31 January 2023

Attachment 5.2.a: Network strategy

Ausgrid's 2024-29 Regulatory Proposal

Empowering communities for a resilient, affordable and net-zero future.

Ausgrid

1 Executive Summary

Introduction

Ausgrid's Network Strategy provides the "line of sight" between the Ausgrid corporate strategy ("Our Strategy") which outlines Ausgrid's approach to achieving our vision *for communities to have the power in a resilient, affordable, net-zero future*, and the network related activities that Ausgrid will take to achieve the vision.

Customer expectations on how they can derive benefits from the electricity network are strongly impacting the transformation of the sector. The actions taken by Government, community and customers are having a direct impact on Ausgrid's future network. Higher penetration of customer owned, 'behind the meter' generation assets, an increasing transition to the electrification of transport and heating, and the increasing effects of climate change are at the forefront of Ausgrid's focus when planning to meet the needs of customers into the future.

The Network Strategy outlines three themes that proactively address external and internal issues impacting Ausgrid's customers and business:

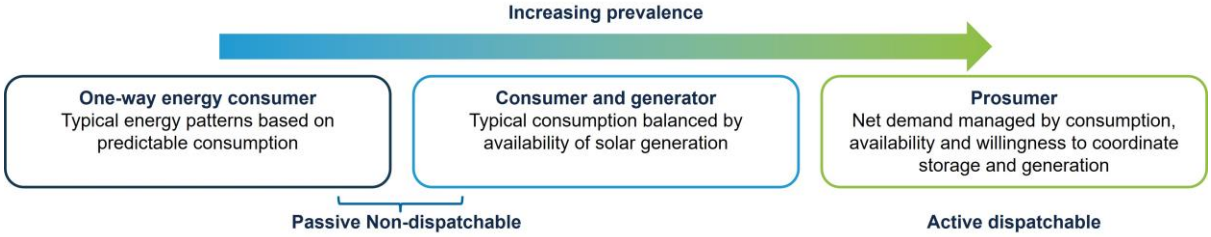
- Sustain the grid;
- Enable net zero; and
- Build resilience to climate change

Each element of the Network Strategy supports the pillars of Ausgrid's Strategy. The overarching relationships between the Ausgrid overall and the three Network Strategy themes are summarised below.

Ausgrid's Network Strategy aims to	Support Thriving Communities by:	Provide Ausgrid's people with purpose and opportunity by:	Understand and maximise the capabilities of existing assets and operations to:	Support Ausgrid's net zero objectives by:
Sustain the Grid	Safely and reliably powering the community at the most efficient cost to support businesses and lifestyles	Involvement in the rollout of new technology and opportunities to learn new skills, while being at the forefront of the community's plans in dealing with climate change - both reduction and response	Support affordability by safely providing reliable power & energy services at the most efficient cost	Providing a safe, reliable and flexible base for hosting high quantities of Distributed Energy Resources (DER)
Enable Net Zero	Supporting the community's net zero aspirations and customer's choices for energy resources and electric vehicles		Be clear about what net zero related services can be delivered by existing assets and which additional areas need focus or investment	Pursue and promote new network enabled opportunities to de-risk and support a cost effective transition to net zero
Resilience to Climate Change	Helping communities to resist, absorb, accommodate, adapt to, transform and recover from the effects of climate change		Be clear about what resilience related services can be delivered by existing assets and which additional areas need focus or investment	Help ensure that the DER capabilities built into the network also consider opportunities to assist customers and communities during climate events.

What customers and stakeholders expect from Ausgrid's network

Ausgrid has engaged deeply with customers to understand their needs and aspirations in order to inform thinking about the way Ausgrid's network and services can support customer's needs. This relationship will become increasingly sophisticated as it evolves from relatively passive electricity supply with one-way flows to more active interactions with two-way flows across the network. The cost and complexity of maintaining service levels and the safety of Ausgrid's employees will also increase.



The Network Strategy considers the relationship with other stakeholders including:

- 'Customer Partners' such as local councils, Accredited Service Providers (ASP's) and alternative solutions providers who represent customers needing Ausgrid services;
- Business and Regulatory stakeholders such as the AER, government bodies, special interest groups and shareholders; and
- Industry stakeholders such as AEMO, retailers, generators, Transgrid, EnergyCo and suppliers.

The challenges addressed by Ausgrid's Network Strategy

In developing the Network Strategy Ausgrid has considered the most important issues facing customers and the Ausgrid business. Ausgrid has applied the organisation's advanced asset management skills and data, considered feedback from customers and stakeholders and environmental scanning to identify the following key challenges to be addressed by the Network Strategy.

External challenges:

- Affordability
- Fairness
- Increase in behind the meter (customer) generation
- Climate change
- Net zero

Internal Challenges:

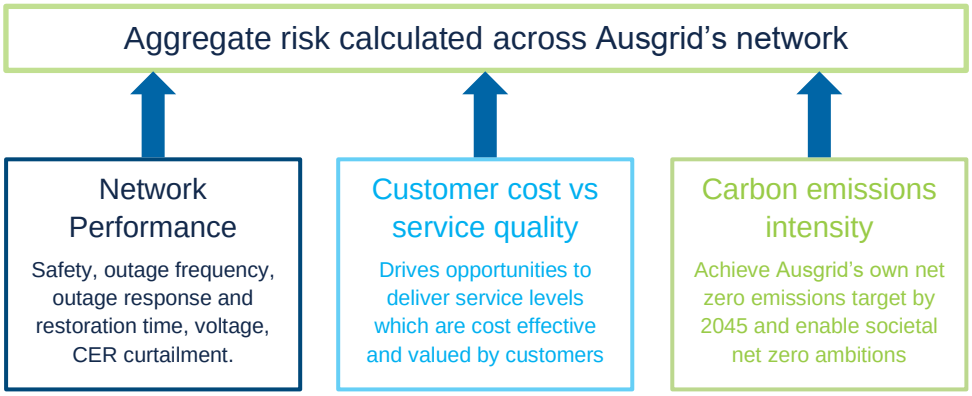
- Maintenance of existing infrastructure
- Changing demand and utilisation patterns

Objectives of the network strategy and measures of success

The overarching objective of the Network Strategy is to guide the evolution of Ausgrid's network, to balance cost, risk and performance over the long term, in the context of changing customer needs and environmental conditions.

An understanding of the measures of success provides material support to the goal of aligning Ausgrid's Asset Management strategy and culture with the corporate vision and objectives. Defining success measures has been a significant part of the development of the strategy.

Aggregate Network Risk Growth (**ANRG**) indicates the performance of three key measures across the Network Strategy's main themes. It includes network performance, customer cost vs. service quality, and carbon emissions intensity.



Network Strategic themes

The Network Strategy distils Ausgrid's approach down to three key themes:

- Sustain the grid;
- Enable net zero; and
- Build resilience to climate change

Sustaining the grid

One of the key challenges is to manage the health of the existing assets and network to deliver on the cost, risk, and performance expectations of customers and stakeholders. Advanced risk management techniques, life extension and contingency planning all have important roles to play in achieving the outcomes required.

The Sustain the Grid theme includes the following strategies:

- Effective utilisation of the network – to maximise energy transferred by the Ausgrid network, both to and from customers, in the most cost effective way;
- Intergenerational investment – to ensure that the customers of today are not unfairly paying for benefits delivered to future customers and that future customers will not unfairly have to pay too much, due to underinvestment today;
- Integrated asset management – to ensure that the collective customer and network needs and options are considered together, rather than separately, leading to potentially inefficient investments;
- Applying emerging technologies – to ensure that Ausgrid adapts its approach to take advantage of new solutions and to stay in touch with the wants and needs of customers and stakeholders as they adopt new technologies.

Enable Net Zero

Customers support actions to reduce carbon emissions to reach Net Zero by 2050 or earlier. Ausgrid will innovate and adapt the business to facilitate an equitable and affordable transition to net zero.

The Enable Net Zero strategic theme includes the following strategies:

- Intensifying electrification – to support migration of transport and heating loads which currently use fossil fuels, to a supply entirely from renewable sources;
- Allowing equitable access – to allow a greater cross section of the community to participate in and contribute to the transition to net zero, even if they are unable to make direct investments in renewable energy or electric vehicles; and
- Effective system operation – to ensure that Ausgrid (and AEMO) can continue to efficiently operate a safe and reliable network with materially higher levels of renewable supply, for the benefit of all customers;

Resilience to climate change

Climate change is resulting in an increasing frequency of extreme weather events and natural hazards, which presents several escalating challenges to operating a resilient grid into the future.

Network Resilience is the ability for the network to resist, absorb, accommodate, adapt to, transform and recover from the effects of a hazard, in this case, the increased hazards associated with climate change. A resilient network contributes directly to resilient, thriving communities.

The Resilience to Climate Change themes involve the following strategies to support communities and the network before, during and after extreme events:

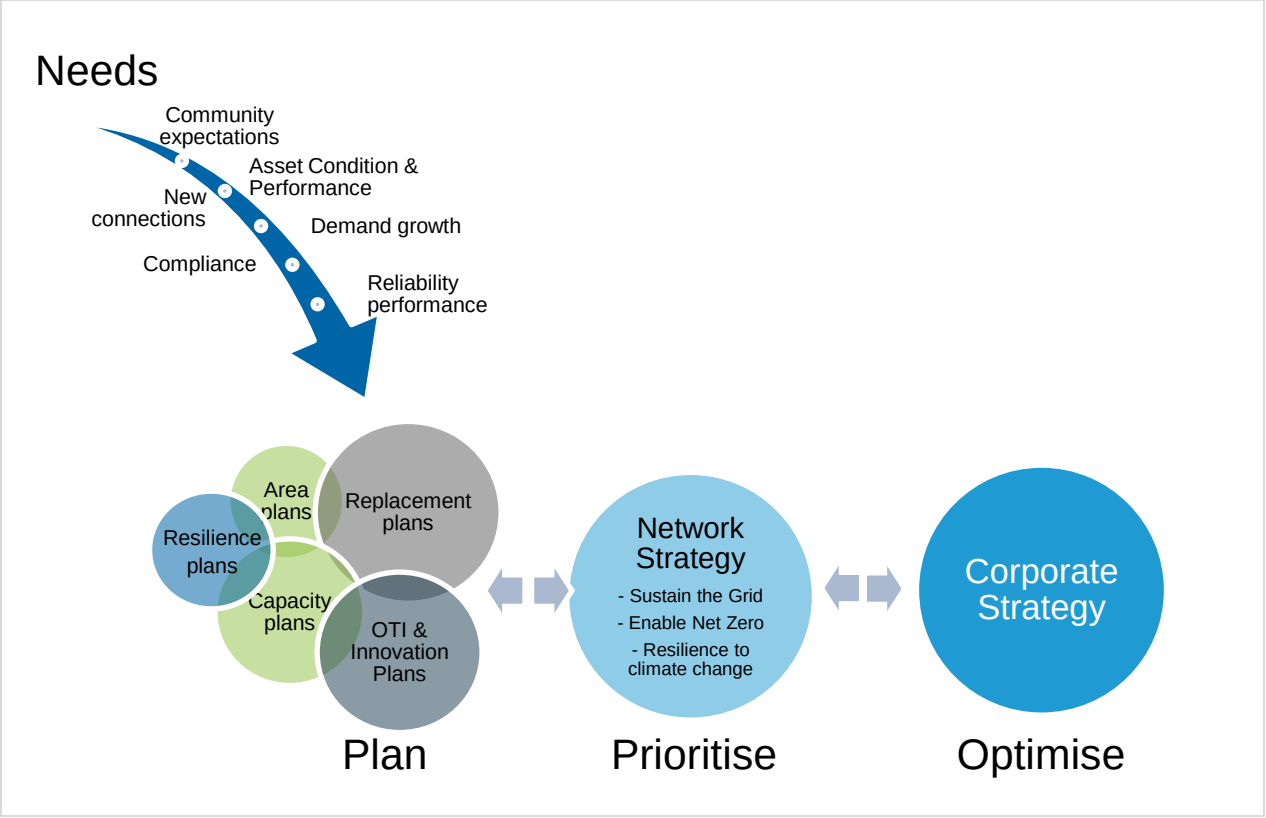
- Supporting the community – to ensure that the community understands the likely impacts of climate change and can make their own preparations, as well as supporting the community during and after events through services including better outage and restoration information, resilience ‘hubs’, and support services during extended outage events;
- Network investment – to ensure that Ausgrid’s network and related control systems are able to cost effectively resist, respond to and recover from climate based events, while considering the role which customers’ own resilience measures play;
- Innovation – to ensure that new approaches to management of resilience are explored and supported so that all viable options are considered, without unintentional bias towards existing and more familiar solutions.

Mapping the Network Strategy to asset management programs

The Network Strategy is mapped to investment programs through Ausgrid’s existing planning processes.

Ausgrid adopts a ‘whole of life, whole of system’ approach to ensuring that assets are created and maintained to support organisational objectives such as those outlined in this strategy.

Ausgrid uses sophisticated Failure Mode, Effect and Criticality Analysis combined with Reliability Centred Maintenance (**FMECA RCM**) to set maintenance programs based on failure rates and impacts on customers and the business. When analysis indicates that maintenance will no longer be effective, retirement or (capital) replacement of the asset is considered.



Capital programs are developed using a portfolio approach supported by bespoke tools such as network analysis software, risk-based models and Cost Benefits Analysis (**CBA**).

The diagram below sets out the process for development of capital plans.

The Plan stage develops potential solutions to the issues identified. The Prioritise assesses the consolidated network capex portfolio to consider the overall alignment of the proposed solutions to the Network Strategy objectives and their relative priority within the portfolio, based on monetised risk where possible. The Optimise phase follows the Prioritise phase and tests the overall portfolio direction against the Corporate Strategy objectives and Board Risk Appetite.

The outputs of the planning process are the plans below which reflect the themes of the Network Strategy.

Investment Plan	Sustain the Grid	Enable Net Zero	Resilience to climate change
Replacement Plans	✓		
Area Plans	✓	✓	✓

Investment Plan	Sustain the Grid	Enable Net Zero	Resilience to climate change
Distribution Capacity Plans	✓	✓	
Operational Technology and Innovation Plans	✓	✓	✓
CER Integration Plan		✓	
Resilience Plan			✓

Conclusion

Ausgrid has developed a Network Strategy which aligns with the Ausgrid corporate strategy while addressing customer and stakeholder needs. The key themes of sustaining the grid, enabling net zero and resilience to climate change, which are supported by advanced analytics and an overarching framework which plans, prioritises and optimises actions and investments across Ausgrid's network. Key measures of success are embedded in the strategy so that Ausgrid can gauge progress against the objectives.

This Network Strategy provides a robust approach, aligned to the Ausgrid corporate strategy, to delivering the network enabled outcomes which will achieve Ausgrid's vision for communities to have the power in a resilient, affordable, net-zero future.

2 Introduction and purpose

The Network Strategy links together and drives the Asset Management strategy, in alignment with the Ausgrid corporate strategy

2.1 Purpose

Ausgrid's Network Strategy provides the "line of sight" between the overall Ausgrid Strategy, which outlines Ausgrid's approach to achieving our vision *for communities to have the power in a resilient, affordable, net-zero future*, and the network related activities that Ausgrid will take to achieve the vision.

The electricity supply industry is undergoing and will continue to experience significant structural transformation. Customer expectations on how they benefit and derive value from the electricity network are strongly impacting the transformation of the sector. The actions taken by Government, community and customers are having a direct impact on Ausgrid's future network. Higher penetration of customer owned, behind the meter generation assets, an increasing transition to the electrification of transport and heat and the increasing effects of climate change are at the forefront of Ausgrid's focus when planning to meet the needs of customers into the future.

2.2 Intended audience

This strategy is intended to provide useful information to a range of stakeholders including Ausgrid staff, customers and the Australian Energy Regulator (**AER**).

2.3 Contents overview

The Network Strategy outlines three strategies that proactively address external and internal issues that impact Ausgrid's customers and business. Each aligns to the pillars of Ausgrid's corporate strategy, which has been formed following extensive engagement with customers and prioritises the actions needed to deliver the best services for customers into the future.

Table 1 - Network Strategy Elements, Drivers and Corporate Strategy alignment

Strategy	Driver	Corporate strategy alignment
Sustain the grid - Intergenerational investment - Integrated asset management - Leveraging technological advances - Innovation	External – affordability External – fairness Internal – maintaining existing infrastructure Internal – changing demand and utilisation patterns	**Optimised Assets & Operations** Improve the efficiency of how we plan and deliver field and office based operations Deliver the network capex and maintenance plans Lift our digital and data capabilities to make fast, evidence based decisions Build new skills to excel today and ready ourselves for the future

Strategy	Driver	Corporate strategy alignment
Enable Net Zero - Intensifying electrification - Allowing equitable access - Effective system operation - Innovation	External - fairness External – increase in behind the meter and distributed generation External – Net Zero Internal – changing demand and utilisation patterns	**Delivering Net Zero** Demonstrate leadership and facilitate an equitable and affordable transition to net zero Enable flexibility and support resilient and secure energy system Embrace the energy transition to create opportunities and grow revenue Reduce Ausgrid's carbon footprint
Resilience to climate change - Supporting the community - Innovation - Hardening the network	External - fairness External – climate change Internal – maintaining existing infrastructure	**Thriving Communities** Support our customers to build resilient communities with a safe and reliable network Strive to resolve customer issues quickly and meet changing expectations Support customer choice by providing options and information Continue to build trust and collaborate with our stakeholders

2.4 Relationship to other strategic documents

The Network Strategy links together and drives Asset Management strategy, in alignment with the Ausgrid strategy objectives of Thriving Communities, Valued People, Optimised Asset & Operations and Enabling Net Zero. It provides guidance on the network investment, decision frameworks and governance aligned to the Asset Management Strategy. This function brings together different supporting strategic initiatives, with each outlining plans to achieve Ausgrid's corporate objectives in more detail.

The Network Strategy forms part of the Asset Management System, a wider system of documents that direct, coordinate and monitor asset management activities across the lifecycle of Ausgrid's assets.

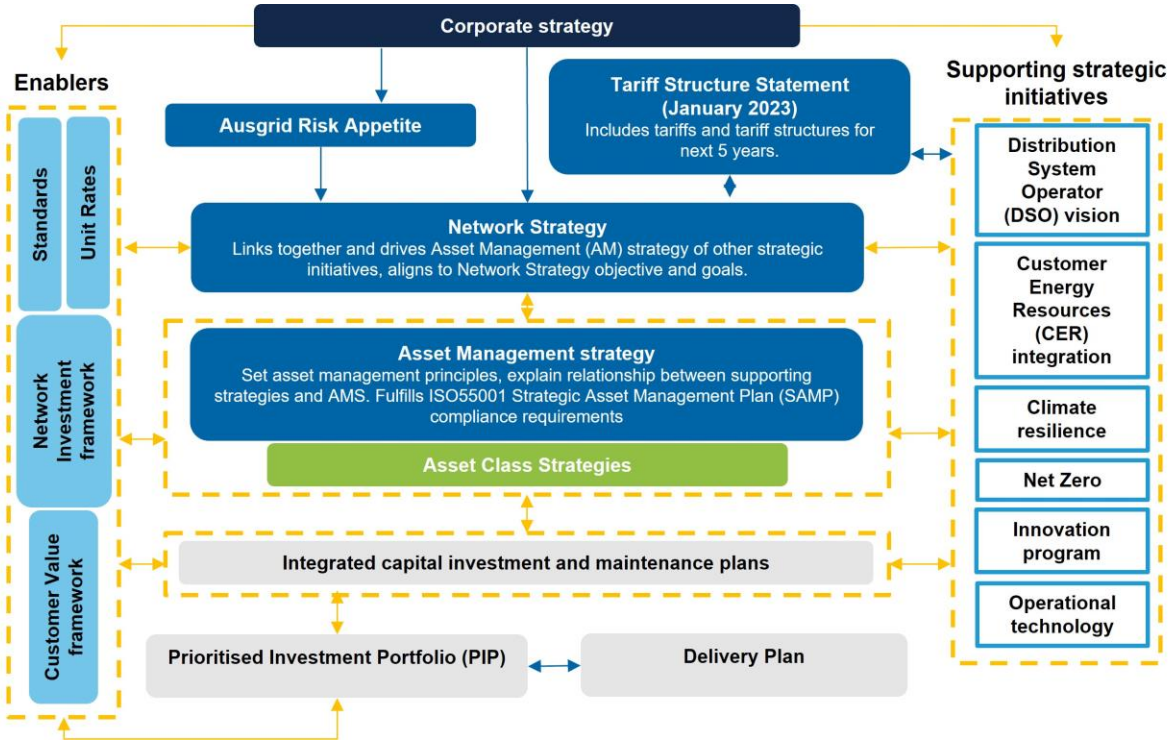


Figure 1: The Network Strategy links together and drives Asset Management strategy, in alignment with the corporate strategy objectives

3 What our customers and stakeholders expect

Deep engagement with Ausgrid's customers and stakeholders to understand their needs and expectations is a foundation of our strategy

3.1 Overview

The changing energy landscape is increasing the complexity of customers' and stakeholders' needs and the ways Ausgrid's network will be used in the future. Traditionally Ausgrid's primary service has been distributing energy from supply points to connection points where energy is sold to customers. Increasingly today, the network is used as an energy services platform – providing system security services, hosting our customer's ability to trade energy and access lower cost, low carbon Customer Energy Resources (**CER**).

Our stakeholders fall into four defined categories:

- Customers,
- Customer Partners,
- Business and Regulatory stakeholders, and
- Industry stakeholders.

These broad categories of stakeholders can be further broken down as shown in Figure 2.

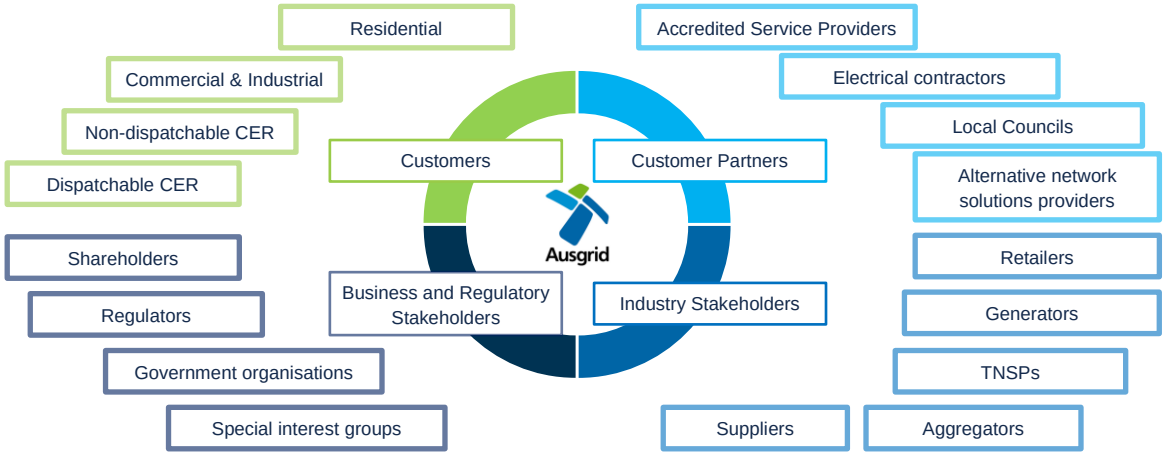


Figure 2: As Ausgrid's network is increasingly used as an energy services platform, we need to understand the new roles and partnerships customers and stakeholders will play in the new energy future

3.2 Customers

Ausgrid's 1.8 million customers are made up of individuals, businesses or any party that utilises our energy services. Our customers live in a diverse range of dwelling types, demographics, and geographies, each with their own energy needs. 38% of our customers live in apartments with limited access to roof space, others live in urban suburbs, often with limited off street parking and high vegetation cover, while others live in coastal or rural settings. Residential customers make up 89% of our customer base, but businesses account for 66% of energy consumption. We process approximately 30,000 new connections per year.

3.3 Customer partners

Partners include customers that pay directly for a service. We group our customer partners into 3 different segments corresponding to the role they play and our relationship in delivering customer value;

- Accredited Services Providers (**ASPs**) and electrical contractors who provide services to end use customers. We provide connection services, processing a request to connect from initial design to commissioning.
- Local councils as the street lighting service provider and regulator of the local built environment responsible for the operation, maintenance, repair, replacement, relocation and installation of public lighting assets.
- Alternative network solutions providers such as grid battery suppliers and Virtual Power Plants (**VPPs**). We explore alternative network solutions at the beginning of the network investment process and then look at solutions with external providers where efficient and justified.

3.4 Business and Regulatory stakeholders

3.4.1 Shareholders

In December 2016, the NSW Government commenced a 99-year lease of a 50.4% share of Ausgrid's assets to IFM Investors and AustralianSuper. In 2022 a partial sale of AustralianSuper's holding to APG was completed. The collective shareholder of IFM, AustralianSuper and APG hold operating control of Ausgrid. The shareholders shape the strategic objectives and vision of our business, bringing external perspectives with a view to shape long-term investment.

3.4.2 Regulators and government organisations

Ausgrid is a highly regulated business. Our performance and activities are measured and assessed as a Distribution Network Services Provider (**DNSP**) participant in the National Electricity Market (**NEM**). As a participant in the NEM, Ausgrid is regulated under the National Electricity Law (**NEL**) and National Electricity Rules (**NER**). The Australian Energy Regulator (**AER**) is the economic regulator for the distribution and transmission sector under these rules. Ausgrid is also accountable to the Australian Energy Market Operator (**AEMO**) in terms of market operation and to the Independent Pricing and Regulatory Tribunal of NSW (**IPART**) for licence conditions. IPART and SafeWork NSW are the jurisdictional technical and safety regulators. The NSW Environmental Protection Authority (**EPA**) is the primary regulator for the environmental impacts of Ausgrid.

3.5 Industry stakeholders

Ausgrid has a vision to work with partners across the energy industry to offer new services that our customers want and value. As the usage patterns and roles of our customers change, new opportunities and service offerings become available.

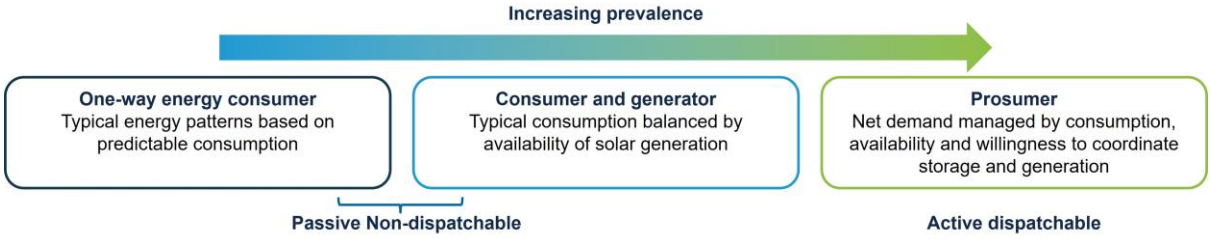
Retailers and aggregators will play an increasing role as partners in orchestrating smaller customer energy resources and usage patterns. Offerings to larger customers and generators, in conjunction with Transmission Network Service Providers (**TNSPs**) are also material to our business.

Ausgrid's suppliers for network equipment, technology and tools to analyse, plan, construct and operate the network are also valuable partners. Collaboration with suppliers can bring innovative and cost effective solutions across the full spectrum of network challenges.

3.6 Customer needs

The changing energy landscape is increasing the complexity of Ausgrid's customers' needs and the ways the network will be used in the future. Ausgrid's primary service has previously been distributing energy from upstream supply points to customers connection points.

Increasingly, Ausgrid's network is used as an energy services platform – providing system security services, hosting our customer's ability to trade energy and access lower cost, zero-emissions. While customers can be increasingly defined as 'prosumers' with dispatchable load and generation, customers using the network's core distribution services will remain in the long term. Ausgrid's role will be to optimise local generation and consumption for the benefit of both our network and customers, as well as the NEM as a whole.



Ausgrid has undertaken extensive customer research and engagement to best understand customers' needs. This engagement is a crucial step in forming the future direction of the business and Ausgrid has taken the opportunity to listen and respond to a diverse range of views. Key themes from the engagement are summarised in Figure 3.

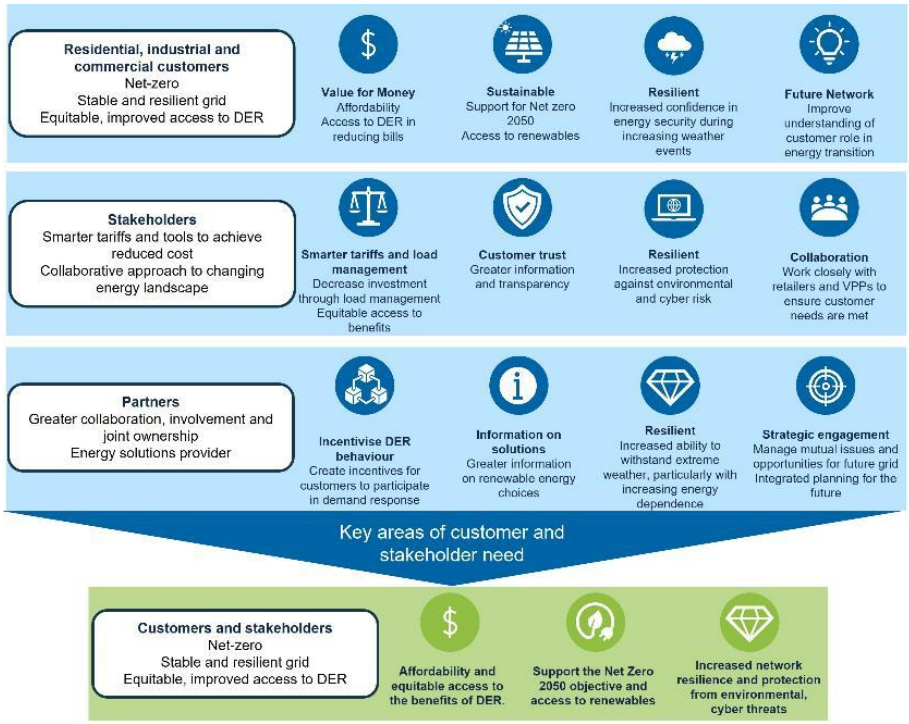


Figure 3: Key themes and highlights from engagement with stakeholders

4 Ausgrid's most significant challenges

The Network Strategy outlines the way Ausgrid is responding to the most important issues facing customers and the business

4.1 External factors

4.1.1 Affordability

Affordability remains a high priority for Ausgrid's customers. Political and customer pressure to contain electricity prices is likely to continue to be a major focus as inflationary pressures return. Whilst Ausgrid's network contributes 46% of customers' electricity bills, Ausgrid has been delivering a material decrease in this component of customer bills over a five-year period. There is an opportunity to help customers understand what drives electricity network prices.

4.1.2 Fairness

Customers have conveyed a clear message through the Voice of Customer (**VoC**) workshops and final report:

"Reliable access to energy is a basic human right. If wide-reaching solutions are not provided by the private sector within this regulatory period, it is Ausgrid's corporate social responsibility to prioritize community energy projects and incentives… The main priority of our recommendations is for every Ausgrid customer to have reliable access to energy supply, despite where they are situated (city or rural)."

While Ausgrid recognises the concept of fairness can mean different things to different people, our network strategy responds to customer feedback by pursuing more equitable network performance outcomes where doing so is cost effective.

4.1.3 Increase in behind the meter generation

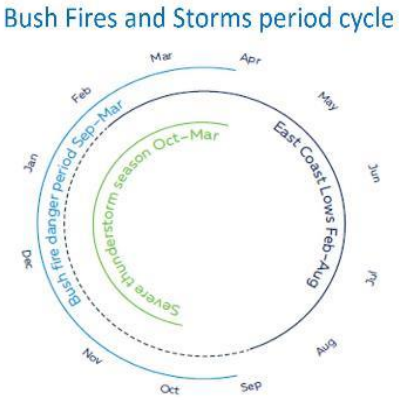
The energy industry is undergoing a rapid change that is impacting the role and value of Ausgrid's existing network. Decentralisation is changing the value and meaning of core services. This is driven by technologies such as solar and energy storage and will be facilitated by innovations such as smart meters and real time monitoring so that the generation can be orchestrated.

CER, including solar, rooftop photo voltaic (**PV**) and the advent of electric vehicles (**EVs**) is increasing the complexity of the volume and timing of energy demand. Densely populated urban environments with limited clear roof space limit the penetration of rooftop PV and make EVs a special focus for Ausgrid's network.

A major factor driving Ausgrid's ability to enable CER and the new ways customers will utilise the network is the underlying cost to access the network. In addition, if not effectively coordinated, CER will drive increasing augmentation costs in the network and limit customers' ability to access low-cost generation.

4.1.4 Climate change

Climate change is having an impact on Ausgrid's network. Ausgrid's customers and network area have experienced more frequent, more intense weather events and interruptions that follow damage to the network. This trend is forecast to continue, with extreme heat, wind and other climate impacts drive increased risk of asset failure from accelerated ageing.



Another trend forecast to amplify the acute and ongoing impacts of climate change is changes in customer behaviour. With increasing electrification and changing technologies, customers' wellbeing and resilience in times of hardship are becoming more reliant on access to reliable electricity supply.

4.1.5 Net Zero

The NSW Government has set a Net Zero Plan with a goal to reach net zero emissions by 2050. Ausgrid's customers support actions to reduce carbon emissions to reach net zero emissions by 2050 or earlier and are seeking to understand their role in achieving this target.

Actions already being embraced by customers include converting appliances and transport from fossil-fuelled energy sources to electric. Ausgrid has set a science based target of achieving net zero emissions by 2045, which will play a major role in enabling the NSW Government's Net Zero 2050 objectives as well as customers' and stakeholders' net zero ambitions.

4.2 Internal factors

4.2.1 Maintaining existing infrastructure

Maintaining the performance of the existing Ausgrid network will continue to be a challenge as the average age increases and the condition of the network deteriorates. While historic performance has been maintained through the introduction of new planning standards and technologies, low asset replacement rates are resulting in an increase in average asset age.

The cost and complexity of maintaining service levels and the safety of Ausgrid's employees will also increase with the two-way flows expected on the network, and this will impact both new and existing infrastructure.

4.2.2 Changing demand and utilisation patterns

Many of the above external factors are changing the long-term trend for peak (maximum) demand on Ausgrid's network. From a relatively stable base, peak (maximum) demand forecasts are expected to be strongly influenced by uptake in rooftop PV, electric vehicles and electrification of heating.

Population and business growth are offset by increasing efficiency of appliances and continued growth in rooftop PV. However, accelerated electrification of household appliances and transport are forecast to drive net growth in maximum demand.

The growth in these emerging usage areas is expected to occur at different rates in different parts of the network, requiring different investments to be targeted in different areas.

Tariffs, dynamic operating envelopes, customer incentives and controls will also impact how the uptake of PV, EV charging and electrification impact on maximum demand. Ausgrid incorporates these scenarios into our investment plans, and this will continue to change the mix of investments compared to the past.

5 Objectives of the Network Strategy

The Network Strategy seeks to guide the evolution of Ausgrid's network to balance cost, risk and performance over the long term, in the context of changing customer needs and environmental conditions

5.1 Measuring success through key metrics

Defining success measures is a significant part of Ausgrid's vision setting and provides material support to the goal of aligning Ausgrid's Asset Management culture with the corporate vision and objectives

This document outlines three key metrics that are introduced under the concept of Aggregate Network Risk Growth (**ANRG**). ANRG is an indicator of Ausgrid's success in balancing network cost, performance and risk.

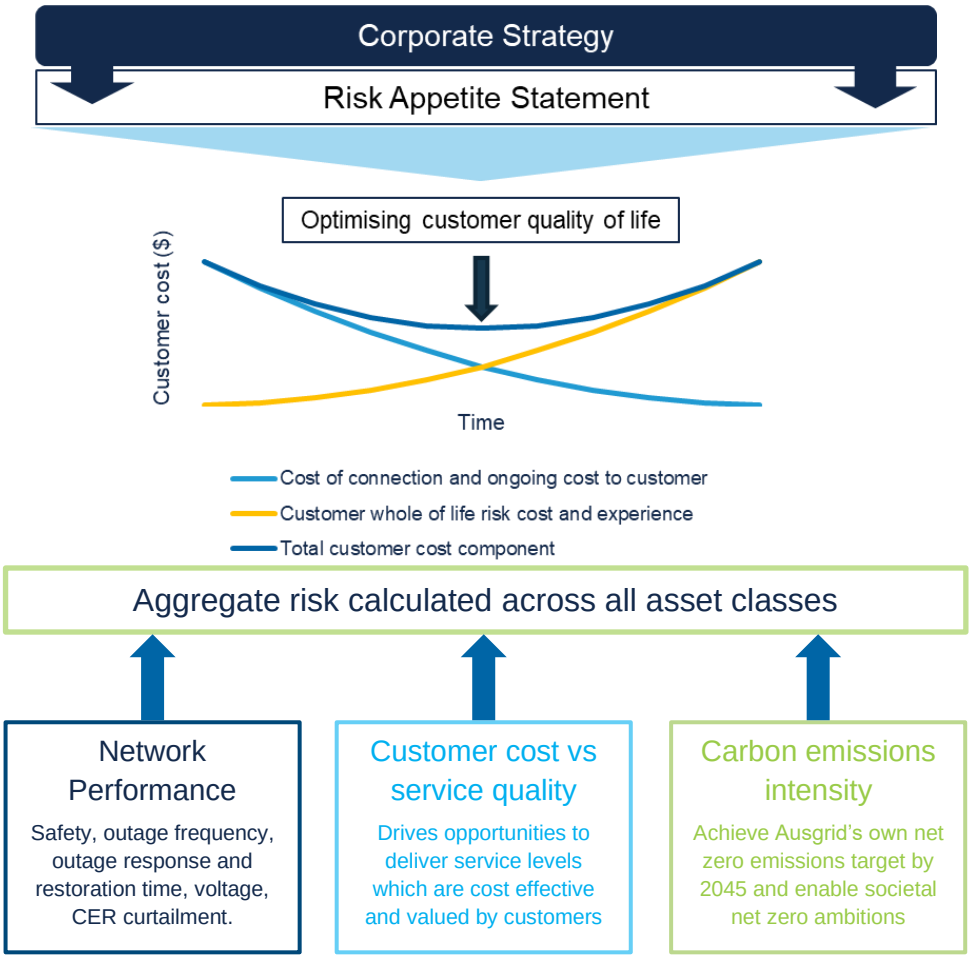


Figure 4: Aggregate Network Risk Growth is a primary metric which gives long-term view of the ability to balance risk, cost and performance across all asset classes.

5.2 Aggregate Network Risk Growth

Ausgrid monetises risk to inform decisions that produce the greatest net economic benefit for customers and stakeholders. Quantified Risk Assessment (**QRA**) is currently applied to all of Ausgrid's network assets. Quantified risk assessment approaches are part of a wider evolution to predict failures before they happen and assess a wide variety of decisions to reduce the most risk at least cost.

Aggregate Network Risk Growth (**ANRG**) indicates the performance of three key measures, with the intent of summarising Ausgrid's quantified asset risk assessment approach. The ANRG concept currently considers expected unserved energy (**EUE**), safety, environmental, bushfire operating cost and financial risks. Other risks due to emerging issues such as CER curtailment and supply quality are being analysed separately (for example via the AER's CER Integration guidance note) and are under consideration for inclusion as they mature. This is consistent with Ausgrid's intention to progressively develop and incorporate more risk dimensions into the ANRG index over time.

ANRG indicates Ausgrid's success in balancing network cost, performance and risk. Increasing risk growth indicates an increasing cost burden to customers to manage the risks Ausgrid seeks to control, including higher public safety risk, outages and bushfires.

5.3 Network performance

Network performance are a lagging view of the frequency and severity of failures which measures success against the objective of a safe, reliable and resilient network. They indicate the network's ability to operate within certain reliability and safety standards and respond to major events and persistent risk from things such as extreme weather events and climate change.

5.4 Customer costs

Customer costs is the initial cost of connection and ongoing cost to supply a customer through the existing network, compared to the whole of life risk cost and customer experience from Ausgrid's services.

This metric drives Ausgrid to identify opportunities to reduce risk-cost and improve customer outcomes, especially in poor performing network areas.

5.5 Carbon emission intensity

Carbon emissions intensity refers to energy related carbon emissions of those connected to Ausgrid's network, line losses from transferring power through conductors and assets and the emissions of Ausgrid's own operations.

Ausgrid is setting net zero emissions by 2045 targets in line with the Science Based Targets Framework[1], which is a developed pathway to Net Zero validated that is in line with the Paris Agreement – limiting global warming to below two degrees pre-industrial levels.

This ambition, combined with Ausgrid's first phase target of a 50% reduction target by 2030 supports the NSW government's net zero objectives.

[1] Ambitious corporate climate action - Science Based Targets

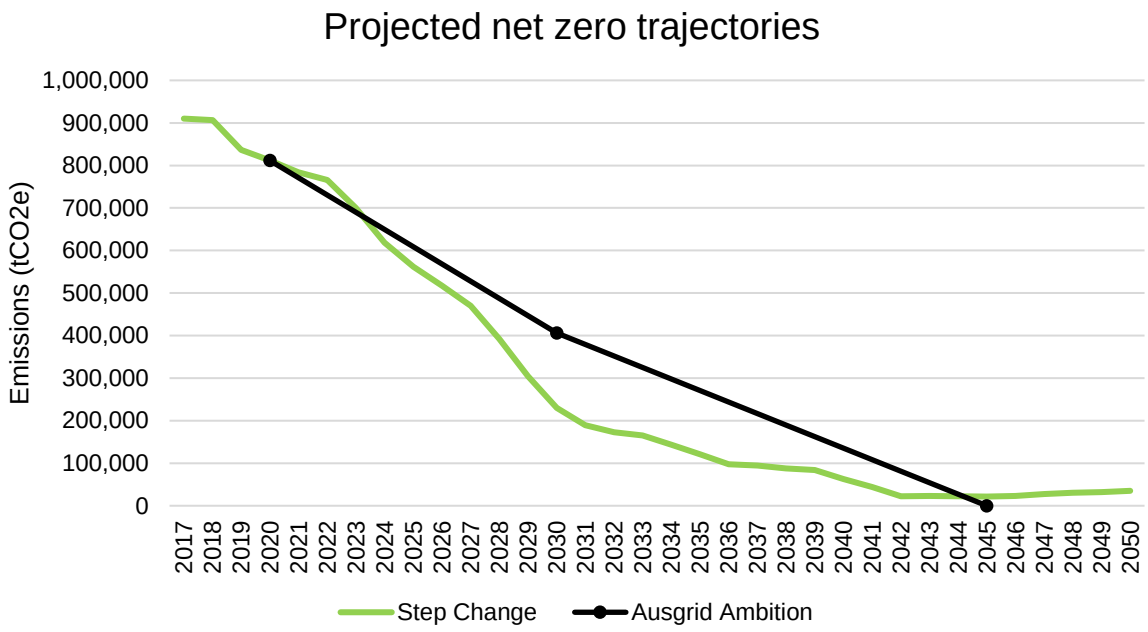


Figure 5: Ausgrid is seeking to enable the net-zero ambitions of the NSW government and Ausgrid's customers.

6 Elements of the Network Strategy

The Network Strategy distils Ausgrid's approach down to three key themes: Sustain the grid, enable net zero, and build resilience to climate change.

6.1 Strategies Overview

Ausgrid's network strategies are employed to proactively adapt to internal and external drivers, which we measure against leading and lagging KPIs.

Strategy	Driver	KPI	Corporate strategy alignment
Sustain the grid - Intergenerational investment - Integrated asset management - Leveraging technological advances - Innovation	External – affordability External - fairness Internal – maintaining existing infrastructure Internal – changing demand and utilisation patterns	Aggregate risk carried Network performance Network utilisation	**Optimised Assets & Operations** Improve the efficiency of how we plan and deliver field and office based operations Deliver the network capex and maintenance plans Lift our digital and data capabilities to make fast, evidence based decisions Build new skills to excel today and ready ourselves for the future
Enable Net Zero - Intensifying electrification - Allowing equitable access - Effective system operation - Innovation	External - fairness External – increase in behind the meter and distributed generation External – Net Zero Internal – changing demand and utilisation patterns	Carbon emissions intensity Network performance Network utilisation	**Delivering Net Zero** Demonstrate leadership and facilitate an equitable and affordable transition to net zero Enable flexibility and support resilient and secure energy system Embrace the energy transition to create opportunities and grow revenue Reduce Ausgrid's carbon footprint
Resilience to climate change - Supporting the community - Innovation - Hardening the network	External - fairness External – climate change Internal – maintaining existing infrastructure	Network performance Network costs per served customer	**Thriving Communities** Support our customers to build resilient communities with a safe and reliable network Strive to resolve customer issues quickly and meet changing expectations Support customer choice by providing options and information Continue to build trust and collaborate with our stakeholders

Table 1: Ausgrid is aligning strategic initiatives with responses to drivers and KPIs, as well as with Ausgrid strategy objectives

While the Network Strategy is primarily aligned the Optimised Assets and Operations, Delivering Net Zero and Thriving Communities objectives of the Corporate Strategy, these are underpinned by Ausgrid's employees and valuing the people at the heart of Ausgrid.

6.2 Sustain the grid

Ausgrid manages over $16 billion worth of infrastructure assets. One of the key challenges is to manage the health of the network to deliver on the reliability and safety performance expectations of customers and stakeholders. Advanced risk management techniques, life extension and contingency planning all have important roles to play in achieving the outcomes required. Reflecting the Optimised Assets and Operations objective of the Corporate Strategy, the Sustain the Grid theme involves the following strategies:

- Effective utilisation of the network
- Intergenerational investment
- Integrated asset management
- Applying emerging technologies

6.2.1 Effective utilisation of the network

Ausgrid seeks to maintain or improve utilisation of the network through a range of initiatives including tariffs, planning standards, connection policies and increased network visibility to maximise value for customers. In addition to traditional capacity based utilisation Ausgrid is considering further ways in which the network can provide customer utility, for example in terms of voltage levels, stable frequency and the ability to export renewable energy to the grid.

6.2.2 Intergenerational investment

Intergenerational investment seeks to achieve equity between customers who will fund network investments now, and customers who will benefit from those investments into the future. Ausgrid's goal is to focus on investment options that strike a balance between cost and service.

Ausgrid seeks to maximise the useful life of assets by considering their acquisition, operation, maintenance and disposal costs. By assessing the Net Present Value (NPV) over the asset lifecycle, Ausgrid can evaluate investment options in the context of increasing uncertainty by:

Integrating the value of optionality to consider increasing uncertainty

This will be achieved by increasing the sophistication of planning options – exploring ways in which optionality, that is the value of delaying an investment decision to a point where the future is more certain, can be built into the assessment of options.

Use of alternative technologies

Considers asset replacements that may require a higher upfront cost but are more likely to meet the future needs of customers. Ausgrid's Climate Resilience Strategy[2] outlines a replacement strategy using of insulated overhead conductor as an alternative construction

[2] Ausgrid Climate Resilience Strategy and Program Justification

type to bare overhead conductor lines. Insulated overhead conductor has improved capability to resist and absorb the impacts of climate events by reducing the risk of contact with vegetation and other conductors.

Staged implementation of assets and early-stage alternative network options

Staging and alternative options can provide the optimum network solution to meet Ausgrid's and customers' current and future needs. New tools and capabilities provide the widest array of options early in the planning process to produce the best valued option.

Integrating "cost to serve" into day-to-day planning

Cost-to-serve is the ongoing cost to supply a customer through the existing network, which must be balanced with the risk-opportunity in upgrading and replacing that network. Supplying a small number of customers through a bushfire prone area may have a higher cost-to-serve due to the increased risk of bushfire and higher maintenance that comes with a long overhead network compared to an urban, underground network. This approach is used to identify opportunities to reduce risk-cost, improve reliability and improve access to cheaper, lower carbon energy choices. Ausgrid will prioritise increased undergrounding of the network in line with new building standards, long term stakeholder plans, and where economically justified as an opportunity to reduce long term maintenance costs and bushfire risk.

Increasing the Cost Benefit Analysis (CBA) study length

Extending the assessment length beyond the nominal life of assets and assessing options over longer timeframes will ensure the most optimal solutions are identified (i.e. by utilising life extension management techniques where available)

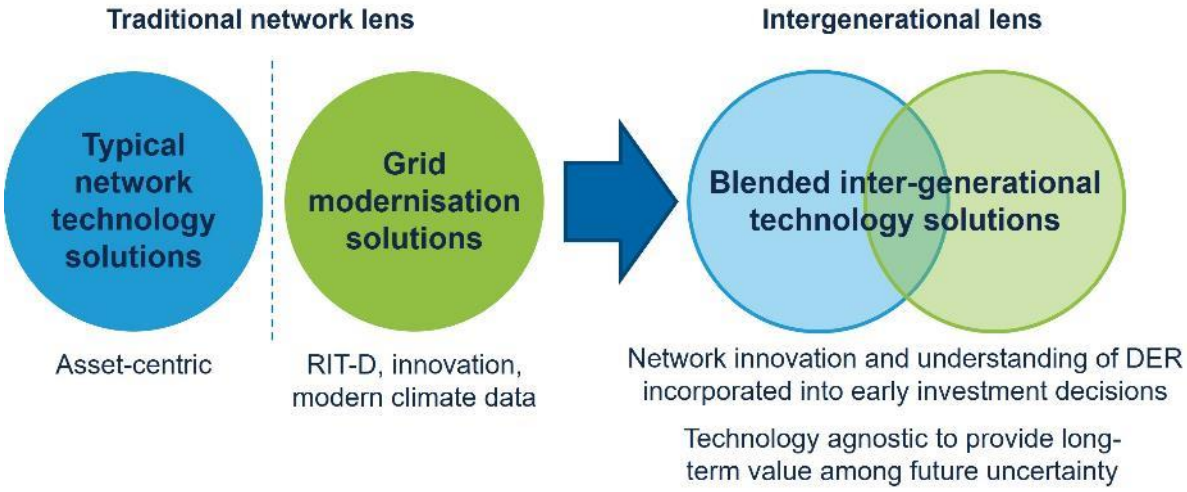


Figure 6:. Where alternative network solutions were typically assessed at a stage following initial investment options (e.g., RIT-D), Ausgrid is incorporating these options alongside traditional solutions like augmentation.

6.2.3 Integrated asset management

Integrated asset management is a framework to integrate multiple risk-cost and decision-making models to increase the execution capability and efficiency of decisions across the

asset base. It drives affordability by enhancing Ausgrid's ability to decrease the cost of each task and prioritise the greatest risk when replacing and repairing assets.

Safety by design

The safety and wellbeing of staff, customers and the community will always be Ausgrid's main priority. Safety is considered across the lifecycle of asset management decisions. Safety by design is an approach to design out risk and incorporate risk controls in the initial phases of an assets' life. Ausgrid engages with suppliers to align specifications with a long-term lens on safety outside the standard warranty period.

Integrated Network Planning

Ausgrid has applied area planning at the subtransmission level for a number of years to identify growth, replacement and other risk related needs so that a holistic response with the best mix of major projects and like for like replacement can be achieved, minimising the risk of duplication of effort. With increasing availability of structured data and more sophisticated integrated analysis tools, this approach will be increasingly adopted at the LV level. Ausgrid will increasingly use integrated LV planning as two way power-flow becomes prevalent with increasing CER adoption and community electrification (see 6.3.3). These trends support the need for increased planning accuracy relating to end-of-life decisions on the LV network.

Data and systems driven decision making

Ausgrid's investment governance and investment systems improve the ability to deliver efficiently. The long-term goal is to reduce costs without compromising on safety - making more accurate investment decisions aligned to a complex workforce and network. Over recent years Ausgrid has been moving away from asset-centric decision making towards data-based decisions. This helps to more accurately understand risk through an evidence-based approach and increases the effectiveness of those decisions in an increasingly digital workforce.

Risk-based prioritisation of investments

Ausgrid's asset management approach is founded on the principle of risk management and investments are prioritised accordingly. Ausgrid's risk-based planning techniques promote economically efficient decisions on all investment across time.

Improving affordability by optimising investment and bundling works

By gaining a holistic view of the network's risk Ausgrid is better able to optimally bundle works on assets which have similar timing 'needs', and are physically close to each other or on the same section of network – addressing more risk on the network for the same fixed mobilisation cost. This improves the cost of doing work and drives improvements in affordability.

Common intervention between assets reduces the total maintenance costs and the number of outages required. For example, an asset due for a 12 year maintenance in FY26 can have this activity moved forward or backward up to 2 years when work is occurring on an adjacent bay of assets in a substation. This may increase the cost and duration of the overall task but delivers reduced 'whole of life' costs overall and eliminates the need for two separate outages. Reduced maintenance costs decrease operational expenditure and the costs Ausgrid passes on to customers through their bill.

6.2.4 Applying emerging technologies

Ausgrid is investing in aligning the services offered by the network with customers' future needs. This includes investment to retrofit existing assets for new purposes, enhancing capabilities through supporting systems such as the Advanced Distribution Management System (**ADMS**) and replacing assets completely.

Investing in systems to unlock CER, reduce outage times and improve safety

Ausgrid is investing in grid modernisation technology and innovation to improve performance, safety outcomes and deliver on customers' net zero ambitions. This includes adoption of established technologies at scale (e.g. auto-reclosers and remotely controllable switches), coordinated by newer technology control and monitoring systems such as Fault Location Isolation and Service Restoration (**FLISR**) to increase the number of customers on self-healing sections of the network.

Part of achieving this is improving Operational Technology infrastructure capability to enable the full benefits of the Ausgrid Innovation Program. Ausgrid is improving network visibility through greater volumes of smart meter data, streetlight controllers, substation, and externally sourced monitoring. The ADMS and planning systems will leverage this visibility to coordinate network planning, working crews and available network devices to operate the network with greater efficiency and make better investment decisions.

ADMS will enable higher levels of automated and remote switching of the distribution network to economically manage reliability, by taking greater advantage of existing manually switched backup supply paths through more targeted and faster switching. This creates new opportunities for lower cost alternatives to physical construction of additional backup paths as a means of achieving supply reliability.

ADMS also brings the ability to optimise the grid to better accommodate and utilise customer CER as a solution to network constraints, in place of physically changing network characteristics through transformer tapping and augmentation.

Ausgrid is supporting system investment through field-based technology to assist our response to major network events including storms and floods. Drones and other technologies are used to assess network access, reducing the need for boots on the ground to plan power restoration. This reduces outage times, the risk of further environmental impacts involved in assessing post-incident damage and improves safety for our workers.

Ausgrid is also considering how new technology can be applied in zone and transmission substations to drive cost efficiency. This includes strategies for acquiring or retaining sufficient parcels of land to enable the construction of 'greenfield' zone substations (where more practical and cost effective than brownfield rebuilds) and in doing so enable a faster transition away from legacy technologies.

Network Innovation

Network innovation covers a wide array of business improvement and investment portfolio initiatives. The current investment portfolio initiatives include:

- The Network Innovation Program – a diverse range of technology pilots with the objective of exploring customer benefits through trials;
- Distribution System Operator (**DSO**) – Project Edith is a trial testing the benefits of dynamic pricing and coordinating customer CER with the aim of increasing customers' ability to install CER and share its benefits with all customers (See 6.3.3);
- Improved data for planning and connections – support better customer outcomes by making network capacity available to customers through network digitisation;

- Demand management innovation – Understand how to utilise batteries and flexible loads such as air conditioning (e.g. Cool saver IOT) to achieve 'solar soak' and peak shaving.

Ausgrid brings customers into the innovation decision making and approvals process to make sure innovation aligns with their needs. The Network Innovation Advisory Committee (**NIAC**) places customers within the innovation investment governance framework.

The NIAC is also complemented by Demand Management Innovation Allowance (**DMIA**) activities, tariff innovation and 'grass roots' innovation programs run across the business. Ausgrid will continue to consider opportunities to collaborate on these various innovation initiatives to maximise their effectiveness, without stifling innovation at the local level.

6.3 Enable Net Zero

Customers support actions to reduce carbon emissions to reach Net Zero by 2050 or earlier and Ausgrid's strategy is to innovate and adapt the business to facilitate an equitable and affordable transition to net zero. The Enable Net Zero strategic theme involves the following strategies:

- Intensifying electrification
- Allowing equitable access
- Effective system operation

6.3.1 Intensifying electrification

This strategic response focuses on Ausgrid's role in accelerating the electrification and decarbonisation of customers' energy needs.

Electrification of households, transport and businesses is a key component to achieving Ausgrid's Net Zero objective. Electrification reduces emissions by:

- Reducing the quantity of higher-emissions carbon-based fuels used as an energy source in appliances such as gas hot water and internal combustion transport;
- Giving customers greater access to renewables as a generation source – as coal and gas fired generation decreases and renewables become prevalent, all customers will have access to renewables whether they own household solar or not.

Increasing CER adoption

Electrification reduces the cost of energy where renewables are the source of generation, however for all customers to benefit Ausgrid needs to be able to improve the capability of people, processes and systems to integrate CER.

Ausgrid's CER Integration Strategy enables the adoption of CER among all customer categories, increasing the scalable benefits of CER as part of Ausgrid's objectives to achieve Net Zero by 2050 and reduce the cost of living for customers. The strategy primarily centres around:

1. Understand customers' needs, including their role in accessing cheaper, zero-emissions renewables.

2. Explore tariffs, price signals and information through greater network visibility before considering traditional network investment.
3. Avoid unintended curtailment and solve issues that will materially slow decarbonisation efforts.
4. Use the Ausgrid network's unique attributes as a platform to cost-effectively accelerate net-zero.
5. Share the benefits of low-cost, zero emissions CER with all customers.

Attracting high value customers to maximise network value and reduce costs

Ausgrid is seeking to attract high load customers to underutilised areas of the network and improve customer access to information that could reduce the cost of its business operations.

Ausgrid's approach includes;

- Increase access to network data for trusted customer-partners.
- Increase access to meaningful data of adjacent infrastructure that informs decisions that maximise the value of customer investments.
- Improving the toolset available to our staff in guiding customer decisions.
- Exploring alternative customer connection agreements that draw a clear balance between the level of access a customer has to the network and network charges.

Increasing customer education and access to renewables

Ausgrid is proposing an education program as part of the CER integration strategy to improve customer access to information on new energy solutions, rewards and incentives available to them. Ausgrid's education program will be customised based on the dwelling type and the relative impact on the customer and the grid. This will support customer choice by providing options and information.

Free standing houses generally have greater access to CER with rooftop access to host solar and garages to charge EVs. Ausgrid will engage these customers, with a view to educating them on the technologies available, their benefits and opportunities to engage in community CER programs including solar soaking and community batteries.

Ausgrid is also invested in helping apartment dwellers achieve greater access to CER and share its benefits. Apartment dwellers make up 38% of Ausgrid's customers and most new connections to the Ausgrid network. With less roof top space, typically mixed arrangements of ownership and limited space, access to EVs and solar energy is currently reduced compared to free standing houses.

Ausgrid is focusing on business processes and standards to address the needs of both existing and new apartment builds by aligning connections policies and procedures to:

- Increase access to public charging infrastructure.
- Seek to design tariffs that shift demand to the middle of the day.
- Decrease barriers for apartments to retrofit and install infrastructure and metering to become 'EV ready'.
- Enable community energy sharing schemes between apartment dwellers.

- Participate in energy sharing trials with community partners.
- Engage ASPs and add metrics around compliance for installed CER.

6.3.2 Allowing equitable access

Ausgrid is building new capabilities to utilise existing network assets in more intelligent ways to increase customers' access to the benefits of CER. This aligns with Ausgrid's vision for a DSO[3].

Increase uptake of tariffs that are more cost reflective

Ausgrid makes capacity investments to meet the forecast peak demand. Tariffs are one of the first options to enable benefits by providing incentives to consume or supply energy in pattens which help the grid.

Despite the availability of tariffs that are more cost-reflective, most of Ausgrid's residential and a high proportion of business customers are on non-cost reflective flat tariffs based on energy consumption. TOU and Demand tariffs will remain a key feature of pricing as a means of achieving Ausgrid's long-term organisational goals.

New, transparent dynamic pricing structures will incentivise residential and industrial customers to optimise the relationship between their activities and times of network limitations, such as available capacity.

Introduce CER trial tariffs and dynamic pricing aligned to the CER 2039 roadmap

Ausgrid is aligning tariff innovation to the CER 2039 roadmap (6.3.3) and the CER integration strategy to optimise customer incentives and reduce the cost of core network services.

The key principle is to shift demand to periods of high CER output by providing an attractive tariff structure. As a network built to its peak demand, dynamic pricing raises the cap on customer CER by shifting generation and load away from peak events allowing customers to install and use larger CER than static export limits. This increases CER penetration and distributes the value of CER to all customers.

6.3.3 Effective CER Integration

Ausgrid's DSO vision is for our network to become an energy services platform, giving customers the ability to invest in cheaper, low-carbon energy choices while sharing their benefits with the entire customer base.

The Australian Energy Market Operator (AEMO) predicts that 50% of customers nationwide will use a form of CER by 2030, increasing the complexity of operating electrical networks as a result. CER penetration is not expected to be homogenous across the network, load and generation are not likely to be efficiently co-located. Intermittent generation from rooftop solar is forecast to impact quality of supply to customers and trip off or constrain customers inverters, curtailing both exports and in-home consumption. Accelerated adoption of EVs will create network constraints through spot loads, particularly in urban areas where access to

[3] Ausgrid's DSO vision is to "Dynamically plan, manage and operate the network to maintain an efficient, safe and resilient service while optimising value for our customers, the energy system, and supporting the renewable energy transition"

rooftop solar capable of offsetting load limited. Vehicle-to-grid (V2G) technology has the potential to change the way people utilise their cars and could even displace stand-alone batteries over time. Several vehicles are proposed to have this capability in FY23.The retirement of coal generation will require additional system support from Ausgrid to maintain customers' security of supply. Ausgrid requires the distribution system to balance energy needs across regions to meet customers' reliability needs.

Ausgrid's network does not currently have sufficient hosting capacity to meet forecast levels of CER and our processes and systems are not set up to deal with this influx. Supporting the transition will require fundamental changes to how we manage our network, interact with customers, and support the stability of the end to end system.

The CER Integration Strategy outlines a combination of solutions required to successfully integrate CER with the potential for multiple customer benefits including;

Our proactive approach to CER integration, as proposed by this strategy and supported by our customers, will deliver the following customer outcomes:

- Enable customers to get the most value out of their investment in CER, with adoption expected to reach an additional 620,000 customer energy resources by 2029.[4]
- Reduce costs for all customers by improving network utilisation.
- Support connection of additional rooftop solar, achieving a low-cost, low-carbon generation mix by reducing the curtailment of customer's solar output by at least 85% for new and existing CER customers.
- Reduce the cost of connecting CER by 50% compared to our base case, by implementing new technology solutions and dynamic services rather than relying solely on traditional augmentation.
- Enable our customers' and communities net zero ambitions, as well as a 50% reduction in our own scope 1, 2 and 3 emissions by 2030 and net zero emissions by 2045.

The strategy supports a proactive investment approach including ICT capability to manage complex power flows through dynamic operating envelopes, dynamic pricing incentives, improved visibility to enhance the accuracy of network investment, a mix of traditional augmentation and dynamic network management devices, including community batteries.

Implementing the DSO vision as a CER 2039 roadmap

The CER 2039 roadmap outlines how Ausgrid will build capability within the Ausgrid business, with customers, with customer-partners and other stakeholders to deliver the DSO vision. Figure 8 outlines the CER 2039 roadmap as outlined in the CER integration strategy.

[4] In line with AEMO's ISP step change scenario.

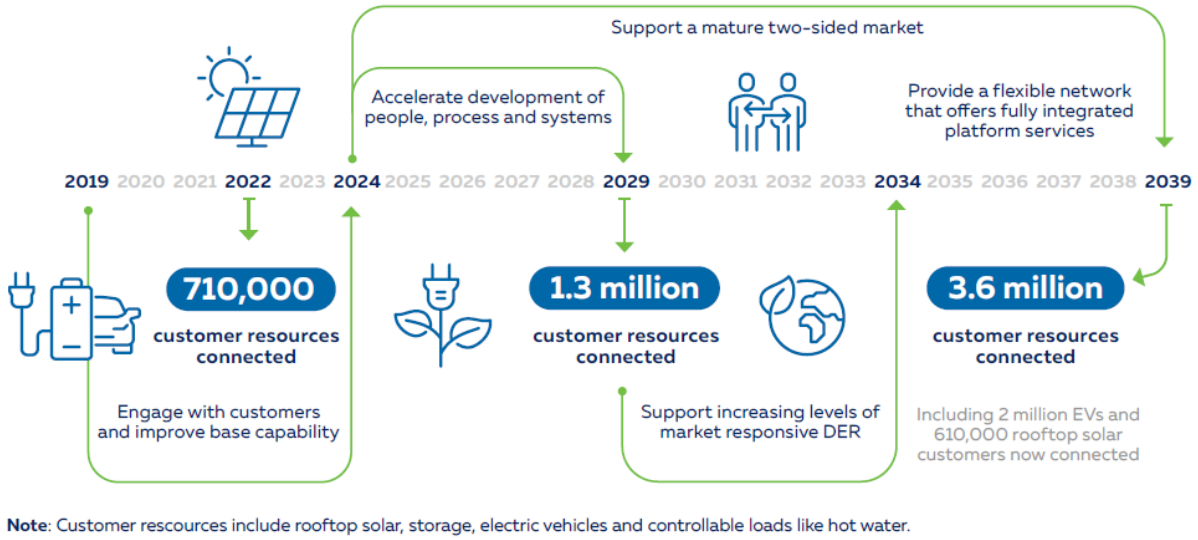


Figure 7: A static network operator model is not sufficient to deal with the increasing complexity of CER and changing customers' requirements. Ausgrid's 2039 vision maps capability required to meet customers' future needs in a changing energy landscape.

A framework delineating how investment has been allocated between the programs to meet a targeted purpose and avoid overlaps is outlined in the CER Integration Strategy.

Improving the value of new network services as a DSO

As renewable energy is a cheaper source of generation compared to fossil fuel sources, accelerating customers' CER choices and sharing the benefits decreases customer bills . Similarly, where Ausgrid can reduce future network investment by leveraging customer CER and existing network assets the cost burden shared by all customers is reduced.

Figure 9 outlines the core services Ausgrid currently offers and will offer into the future at decreased price, as well as the different services Ausgrid is looking to develop and expand upon.

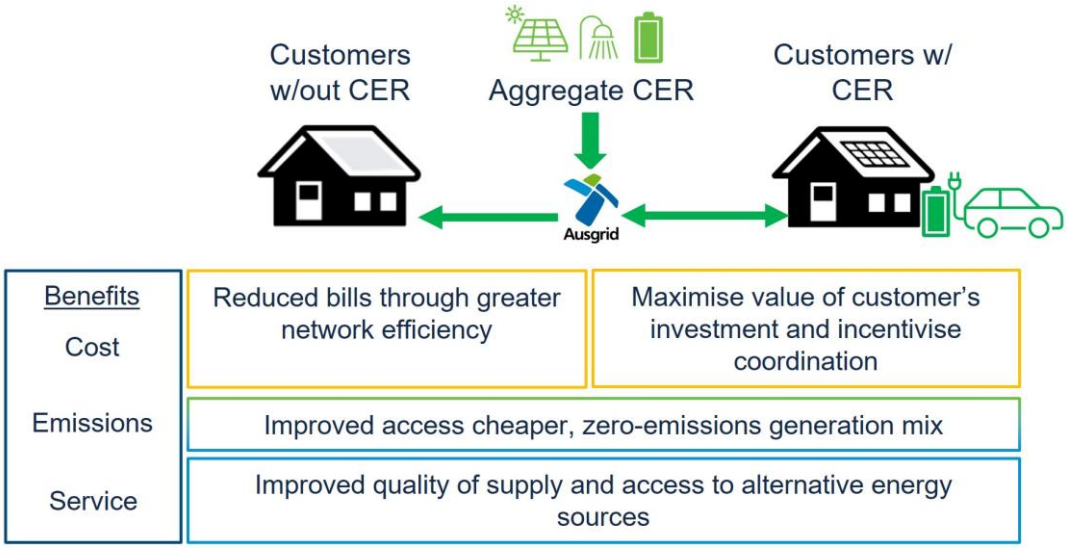


Figure 8: Ausgrid's CER 2039 roadmap and CER integration strategy support new capabilities and services that increase customer access to CER and share its benefits with all customers

Access to CER through new services

Ausgrid is targeting shared asset schemes that increase equitable customer access to lower cost, zero-carbon CER and materially decrease customer bills.

In addition to its alignment with objectives for enabling customer's net-zero ambitions, this initiative reduces the cost of living by sharing unregulated revenue with customers.

6.4 Resilience to climate change

Climate change is resulting in an increasing frequency of extreme weather events and natural hazards, which presents several escalating challenges to operating a resilient grid into the future.

Network Resilience is the ability for the network to resist, absorb, accommodate, adapt to, transform and recover from the effects of a hazard, in this case, the increased hazards associated with climate change. A resilient network contributes directly to resilient, thriving communities.

The Resilience to Climate Change themes involve the following strategies to support communities and the network before, during and after extreme events:

- Supporting the community
- Network investment
- Innovation

6.4.1 Supporting the community

Community resilience and network resilience are separate concepts, but intrinsically linked. Although Ausgrid has a role to play in building community resilience, there is a need for partnerships with government, local councils, essential services, and other resilience actors. Ausgrid has a role to play in facilitating services to enable communities to support themselves, and is exploring community support services including community grants, education campaigns, and supporting the development of resilience plans.

6.4.2 Network investment

Ausgrid is investing in the network to minimise the impacts from the most significant climate perils facing Ausgrid's customers, particularly windstorm, bushfire and extreme heat. A range of network solutions are being explored to address climate risk growth for each geographic region and for each climate peril. Solutions aim to mitigate risks, reduce the number of customers impacted, or improve Ausgrid response times. Co-funding partnerships with local councils and other stakeholders will be actively pursued to help ensure solutions represent the best community outcome and the resilience costs passed on to Ausgrid's customers are efficient and fair.

6.4.3 Innovation

New technologies, approaches and incorporating a more nuanced understanding of Ausgrid's customers' needs into network investment is required to improve resilience for customers and

communities. Ausgrid is investing in innovation, research and development, to trial different technologies and realise benefits for a variety of solutions.

Full details of the Network Resilience strategy are provided in the Climate Resilience Strategy and Justification.

7 Mapping to asset management programs

The Network Strategy is mapped to asset management programs through Ausgrid's existing planning processes

7.1 Maintenance

Ausgrid adopts a 'whole of life' and 'whole of system' approach to ensuring that assets are created and maintained to support organisational objectives including safety and reliability.

Ausgrid uses FMECA RCM to set maintenance programs based on failure rates and impacts on customers and the business.

A strong understanding of maintenance needs also informs replacement decision making. A replacement decision is typically taken only when maintenance is no longer cost effective and only replacement can remove the risk and/or restore the level of serviceability required. This trade-off between maintenance and capital is part of planning Ausgrid's capital investments.

7.2 Capital planning process

Ausgrid's asset management plans are developed through the annual capital planning process. The capital planning process draws on the Network Strategy and Corporate Strategy to prioritise and optimise the capital expenditure forecasts.

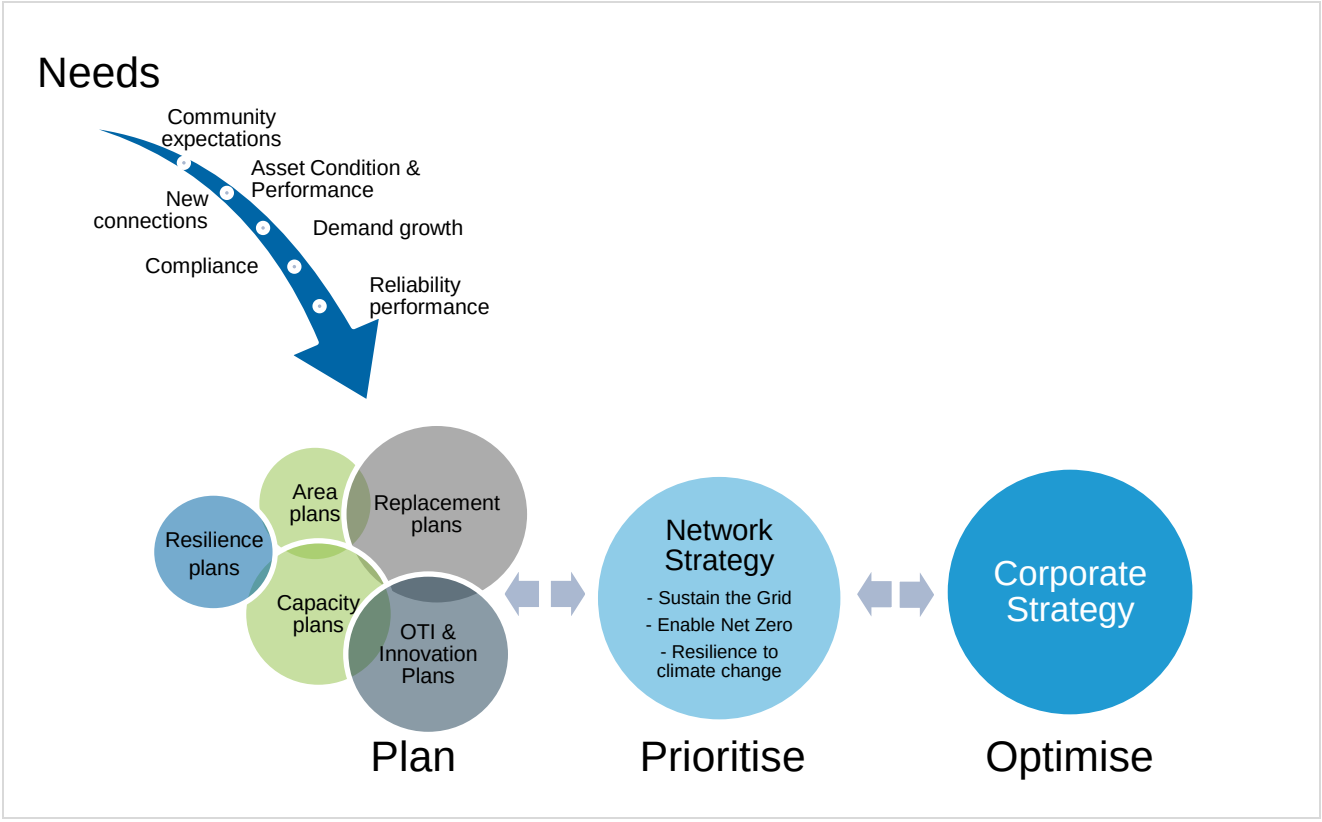


Figure 9: Capital planning process and interaction with the Network Strategy and the Corporate Strategy

An overview of the phases is as follows:

Plan – Needs provide the inputs used in the creation of capital investment plans. Planning is a decision process that takes into consideration all the needs, constraints and strategic investment drivers derived from the Network Strategy. Planning employs bespoke tools such as network analysis tools, risk-based models and Cost Benefits Analysis (**CBA**) evaluations.

Prioritise – The Network Strategy provides the overarching approach to prioritising investments within and between the investment plans. There is a two-way interaction between the investment plans and the Network Strategy. The Plan and Prioritise process is iterative where investment plans are refined and tested against the strategies until they achieve the objectives of the Network Strategy.

Optimise – Following prioritisation, the overall capital plan is reviewed for consistency with the Corporate Strategy. Investments that best meet organisational objectives are selected from the list of prioritised investments and proceed to delivery.

7.3 Plan

Capital plans we develop are shown below. Included in these capital plans are the outcomes of the Climate Resilience and CER integration strategies. They include investments that build foundational ICT capabilities, integrate innovation into BAU and explore new areas of customers value through innovation.

Key input	Description
Replacement Plans	Replacement programs are developed for distribution assets and piecemeal elements of the subtransmission network (which are not covered by Area Plans) based on asset performance, condition, known design flaws and/or compliance issues.
Area Plans	Major projects for the subtransmission network based on analysis of drivers such as asset condition, local peak demand growth, reliability, compliance issues and major customer connection activity.
Distribution Capacity Plans	Augmentation and connection capex for the 11kV (high voltage) and low voltage network is identified based on local peak demand growth, and ability to meet reliability licence conditions.
Operational Technology and Innovation (OTI) Plans	OTI and Innovation programs are developed based on assessment of customer needs, network objectives, Operational Technology compliance obligations (including cyber) and the need to support business activities in an efficient way

The planning process principally involves monetising risk to inform decisions that deliver the greatest net economic benefit for customers and stakeholders.

Quantified Risk Assessment (**QRA**) is currently applied to the majority of Ausgrid's network investments, with assessment through a CBA approach. To help perform QRA consistently across all investments, Ausgrid has a Value Framework which outlines the nature of network risk and the consequences it has for customers. The Value Framework establishes organisation-wide consistency of risk / benefit quantification. Investment planners conduct CBA analysis using several tools with set criteria. The option with the greatest economic benefit is selected and included for consideration in the expenditure plan.

Ausgrid intends to expand the scope of the Value Framework to assess wider societal benefits emerging from the energy transition and the benefits of managing the risk of increasing major weather events because of climate change. Valuing organisational goals within each investment decision demonstrates alignment to Ausgrid's long-term strategy and supports smarter asset management decisions to give the best value for customers.

The planning phase is guided by the Decision Making & Risk Management document. The scope of this document is to outline Ausgrid's risk management approach for assets and the performance of the network, as well as the application of the asset management system in a manner which is consistent with the risk appetite defined under Ausgrid's Risk Management Framework (**RMF**). It describes key processes for managing asset related risks and opportunities, and the different risk methodologies and analysis techniques used to inform asset management decision making to achieve Ausgrid's corporate and asset management objectives.

7.4 Prioritise

Investment prioritisation is the next stage in the development of the capital plan. The strategic investment drivers in the Network Strategy provide an input to the previously described planning process, as well to give precedence to those investments that are preferred by customers.

The strategic investment drivers in the Network Strategy influence on each of the investment plans as shown below.

Investment Plan	Sustain the Grid	Enable Net Zero	Resilience to climate change
Replacement Plans	✓		
Area Plans	✓	✓	✓
Distribution Capacity Plans	✓	✓	
Operational Technology and Innovation Plans	✓	✓	✓
CER Integration Plan		✓	
Resilience Plan			✓

The following sections discuss the impact of the Network Strategy on each of the Investment Plans.

7.4.1 Replacement Plans

Replacement expenditure reflects the direct costs of capital works associated with replacing or extending the life of an existing network asset. Ausgrid replaces assets when they fail in service (reactive replacement- functional failure), or when our analysis shows that the safety, reliability, security and environmental risks exceed the costs of replacing the asset (proactive replacement – conditional failure or obsolescence). Programs are based primarily on condition assessment; however, consideration is also given to other information such as asset risk and failure history.

7.4.2 Area Plans

Ausgrid takes a holistic approach to capital forecasting, looking at overall network performance based on a risk assessment approach.

Network load growth, customer connections, asset condition and compliance requirements are key inputs to the area planning process. Strategic network plans for 28 defined geographic areas are then developed, covering Ausgrid's network of 33kV – 132kV feeders, zone and subtransmission substations. The purpose of the area plan approach is to identify optimal solutions based on a portfolio that prioritises the greatest customer benefit.

Ausgrid's Area Planning approach uses risk based probabilistic modelling. Based on the most recent demand forecast information, asset condition and network performance, cost benefit analysis is developed and implemented to compare options. Both network options and demand management options are compared to determine the preferred option and the optimal project timing. This approach mitigates the network risk and maximises the net economic benefits.

An Area Plan review is triggered by the risk assessment of the geographic area which it covers. In addition to the Area Plan process, a yearly review of the preferred strategy is conducted based on the latest available information to ensure the preferred strategy still provides the most net economic benefits. This approach maximises the efficiency of our future investment decisions.

In parallel with the Area Plan developed major projects, individual projects and programs are identified and considered on individual cases. These individual projects and programs remain as dedicated programs and are consolidated where appropriate with replacement programs to avoid duplication.

This approach has the benefit of both developing more efficient combined solutions and addressing the risk of duplication of projects or programs across drivers.

7.4.3 Capacity Plans

This is capital works to install new assets on Ausgrid's shared network to meet additional demand at peak times, or to meet reliability licence conditions. Categories are as follows:

- Connection capex: This is when Ausgrid increase capacity of the shared network in response to a specific customer connection application or applications.
- Augmentation capex: This includes all other occasions where we increase capacity of the shared network driven by general peak demand growth.

Capacity driven works at transmission and subtransmission level (132, 66 and 33kV) are incorporated into Area Plans as individually approved projects. Works at distribution voltages (22kV and below) are delivered as under overarching distribution enhancement programs.

7.4.4 Operational Technology and Innovation Plans

This category includes investments for information and operation technology and innovation projects associated with the network. It may include investments which directly affect

customer outcomes such as reliability (e.g. network automation), or which may support more effective and efficient running of the business (e.g. digital twin and LiDAR).

7.4.5 Investment plan enhancement

Integrated Asset Management allows a holistic view of the network investments across all investment drivers and delivery constraints and opportunities. Investment plans are enhanced through this process to incorporate bundling of works across and within the plans so that the overall costs of delivery can be reduced.

7.4.6 Alignment to the corporate strategy

The final stage of the process involves alignment of the investment plans within the context of Ausgrid's Corporate Strategy. The Network Strategy is developed and designed to deliver on the relevant network objectives within the Corporate Strategy; however, Ausgrid's Executive and Board must optimise investments so that multiple objectives can be achieved within the operational and financial constraints of the business. In some cases, investment needs arise due to factors that were not conceived of during the investment planning process. Likewise, benefits associated with some investments that are not easily or directly quantifiable and a judgement needs to be made. This is where the Executive and Board play a role in optimising the investment program so that the business is managed prudently.

Investment Plans are developed to respond to distinct needs, and the iterative investment planning and prioritisation process results in a set of mutually exclusive investment options that are ready for consideration and optimisation.

The Optimise phase of the process allows Ausgrid to flexibly respond to changing requirements that are broader than the needs that drive the investment plans. We are considering how this could be practically achieved and the balance between customer and business needs, flexible capex programs and effective and efficient program delivery.