

Jemena Electricity Networks (Vic) Ltd

Network Resilience

JEN Draft Plan Addendum

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Overview

At its broadest level, resilience is the ability of a system or organisation to respond to or recover readily from a crisis or disruptive process. For an electricity system disruptions come from natural, technological, and human-caused threats. Each of these threats can have the potential for widespread impacts on the operation of an electricity distribution system like ours, and we must respond to each of these.

In this paper, we explore the increasing frequency and severity of natural disasters on the electricity distribution system, the possible solutions to withstand these threats, and how to manage the electricity network through them and after they arise. We also explore our role in supporting the community through the wide-spread and long-duration outages that result from these events.

Overview

- Climate change is impacting the way we provide electricity distribution services. The poles, transformers and wire we use, are coming under increase pressure from extreme weather events resulting in longer and more wide-spread outages.
- Electricity network businesses are responding to these impacts by changing the way we invest in and operate the network and work with the community though and after these events.
- Government and regulators are undertaking resilience reviews which are still in ‘draft’. However, Jemena has begun to think about how we might reflect their final outcomes and the customer cost impacts.
- We encourage customers and stakeholders to provide feedback on these initial thoughts, which we will reflect in our 2026-31 Electricity Distribution Price Review Proposal (lodged January 2025).

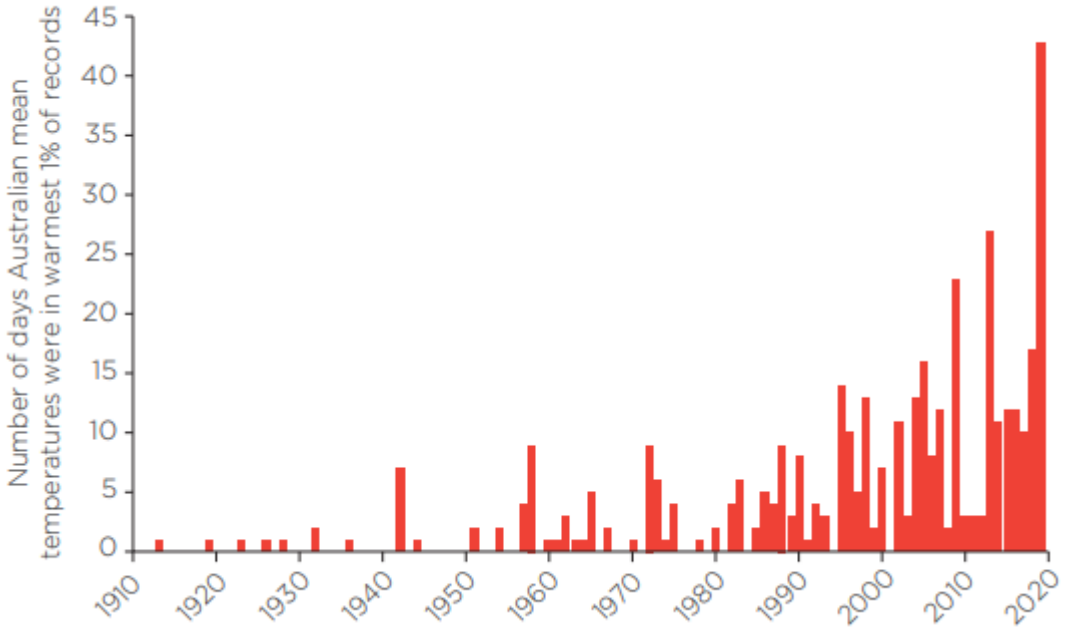
Note: All amounts presented in this report are in 2024 dollar values.

1. Climate change is impacting electricity networks

The National Electricity Market and the laws, rules and objectives that underpin its operation have historically incentivised the efficient delivery of electricity to customers in a steady-state environment. This involves balancing affordability and efficient investment, with customer expectations around reliability and quality of service. However, in recent years climate change has increased the severity and frequency of extreme weather events which has disrupted this steady-state approach to managing the electricity system.

Extreme weather damages and disrupts the electricity network; at the same time, the energy transition is encouraging customers to 'electrify everything' meaning they are more reliant than ever on the network.

Unusually hot days are becoming more frequent



Source: Energy Networks Australia: Electricity networks A guide to climate change and its likely effects, Report prepared by Scientell Pty Ltd for Energy Networks Australia

Case Study: Victoria's February 2024 Storms

On 13 February 2024, a significant storm crossed Victoria in the mid-afternoon. The associated heavy rainfall and gusts of more than 110 kilometres per hour caused significant damage to the state's transmission and distribution electricity networks.

Over 1 million customers across the state lost power over the course of the event with 30,000 customers remaining without power for over three days.

	Total Customers	Peak number of customers without supply	Longest time customer was without supply
Ausnet	802,000	360,000 ***45% of customers***	**11 days** 94% of affected customers were restored within 72 hours
Citipower/ Powercor	1,332,000	257,000 ***19% of customers***	96% of affected customers were restored within 16 hours
Jemena	370,000	54,250* ***15% of customers***	**2.5 hours** 98% of affected customers were restored within 2 hours
United Energy	700,000	249,180 ***36% of customers***	90% of affected customers were restored within 19 hours

*53,000 of these customers lost supply due to emergency load-shedding measures directed by the Australian Energy Market Operator.

Source: Victorian Government Network Outage Review, Interim Report (4th July 2024)

The impacts of this outage on electricity customers and the wider community prompted a review by the Victorian Government on the electricity networks' operational response. The scope of the review included:

- Contingency planning
- Effective management of the incident
- Restoration of supply (including temporary supply via generators)
- The process for enacting State emergency management restoration priorities
- Identifying opportunities for the use of mutual aid and resource sharing within Victoria, or from interstate resources
- The effectiveness of tools and systems to communicate with customers and external authorities
- The capacity to provide support and offer resources to heavily impacted communities (via mobile community response vehicles or community centres)

The Panel aims to identify best-practice systems, resources, and technologies for managing extended outages. The Panel's interim report can be read here

Jemena looks forward to collaborating with the Panel, our customers, stakeholders, our Victorian peer businesses and the communities we serve as the review progresses.

The increasing risk of these long-duration outages has led the Victorian Government, regulators and electricity distribution network service providers to consider how best to increase the electricity network's resilience to these extreme events. Jemena is committed to minimising the possibility of long-duration outages and their potential impact on the communities we serve through the plans and initiatives we have outlined in this document.

2. What is network resilience?

Network resilience is defined as *"…the network's ability to continue to adequately provide network services and recover those services when subjected to disruptive events"*[1]

Although some initiatives that increase network resilience may also help maintain reliability (for example, replacing wooden poles with steel poles), these are not interchangeable terms or concepts. While reliability relates to how the network performs under normal conditions, resilience measures how the network performs under external strain.[2]

Table 2–1: Reliability and Resilience – definition and measurement

	Reliability	Resilience
Definition	The probability of a system, device, plant or equipment performing its function adequately for the period of time intended, under the operating conditions encountered.	A performance characteristic of a network and its supporting systems (e.g. emergency response processes, etc.). It is the network's ability to continue to adequately provide network services and recover those services when subjected to disruptive events.
Performance Measured By	**System Average Interruption Frequency Index (SAIFI)** The average number of interruptions each year outside of excluded events. **System Average Interruption Duration Index (SAIDI)** The average duration (minutes) of interruptions each year outside of excluded events. **Customer Average Interruption Duration Index (CAIDI)** The total duration of all the Sustained Interruptions (in minutes) divided by the total number of Sustained Interruptions that have occurred during the relevant period	No formal quantification method[3]
Customer Value	Value of Customer Reliability (VCR)	Value of Network Resilience (VNR)[4]
Outage Length	3 minutes – 12 hours (also known as short duration outages)	12 hours + (also known as long duration outages)

1 s 2.1, AER, Network Resilience - a note on key issues, April 2022

2 This paper mainly focuses on external pressures caused by extreme weather/climate change, strong cyber security has also become an important aspect of network resilience with the advent of our increasingly digitised network. We address cyber security resilience in our 2026-31 electricity distribution price review Draft Plan.

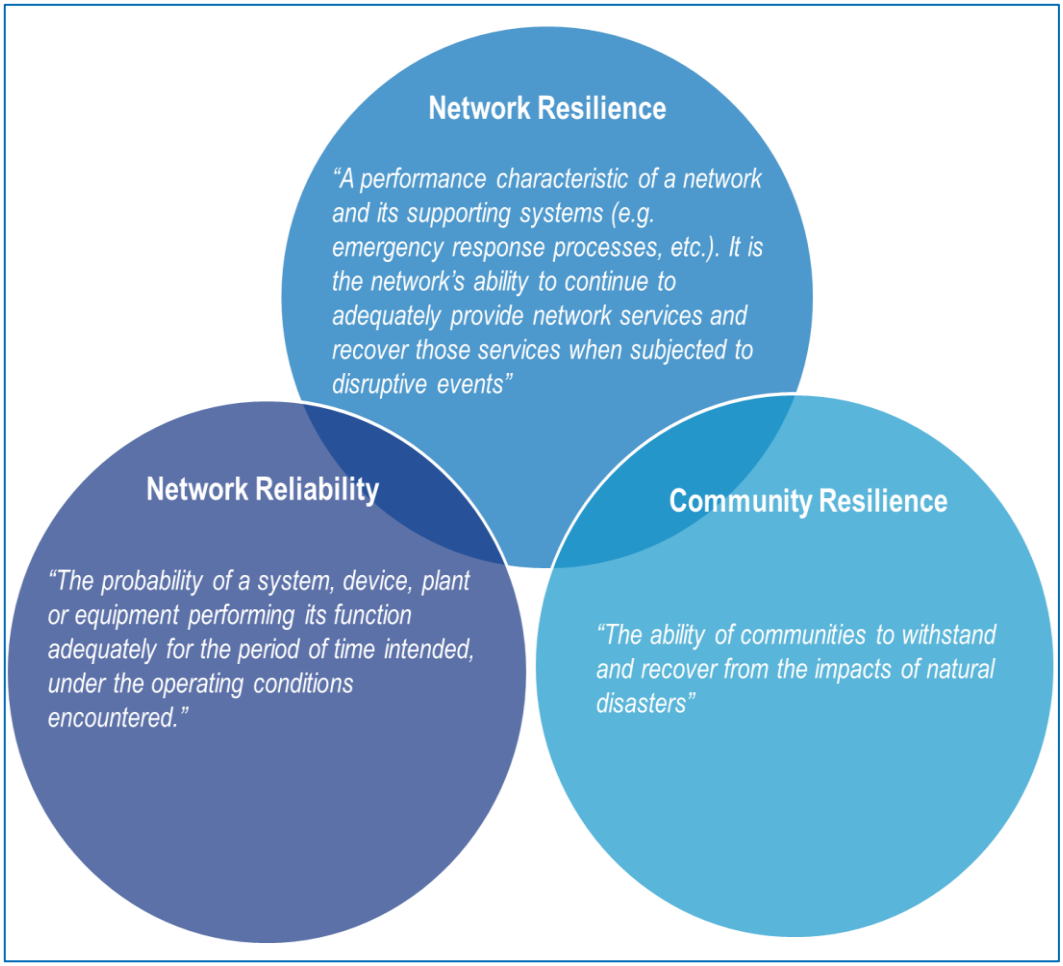
3 Appendix 3.3 of the AER's Final Decision for Ausgrid 2024 – 2029 Price Determination suggests National Electricity Market wide performance reporting of resilience investments. However, this has not be adopted.

4 See section 4.4 for more details on *Value of Network Resilience*

While network resilience is an important aspect of responding to major weather events, it is only one part of wider community resilience. Community resilience encompasses how government, communities, households and all critical infrastructure operators respond to natural disasters. Poor network resilience can hinder community resilience by negatively impacting restoration efforts or disrupting the provision of critical services. This also has a flow-on effect on other critical and emergency services, such as hospitals, water treatment plants, and communication networks. Network resilience plays an important role in supporting these emergency agencies, governing bodies, and the communities they serve when faced with a major weather event.

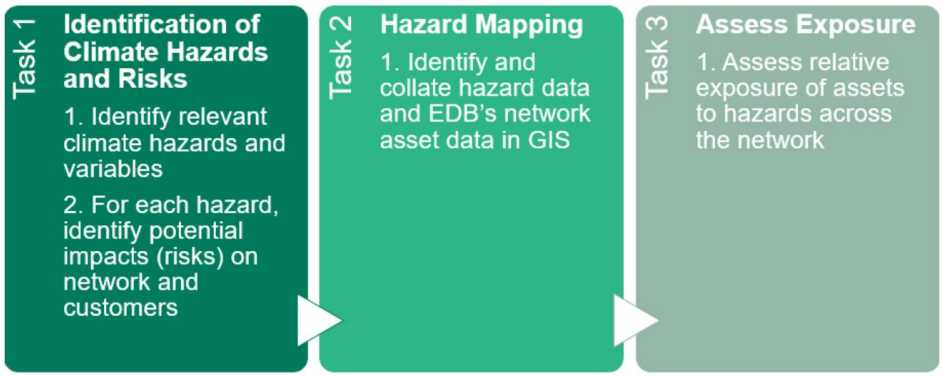
The relationship between community resilience, network resilience and reliability are summarised in Figure 1 below.

Figure 1 - The relationship between community resilience, network resilience and reliability



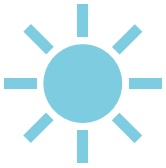
3. Jemena has taken steps to understand the climate risks facing our network and assess how prepared we are to address them.

Our changing climate is one of the critical factors bringing network resilience into sharp focus. In 2023 Jemena—along with our Victorian distribution network service provider peers—commissioned AECOM to develop a statewide Climate Change study. The purpose of this report was to assess the likely impact of the changing climate on the electricity network assets and to identify areas which could be classified as 'at risk'. The report had three key phases:



Source: AECOM Climate Change Study for Victorian Electricity Distribution Businesses

Out of this exercise, AECOM identified the below risks to Jemena's electricity distribution network:

Hazard	Risks to Jemena's Network
Extreme rainfall 	Projected changes in heavy rainfall are greatest at Sunbury and Gisborne South. In addition, areas of asset exposure are spread across the southern half of the distribution area. Example locations include West Footscray, Hadfield and Heidelberg West. Approximately 5% of Jemena's electricity distribution lines (and associated assets), 4% of distribution substations and 10% of zone substations intersect with the existing flood overlays across the distribution area.
Bushfires 	Areas of greatest asset exposure include Gisborne South, the region surrounding Gisborne South and Woodlands Historic Park. Approximately <1% of distribution lines and 1% of distribution substations intersect with the bushfire management overlays across the distribution area.
Extreme heat; days over 35°C and/ or days over 40°C 	Frequency and severity of extreme heat days are relatively uniform across the distribution area. Assets are similarly exposed across Jemena's distribution area with the frequency and severity of extreme heat events projected to be relatively uniform. The projections do not consider the potential for higher ambient temperatures due to the urban heat island effect.

Hazard	Risks to Jemena's Network
Extreme wind; wind gust >100 km/h 	Areas of higher exposure—as indicated by the vegetation overlay and the concentration of assets—include the region surrounding Gisborne South, and in proximity to Merri Creek and Darebin Creek Approximately 3% of distribution lines intersect with the vegetation overlay across the distribution area.
Sea level rise 	Areas of greater asset exposure include Williamstown. Less than 1% of distribution lines (depending on the voltage levels) and distribution substations intersect with areas that are projected to be inundated by 2040 and areas that projected to be inundated by 2070. Approximately 3% of zone substations intersect with areas that are projected to be inundated by 2070.

The findings from this report have informed our thinking around both our network replacement schedules and our network planning initiatives. By responding to, and planning for, changing network conditions we can manage both the risks of long duration outages, and the costs of rebuilding parts of the network not constructed with a changing climate in mind.

4. The framework is changing to address this

Given the increasing intensity and number of extreme weather events across Victoria and the NEM, as well as the resulting electricity outages, policymakers and regulators have begun investigating and developing adjustments to the regulatory framework to address this emerging challenge. Recent reviews include:

- The Victorian Government's Expert Panel Resilience Review (2021)
- The AER's Guidance Note on Resilience Issues (2022)
- The Victorian Government's Expert Panel Resilience Review (on going)
- The AER's Value of Network Resilience (VNR) Consultation & Draft Decision (on going)

4.1 The Victorian Government's Expert Panel Resilience Review (2021)

Following the 2021 storms, the Victorian Government convened an expert panel on electricity distribution network resilience. The expert panel suggested eight recommendations, comprising 35 sub-recommendations intended to increase network resilience.

Panel Recommendations

- *A Network Resilience Investment Strategy should be developed in the short term, with actions that can start immediately, to drive distributor investments in resilience solutions, informed by risk analysis and community needs. This should result in investments and solutions in the most high-risk locations by 2025.*
- *The distribution businesses should be required to take an all-hazards approach to risk mitigation for the purposes of safety, reliability, security and resilience of the electricity system. This should result in a regular assessment (at least every 5 years) of the need for investments and solutions in the-most high risk locations, from 2025 onwards*
- *The national legislative framework should be amended to drive distributor investments in resilience in the longer-term. To implement these changes, the Panel proposes that the Victorian Government should seek to amend the AER's framework, through working with the AER and through a series of proposed Rule changes, to embed resilience in the national framework from the next regulatory period (from 2026 onwards) and avoid the need for Victorian Government intervention in the longer term.*
- *The distribution businesses should be required to partner with communities and local councils in emergency planning and response*
- *The distribution businesses should have new obligations to improve the prioritisation of the restoration of power following an outage*
- *The distribution businesses should improve their communication with customers before and after prolonged power outages*
- *Improve delivery of relief to customers affected by prolonged power outages*
- *The distribution businesses should be required to conduct after action reviews (AARs) to improve outcomes for customers impacted by prolonged power outages*

Jemena has begun to embed many of these recommendations into our business-as-usual practices including engagement with local councils and updates to our outage management processes. We will continue to engage with the Victorian Government as they develop the proposed rule changes to further progress the implementation of the Expert panel's recommendations.

4.2 The AER's Guidance Note on Resilience Issues (2022)

In 2022 the AER published a note, which defined network resilience and gave guidance on how network service providers should forecast and present their resilience investments in their price review proposals:

AER Forecasting Requirements:

- *Establishing a causal relationship between the proposed resilience expenditure and the expected increase in the extreme weather events.*
- *Ensuring the proposed expenditure is required to maintain service levels and is based on the option that likely achieves the greatest net benefit of the feasible options considered.*
- *Fully informing consumers of different resilience expenditure options, including the implications stemming from these options, and that they are supportive of the proposed expenditure.*

The AER's guidance note highlights the difficulty between planning for extreme weather events—which by their nature are difficult to predict—and the certainty required by the regulatory framework. The requirements of the note are also challenging to satisfy, particularly the requirement to establish a causal links between the need to network invest and the type of investment required to address the effects of extreme weather events.

There may also be tension between fulfilling the requirements of this guidance note, which focuses on *maintaining network resilience,* and implementing the Victorian Government's recommendations, which calls on network service providers to *improve network resilience,* particularly through their restoration efforts.[5] There may also be a variation between the investments justified using the criteria set out in the note, and the investments that can be economically justified using the VNR, which is discussed below.

4.3 The Victorian Government's Network Outage Review (ongoing)

In light of the February 2024 storms, the Victorian Government has commissioned an independent panel (Panel) to review the operational response of electricity network service providers during long-duration outages and recommend ways in which this could be improved. An interim report by the panel identified 51 potential improvements that could be implemented, with a final report due to the Minister for Energy and Resources in August 2024.

Jemena's response to this interim report can be read on the Department of Energy, Environment and Climate Action's website.[6]

The timing of the Panel's report and Jemena's response to the recommendations overlap with the publication of our Draft Plan. Some of the initiatives included in our Draft Plan address these Panel recommendations. However, there are additional recommendations that we did not fully consider when we prepared our Draft Plan; consequently, we have *not* included the expected costs of implementing these additional Panel recommendations in our capital expenditure forecast. Instead, we are releasing this addendum paper for consultation and will incorporate feedback in future updates and our initial proposal due to the AER on 31 January 2025.

We outline a series of initiatives designed to address the Panel's recommendations targeted at distribution network service providers in section 6 and although we have not fully considered all of the Panel's recommendations, we have identified several which have significant implications on how network businesses deliver services and how the costs of these services are recovered from customers. One of the Panel's key recommendations suggests network service providers should self-fund the cost of outage payments (that is, not recover them through distribution charges). This is a material change to the design and operation of the regulatory framework in Victoria and if implemented, could have a profound impact on the way network businesses manage risk. We elaborate on this issue below.

[5] *Pg 48, Expert Panel, Network Outage Review, Network Outage Review (energy.vic.gov.au)*

[6] *Jemena, Submission to Expert Panel interim Report, Published Submissions | Network Outage Review | Engage Victoria*

Incentivising Resilience

Recommendation 20 and 21 of the Network Outage Review's Interim Report highlighted the need to incentivise network service providers to provide a resilient service, and ensuring they internalise the externalities of failing to do so.

Currently, customers are compensated for power outages through Victoria's guaranteed service level (GSL) scheme, which is funded through electricity distribution price review determinations. If the customer experiences an outage which lasts more than 7 days, they receive an additional prolonged power outage payment (PPOP) financed by the Victorian Government. Jemena supports the use of incentive schemes. However ensuring the measure triggers the right response requires a holistic consideration of the network service provider's operating environment including balancing all incentives and the regulatory framework.

The Panel recommended networks move to a self-funded compensation model (for example, the AER should not allow network service providers to include these costs in their prices), pointing to a recent change in Ofgem(1)'s Guaranteed Standards of Performance (GSoP) compensation scheme which increased the total amount of compensation a customer could receive per event from £700 to £2,000. The Distribution Network Operators (DNOs), subject to Ofgem's GSoP payment process operate under different market conditions than Victorian Distributors namely:

- DNO's total financial liability under the GSoP scheme is capped, via a condition set out in their licencing agreements.(2)
- While DNO's are liable for payments up to this amount, the potential cost associated with this is included in the calculation of the networks' '*Allowed Network Asset Risk Metric'.* This is the level of risk the network is funded to avoid. This means DNOs are fully funded to avoid the cost of these payments through capital expenditure investments. The costs of these investments are ultimately borne by consumers.(3)
- Following the Storm Arwen report (which triggered the change in compensation cap), Ofgem also waived the cost pass through minimum threshold and time limit for cost pass through applications to deliver any of the report's recommendations.(4) Again, this means networks are fully funded to deliver this program of works, the cost of which is passed on to consumers.

If Victoria adopted a similar scheme, under our current operating conditions, it would lead to networks pursuing the unattainable goal of eliminating all outages through aggressive capital expenditure investments. Based on the current Value of Customer Reliability, we estimate this investment to be multiple times the current *Regulatory Asset Base* value. This cost would ultimately be borne by consumers.

Alternative approaches may be preferable, including a targeted and high-powered incentive. It could deliver better outcomes at a more efficient cost, address the issues associated with managing uncontrollable events, and achieve the accountability objective identified in the panel recommendations. A possible approach is to adopt the design principles from the Victorian *Fire Factor* (F-Factor) scheme which considers the location and timing of events and also combines risk and consequence into a more powerful scheme designed to address the root problem.

References:

(1) Ofgem is the economic regulator overseeing the energy market in the United Kingdom.

(2) S5.12, Ofgem, Review of Severe Weather Compensation Arrangements for Electricity Customers (ofgem.gov.uk) Appendix 8 of each DNO's Special Licence Conditions calculates this cap.

(3) Chapter 3 of each DNO's Special Licence Conditions calculates the total value of the risk they are funded to avoid.

(4) S6.43 – 6.53, Ofgem, RIIO-ED2 Final Determinations Overview document (ofgem.gov.uk)

4.4 The AER's Value of Network Resilience (VNR) Consultation & Draft Decision (ongoing)

On 1 March 2024, the Energy and Climate Change Ministerial Council (ECMC) requested the AER extend its ongoing Value of Customer Reliability (VCR) Review to include outages over 12 hours. In response to this, the AER began a consultation process on how best to calculate the Value of Network Resilience (VNR), which they defined as the value customers place on avoiding long-duration outages (12 hours +).

The intention is that this value may be included in cost benefit analysis which underpins network price review proposals and business planning. In order to ensure a value was available to inform the upcoming Victorian price proposals the AER intends to calculate an interim value.

AER's Draft VNR Decision:

The AER proposed to quantify an interim value using the VCR:

Residential Customers:

- 1x VCR applies for the first 12 hours of an outage
- 2x VCR applies for 12-24 hours
- 1.5x VCR applies for the remaining duration of the outage.

The total value of the outage is capped at $3,494 per residential customer.

Business Customers:

- 1x VCR applies for the first 12 hours of an outage,
- 1.5x the standard VCR applies for 12-24 hours
- 1x the VCR applies for 24-72 hours
- 0.5x the VCR the remaining duration of the outage

There is no value cap for business customers.

In the long term, the AER proposes working with distribution network service providers to conduct a survey to capture the costs their customers incur during a long-duration outage and explore potential models which could be used to calculate a value.

The AER intends to release its final decision by September 2024. Jemena will continue to engage with the consultation process and will incorporate the required investment—taking into account these values—into our electricity distribution price review proposal.

However, as highlighted previously, there may be variation between projects which are economically justified by the VNR, projects which satisfy the AER's resilience guidance note and meet the Victorian Government's requirements. Jemena will continue to engage with these stakeholders and our customers to finalise a resilience proposal which meets their expectations.

5. Early engagement with our customers

We engaged extensively with our customers across our electricity distribution network areas to understand their energy priorities, preferences, and how we should prepare for a more sustainable energy future. The topic of resilience featured throughout our engagement program,[7] forming part of robust discussions in order to understand customers' expectations around the resilience of our network including how we respond to and recover from extreme weather events.

Engagement Group		Views on Resilience
Customer Voice Groups	First Nations	Expects the electricity network to maintain high levels of reliability and **increase the resilience of the network by responding quickly to extreme weather events.** They noted that many Elders and First Nations community members **may need support in getting back onto the electricity network** and checking in on who would be severely impacted by power outages. In contrast, **some community members would be able to live "off-grid" for shorter periods of time.**
	Disability	Power outages may be critical to some customers and have minimal impact on others. The group noted the **importance of outage notifications** and knowing accurate restoration times. Customers with a disability expect us to **future proof our assets** as much as possible to maintain high reliability and to **withstand extreme weather events to minimise outages.**
	Mental Health	With the increasing number of extreme weather events impacting the electricity network, the group felt it is essential for us to **increase our resilience to withstand and recover from these events**
	Multicultural	Because of the recent extreme weather events in Jemena's network, multicultural customers see it is critical to **increase our network resilience** and be **prepared for more frequent extreme events that impact the network.**
	Seniors	The group recognised the significant impact that power outages can have, both short and long term outages, on seniors. The group want us to **strengthen our resilience** so we can respond quickly to power outages and get customers back on the grid as quickly as possible.
	Young People	Young people want us to focus on futureproofing the network and **increasing our resilience to extreme weather events** and future demand.
Residential customer research		This was the **second highest priority** identified by our residential customer research, following reliability
People's Panel		It is important to invest in network infrastructure with a focus on replacing and upgrading fragile assets, using technology to better predict, manage and respond to significant outages, minimise impact on the customer and develop, maintain and implement a resilience strategy.
Retailers		Retailers want us to increase our resilience as we face greater extreme weather events that impact the network to continue to provide a reliable and safe network to customers. This includes reducing restoration times and increasing our ability to recover quickly from power outages, enhances the service delivery to customers.

[7] Further information on our engagement program can be found in Chapter 2 of our 2026-31 draft plan.

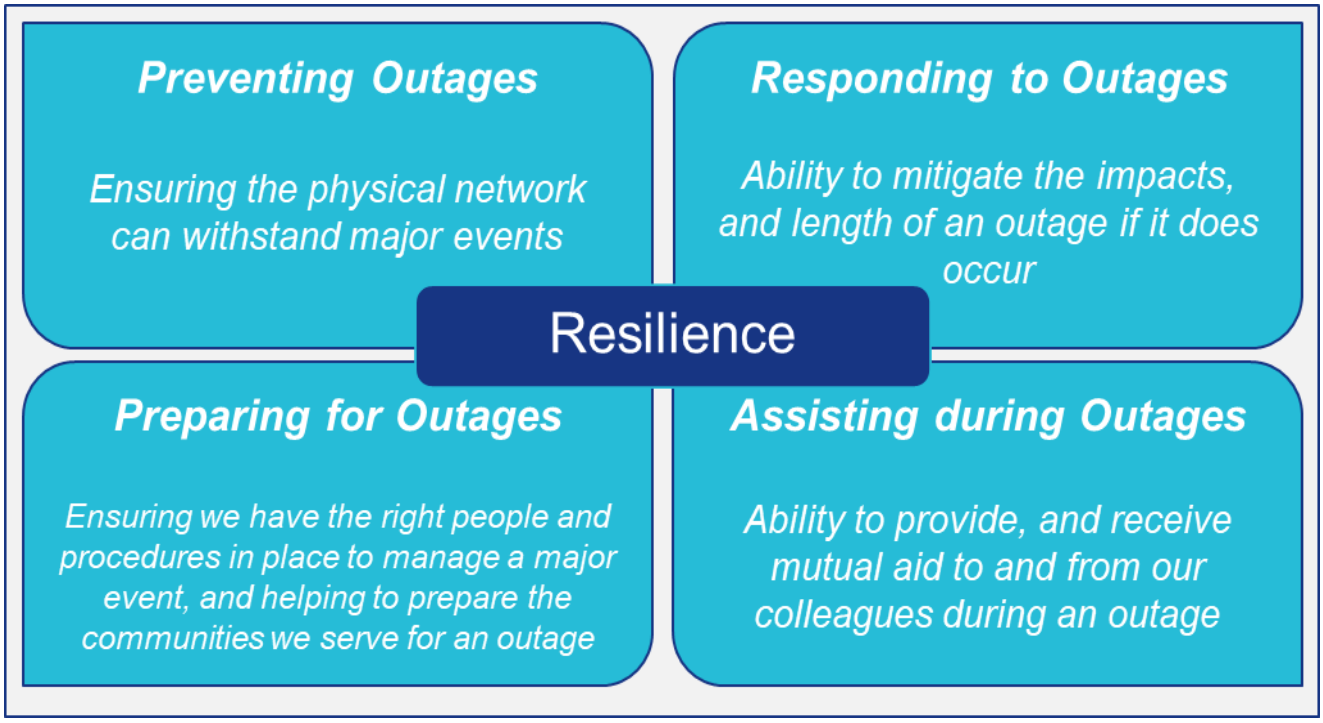
Engagement Group	Views on Resilience
Energy Reference Group	It's important that Jemena increase the resilience of the network by preparing for the rise in extreme weather events and minimise and mitigate the exposure we face.
Small & Medium Businesses	The ability for Jemena to respond to extreme weather events and reduce longer-term outages is a top priority for small businesses to help them return quickly to operating and reduce the associated costs with closures. The reliability of the electricity network emerged as a significant concern to reduce impacts on businesses and the services and goods they provide. Businesses underscored the importance of having advance notice for planned outages and effective communication during unplanned outages so it can help minimise the impact on their business and they can plan and adapt their operations accordingly.
Local Councils	Local councils want support to identify risks and potential impacts to communities before, during and after extreme weather events and want to collaborate with us to help support community education and communication.

In essence, all customers, their representative groups and key stakeholders have given a strong endorsement to deliver network resilience and support the community during significant events. Notwithstanding this early support, we propose to seek further feedback from our customers, particularly as we are yet to incorporate the financial impacts of the resilience initiatives—per section 6—into our long term plans.

6. Our current thinking on resilience initiatives

Jemena has identified several programs of work to address the Network Resilience objective and assign each to one of the four key resilience tenets or competencies outlined in Figure 2 below.

Figure 2 - Key resilience tenets



6.1 Preventing Outages

Outages can be prevented by replacing/upgrading physical network assets or increasing maintenance activities so assets are better prepared for a weather event. Many of the replacement activities, and the hazard trees program included in our Draft Plan, are primarily driven by the need to maintain reliability and safety standards will also increase network resilience to extreme events.

Preventing Outages: Relocating assets in high-flood risk zones

Following the 2022 Maribyrnong river floods, Melbourne Water updated their flood risk modelling in line with Australian Rainfall and Runoff (ARR) guidelines, which is the industry standard for flood modelling. This modelling activities reclassified many of the communities Jemena serves as 'high-flood risk zones' Melbourne Water's[1]



We propose to spend $20M dollars relocating these assets to higher ground, reducing the reduce the risk of these assets suffering flood damage, which could cause an outage, inconveniencing customers and hindering restoration efforts. Safeguarding our assets from this damage also ensures we do not have to replace them sooner than expected and helps maintain affordability and price stability for customers.

This initiative is included in our Draft Plan would cost residential customers $0.54 per annum on average.

[1] Expert Panel Review of Flooding Risk, Progress update on the Maribyrnong River Flood Review - Release of Report | Maribyrnong River Flood Review | Let's Talk | Melbourne Water

Preventing Outages: Hazard Trees Program



As mentioned in our Draft Plan we are proposing to extend our hazard trees program beyond hazardous bushfire risk zones to areas that are expected to see increased windstorm activity. This project will see increases in our vegetation management activities and will help maintain reliability and also increase resilience as there will be a reduced risk of falling branches impacting poles and wires during a storm event.

This initiative is included in our Draft Plan would cost residential customers $0.11 per annum on average.

6.2 Preparing for Outages

Jemena can prepare for outages by ensuring we have the right procedures and people in place to confidentially manage a major event. Currently, Jemena's dedicated Business Resilience team is tasked with ensuring our staff have had the appropriate training to deal with a major event and liaising with external parties to coordinate community resilience. This group is also tasked with implementing and embedding any 'lessons learned' from previous events identified in the 'after action reviews' which we conduct as standard following a major event.

Many of the Panel's recommendations in this space involve standardising outage preparation activities across network service providers. We have included the cost of this in Section 7 of this document. However, we have not included any of these costs in our Draft Plan.

6.3 Responding to Outages

Some solutions will not prevent outages from occurring but will reduce their impact on the communities we serve or shorten their duration. For example, we intend to invest in temporary generators which could be deployed across the network, depending on where the outage occurs. This reduces 'the risk of paying twice' (e.g. hardening the network in one suburb, and then another suburb is hit by a storm).

We also intend to purchase a Jemena Emergency Response Vehicle (JERV) which will be equipped with features such as an inverter, solar panels, lithium battery, generator, satellite Wi-Fi, coffee machine and first aid supplies. In addition to having access to these facilities, the JERV will also provide communities affected by an outage with a focal point to receive in person information on restoration times.

The combined cost of these initiatives are included in our Draft Plan and would cost residential customers $0.04 per annum on average.

6.4 Assisting During Outages

The Panel has identified a number of opportunities for Victorian Network Service Providers to assist each other during long-duration outages. This would mainly be in the form of redirecting our staff and equipment from their 'business-as-usual-activities to assist our Victorian peers when their networks are affected by a long-duration outage. Providing our staff with the necessary training to do this will have a cost impact (detailed in Section 7) and may also have an impact on the service our customers receive. For example, Jemena may have to cancel a planned outage in order to redirect our staff to network restoration efforts across the state. Our Victorian peer Network Service Providers will reciprocate this assistance if Jemena faces a long-duration outage. We propose to consult with our customers and the AER to ensure we're aligned on the appropriate level of assistance during an outage and discuss the possibility of adding some flexibility to our benchmarking and incentive schemes to account for the costs incurred and services disrupted during an extreme event.

7. Costs associated with the independent panel's draft recommendations

Jemena is supportive of the intent behind the Victorian Government's Network Outage Review Panel recommendations. However, there is an important balance to be struck between managing risk, customer outcomes and price impacts. We have assessed the initiatives recommended and the possible customer cost implications of implementing them.

The below are high-level cost estimates of initiatives that we think could address the recommendations, which have not been included in our Draft Plan expenditure forecast. We propose to work with the Panel, DECCA and our customer groups as we refine the project scopes and costs and identify overlaps with initiatives included in our Draft Plan.[8]

Project	Implementing "Make Safe Procedures"	
	Panel Recommendations	**Impact Assessment and Make-Safe Actions: 33 - 37**
	Resilience Themes	**Preparing, Responding, Assisting**
Cost	Operating expenditure: $3,900,000 Capital expenditure: $150,000	
	Included in our current forecast	No
Residential Customer Bill Impacts	• $1.01 per annum (nominal)	
Proposed Initiatives	• Upgrade digital systems to enable the presentation of additional information on damaged infrastructure and safe areas via the outage tracker. • Embed the State Emergency Management Priorities in fault and restoration strategies, including formally embedding 'make safe' as a priority. • Work with Emergency Services to develop procedures for Rapid Impact Assessment (RIA) We will also continue to take reports of damage from Emergency Services and the community through our website and other channels and feed this information into decisions around restoration prioritisation.	
What this will mean for customers	• Additional information on faults/hazards will be available in our outage tracker. • Potential reduction in outage restoration times.	

[8] We have not included any capital expenditure required to upgrade 'worst served customer' feeders as we believe it is the expert panel's intention that this recommendation would apply to the ten worst served feeders across the state, rather than on a per network basis. If this is not the case, we will cost these upgrades and include the project in our Proposal.

Project	Working with our Delivery Partners	
	Panel Recommendations	**Restoration Planning, Prioritisation and Operations 38 - 43**
	Resilience Themes	**Preparing, Responding**
Cost	Operating expenditure: $3,600,000 Capital expenditure: n/a	
	Included in our current forecast	No
Residential Customer Bill Impacts	• $0.85 per annum (nominal)	
Proposed Initiatives	• Continue to enhance our Emergency Management Liaison Officer programs so there is capacity and capability to participate in in state, regional and incident management tiers. • Work with third-party contractors to ensure they are also prepared for a major event. • Upgrade our standards and principles to comply with the Victorian Preparedness Framework (VPF).	
What this will mean for customers	• Potential reduction in outage restoration times.	

Project	Mutual Aid	
	Panel Recommendations	**Mutual Aid between Distribution Businesses and Other Organisations 44 - 48**
	Resilience Themes	**Assisting, Responding**
Cost	Operating expenditure: $400,000 Capital expenditure: n/a	
	Included in our current forecast	No

Residential Customer Bill Impacts	• $0.11 per annum (nominal)
Proposed Initiatives	• Jemena and our Victorian distribution network service provider peers will create a joint Mutual Aid agreement, formalising the help we can offer during a major event. • Jemena will proactively train our staff so they are familiar with all or some of our peer networks on a proactive basis.
What this will mean for customers	• Jemena, and our Victorian distribution network service provider peers will be able to rapidly deploy our staff to assist when another network is facing an extreme event and we have addressed the majority of issues on our own network. This could reduce restoration times for our customers if the staff of other network businesses assist Jemena.

Project	**Responding and Temporarily Restoring**	
	Panel Recommendations	- **Temporary Generation for Key Community Assets (51)** - **Recovery after an Emergency (48 - 50)**
	Resilience Themes	**Responding**
Cost	Operating expenditure: $350,000 Capital expenditure: $1,400,000	
	Included in our current forecast	No
Residential Customer Bill Impacts	• $0.41 per annum (nominal)	
Proposed Initiatives	• Jemena will contribute to statewide messaging about the safety and repair of private electrical infrastructure, including what to do when a defect notice is issued. • Jemena will provide emergency recovery agencies with a list of defective premises to monitor. We will also provide licensed electricians with information during events via automated digital information transfer.	

What this will mean for customers	• Jemena customers will have more information about steps they can take to restore their own assets after experiencing the harmful effects of extreme weather events. • During an outage, private electricians will have greater information to assist their clients, potentially reducing the amount of time a customer is off supply.

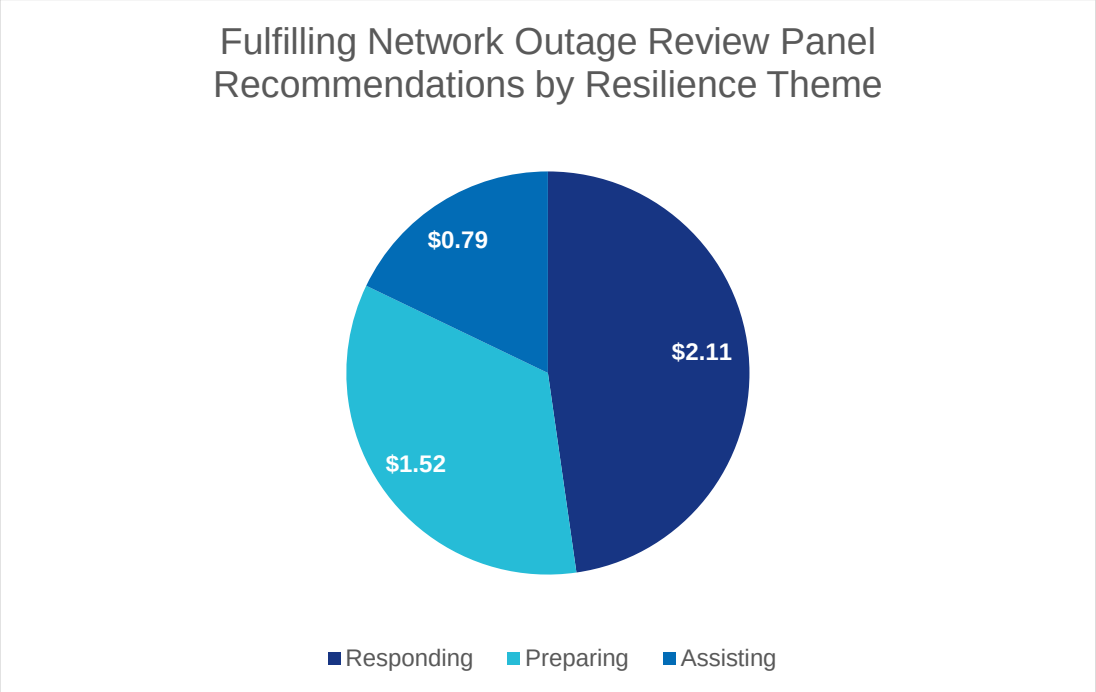
Project	**Planning Optimisation**	
	Panel Recommendations	- **Planning & Coordination (3 - 9)** - **Telecommunications Continuity Planning (13 - 16)**
	Resilience Themes	**Preparing, Assisting**
Cost	Operating expenditure: $3,000,000 Capital expenditure: n/a	
	Included in our current forecast	No
Residential Customer Bill Impacts	• $0.71 per annum (nominal)	
Proposed Initiatives	• Jemena will attend Regional and Municipal Emergency Management Planning Committees & State Critical Infrastructure Forums. • Jemena will collaborate with our Victorian distribution network service provider peers, Emergency Services and Community Groups to deliver household power outage plans. • Jemena will design and deliver multi-sector, network-wide Emergency Management Exercises annually. • Jemena will proactively engage with stakeholders and attend Sector Resilience forums, including telecommunications and cross-sector forums, to enhance understanding of continuity of service for essential service providers.	
What this will mean for customers	• Jemena and other bodies responsible for community resilience will be better coordinated to deliver support during an outage, potentially reducing the impact and duration of the outage.	

Project	Planning for life support customers	
	Panel Recommendations	- **Planning for Life support Customers (11 -12)** - **Telecommunications Continuity Planning (13 - 16)**
	Resilience Themes	**Preparing, Responding**
Cost	Operating expenditure: $950,000 Capital expenditure: $800,000	
	Included in our current forecast	No
Residential Customer Bill Impacts	• $0.41 per annum (nominal)	
Proposed Initiatives	• Enhancement of SAP ERP platform to align with new Life Support categories and creation of additional data fields to differentiate and store details on Life Support Account holders, support persons, and residents. • Subsequent downstream system enhancements to ensure that all Life Support customers, Life Support residents, and support persons are notified with relevant unplanned and planned outage notifications, according to their preference. • This solution also includes annual performance testing and assessments of the accessibility of the customer service systems. It includes ensuring a robust, and timely, data feed to the existing Emergency Victoria emergencies webpage and app solution.	
What this will mean for customers	• Life Support customers will be able to nominate additional parties to receive outage notifications. • Reduced risk that a Life Support customer will not receive a notification.	

Project	Outage Communications	
	Panel Recommendations	**Communication with Customers & Community (25 – 32)**
	Resilience Themes	**Responding**
	Operating expenditure: $2,450,000 Capital expenditure: n/a	

Cost	Included in our current forecast	No
Residential Customer Bill Impacts	• $0.59 per annum (nominal)	
Proposed Initiatives	• Develop on-ground support capability, including establishing relationships and ensuring preparedness and refining communication and support strategies. • Development and Sharing of Best Practice Communications Approaches and annual pre-event planning, real-time updates and post-event debriefing.	
What this will mean for customers	• Improved communication during a long-duration outage.	

In total, implementing these recommendations would cost residential customers $4.42 per annum on average[9].



As the Panel refines its final recommendations, we will continue to finalise the costs of these proposed initiatives, and the bill impacts for customers.

[9] *As mentioned previously, we have not costed additional improvements to 'worst served customer' feeders as no Jemena feeders feature in the state's top ten worst feeders. This means none of the panel recommendations are included in our 'preventing outages' category*

8. We recognise there is more work to do

Jemena is committed to providing our customers with sustainable and affordable services. We also want to ensure our resilience plans reflect not only customers' views but 'best practice' as defined by both the AER and the Victorian Government. As a part of our commitment we will further refine our activities on network resilience and incorporate these into our 2026-31 price reset proposal. This includes:

- Updating our capital expenditure modelling to reflect the AER's final VNR.
- Ensuring our forecast includes the investments necessary to deliver the recommendations included in the Victorian Government's Network Outage Review final report, expected in late September 2024.
- Refining the cost of the projects we have already identified based on the interim report and look for synergies between those projects and what is already included in our capital expenditure plan.
- Updating our customers on our proposed resilience projects and seek their feedback on how they align with their priorities.

In addition to this, we encourage all interested stakeholders to submit a response to this draft proposal, which we will consider as we finalise our resilience program.

We seek your views

In this document, we have:

- outlined the impacts of increased frequency and duration coming from extreme weather events.
- outlined the regulatory framework pertaining to network resilience issues.
- sought to develop a cost assessment of each of the initiatives necessary to comply with the Expert Panel's recommendations

As a part of our consultation processes, we seek your views on any and all topics related to network resilience.