SA Power Networks Group ESG Reporting Suite

Network Matters: Management Approach

This document describes how the SA Power Networks Group responds to, manages and evaluates material network-related matters. The introduction section of this document provides an overview of the changing role of the grid, our most material climate-related risks and opportunities (CRRO), and how these CRRO are governed.

Our material network matters are:

1. Decarbonisation and the energy transition
2. Grid resilience and reliability
3. Emerging technologies and integration

SA Power Networks Sustainability Reporting Suite

This document should be read in conjunction with our:

- Sustainability Report;
- Sustainability Data and Disclosure Databook; and
- Environmental, Social and Governance Matters Management Approach Statements.

Our reporting follows the guidance of the Taskforce for Climate-related Financial Disclosure (TCFD) framework, the Global Reporting Initiative (GRI) Standards and general industry standards. Supporting information that forms part of our sustainability disclosures is available on our website.

SA Power Networks

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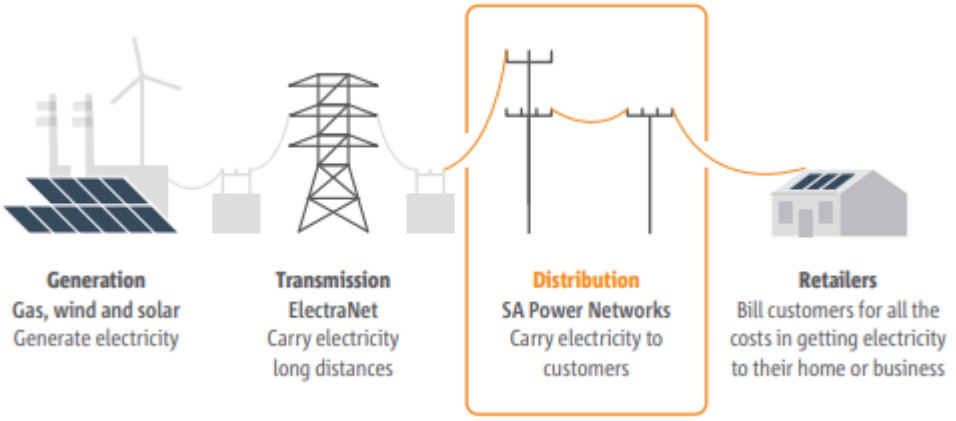
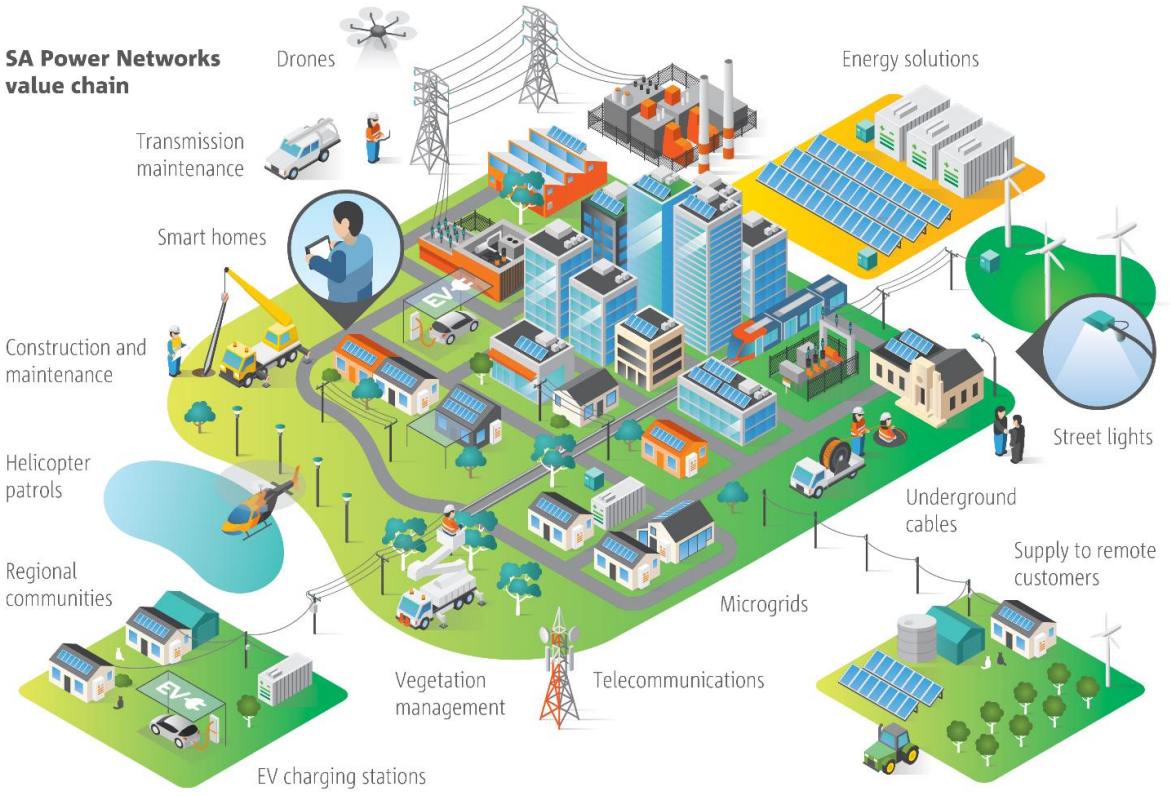
Introduction

About our electricity network

SA Power Networks' core business is electricity distribution.



Our network spans 178,000km^2, and incorporates 650,000 Stobie poles, 89,000km of powerlines and underground cables, more than 410 zone substations, and 73,000 street transformers. We provide and maintain around 220,000 streetlights for over 70 Council, Aboriginal and regional areas across South Australia.



To provide a safe and reliable network we undertake construction, maintenance and improvement works, trim vegetation under our powerlines, and conduct helicopter, drone and ground inspections of our assets. This helps to protect our customers, communities and network from bushfires, outages, and storm impacts.

Climate-related risks and opportunities

Assessment and management of climate-related physical and transition risks is ongoing as part of our business processes as well as specifically through our Risk Management Framework, consistent with the process for all risks at SA Power Networks. The SA Power Networks Group employs an Enterprise Risk Management Framework in alignment with ISO 31000:2009. Climate change risk features in the list of top 10 enterprise risks in our Corporate Risk Register and Risk Appetite Statement.

Our most significant climate-related risks and opportunities are documented in our Corporate Risk Register and to aid visibility and clarity for internal governance and external reporting purposes we have established a dedicated Climate-related Risks and Opportunities Register (CRROR). A summary of the main climate-related risks and opportunities and their potential impacts is outlined in the table below:

Climate-related Risks and Opportunity Categories

Climate-related risk / opportunity	Potential impact
Physical risk: **Risk of significant supply interruptions due bushfires.**	Climate change is predicted to increase the frequency and severity of bushfires. Impacts include: • Failure, degradation or damage to network assets, equipment, property and access ways • Service outages and operational disruption • Third party injury • Customer complaints • Reputational Damage • Financial penalty or loss of incentive
Physical risk: **Risk of significant supply interruptions due to extreme weather events.**	Climate change is predicted to increase the frequency and severity of storms (including lightning strikes and wind gusts), heatwaves and flooding. Impacts as above.
Physical risk: **Significant increases in insurance premiums and/or difficulty obtaining adequate insurance coverage.**	Damage to infrastructure caused by bushfires, excessive rainfall and extreme wind events is expected to drive up insurance costs. Bushfires caused by our assets may result in areas or assets that are 'uninsurable'.
Physical risk: **Risk to supply chain**	Extreme weather events (bushfires, flooding) and changing environmental conditions (eg sea level rise) may result in supply chain disruptions and shortages, impacting key materials, skills or technologies. Change in the Australian and global carbon market may increase material costs and availability.
Physical risk: **Increased occupational health and safety risk related to persistent warming and volatile climate conditions.**	Rising extreme temperatures and increased storm events will increase the risk of health and safety impacts on field workers and reduce windows available to undertake maintenance and construction activities. The health and safety of vulnerable customers and communities may be impacted by prolonged outages.
Transition risk - **Market; Technology:** **Risks arising from consumer and technological changes which are occurring as part of the transition to a lower carbon economy.**	Failure to adequately respond to the increasing uptake of consumer energy resources (CER) and electric vehicles (EVs) may result in network instability, reputational damage and increased operational costs.

Transition risk - **Policy and Legal; Market:** **Uncertainty regarding longer term government policies and climate-based policies of regulators, financiers and insurers.**	Unclear or inconsistent energy policy from Federal or State Government and/or regulatory requirements may impact Reset acceptance and results. Changes in government expectations and/or targets for management of climate related risks, carbon pricing or emissions regulations may result in increased operational and compliance costs. Increased expectation of climate action from investors and customers. Reduced access to debt and equity capital to undertake business activities.
Transition risk - **Policy and Legal:** **Increase in legal or regulatory action/fines.**	Legal or regulatory action/fines due to inadequate or inaccurate disclosure of climate-related risks or insufficient action to address climate-related issues. Increased costs for dispute resolution with landowners and communities as grid works are accelerated or delayed.
Transition risk – **Reputation:** **Decline in stakeholder perception, including those of Government, investors and the community.**	Reputation risk due to a perception that we are not contributing to the low-carbon transition in line with customer and government expectations. Reduced revenues if customers do not support our proposed activities/initiative and our Reset proposal is rejected. Increased hiring costs and project delays as prospective employees prefer to work for other organisations.
Opportunity - **Markets, Products and Services:** **New markets and technology**	The energy transition is presenting the possibility of new business models and revenue opportunities (both regulated and unregulated business). There is increased government and private investment in electrical infrastructure to support the clean energy transition. Reduced greenhouse gas emissions across the SA economy. Opportunity to collaborate on innovation and leverage technological advances to reduce costs, explore new business opportunities, and maintain social licence to operate. Enhanced capacity to attract investment from investors favouring companies with strong climate action and more readily meet climate-related regulatory requirements.
Opportunity - **Markets, Products and Services:** **Accelerated electrification of industry, transport and households**	The projected increase in load/throughput of energy through our grid will increase the demand for and the range of our services and solutions. Reduced electricity costs and greater choice/control of energy services for consumers. Reduced greenhouse gas emissions across the SA economy. Opportunity to collaborate on innovation and leverage technological advances to reduce costs, explore new business opportunities, and maintain social licence to operate. Enhanced capacity to attract investment from investors favouring companies with strong climate action and more readily meet climate-related regulatory requirements.
Opportunity - **Resource efficiency and Resilience:** **Innovation and new technologies for network resilience.**	The energy transition is presenting the opportunity to create and trial new technologies and approaches to improve the resilience, reliability, safety and operation of the network. Investment in resilient assets that can withstand acute physical risks, promote business continuity and receive insurance benefits.

Governance

Given the potential and actual impact of climate-related risks and opportunities, commensurate oversight and governance is embedded into the SA Power Networks Group's structures and systems. The Board's role in defining the SA Power Networks Group's approach to climate-related risks and opportunities is key to the integration of climate change into organisational governance, strategy and risk management.

SA Power Networks Group's management implements our governance structure and Risk Management Framework, which includes climate-related risks, and our Board-approved Risk Appetite Statement, which outlines our ESG risks and opportunities. Key management roles accountable for climate-related risks are

included in our Environment, Sustainability, Risk, Operations, Customer and Strategy, and People and Culture departments and functions. High-risk climate-related risks such as bushfire risk management are governed via the Bushfire Risk Management Committee and report through to the Board Risk Management and Compliance Committee.

The Board Sustainability Committee meets four times during the year, to receive progress updates on the SA Power Networks Group's Sustainability Strategy and reporting, and to monitor performance against a range of ESG metrics and targets.

A representative from the Environment Branch and other senior and operational managers whose roles intersect with climate-related matters are members of the Sustainability Coordination Team, which is led by the Sustainability Manager. Updates on climate-related matters, including management of risks, progress on GHG emissions reduction, and changes in legislation/regulation are reported via the Executive Leadership Team to the Board's Sustainability Committee and Risk Management and/or Compliance Committees at least quarterly.

To further build capability within our workforce and among key stakeholders, we provide environmental training and climate change impact communications throughout the business.

1. Decarbonisation and the energy transition

1.1 Overview

This section outlines how SA Power Networks approaches climate change, the energy transition and decarbonisation, both in relation to our role and in own operations and facilities.

The SA Power Networks Group's over-arching approach to climate change is three-fold, comprising:

1. **Our role as a network operator**: we are actively leveraging our unique circumstances to help South Australia transition to a distributed and decarbonised energy system and work toward a future where energy is clean, reliable and affordable;
2. **Playing our part by achieving net-zero**: we have pledged to achieve net zero Scope 1 and Scope 2 GHG emissions across our operations by 2035 and net zero Scope 3 GHG emissions by 2050; and
3. **Building the resilience of our grid, our people and our communities**: we will continue to improve the reliability and resilience of our network, our business, and the ability of our customers to respond and adapt to climate-related impacts through collaboration, innovation and engagement.

These objectives are embedded in our overarching corporate Strategic Direction, with the programs, projects and other initiatives to achieve them detailed and operationalised via relevant sub-strategies and departmental plans. Decarbonisation, enabling the energy transition, and action on climate change is embedded in our overarching Vision and explicitly articulated in our Sustainability Strategy and Sustainability Policy.

Our Climate Change Position Statement outlines our organisation's position, role, objectives, and initiatives with respect to climate change and the transition to a low carbon economy. We publish an annual Sustainability Report, which tracks our progress on a range of initiatives and commitments including progress on aligning our activities and reporting against the recommendations of the Taskforce on Climate-related Financial Disclosures (TCFD) Framework.

Our approach to energy affordability and equity can be found in our *Sustainability Report* and *Social Matters: Management Approach Statement*.

1.2 Management approach

1.2.1 Our role as a network operator

Our network plays an integral role as South Australia transitions to a distributed and decarbonised energy system. A network that once served only to 'passively' supply energy generated by large, centralised fossil-fuelled generators, now hosts and actively manages more than half of the State's generation capacity, with much of it owned by customers in the form of rooftop solar, household batteries and virtual power plants (VPPs). Increasingly, large-scale batteries connected to the distribution network are providing system security services once provided solely by grid-scale generators. Over the longer term, our network will enable broader decarbonisation through electrification of transport and potentially other end-use applications currently powered by hydrocarbons.

This shift to widespread and decentralised consumer energy resources (CER) directly connected into the electricity distribution network, has already resulted in an expansion of the services our network provides. There are further opportunities to increase the value that the network offers and leverage the significant investment our community has made in it. Enabling South Australia's transition to a distributed and decarbonised energy system involves investing in clean energy solutions, asset replacement and grid electrification strategies. We are focused on providing opportunities for customers to benefit from the two-way market and actively involve customers in the management of electricity demand and supply and support their capacity to do so.

More information about how we explore and integrate new technologies can be found in section 3.

'Emerging technologies and integration'.

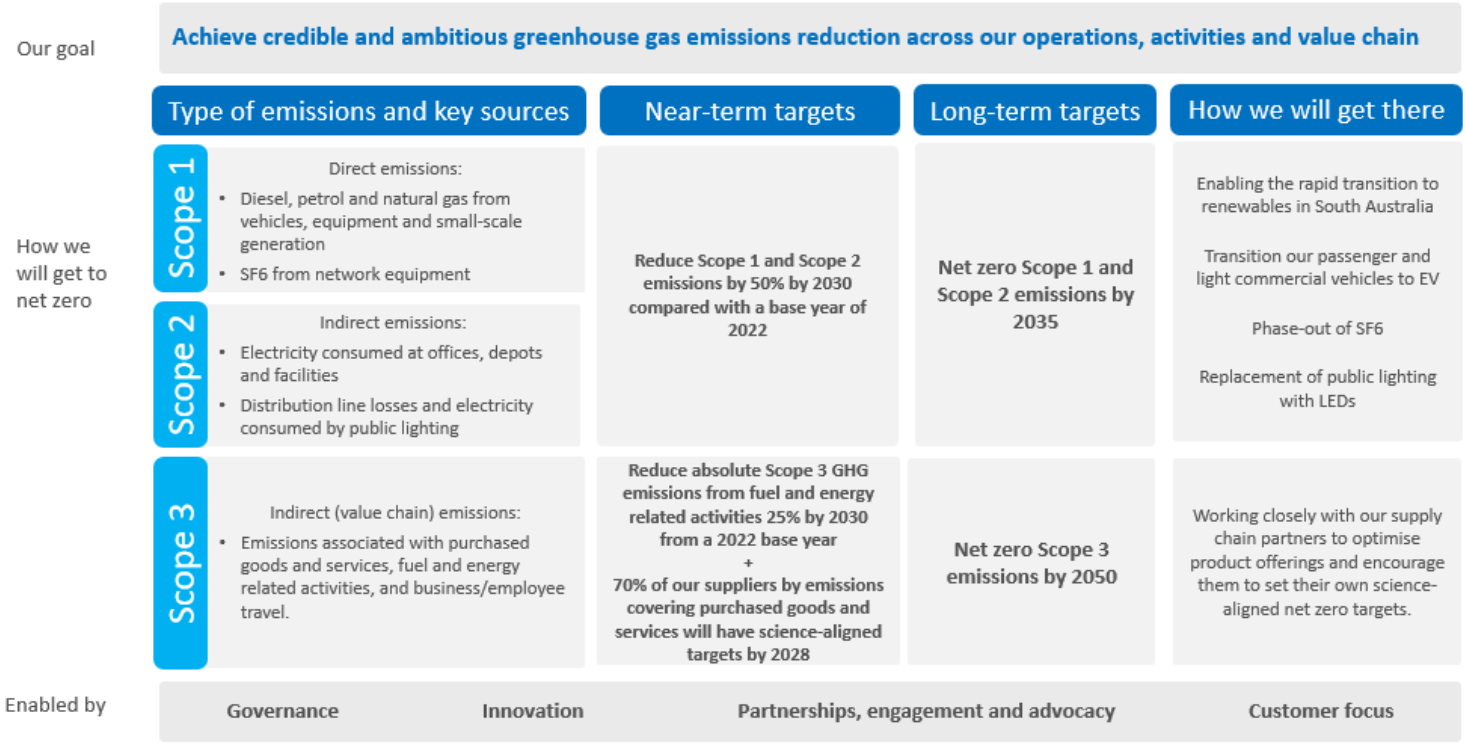
Along with the shift to decentralised and 'democratised' energy, and the opportunities it provides, are a range of challenges, including managing the integration of new and emerging technologies into our grid, maintaining system security and reliability, and hardening our infrastructure against the impacts of climate change.

More information about how we manage reliability and resilience challenges can be found in section 2. 'Grid resilience and reliability'.

1.2.2 Playing our part by achieving net-zero

Our goal is to achieve credible greenhouse gas (GHG) emissions reductions across our operations, activities and value chain. We have analysed our future growth and operations to forecast our emissions over the coming decades and established Scope 1, 2 and 3 GHG emissions reduction targets. To ensure these targets are aligned to what the latest science tells us is necessary to meet the goals of the Paris Agreement[1] we sought expert support to develop targets in line with the guidance of the Science Based Targets Initiative.

The SA Power Networks Group's Science-based GHG Emissions Reduction Targets



Strategies to reduce our carbon footprint are either established or under development and are outlined in our *Climate Change Transition Roadmap* (*CCTR).* The *CCTR* outlines some of the key initiatives we are undertaking over coming years to meet the immediate and predicted challenges and opportunities posed by climate change and the transition to a low carbon economy. As we execute these plans over the next few years, we will continue to work with our stakeholders to refine and extend the roadmap.

[1] The Paris Agreement is a legally binding international treaty on climate change which aims to limit global warming to well below 2°C above pre-industrial levels and pursue efforts to limit warming to 1.5°C.

SA Power Networks Climate Change Transition Roadmap

Commitments

Support the South Australian Government's aspiration of 100% net electricity demand in the state to be met by renewables by 2027

Target
Net zero Scope 1 and 2 GHG emissions by 2035[10]

Target
Net zero Scope 3 GHG emissions by 2050[10]

	2020 – 2024	2025 – 2030	2030 – 2035	2035 and beyond
Our role as a network operator We are leveraging our unique position to help South Australia transition to a distributed and decarbonised energy system	• *Distributed Energy Transition Roadmap 2020-2025* released • *Consumer Energy Resources (CER) Integration Strategy* developed • Flexible Exports for residential solar launched • Energy Masters Pilot launched • *Sustainable Financing Framework* and Green Bond released	• Continue to develop and embed Distribution System Operator (DSO) capabilities, including expanding our suite of demand flexibility offers and managing network capacity with real-time network signals[11] • Work with industry and government to streamline connection processes, with transparent and national harmonisation of approaches for CER	• Targeted climate scenario analysis to be undertaken • Continue to partner with governments and the private sector to pilot innovative approaches • Better integration of sustainability principles into Regulatory Proposal approach and financial planning	• Aim to operate a decentralised and dynamic low carbon energy system that provides benefits for all South Australians
Playing our part by achieving net zero We will achieve credible greenhouse gas emissions reduction across our operations, activities and value chain	• *Climate Change Position Statement* released • Establishment of science-based Scope 1, 2 and 3 GHG emissions reduction targets • *Decarbonisation Roadmap* prepared	• Develop our *Climate Transition Action Plan (CTAP)* • Develop our *Circular Economy Plan* • Develop our Sulphur Hexafluoride (SF6)[12] phase-out strategy • Supplier engagement on sustainability issues accelerated, with a focus on Scope 3 GHG emissions	• Explore alternative solutions and fuel types for mobile and stationary generators • Improve circularity of key business operational activities	• Aim to review our approach to decarbonisation to seek further reductions in direct and indirect emissions across our value chain
Building the resilience of our grid, our people and our communities We will continue to improve the reliability and resilience of our network, our business, and support our customers to respond and adapt to climate-related impacts	• *Strategy for Network Resilience to Extreme Weather* developed • Stand-alone Power Systems (SAPS) trials • Work with Community Advisory Forum and resilience focused Advisory Groups • *Vulnerable Customer Strategy* developed • Energy Charter membership and #BetterTogether initiatives undertaken • Community Partnerships and Community Grants Programs	• Energy Charter #BetterTogether Community Resilience Project • Utilise climate scenario analysis to develop and enhance grid reliability and resilience initiatives • Integrate climate adaptation into our asset management approach and decision-making • Community Battery trials • Embed capabilities to procure non-network solutions where efficient, eg Standalone Power Systems in select locations	• Continue to develop and implement grid reliability and resilience initiatives • Continue targeted advocacy activities with a focus on enabling community resilience	• Aim to provide a reliable network service that is resilient to the physical impacts of climate change • Aim to support our people, customers and communities to respond and adapt to climate change

10 2022 baseline 11 Distribution System Operator (DSO) is the industry term for the broader role that network businesses like SA Power Networks perform in the electricity system of the future. In contrast to the traditional static and passive model of one-way electricity delivery, DSO is an evolving and active model that is driven by digitalisation and a changing relationship between consumers and grid operators.
12 SF6 is a synthetic gas used in the electricity transmission and distribution sector as an insulator and arc suppressant. Extremely potent and persistent greenhouse gas – 23,500 times more effective at trapping infrared radiation than an equivalent amount of CO_2.

1.2.3 Building the resilience of our grid, our people and our communities

As an essential service, we know that our customers want reliable electricity, and for us to evolve our grid to withstand the predicted impacts of climate change, our aging assets and other risks such as cyber security threats. Our resilience approach encompasses:

- **Our grid and our business:** We have a holistic approach to organisational resilience that assists in managing both foreseen and unforeseen risks. This approach addresses the resilience of the organisation through four key areas: risk management, business continuity, crisis and emergency management, cyber security and IT disaster recovery.
- **Our people:** The safety of our workers and contractors is paramount, and ensuring their wellbeing in the increasingly challenging conditions brought about by climate change is of growing focus.
- **Our customers and communities:** We engage with customers to identify and deploy technology and approaches to maintain reliability and improve the resilience of the grid, particularly for our worst served customers and regions. Additionally, we advocate for supportive policies and regulatory approaches that encourage and support climate change-related initiatives and accelerate decarbonisation.

More information about how we manage reliability and resilience challenges can be found in section 2. 'Grid resilience and reliability'.

1.4 Evaluation and improvement

To enable investors and other interested parties to assess our approach and performance, we are working towards aligning our activities and reporting against the recommendations of the Financial Stability Board's Task Force on Climate-related Financial Disclosures (TCFD). A TCFD Index is available in our *Sustainability Data and Disclosure Databook*, which can be accessed via our website.

ESG risks are reported regularly to the Executive Leadership Team and to the Board on a six-monthly basis.

A range of organisational and operational climate and network performance metrics and KPIs are monitored and reported via our annual Sustainability Report and *Sustainability Data and Disclosure Databook*.

We have engaged with our stakeholders (including the AER) in the identification of climate-related risks within the distribution network and have endeavoured to support funding submissions with empirical evidence of these impacts. Additionally, climate-related risks and opportunities have been identified and communicated publicly through the annual Distribution Annual Planning Report.

We recognise that a key opportunity exists to engage more effectively with the community and communicate about the significant role we play in enabling decarbonisation and improving resilience. Customer and community support of SA Power Networks' role as an enabler may positively influence government and regulator decisions related to the importance of investing to support the future of the network as it decarbonises and harden the grid against severe weather impacts exacerbated by the changing climate.

2. Grid resilience and reliability

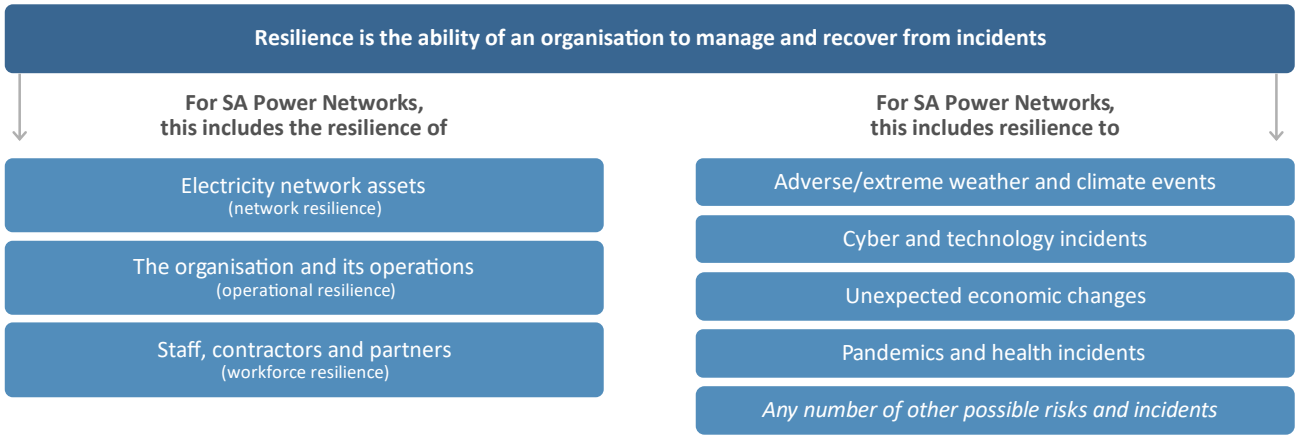
2.1 Overview

This section outlines how SA Power Networks approaches maintaining and improving electricity grid reliability and resilience, through maintenance and upgrades, feeder automation, leverage of consumer energy resources (CER) and advanced network architecture, and our bushfire risk management and emergency response programs. Our aim is to minimise major disruptions from impacts including increased demand, electrification, climate-induced extreme weather events, challenges associated with the clean energy transition, and aging assets.

Our approach to cyber security, privacy and data is addressed in our *Governance Matters: Management Approach Statement*.

For an electricity grid, **reliability** refers to the average network performance (or how effectively the network delivers power to its customers) and relates to minimising the frequency and outage time under normal conditions (excluding major storms) and planned outages.

Resilience in its broadest sense is the ability to withstand, manage and recover from incidents. The SA Power Networks Group needs to be resilient to respond to a range of issues and incidents, encompassing matters such as cyber security, economic changes, changing consumer preferences, severe weather, bushfires and other climate impacts. We have a holistic approach to organisational resilience that assists in managing both foreseen and unforeseen risks.



2.2 Management approach

2.2.1 Strategy, definitions and challenges

SA Power Networks has a suite of strategies and operational plans aimed at managing the distribution network to maintain (or improve) the reliability of supply to customers. These strategies address the four key drivers of reliability performance:

- ensuring there is capacity in the network to meet changes in customer demand;
- managing the condition of the physical assets that comprise the network;
- adapting to external trends that impact on network reliability; and
- adapting to changes in the State's energy generation mix.

We have an overarching Organisational Resilience Policy and Framework, aimed at assisting the business to develop the capability to deal with both foreseen and unforeseen risks, respond to any disruptive event, recover, and improve resilience over the longer term.

Our strategy for managing the distribution network's capacity to meet demand is described within the SA Power Networks *Distribution Annual Planning Report*. Our demand forecasting methodology and network planning approach ensures we have sufficient reserve capacity in the network to supply peak demand, and to provide an ability to restore supply to customers even after a major interruption. The planning criteria used to develop our capacity plan are designed to meet the quality of supply requirements of the *Electricity Act* reflected through the Electricity Distribution Code to maintain historic levels of network performance, security and reliability.

SA Power Networks' *Reliability & Resilience Management Strategy (RRMS), Strategic Asset Management Plan* and *Strategy for Network Resilience to Extreme Weather* describe our strategy for managing the physical assets that comprise the distribution network, how we comply with our distribution license conditions, how we identify areas of poor performance and manage negative reliability trends, and the program of works and initiatives to address reliability and resilience challenges in the short and longer term.

SA Power Networks considers the transitional impact of changes to the State's energy generation mix and the shifting preferences of our customers within our strategy and network planning processes, as highlighted in our refreshed Network Strategy, *Strategic Directions 2035* document and Sustainability Strategy. Our Distributed Energy Transition Roadmap 2020–2025 outlines some of the initiatives we have underway that will help us to enable the energy transition and maintain network stability.

Reliability

Maintaining reliability can be challenging. We operate an ageing network that is significantly radial in nature and 80% of it is above ground. In regional areas long single radial lines supply towns and surrounds and a fault upstream will affect all those downstream.

Two widely applied measures of distribution network reliability are the system average interruption frequency index (SAIFI), and the system average interruption duration index (SAIDI). SAIFI measures the frequency or number of interruptions to supply experienced by the average customer each year, while SAIDI measures the total duration or minutes off supply experienced by the average customer. These two measures are linked to the AER's Service Target Performance Incentive Scheme (STPIS) that applies to electricity distribution networks. The STPIS provides electricity distribution networks with incentives for maintaining and improving network performance, to the extent that consumers are willing to pay for such improvements. The STPIS is intended to ensure that distributors' service levels do not reduce as result of efforts to achieve efficiency gains.

Resilience

Power outages have the potential to be extremely disruptive to communities and businesses, particularly when they are widespread, enduring, or affect remote communities. As part of our commitment to

delivering a reliable, resilient and safe electricity service, we work with our stakeholders and the community with the purpose of aligning our investments to our customers' priorities. Engagement with our customers tells us that:

- Customers expect the minimum number of outages for the shortest time possible.
- Customers and stakeholders expect that we will work with other providers to build resilience for both our network and communities.
- Customers and stakeholders expect that we will put in place network solutions to build resilience.

We have developed a definition of resilience, based on the Australian Energy Regulator's (AER) definition:

AUSTRALIAN ENERGY REGULATOR → SA Power Networks

"…It is the network's ability to continue to adequately provide network services and recover those services when subjected to disruptive events"

"…The ability of **SA Power Networks** to continue to **safely** provide network services and recover those services, **and mitigate community impacts of network service outages** when subjected to disruptive **weather** events"

Challenge - Aging Assets

The majority of our network infrastructure assets were initially installed in the 1950s through to the 1970s. Although some assets (eg Stobie poles) may last up to 100 years, others (eg protection relays) are unlikely to last more than 15 years. On average, we expect asset lives in the order of 50 years.

Increasing numbers of assets are now approaching end of operational life and SA Power Networks is currently undertaking major work to understand the condition and risk profile for a range of assets with differing working life expectations. This will be used to develop a sophisticated understanding of our assets and risk and to develop an uplift in replacement programs that intelligently manages risk over time and in a way that is cost efficient for customers and ensures safety for the community.

Challenge - Climate-related risks and opportunities

Electrical equipment is vulnerable to climate-related issues – it can work less efficiently in heat, it can be damaged by fire or lightning, and it is vulnerable to the impact of tree/limb falls and other impacts. We are already experiencing the impacts of climate change on the grid, including more frequent and severe storms, heat events and bushfires.

By 2035, current forecasts indicate that average temperatures across Australia will be at least one degree higher than historical averages, and it is expected we will experience more frequent and more severe weather events, requiring a greater focus on network resilience and storm response. In addition, the number of days of high bushfire risk is anticipated to increase significantly, consistent with the trends in bushfire risk we have seen over the period from mid last century to 2020.

Action to address climate change in Australia has (so far) primarily focused on decarbonising the energy sector through replacing fossil fuel generation with renewable energy sources. The rapid uptake of renewables has a host of benefits but also poses a challenge to grid operators.

- **Physical risks: Severe weather events and bushfires**

We have identified the key future weather perils of concern that will particularly challenge our network's resilience in the future. Without investing in resilience, these weather perils could lead to more frequent and longer power outages.

Key weather perils of concern for South Australia

STORMS INCREASE IN SEVERITY OF WINDS AND LIGHTNING STRIKES	HEAT NUMBER OF HOT DAYS IS INCREASING	BUSHFIRE LONGER, RISKIER FIRE SEASONS	RAINFALL & FLOOD LOWER TOTAL RAINFALL PROJECTED, BUT EXTREME RAINFALL TO INCREASE
More intense and damaging storms including microbursts and severe convective winds. Australia's infrastructure has been built for the 20th century and is unprepared for more intense storms, leading to potential: • Increased risk of prolonged power outages (due to asset damage and delayed access for repairs) • Increased costs related to infrastructure repair and hardening	Number of very hot days (>40°C) to increase from 2 to 6 days/year in Adelaide between now and 2050, leading to potential: • Increases in peak electricity demand • Increased risk of network fire starts • Increased health impacts of power outages, including from coincident storm or bushfire events	Longer fire seasons, with 40% more 'very high' Fire Danger days between now and 2050, leading to potential: • Increased risk of network fire starts • Increased risk of prolonged power outages (due to Public Safety Power Shutoffs, bushfire damage and delayed access for repairs)	By 2030 total annual rainfall across SA projected to decline by 4.4 - 9%, but the amount of rain falling in extreme rainfall events will increase between now and 2050, leading to potential: • Increased risk of asset flooding and damage • Increased risk of prolonged power outages and delayed access for repairs

Note: excludes impacts of wind and lightning, as the impacts of these are less certain and less likely to impact SA.
1 Data from Climate Change Australia (CSIRO) Summary of weather for SA – forecasts are for mid-century (2050).
2 Data from SA Climate Ready Initiative – uses a baseline period of 1981 to 2010.
3 Examples of common climate risks and their impacts (NSW/ACT/TAS/NT Electricity Distributors Network Resilience: Collaboration Paper 2022).

- **Transition risk/opportunity: Increasing uptake of distributed or consumer energy resources (CER) and maintaining system stability**

In total, in 2024, 72% of South Australia's electricity needs were met by renewable energy (over 12 months) and the State is on track to be 100% net renewable energy before the end of the decade. This profound transition is placing unprecedented pressures on the network and the broader energy system to adapt. Although the increased uptake of CER presents significant challenges in relation to system stability, our key role at the centre of this distributed energy network and as an enabler of South Australia's transition to a low-carbon economy has been prioritised as a core business opportunity.

2.2.2 Management of climate-related issues

Key activities to manage climate-related issues are outlined below.

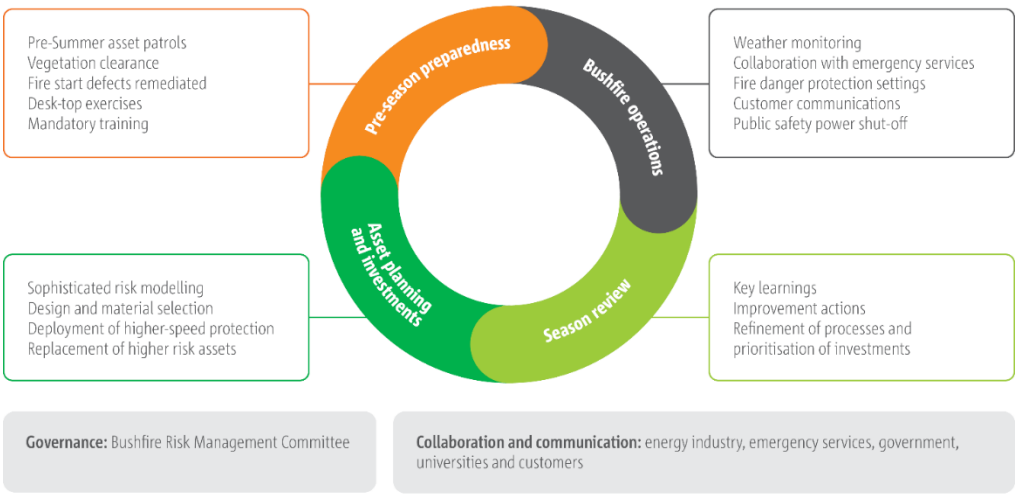
Weather and bushfire modelling to tailor our planning and investment

To better understand, plan for and manage the impact climate-related risks have on our assets, people and operations we collaborate with the Commonwealth Scientific and Research Organisation (CSIRO), Energy Networks Australia and the Bureau of Meteorology (BoM). This analysis is used to provide evidence supporting the need to integrate climate considerations into the network planning spend when engaging with the Regulator. Specific risks including those posed by bushfire and extreme weather events are considered in network planning and operational capacities during our strategy and risk management processes.

Our bushfire risk management process

The SA Power Networks Group invests millions every year to reduce the risk of bushfire and loss of power supply in communities. We undertake a range of bushfire risk preparation, mitigation and adaptation activities. Our Bushfire Risk Management Committee, which includes representatives from our Network Management, Field Services, Governance, and Regulation functions, oversees the approach to bushfire risk with a focus on what we can do the reduce the risks of a fire start.

Bushfire risk management cycle



We actively monitor bushfire research and partner with organisations such as the BoM, Energy Networks Australia and the CSIRO to undertake sophisticated modelling to enable more targeted preventative activities. We work closely with with other government and first responder agencies such as the State Emergency Service (SES), Metropolitan and Country Fire Services (MFS/CFS), and the BoM to plan, prepare and respond to major public safety incidents and the bushfire season, and are a member of the State Bushfire Coordination Committee.

Extensive bushfire seasonal preparation is completed ahead of the season, including:

- rectifying any identified bushfire and supply risk defects and ensuring key network projects are completed prior to summer;
- trimming vegetation around powerlines;
- training operational personnel/emergency management exercises;
- ensuring emergency spare parts are in stock;
- preparing our call centre and social media messaging; and
- writing to Life Support customers and Government representatives.

SA Power Networks is the only utility in Australia to (voluntarily) be externally audited for vegetation compliance against the *Electricity (Principles of Vegetation Clearance) Regulations 2021*. Trimming trees and branches near powerlines and repairing or upgrading equipment reduces the risk of bushfire and maintain a reliable power supply to customers and communities. Information about how we manage vegetation near powerlines is available on our website.

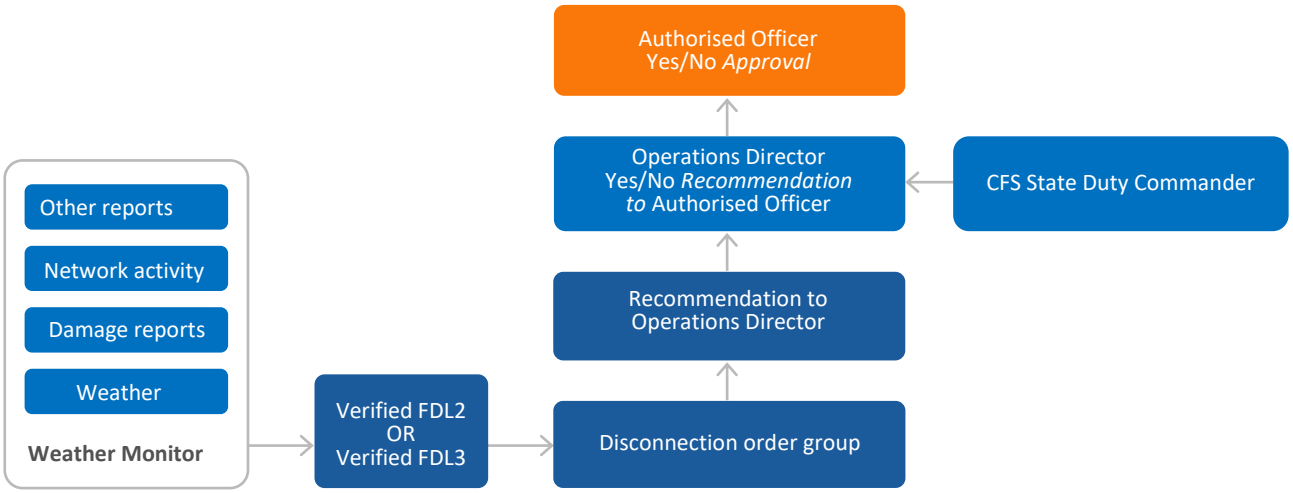
When the bushfire season does start, asset inspectors continually assess the asset and look at whether there needs to be greater attention brought to certain areas. This includes the use of drones, helicopters and ground patrols.

Emergency disconnections during bushfire season

During periods when high bushfire and/or extreme weather conditions are expected, we use a range of tools and methods such as daily monitoring of weather, twice-weekly briefings with meteorologists, and specific response levels (Fire Danger Level, Emergency Response Level and Minimum State Demand) to manage and mitigate potential risks.

In severe cases, when conditions are deteriorating and are not forecast to improve, emergency disconnections may be required to keep communities safe. This response follows a Disconnection Procedure Flowchart.

Disconnection procedure flowchart



Workforce safety

Rising extreme temperatures and increased storm events will increase the risk of health and safety impacts on field workers and reduce windows available to undertake maintenance and construction activities. The health and safety of vulnerable customers and communities may be impacted by prolonged outages.

We have a range of Work Health and Safety Policies and Procedures, with specific measures to manage heat, UV, fatigue, bushfire risk and storm conditions. All field and network operations teams receive daily forecast information from the Emergency Management team, which includes data on wind conditions, thunderstorms and other potential hazards. This information, provided up to five days in advance, helps depots plan their workforce needs so that enough staff and resources are prepared and available for any outages.

2.2.3 Operations

Evolving the role of the grid

We are actively adapting our grid design and operations to better withstand and recover from significant events, issues and changes. We have clearly identified our most significant risks and developed the approaches and technology to manage them. For example, South Australia is rapidly incorporating and utilizing the latent power, storage and supply strengthening services of battery systems and synchronous condensers.

To facilitate the energy transition, we have begun developing (and will need to refine and implement) new Distribution System Operator (DSO) capabilities, managing an enormous capacity of DER/CER on the network to ensure network safety and reliability, as well as system security. We work closely with the South Australian government, AEMO, Essential Services Commission of South Australia (ESCoSA), and the State's transmission network operator, Electranet, to improve technical capabilities to help support the energy system during severe faults, extreme weather events or other abnormal conditions that could destabilise it, and to play our part in ensuring the whole energy system is optimised during the energy transition.

Activities that SA Power Networks undertakes to manage network reliability performance include:

- Network enhancements to manage underlying reliability performance, to harden our network against storms, and to manage performance to our worst served customers;
- Introducing and improving key procedures;
- Improving information to our customers and customer contacts;
- New technology, innovation and research projects; and
- Ongoing daily reliability management activities.

Planning and upgrading ('augmenting') the capacity of our network

SA Power Networks has developed its planning with the objective of meeting and maintaining the reliability and security of supply requirements of the National Electricity Rules and Electricity Distribution Code. Where the forecast demand breaches the planning criteria, a constraint is established and a suitable solution is sought whether this involves implementation of a major network augmentation such as an extension or upgrade of our assets, a deferral solution or a suitable contingency plan taking all risks and their associated consequences into consideration. As a matter of course, SA Power Networks considers various non-network solutions when attempting to determine its preferred solution to address an identified constraint on its network.

SA Power Networks plans to implement solutions for those assets forecast to be overloaded under normal conditions, prior to the overload occurring. However, the solution for contingency events considers both the likelihood and consequence of such an event as well as the amount and type of customer load at risk. The load at risk level chosen usually allows verification of exceedance of the contingency capacity prior to project commitment.

Managing the physical assets in our network

Our Asset Management System (AMS) consists of processes, artefacts, tools and integrations. It provides an integrated and aligned approach to maximise value through the achievement of the Asset Management Objectives. This includes but is not limited to good investment decisions, holistic prioritisation and effective delivery to our customers.

Assessing the performance of our network and responding to trends

We have a dedicated Reliability Operations team that monitors and analyses power outages on our network. This team acts to reduce the risk of future outages and works to continually manage our network's reliability. We carry out an ongoing Reliability Management Program, which focuses on managing reliability performance in areas where our customers experience frequent outages. This work includes projects aimed at preventing outages occurring, reducing the number of customers who experience the outage, and reducing outage durations.

In addition to managing the capacity of the network and condition of our physical network assets, there are a range of improvements ('augmentation') to manage our network's reliability ('hardening' the network), including the installation of:

- lightning resilient insulators;
- animal guards where wildlife comes into contact with our equipment;
- line covering on bare wires under problem vegetation (trees, bushes, etc);
- feeder automation;
- switches to minimise the number of customers who experience an outage;
- Line Fault Indicators to better identify the location of faults; and
- undergrounding sections of the overhead network that are repeatedly damaged during storms.

Maintaining stability and resilience for customers and communities

During the recent customer and stakeholder engagement process designed to assist with the development of the SA Power Networks Regulatory Proposal for 2020 to 2025, electricity customers communicated that network reliability and resilience is a very high priority, particularly regional and rural customers, and that reliability standards should not be lowered.

It was recommended that SA Power Networks invest in an approach that, through a combination of Replacement and Augmentation expenditure, will:

- Maintain regional reliability at current levels with improvements for worst served regions.
- Improve Adelaide CBD reliability to achieve compliance with ESCoSA target.
- Improve rural long restoration times to achieve compliance with ESCoSA target.
- Improve service to worst served customers

- Maintain the current level of bushfire risk (excluding any influence of climate change).

New Value initiatives (in order of preference) also recommended were:

- Bushfire Replacement Expenditure.
- Regional Reliability Improvement
- Worst Served Customers Reliability Improvement
- Public Safety Power Shutoff Reduction.

In addition, recommended that SA Power Networks purchase and install a number of new mobile generators across the State, and fund energy resilience projects. Stakeholders felt that this approach addressed community concerns about regional equity and provided a good balance between SA Power Networks' significant role in building community resilience and the need to partner with other stakeholders.

Crisis and emergency management

We have detailed and mature approaches to managing crisis events associated with business operations, including extreme weather events, particularly with regard to bushfire risk and severe storms. Our Emergency Management team monitors weather and other information to optimise the business response to unplanned events. We do this through a continuous improvement cycle of pre-event preparations, during-event response, post-event operational reviews and accompanying action plans.

A Crisis Management Team can be stood up to respond to crises in real time, and we have a dedicated local customer relations team and Customer Relationship Management System, operating a 24/7 faults and emergencies line. During outage or crisis events we also boost our social media and SMS communications.

We engage in proactive communication with customers when forecasts indicate significant Emergency Response Level or Fire Danger Level conditions. This includes reaching out to Life Support Customers, MPs, nursing homes and other major customers, to inform them of preparations for extreme weather events.

Social media is a critical platform to spread messages during events, and we also utilise an automated system that sends out SMS messages to customers as soon as we know a part of the network is off, including those parts that customers inform us of. In major events, we deliver targeted, bespoke messaging to localised groups of customers regarding restoration times.

During bushfires, communications are more regular. We do as much as we can to make sure that we are preparing and informing the community about our preparations and advise them on what they need to do when there is a bushfire.

2.3 Evaluation and improvement

We continually review and report on our progress against network performance, severe weather and bushfire preparations and response to the Executive Leadership Team, Board and in our annual sustainability reporting.

SA Power Networks has regulatory requirements to use its best endeavours to achieve a series of performance standards. We continue to identify, trial, introduce and review new reliability management products and procedures, and apply best practices to maintain a reliable electricity supply. Condition monitoring practices and strategic asset maintenance and replacement also underpin network reliability.

3. Emerging technologies and integration

3.1 Overview

This section of our management statement outlines how the SA Power Networks Group approaches the identification and management of new and emerging technologies in the energy sector and their integration into our grid operations, systems and processes. As part of our role in enabling the energy transition, we are exploring new markets and opportunities outside the traditional role of a regulated electricity distribution business.

Emerging technologies include residential and commercial solar and wind generation, storage batteries, Virtual Power Plants (VPPs) and electric vehicles (EVs). Integration of these resources presents planning, design, engineering, system stability and security challenges. We are exploring new markets and opportunities outside the regulated business and building our digital capabilities to capitalise on new technology developments, making our processes more efficient. This includes leveraging artificial intelligence (AI) and the digitisation of the network. We leverage technologies such as machine learning, electric vehicles, drones, robotics and virtual reality technology to deliver our services and operate our network.

We are also acutely aware that the benefits and challenges of the rapid energy transition have the potential to affect customers in different ways. We consider how our activities and services can be developed and delivered in a just and fair manner, and strive to think ahead to identify and address new forms of exclusion and inequality.

3.2 Management approach

3.2.1 Strategy

The SA Power Networks Group's *Strategic Direction 2035* sets out our vision to lead the transformation of energy services for a sustainable future. It reflects a significant shift toward a more aspirational leadership role for SA Power Networks as an influential South Australian organisation, and Enerven's capacity for tailored and innovative solutions for its customers, with both contributing to the state's dynamic energy future. The *Strategic Direction* setting process provided the vehicle for the business to align on key issues and opportunities relating to the challenging and unprecedented pace of change we face as an industry and community, to articulate our aspirations and chart our course for the future.

A number of key strategies and delivery plans outline how we will achieve the aspirations of the *Strategic Direction*, including our CER Integration Strategy, Network Strategy and Delivery Plan, and Distributed Energy Transition Roadmap 2020–2025. The Transition Roadmap was developed in consultation with customer representatives and industry, and outlines some of the initiatives we have underway that will help us to enable this transition.

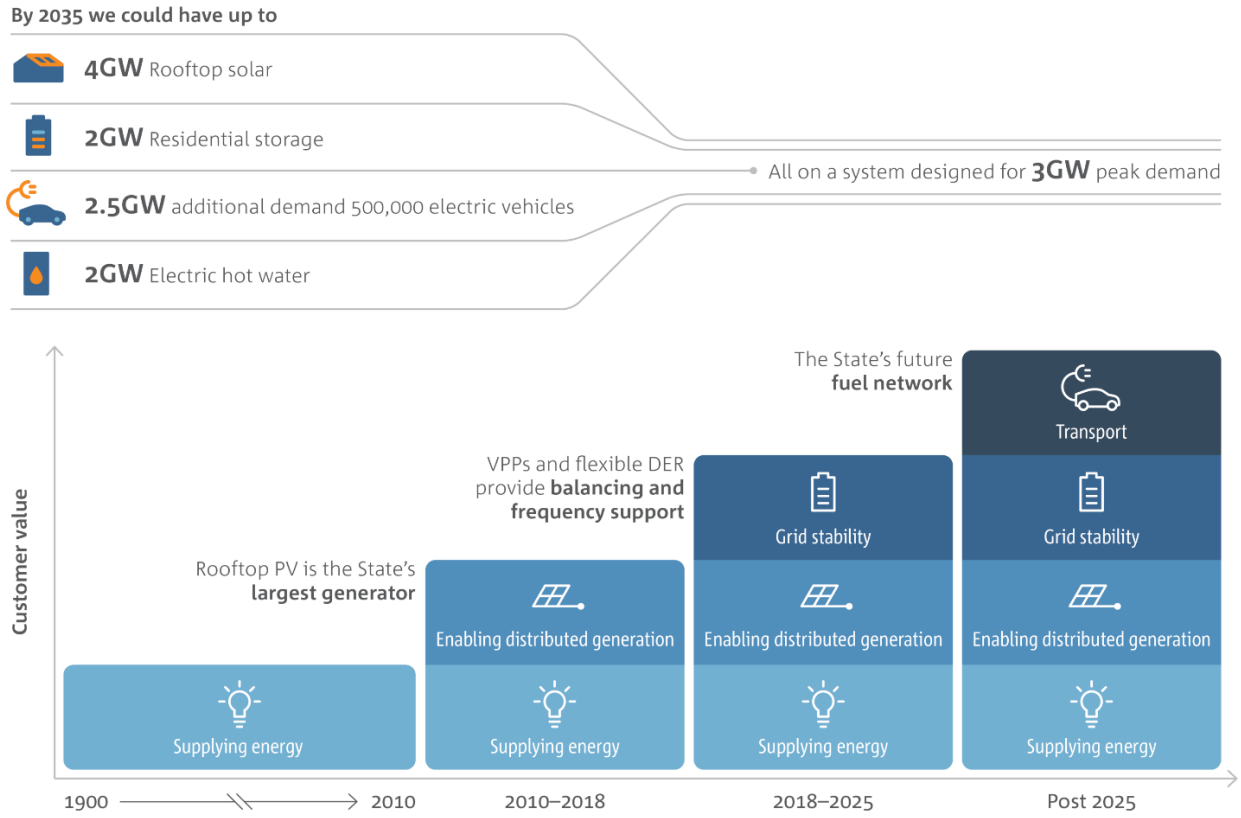
3.2.2 Transforming energy in South Australia

Understanding and planning for the rapid transition of the energy sector

Over the past decade, the South Australian electricity system has undergone a dramatic transition from being predominantly coal and gas powered to being powered largely by renewable energy. Already we have the highest penetration of distributed solar of any gigawatt-scale energy system in the world and we're working on doubling our solar capacity in the next five years. In the longer term, the growing availability of renewable-generated energy combined with storage, has the ability to drive down wholesale energy prices benefitting all customers.

As the economy continues to decarbonise, we anticipate a significant amount of 'electrification' to occur – where applications previously powered by hydrocarbons (eg natural gas, petrol, diesel) will switch to renewables-sourced electricity, for example electric vehicles. The South Australian electricity network

currently delivers ~25% of state end-use energy. As the State decarbonises, the distribution network could ultimately supply 80%+ of the State's energy needs. Our challenge is to efficiently adapt the existing network to support all these new applications, and releasing significant value for customers. The period 2025–30 will be critical in managing the continued uptake of solar and batteries, and an acceleration in the take-up of electric vehicles.



There has been, and continues to be, a high level of co-operation between the Government of South Australia, the Australian Energy Market Operator (AEMO), ElectraNet, the Office of the Technical Regulator (OTR) and SA Power Networks (on projects and collaboration via the SA Energy Transition Steering Committee) in implementing the energy transition so far. In many cases, the most effective methods of managing issues related to the energy transition are implemented in the distribution network. Our job is to make sure the network and our services evolve to make this future possible.

We have undertaken modelling to better understand the implications of various pathways to net-zero on the energy sector broadly, and our customers and network specifically. The scenarios used to develop the modelling are based on those that AEMO used in developing their integrated system plan, reflecting lower or higher levels of DER/CER uptake, electrification and the role that hydrogen might play in the future energy system.

Overall, the modelling predicts a future in which energy will be clean, reliable and increasingly affordable. However, the challenge is that customers will need to invest (for example, in buying an electric vehicle) to see these benefits, which could be more difficult for those customers experiencing vulnerability.

3.2.3 Integrating distributed and consumer energy resources (CER)

Leveraging latent capacity and flexibility

During the 1980s and 1990s, significant investment was made in the distribution network to meet air conditioning demand, which means we have untapped potential in our network. By tapping into that unused capacity, we have the potential to avoid the need for network investment.

Our role is now less about moving energy from distant or distributed generators, to more about ensuring

we have enough network capacity to support peak demand and generation (or using flexibility to avoid building out capacity). Hence our solutions are about 'stretch and fill'. Stretching the network's capacity through smart network management and leveraging the network's spare capacity – filling it with flexible customer energy resources.

We have achieved stretch through investing in dynamic voltage management capabilities, whereas the fill part of the strategy leverages the flexibility of customer energy resources such as PV, storage, hot water, and EV to ensure we can enable consumer energy resources within the existing capacity of the network. This includes innovative tariffs to encourage customers to use network capacity more efficiently. New flexible export connection offers are available for residential solar customers. Customers have a choice between lower fixed exports all year round, or flexible export limits that vary based on the local network conditions. Flexible exports offerings are being developed for larger solar and battery customers and will be in launched conjunction with the new connections policy from 1 July 2025.

Additionally, we are improving our network planning and forecasting processes to accommodate future high-CER scenarios such as springtime reverse power flows and an expected 350,000 newly added electric vehicles charging on the network. To enable data analysis from the hundreds of thousands of smart distributed or customer energy resources connections we are building systems to optimise the operation of the network and unlock more value from network and customer assets.

Maintaining stability during low operational demand

South Australia regularly experiences a situation where every sunny, mild day our customers are being entirely powered by rooftop solar during the daytime. During periods of minimum demand, there is still a lot of energy being consumed, but it is being supplied by CER and so is not directly controlled by the SA Power Networks network. Contrary to common belief, during minimum demand SA Power Networks is not managing 'too much' rooftop solar, but rather the risk of a transmission issue causing a bigger problem. If a large system disturbance occurs at minimum demand, such as a major transmission line outage, we could see large amounts of rooftop solar automatically switch off at once. If this occurs, South Australia requires another generation source that can quickly replace the rooftop solar that has tripped off, so we can continue to supply the underlying demand. The SA/Victorian transmission interconnector provides this alternative source of generation, by importing energy from Victoria, and so is critically important during periods of very low demand.

As a result, when we have low levels of demand on our network, there is no action required of us provided the SA/Victorian (Heywood) interconnector is in service – but we need to be ready to act. If the Heywood Interconnector is not in service (like when it was severed in late 2022), or even if one of the two circuits are out, the Australian Energy Market Operator (AEMO) will direct us to take action to increase demand on our network. SA Power Networks is high adept at controlling distributed rooftop solar, and can enact a range of actions available to us, including:

- Curtail any SCADA-controlled generators
- Curtail rooftop solar capable of receiving a direct control (through Flexible Exports or Smarter Homes programs)
- As a last resort, we can use our Enhanced Voltage Management capability. This technology is used to increase distribution voltage levels above nominal. Solar inverters will see this overvoltage and turn off.

We are also addressing this risk by proactively working with industry to make sure new solar inverters are set up with the right settings to ride through transmission faults. Once commissioned, the new SA/NSW transmission interconnector (Project Energy Connect) will provide additional levels of system security.

Electric vehicles (EV)

A key piece in the net zero puzzle is the electrification of the transport sector. Although uptake of EVs has historically been slow in Australia, the Electric Vehicle Council expects that by 2030, there will be around a million EVs on the road, and by 2035 around 30% of vehicles in Australia will be electric. In addition to

beginning to transition our own large fleet of vehicles, we have developed a range of initiatives under our Network Strategy to ensure our network is 'EV Ready' as the uptake of EVs and chargers will have huge impacts on the energy system.

We are working to make the network 'EV Friendly' – we've updated our tariffs so EV owners can charge EVs overnight on the same low rate as off-peak hot water, and the 'solar sponge' tariffs provide an additional 'super off-peak' period in the middle of the day. We have also made changes to our tariffs for large commercial customers that will reduce the cost to large EV 'supercharger' stations and we're working with commercial EV charging networks to help them to find the best places to connect to the grid.

Innovation and collaboration

SA Power Networks' Network Innovation Centre (known as 'the NIC') provides us with a facility to trial and test new technologies that could impact on our business and customers in the immediate and mid-term future. The NIC showcases a range of displays to share some insights into where the future of the electricity network might be heading, and the role that customers, networks and other key stakeholders may play in that future.

The NIC has both network side and customer side technologies on display including a section of distribution network that can be viewed close-up as well as a 'smart house' which integrates solar PV, battery storage, an electric vehicle and a home energy management system with a range of traditional appliances. Our aim is to understand, trial and test new technologies then develop strategies to adapt and capture new opportunities.

South Australia's world-leading take-up of CER (particularly rooftop solar panels) and variable renewables has required us to solve issues that have not yet been addressed anywhere else in the world. This necessity to innovate has also led to groundbreaking and enduring collaborations and partnerships.

We believe that our (and other networks') collaboration with AEMO will provide significant value through providing an 'open access' network platform to facilitate new energy services and connection of DER/CER.

Leveraging new technology

Technology and innovation play a fundamental role in how we are establishing our role as the Distribution System Operator. We have already incorporated innovation into a wide range of systems, functions, and processes, with a focus on improving safety and efficiency.

Our Advanced Distribution Management System (ADMS)[2] was upgraded in 2024. This has enhanced our network management and modelling capabilities along with providing options to further improve model accuracy with increased frequency of data refresh. We are on track to launch the Distributed Energy Resources Management System (DERMS), within the ADMS, early 2025 which will enable us to better manage CER, aligning with our commitment to support the integration of renewable energy into our network. The implementation of systems to specifically analyse and present smart meter data are underway to provide even greater levels of visibility within our network to further support this integration of CER. These advancements are not only improving our operational capabilities but also delivering tangible benefits to our customers through improved service reliability, enhanced security, and greater access to the network.

We also leverage a wide range of new technology, including AI, digitisation, machine learning, electric vehicles, drones, robotics and virtual reality technology to deliver our services and operate our network. Recent examples in the network resilience and reliability area include the use of:

- AI technology in the development a new tool to reliably predict when and how in-service distribution network assets will fail. Through the integration of engineering, artificial intelligence, and data analytics, the condition-based algorithm we have built forecasts the lifespan of assets and

[2] ADMS is a software platform that supports a suite of electricity distribution management, performance and optimisation functions such as automated outage restoration.

identifies the factors contributing to their degradation. Utilising machine learning, this tool computes the likelihood of failure for various assets;

- LiDAR and digitisation as a solution to better see and manage our assets during the River Murray flood event in 2022/23. We used LiDAR and a digital twin of the network to develop a 3D model which could, at scale, determine conductor to water clearance for every span within the predicted 340GL/day River Murray flood area, for both actual and modelled water levels; and
- Drones for asset inspections, scoping work, restringing of powerlines and outage restoration in difficult or sensitive (eg native vegetation) locations.

3.3 Evaluation and improvement

To ensure we keep up with the rapid pace of change, we have systems in place to scan and gather local and global information, trends and technology development. Our people attend and speak at conferences and actively collaborate with peers on projects.

Progress on delivering key projects and programs is reported regularly to the Executive Leadership Team and to the Board on a six-monthly basis. A range of strategic and operational metrics and KPIs are monitored by the organisation in relation to the implementation of the Network Strategy and Delivery Plan and network reliability. A number of relevant measures and case studies are provided in our annual Sustainability Report and *Sustainability Data and Disclosure Databook*.