



# **Energy Resilience in the Flinders and Northern Flinders Ranges Regions**

## **Briefing Paper**

May 2025



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**Information in this document should not be relied upon as legal advice. Each situation will be different and you should obtain and rely on legal advice for your own situation.**

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# 1. Introduction

This briefing paper has been prepared by the First Nations Clean Energy Network in preparation for a *Stakeholder Workshop* regarding the October 2024 electricity outage in northern South Australia.

The First Nations Clean Energy Network has members and supporters in the Flinders Ranges and Northern Flinders Ranges who were impacted by the power outage in October 2024.

Community members experienced hardship through the loss of power – including the loss of food, inability to warm and cool homes, risks to medicines needing refrigeration, the cost of using personal diesel generators, and the stress of the impacts of not knowing how long the outage would go for.

Following a series of meetings with providers and decision-makers, and calls from the regional communities, we planned to run a workshop alongside the Outback Communities Authority and Flinders Ranges Council.

The workshop is intended to provide a platform and voice for impacted communities to be able to share lived experiences of energy insecurity, to build relationships, and to start a collaborative conversation about what regional resilience can look like.

The workshop is also an invitation to energy providers to build relationships with regional communities, and to present the roles they play in energy transmission and distribution, and in providing energy resilience and security.

In broad terms, this briefing paper covers issues related to the outage in October 2024, and provides an overview of electricity supply responsibilities and some of the risks and opportunities to be considered.

This briefing paper is intended as pre-reading ahead of the workshop to be held on 15 May 2025 in order to bring participants up-to-speed.

## **About the First Nations Clean Energy Network (The Network)**

The [First Nations Clean Energy Network](#) (the Network) is made up of First Nations people, groups, community organisations, land councils, unions, academics, industry groups, technical advisors, legal experts, renewables companies and others - working in partnership to ensure that First Nations people, groups and communities are key participants in and share in the benefits of Australia's rapid transition to clean energy.

The Network supports communities to address the barriers to clean, affordable and reliable power, securing good jobs and strong economies, so First Nations can have the choice to continue to live and work on Country.

The Network is led by a Steering Group of First Nations leaders. As a national, First Nations-led coalition, the Network aims to enable and empower First Nations to participate in, benefit from, respond to, and shape an energy system in rapid transition as Australia rapidly transitions to renewable energy and seeks to meet legislated emissions reductions targets.

## **About the Outback Communities Authority (OCA)**

The Outback Communities Authority is committed to delivering a thriving and resilient Outback SA through effective collaboration with outback communities, stakeholders, and communities of interest. We approach the way we work with honesty and transparency, developing practical solutions without overpromising or underdelivering - because we truly care about the region and its people.

As the region's lead representative, we work closely with other government agencies and non-government organisations to address challenges and drive positive change. By advocating for investment at all levels of government, we aim to foster growth, resilience, and a stronger Outback SA.

## **About The Flinders Ranges Council (TFRC)**

The Flinders Ranges Council is home to around 1,650 people, making it, by population, one of the smallest local government areas in the state. It has three townships, Quorn (population around 1232), Hawker (population 301) and Cradock (population 44), located within its boundaries.

Despite its size, TFRC residents and businesses make a significant contribution to the state's economic prosperity through providing critical services to the broader region.

*Last year power outages in August and October had significant impacts on businesses, services and households. In particular, it was our most vulnerable that were at great risk for extended periods of time. This caused anxiety as when the power goes out so does most communication and medical devices. We have been working with local members of both parliaments, electricity and communication providers and community groups. We are looking for short-, medium- and long-term solutions.*

Sean Holden - CEO, The Flinders Ranges Council.

## 2. Electricity supply and responsibilities

Regional communities rely on electricity to supply essential and non-essential services including air conditioning, refrigeration, hot water, lighting and a range of devices.

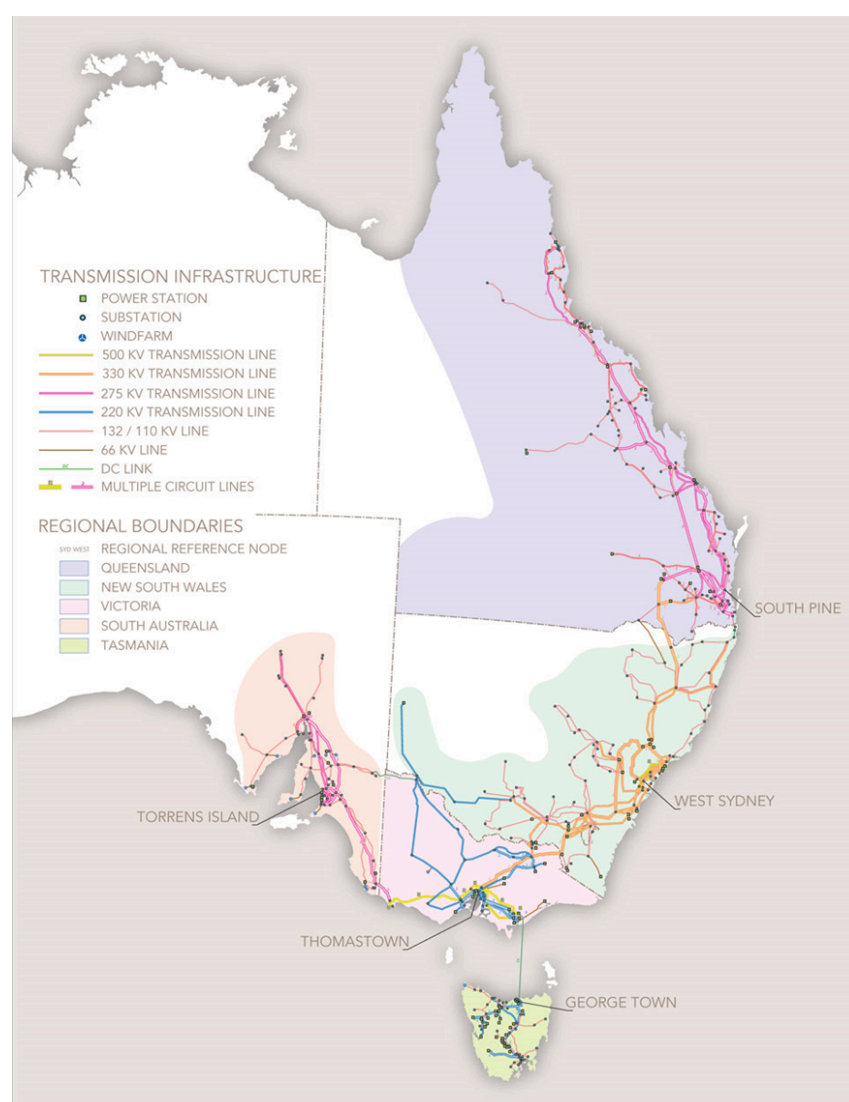
While there are other sources of energy used in communities including LPG, petrol, diesel and wood, electricity is the dominant form of energy for non-transport applications.

In South Australia, communities are supplied by electricity through:

- the National Electricity Market (NEM); or
- the Remote Area Energy Supply (RAES) scheme; or
- through a stand-alone power system (SAPS).

The focus of the workshop will be communities supplied through the National Electricity Market (NEM).

**Figure 1: The National Electricity Market (NEM)**



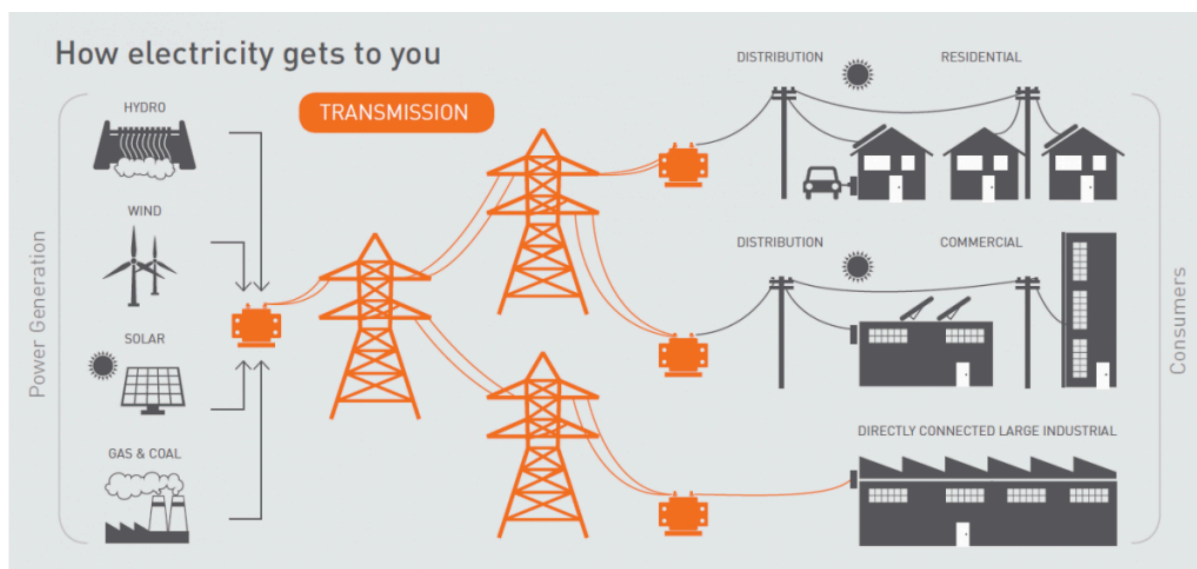
Source: [AEMC](#)

The Northern Flinders Ranges region in outback South Australia is at the very edge of the grid. Electricity supply is more fragile at the edge of the grid due to:

- Long radial lines, with no backup supply. Communities at the end of these long radial lines are more likely to experience a power interruption as they are affected by all faults spanning the entire length of that line. The network providers need to inspect lines that suffer an outage to ensure they are not placing people at risk from a safety perspective. This impacts restoration timeframes.
- The region is prone to lightning strikes, which can cause damage to equipment on the network.
- Network assets are ageing.

Electricity is generated by a range of generators, transmitted at high voltage over long distances by a transmission network service provider (ElectraNet in SA), and then distributed to customers through a distribution network service provider (SA Power Networks or SAPN in SA).

**Figure 2: Electricity supply process in the NEM**



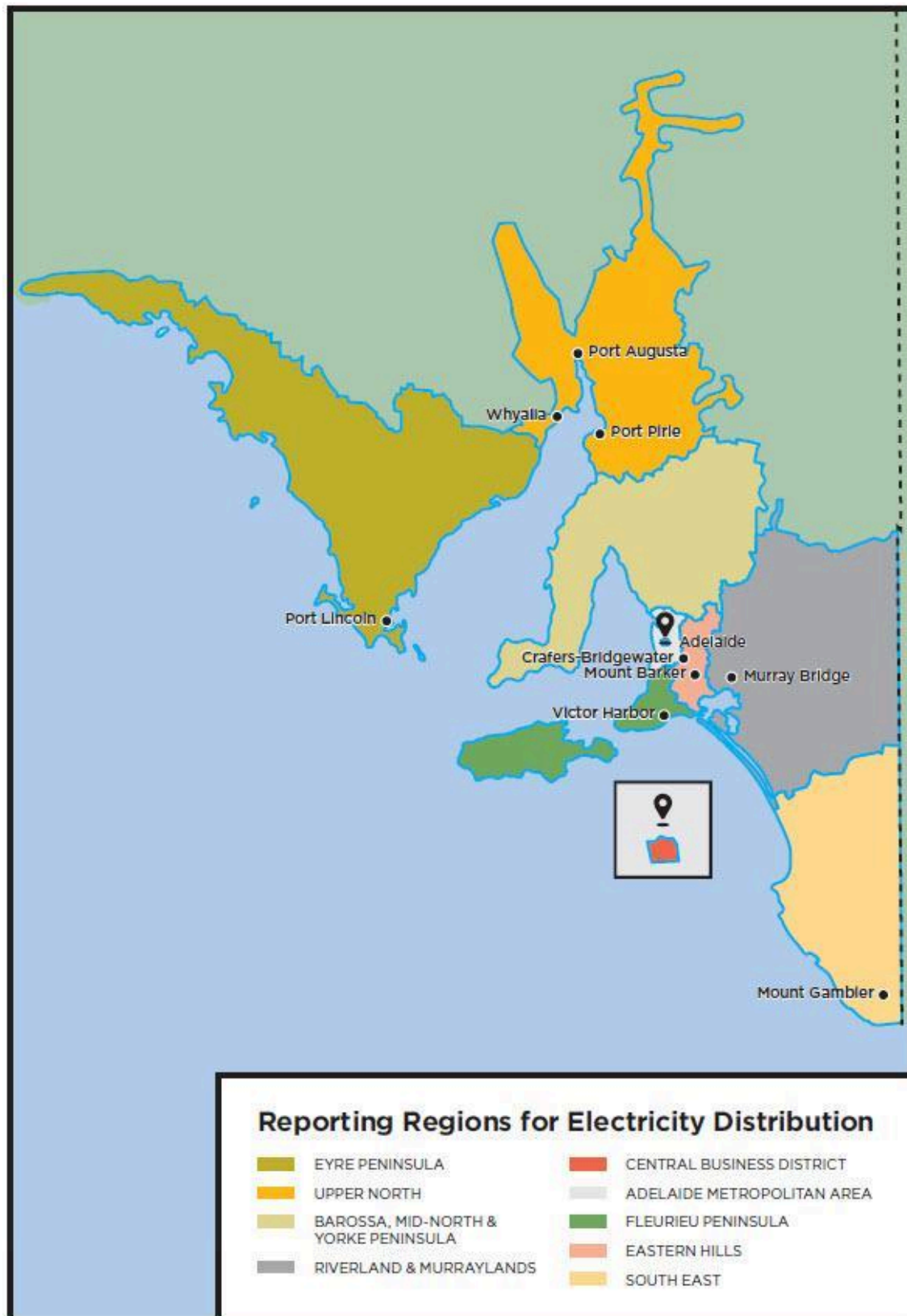
Source: [Energy Networks](#)

ElectraNet [manages](#) 6,636 kilometres of high-voltage transmission lines and cables and 99 substations in SA. SA Power Networks [build](#), maintain and upgrade the poles, wires and substations that deliver power to around 900,000 homes and businesses in SA.

SA Power Networks and ElectraNet are both regulated through the Essential Services Commission of SA (ESCOSA). This imposes numerous conditions on them, including costs and service levels. The state government, through the Department of Energy and Mining (DEM), also has a [role](#) in energy and technical regulation.

The following figure shows the reporting regions for electricity distribution. Our area of interest is the Upper North.

**Figure 3: Reporting regions for electricity distribution**



Source: [ESCOCA](#)

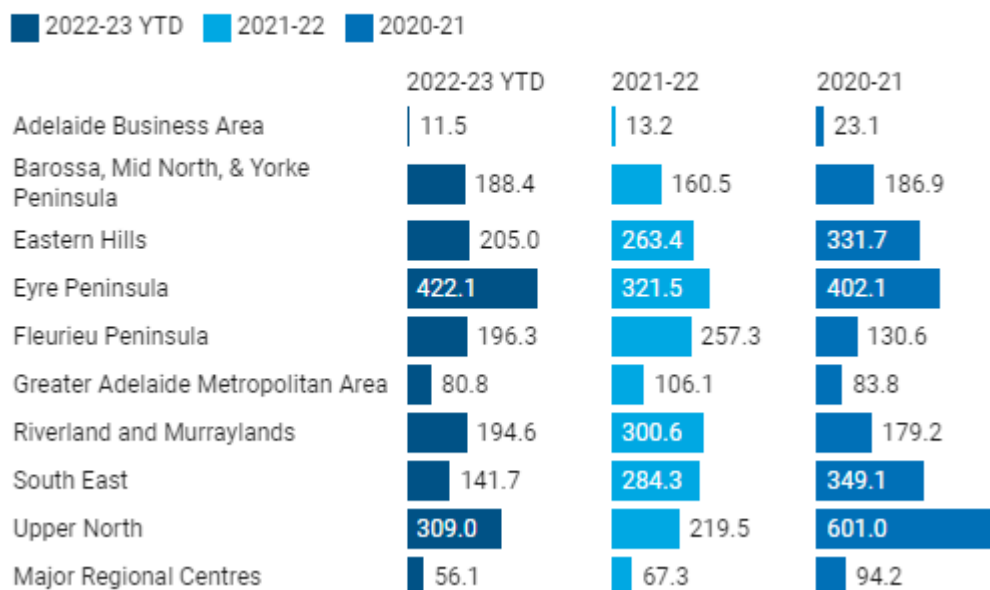


The following tables show the duration and number of unplanned (i.e. not related to scheduled maintenance) electricity supply interruptions.

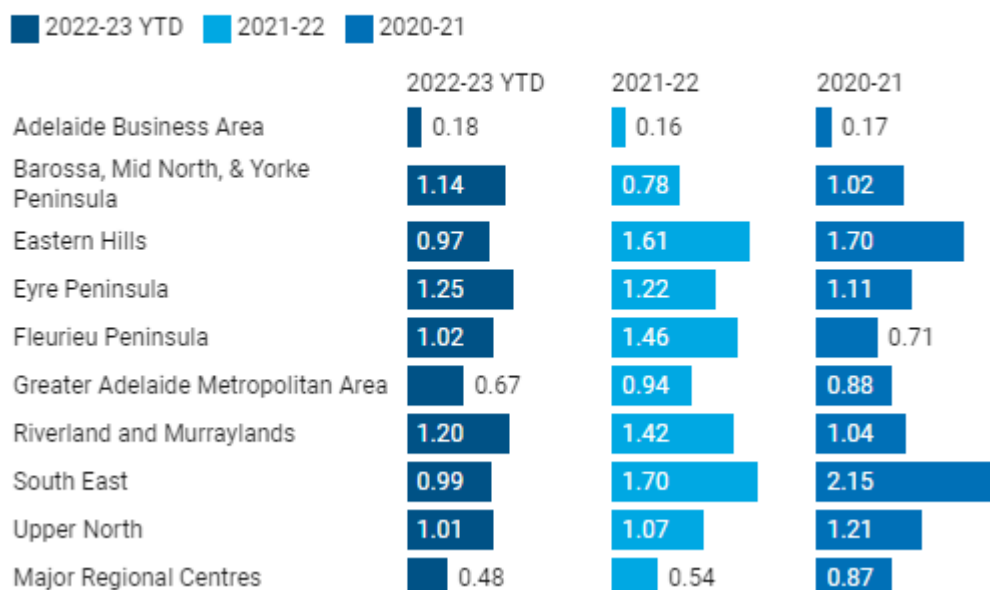
The tables show that, in general, areas at the very edge of the grid such as the Upper North region are amongst the worst performing.

**Table 1: Unplanned electricity supply interruptions, by minutes and number**

**Average minutes of unplanned supply interruptions per customer per year, normalised (USAIDIn), by region**



**Average number of unplanned supply interruptions per customer per year, normalised (USAIFIn), by region**







A summary of the outages and restoration is provided below.

- Extreme weather event on Thursday 17 October 2024.
- Power supply was impacted and ElectraNet and SA Power Networks crews immediately began working to restore power.
- Power was restored to **Roxby Downs** Saturday 19 October.
- Households and businesses with rooftop solar in Leigh Creek and Hawker (and surrounding communities) were asked to turn off their solar systems to ensure power could be maintained as the generators will not operate with solar in the system.
- Households and businesses with rooftop solar in Quorn were asked to turn off their solar systems to ensure power could be maintained. **Quorn** had temporary generation by 19 October with normal supply restored Friday 1 November.
- Generators energised at **Hawker** evening of Monday 21 October.
- Generators energised at **Leigh Creek** on Tuesday 22 October.
- **Woomera** had temporary power supplies by Thursday 24 October, and normal supply on 31 October.
- **Pimba** residents had their own stand-alone power supplies with town generation energised on Friday 25 Oct.
- The prioritisation of generator deployment and the impact on remote Aboriginal communities connected to SAPN's grid.
- Importance of documenting the rebuilding process/restoration for public awareness.
- The Australian Energy Regulator (AER) has accepted SA Power Networks' proposal for three new mobile generators as part of its Final Determination for 2025-30.
- The longer-term energy supply for these communities is being considered by ElectraNet.

## 4. Risks and opportunities

### 4.1 Climate change

Climate change is a key risk to electricity supply. As Giles Parkinson [writes](#) in Renew Economy, Australia has a long stringy grid vulnerable to the increasing intensity of natural disasters – whether they are fire, flood or storms:

*In Australia, we are all too familiar with the devastation and disruption that natural hazards such as bushfires, cyclones and flooding can cause. However, with the driver of a changing climate there is growing potential for some natural hazards to occur at unimagined scales, in unprecedented combinations and in unexpected locations. Many natural hazards are becoming more frequent and intense. More people and assets are exposed and vulnerable to these hazards. The essential services we rely on – power, water, telecommunications, the internet and finance – are also exposed to these impacts.*

A [study](#) on the vulnerability of critical energy infrastructure to storms found that tall, slender structures, such as transmission towers, distribution poles and wind turbines are most affected.

## 4.2 SAPS and Microgrids

Strengthening the grid at the edges, and the installation of stand-alone power systems (SAPS), are opportunities that warrant further consideration.

A [‘microgrid’](#) refers to electricity networks that can be isolated and operated independently of the interconnected electricity system (the ‘grid’). A microgrid can be created by installing solar, battery storage and/or diesel generators in communities along with controls so that during a grid outage, or if the grid is disconnected due to extreme fire risk, the community, or part thereof, can continue to have an electricity supply.

The Microgrid Feasibility and Screening Study<sup>1</sup> for the Eyre Peninsula found that a ‘microgrid would allow portions of the upstream network to be de-energised on days of extreme or catastrophic bush fire risk, minimise outages caused by upstream faults, and reduce carbon emissions attributable to grid imports. Improved reliability of electricity supply would reduce loss of services, supplies, and perishable stock, creating a positive impact on health services, education services, and local businesses.’

[Stand-alone Power Systems](#) (SAPS) are ‘off-grid systems that operate independently from the main network’. In some cases communities can be removed from the grid and supplied by SAPS. As an example, SAPN are in the process of installing SAPS at Cape de Couedic on Kangaroo Island. The existing line connecting Cape de Couedic with the NEM will be removed.

There are interesting developments regarding microgrids and SAPS in other jurisdictions. For example, Western Power in Western Australia has committed to converting more than 52% of its remote and regional network serving 3% of its customer base to SAPS and microgrids. Its analysis estimated savings of approximately \$388 million over 50 years by transitioning just 2,702 customers to SAPS. These savings primarily come from avoiding costly traditional grid infrastructure maintenance and replacement, particularly in remote areas. The economic benefits extend beyond direct infrastructure costs - SAPS and microgrids can provide improved reliability, reduced bushfire risks, and better power quality for remote customers<sup>2</sup>.

The study also found that 204 connection points (mostly homes and small businesses) on the Eyre Peninsula distribution network have the potential for implementation of SAPS, allowing for the decommission of existing network assets. 162 connection points have the potential to be powered by a microgrid. Microgrids use existing network assets, so poles, wires, and other components would not be decommissioned when implementing microgrids at these locations. A BESS Cost Sensitivity analysis shows that for both microgrid and IPS, substation zones SSD188 Port Lincoln Terminal and SSD269 Darke Peake are good candidates to re-screen in the future if BESS prices reduce below 70% of current prices.

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<sup>1</sup> Microgrid Feasibility and Screening Study, South Australian Eyre Peninsula, Fringe-of-Grid Futures Public Report. ITP Renewables.

<sup>2</sup> Pers comm, Gabrielle Kuiper