an energy based charge. It is our customers' peak demand that drives network investment not their energy consumption.

It will not result in lower network costs or prices.



# Option 2: Seasonal Time of Use Tariff

A seasonal time of use tariff (STOU) is a cost reflective tariff option available to Endeavour Energy for the 2019–24 regulatory period.

Endeavour Energy would look to assign new customers to the cost reflective tariff option, giving them the option to 'opt-out' to the flat tariff.

## How is it structured?

The STOU tariff includes a fixed daily rate and an energy based charge that varies depending on the time of day and time of year energy is consumed.

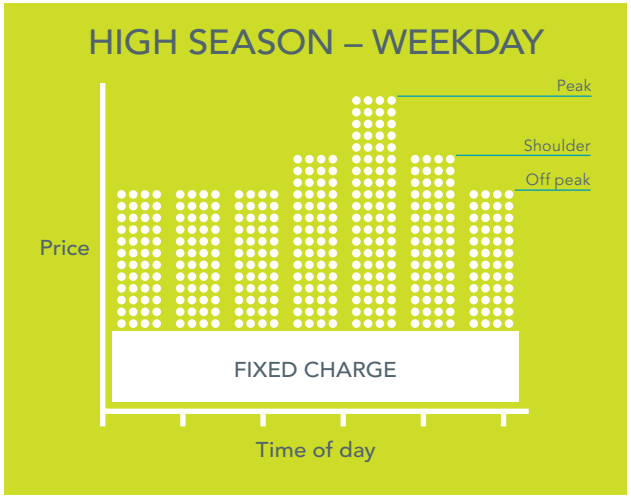
## What do we believe are the benefits of this tariff structure?

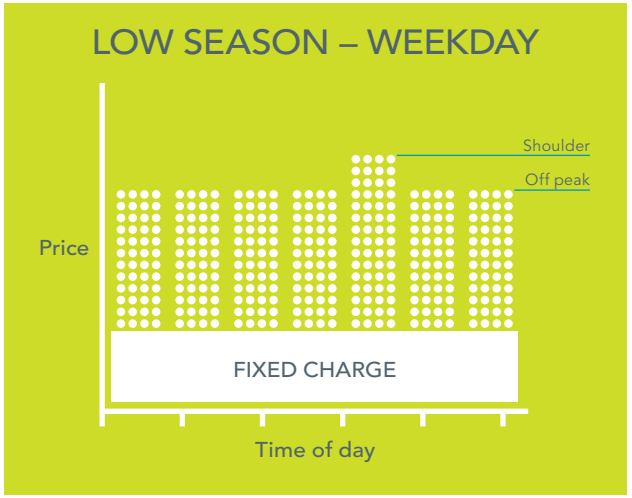
A STOU tariff would provide a more cost-reflective price signal to customers (relative to the flat tariff) as it introduces seasonality to the price signal. This would increase the likelihood that our expenditure requirements, and in turn prices, will be reduced in the long term by facilitating improved customer control and incentives for customers to efficiently use solar PV and battery devices.

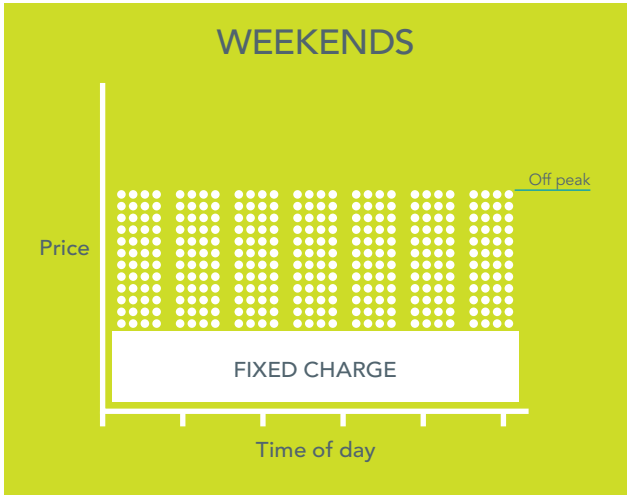
## What do we believe are the short-comings of this tariff structure?

The STOU is based on an energy based charges. It is our customers' peak demand that drives network investment not their energy consumption; as such it may not deliver the lowest network costs or prices.

The STOU is a more complex tariff structure than the flat tariff.



# Option 3: Seasonal Time of Use Demand Tariff

A seasonal time of use demand tariff (STOU Demand) is a cost reflective tariff option available to Endeavour Energy for the 2019–24 regulatory period.

Endeavour Energy would look to assign new customers to the cost reflective tariff option, giving them the option to 'opt-out' to the flat tariff.

## How is it structured?

The STOU Demand tariff includes a fixed daily rate and an energy based charge that varies depending on the time of day and time of year energy is consumed. It would also include a seasonal monthly demand charge for maximum consumption.

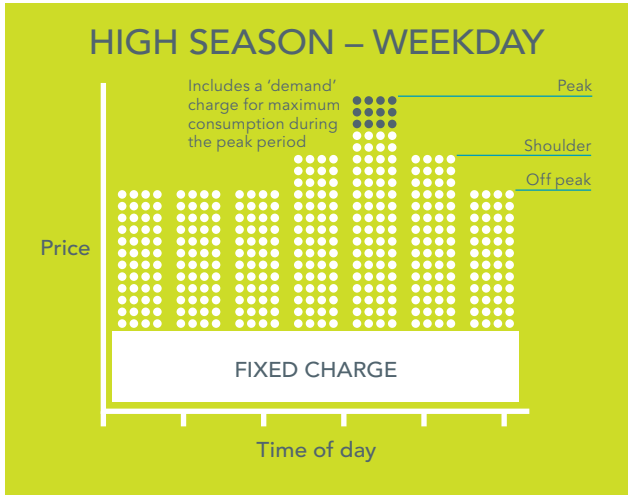
## What do we believe are the benefits of this tariff structure?

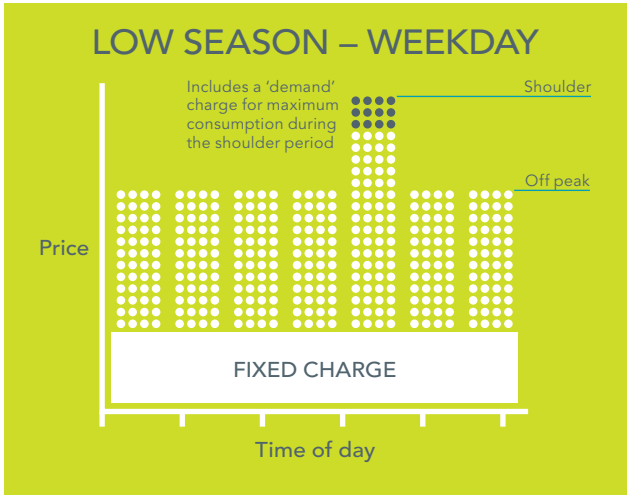
A STOU Demand tariff would provide a more cost-reflective price signal to customers (relative to the STOU tariff) as it introduces a seasonal monthly demand charge to the price signal.

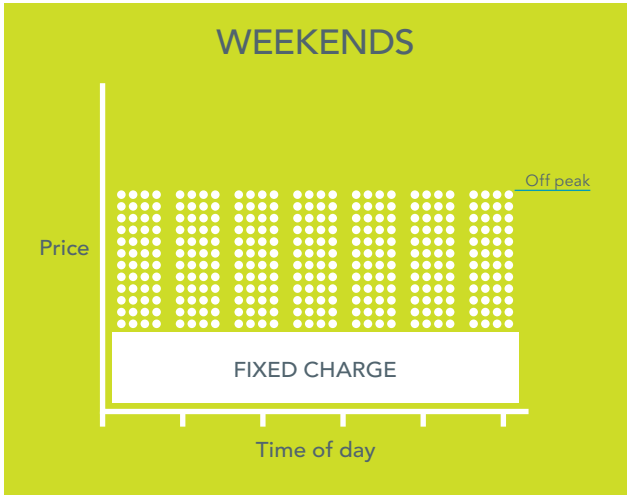
The STOU Demand tariff best aligns our price signal and cost structures and is the most likely of the pricing options to reduce our expenditure requirements, and in turn prices, in the long term. The STOU Demand tariff facilitates customer control over their network bills and provides the clearest incentives for customers to support the network with solar PV and battery devices.

## What do we believe are the short-comings of this tariff structure?

The STOU Demand tariff is the most complex of the pricing options outlined. We consider that as customers become more familiar with cost-reflective tariffs over time, they will be able to respond positively to reduce their bill.



# KEY CONSIDERATIONS ON TARIFFS

## Why demand tariffs make sense in a changing energy industry?

The demand for electricity at peak times is a key driver of network investment. A network tariff based on the customer's demand for electricity at peak times, rather than their total energy consumption, will more accurately signal the cost of this future network investment. When customers base their consumption decisions on cost-reflective tariffs, investment in network assets to service inefficient customer demand is eliminated and average network prices decline.

Further, customers with generation and storage systems pay a lower share of residual costs compared to other customers. A large proportion of residual costs are collected through energy tariffs. Small-scale generation customers are able to offset their energy use, but can access capacity of the network at peak times. A demand tariff allows us to more evenly collect residual costs from customers based on their demand for network capacity, while providing a signal for using demand at peak times.

We are examining the potential for demand based tariffs for residential and general supply customers. We are looking at designs that better reflect our customers' demand at times when the network is most likely to be constrained. We would provide an 'opt-out' tariff option to customers on demand based tariffs.

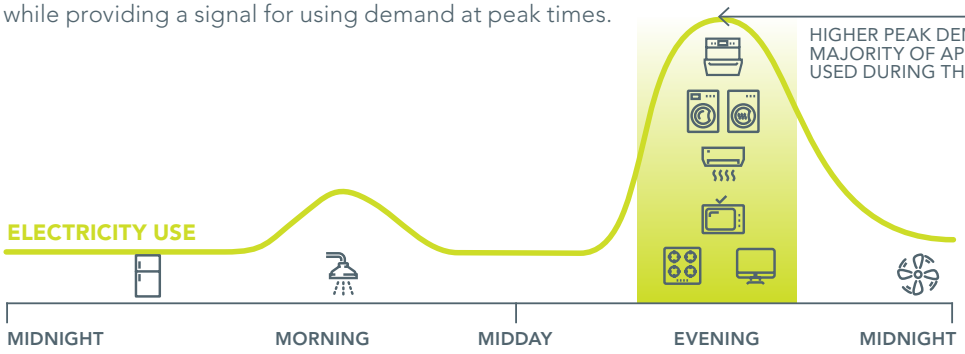
## What are the benefits of cost reflective pricing to customers?

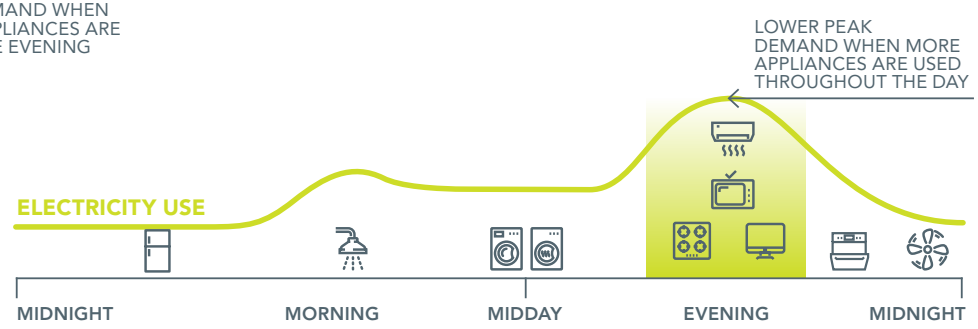
- **Lower prices:** Any customer response to cost-reflective pricing will lead to lower prices for all in the longer term.
- **Customer control:** provides the individual with greater control over their bill should they wish to makes changes to the way they consume electricity (as depicted below by way of example).
- **Promotes efficient technologies:** Motivates customer investment in technologies that benefit themselves and the network.

## Why STOU demand tariffs make sense based on our network?

Endeavour Energy's network demand is at its peak during the late afternoon/early evening in the summer months. A cost-reflective tariff that signals this to customers is more likely to incentivise changes in energy consumption that will reduce peak demand on our network and therefore our costs and future prices:

- We are considering removing the high demand period for winter months given peak system demand occurs in warmer months.
- We are thinking about narrowing the charging window for peak use to improve the cost-reflectivity of our price signal.
- We are considering an 'opt-out' rather than 'opt-in' tariff assignment policy for customers changing their connection to include the ability to inject power into the network.



# WE'D LIKE TO HEAR WHAT YOU THINK ABOUT OUR DIRECTIONS PAPER

We welcome your feedback on the following consultation questions or any other information provided in this directions paper, to help us shape our formal proposal.

Your feedback will be taken into account as we continue to prepare a detailed formal revenue proposal for submission to the AER by 31 January 2018.

All feedback must be received by 1 September 2017.

We will review all feedback received and publish further information, including a summary of the key themes which have emerged from feedback on this directions paper. This will also explain how we intend to take customer feedback into account in preparing our formal revenue proposal.

## We look forward to receiving your feedback.

1. What are the priorities of the stakeholders that you represent?
2. What can we do to best deliver on these priorities?
3. What changes to our price tariff design should we be considering?
4. How should we be engaging with customers and stakeholders in developing our proposal?
5. What should be our role in the future energy market that will provide customers greater choice and control?

# GLOSSARY

| | |
|---|---|
| **AEMC** | Australian Energy Market Commission |
| **AER** | Australian Energy Regulator |
| **ASP** | Accredited Service Provider |
| **Augex** | Augmentation expenditure |
| **BESS** | Battery Energy Storage System |
| **Capex** | Capital expenditure |
| **CCC** | Customer Consultative Committee |
| **CESS** | Capital Expenditure Sharing Scheme |
| **CSIRO** | Commonwealth Scientific and Industrial Research Organisation |
| **DMIS** | Demand Management Incentive Scheme |
| **EBSS** | Efficiency Benefit Sharing Scheme |
| **ENA** | Energy Networks Australia |
| **Federal Court** | Federal Court of Australia |
| **FY** | Financial Year |
| **IAP2** | International Association for Public Participation (Australasia) |
| **IT** | Information Technology |
| **kV** | Kilovolts |
| **LRMC** | Long Run Marginal Cost |
| **MVA** | Mega Volt Amp |
| **NEM** | National Electricity Market |
| **NEO** | National Electricity Objective |
| **NER** | National Electricity Rules |
| **NSW** | New South Wales |
| **Opex** | Operational expenditure |
| **PV** | Photovoltaic |
| **QUT** | Queensland University of Technology |
| **RAB** | Regulatory Asset Base |
| **RBA** | Reserve Bank of Australia |
| **Repex** | Replacement expenditure |
| **RFS** | Rural Fire Service |
| **ROC** | Regional Organisation of Councils |
| **SME** | Small to Medium Enterprises |
| **STOU** | Seasonal Time of Use tariff |
| **STOU Demand** | Seasonal Time of Use Demand tariff |
| **STPIS** | Service Target Performance Incentive Scheme |
| **TOU** | Time of Use tariff |
| **Tribunal** | Australian Competition Tribunal |
| **TSS** | Tariff Structure Statement |
| **WACC** | Weighted Average Cost of Capital |

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