

Network resilience guidelines

Consultation paper

June 2026

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Executive summary

Widespread and prolonged power outages from extreme weather events have significantly impacted electricity networks and local communities. There is awareness and acknowledgement among stakeholders of the need to support networks, and particularly the communities they serve, to prepare, plan and recover from the effects of natural disasters.

We acknowledge the considerable body of work that has emerged around the many different facets of network resilience. Several government reviews have investigated responses from network service providers (NSPs) and other responsible entities to reduce the prolonged power outages and other impacts on local communities. The reviews show that these entities can improve their preparedness for, and response to, impacts from extreme weather events. There have also been examples of productive engagement by NSPs and other interested parties to better understand their customers and local community preferences in preparing for and recovering from natural disasters.

Like other entities, we have been thinking about the future impacts of climate change on networks and local communities. Climatic conditions are changing over time and their impact on electricity networks and affected communities is uncertain – this also means that our assessment of resilience proposals is not straightforward. In undertaking our assessments, we have found that proposed resilience expenditure differs significantly among NSPs as it reflects the different perils and specific locational risks they face. We have also observed the efforts by NSPs to engage with their consumers; although engagement methods contrasted significantly, they were effective and reflective of the different customers.

To support the ongoing conversation around network resilience, we are developing network resilience guidelines that will inform NSPs, consumer groups and other stakeholders of the way we assess resilience proposals under the National Electricity Rules (NER). This includes the type of information needed to support these proposals. It also outlines our expectations around consumer engagement. We observed that the engagement methods with consumers on network resilience proposals were different but were effective and tailored to best suit the needs and circumstances of their customers. Consumers are at the heart of our work. We want to ensure that they are well-informed when making preferences about network investments that seek to address weather-related uncertainties.

To date, our 2022 note on network resilience has provided guidance to NSPs and other stakeholders as to how resilience-related funding would be treated under the NER. Several NSPs have demonstrated the prudence and efficiency of their resilience proposal with reference to the evidential criteria set out in the guidance note. We accepted 72.3% of the \$693.2 million (nominal) total resilience expenditure proposed in recent distribution revenue determinations.

Given the new and emerging information about network resilience, we welcome revisiting guidance on network resilience. Since the release of our guidance note, we have learnt from recent revenue determinations, feedback raised by stakeholders, and observations made in detailed studies and reports.

This consultation paper is the first of 3 stages involved in developing the non-binding network resilience guidelines we are required to publish by 1 December 2026. The feedback received

in response to this paper will inform our draft guidelines (the second stage, which we expect to release in the coming months). While our 2022 guidance note is a useful starting point in considering elements of the guideline, we see the process of developing the guidelines as an opportunity to refresh our understanding of network and community resilience. We encourage stakeholders to view this consultation paper with this perspective and when making a submission in response to our questions. If stakeholders have views on resilience issues not raised in this consultation paper, we are open to new perspectives.

1 Overview

The AER exists to ensure energy consumers are better off, now and in the future. Consumers are at the heart of our work, and we focus on ensuring a secure, reliable, and affordable energy future for Australia.

On 8 May 2025, the Australian Energy Market Commission (AEMC) made a final rule to provide regulatory clarity around the assessment of electricity distribution network resilience expenditure. As part of this, the AER is required to develop and publish formal network resilience guidelines by 1 December 2026. The new guidelines will replace the AER's existing note on key issues of network resilience.¹

This consultation paper looks at how the National Electricity Rules recognise distribution network resilience, and the new resilience expenditure factors that distribution network service providers and the AER must consider when proposing and assessing resilience expenditure.

1.1 Request for submissions

We invite interested parties to make written submissions to us on the matters discussed in this consultation paper by **Friday, 10 July 2026**.

Submissions should be sent to aerinquiry@aer.gov.au in a text readable document format (such as Microsoft Word or PDF) and addressed to the Executive General Manager Network Regulation.

We prefer that all submissions be publicly available to facilitate an informed and transparent consultative process. We will treat submissions as public documents unless otherwise requested.

Parties wishing to submit confidential information should:

- Clearly identify the information that is the subject of the confidentiality claim.
- Provide a non-confidential version of the submission in a form suitable for publication.

All non-confidential submissions will be published on our website. For further information regarding the AER's use and disclosure of information provided to it, see the [ACCC/AER Information Policy](#) available on the AER's website.

¹ AER, [AER note on the key issues of network resilience](#) (guidance note), April 2022.

1.2 Next steps

This consultation paper is the first step of a 3-stage process.² The indicative timeline at Table 1 provides an overview of the upcoming milestones in developing the network resilience guidelines.

Table 1 Key milestones

Milestone	Indicative date
Consultation paper published	June 2026
Submissions on consultation paper closes	July 2026
Draft guidelines published for consultation	September 2026
Submissions on draft guidelines closes	October 2026
Final guidelines published	November 2026

Note: Dates are subject to change.

We will review and incorporate feedback from each step of the overall consultation process in developing our guidelines.

While there are no public forums currently scheduled, we are open to further engagement with interested parties to capture the full range of stakeholder views. Please contact us at [aer.inquiry@aer.gov.au](mailto:aer.inquiry@ aer.gov.au) if you would like to schedule a meeting or if you have any questions about this paper or lodging a submission.

² The standard rules consultation procedure is set out in NER clause 8.9.2.

2 Background

We recognise that climate change is a global issue with localised impacts that can profoundly affect communities. These localised impacts – severe bushfires, storms and floods – have devastated communities, raising awareness about the role that different entities have in supporting community resilience to prepare, plan and recover from natural disasters. NSPs have an important part to play in understanding the needs and preferences of consumers in responding to these challenges.

The AER’s work around network resilience demonstrates that we recognise the importance of network resilience and the ability for electricity networks to adequately perform their functions during and after severe weather events. We are also acutely aware of the damaging effect that severe weather events have on local communities, and the need to provide support to affected communities to prepare, plan and recover from these disruptive events.

Growing stakeholder interest in network resilience and the uncertainty associated with the treatment of network resilience under the NER were key reasons why the AER released a guidance note in 2022 on this matter (see section 2.1). Since that time, the AER has included resilience expenditure in several determinations, with businesses using the guidance note to frame their proposals. Our assessment of these proposals has resulted in the AER accepting the majority of the resilience-related expenditure proposed. In addition to ex-ante resilience expenditure, we have and will continue to assess ex-post expenditure in the form of cost-pass through applications for extreme weather events.

2.1 AER guidance note on network resilience

In April 2022, we published a guidance note to support broader discussions between electricity networks, consumer groups and advocates on how resilience-related expenditure would be treated under the NER.³

Our guidance note outlines the types of evidence expected from resilience-related proposals. This included demonstration that a causal relationship exists between the proposed resilience expenditure and the expected increase in the extreme weather events, and the testing of the preferred option in a cost benefit framework. It also set out the need for consumer engagement to demonstrate that consumers are fully informed and supportive of the preferred expenditure option.

Our guidance note recognises there is a close relationship between resilience and reliability, because resilience is an input that contributes to the achievement of reliability (the service level outcome). Under the NER, reliability is defined as “the probability of a system, device, plant or equipment performing its function adequately for the period of time intended, under the operating conditions encountered.”⁴ Our note also recognises the interrelation between network resilience and community resilience, where resilient electricity networks can assist in

³ AER, [AER note on the key issues of network resilience](#), April 2022.

⁴ NER, Chapter 10.

building community resilience. However, many different entities have a role in supporting communities to withstand and recover from the impacts of natural disasters.

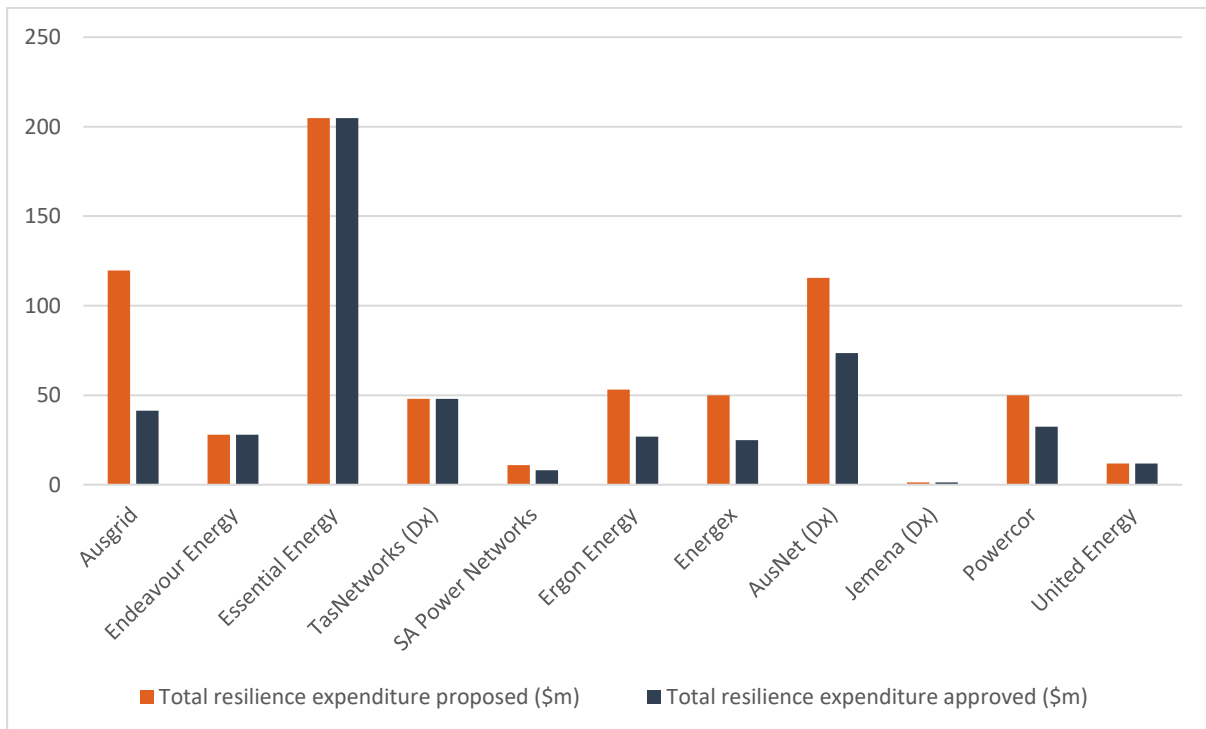
To further assist stakeholders with their consideration of resilience-related expenditure in a cost benefit analysis framework, in September 2024, the AER completed a review on the Value of Network Resilience (VNR) for outages lasting longer than 12 hours.⁵ The VNR is used to help inform networks and stakeholders about appropriate investments to enhance network resilience against extreme weather events, particularly the ability to withstand and recover from such events.

2.2 Assessments of resilience expenditure

Since release of our 2022 network resilience guidance note, almost all resilience-related proposals by NSPs framed their submission against the criteria set out in the note.

Figure 1 provides an overview of total resilience-related expenditure that NSPs have proposed against what the AER has approved through recent revenue determinations. Notably, we have accepted \$501.0 million (or 72.3%) of the \$693.2 million (nominal) total resilience-expenditure proposed since the release of our guidance note.

Figure 1 Resilience expenditure proposed by NSPs and AER final decision (\$nominal, million)



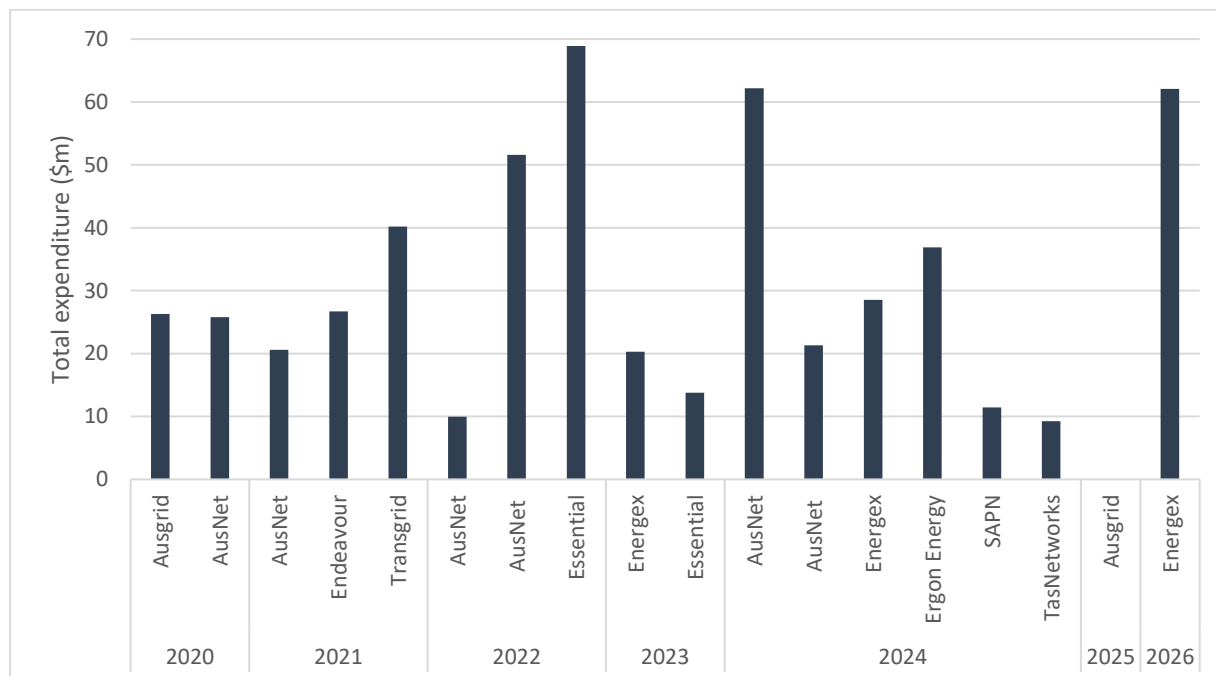
Source: AER analysis.

Note: Not all NSPs included resilience-related expenditure in their revenue determination proposals.

⁵ AER, [Value of Network Resilience 2024](#), 30 September 2024.

Over a similar period, we have made determinations on 20 cost pass through applications related to extreme weather events, with total associated costs of approximately \$535.9 million (nominal).

Figure 2 AER determinations on severe weather-related cost pass through applications by year (\$nominal, million)



Source: AER analysis.

Note: Broadly, a cost pass through event is one that occurs beyond the reasonable control of a NSP and has not been accounted for in its current 5-year revenue determination. Examples can include new statutory obligations imposed on the business or extensive damage to infrastructure caused by a natural disaster. They can occur at any time during a regulatory control period. Under the NER, an NSP can submit a cost pass through application to the AER to recover its efficient costs incurred because of the event.

2.3 Related initiatives

We acknowledge the extensive stakeholder engagement NSPs have undertaken with their customers ahead of submitting their revenue determination proposals for the next regulatory control period. This includes engaging customers on both network-related and community resilience proposals.

In addition to the learnings and observations stemming from the revenue determination processes, studies, reviews and broader commentary from stakeholders have occurred in the resilience space. We outline a few of these initiatives below.

- Over the last several years, state/territory governments have engaged expert panels to conduct reviews into responses by electricity networks following extreme weather events. For example, the recommendations from the following reviews relate to improving network resilience to reduce the likelihood and impact of prolonged power outages; and improving operational responses and capabilities of the electricity networks.

- An expert panel led the Electricity Distribution Network Resilience Review following the June and October 2021 storm events in Victoria.⁶ The review ran from September 2021 to May 2022 over 2 phases.
- The Victorian Government commissioned the Network Outage Review, where a panel of independent experts examined the electricity transmission and distribution network businesses' response to the 13 February 2024 storms.⁷
- The Tasmanian Government commissioned a Network Outage Review following an extreme weather event in August 2024 which caused widespread damage to the electricity distribution network across the state.⁸
- There have been inquiries into responses to bushfire events. For example, the NSW Bushfire Inquiry and the Royal Commission into National Natural Disaster Arrangements were established in early January 2020 in response to the extreme bushfire season of 2019–2020.⁹ Recommendations from these inquiries focus on actions to address future preparedness for, response to, and recovery from, natural disasters. These inquiries highlighted the importance of community resilience and the role that different entities need to play to support community resilience.
- We also understand that the Australian Government is undertaking work which seeks to support enhanced energy sector resilience to all hazards, including the resilience of energy infrastructure to natural disasters.¹⁰

⁶ The Victorian Department of Energy, Environment and Climate Change, [Electricity Distribution Network Resilience Review](#), 11 April 2024, accessed 6 May 2026.

⁷ Expert panel for the Victorian Government, [Network Outage Review](#), 23 May 2025, accessed 6 May 2026.

⁸ The Department of Renewables, Climate and Future Industries Tasmania, [Network Outage Review](#), n.d., accessed 6 May 2026.

⁹ NSW Government, [NSW Bushfire Inquiry report](#), n.d., accessed 6 May 2026; Royal Commission, [Royal Commission into National Natural Disaster Arrangements](#), n.d., accessed 6 May 2026.

¹⁰ Australian Government, Department of Climate Change, Energy, the Environment and Water, [Energy infrastructure resilience](#), 10 February 2025, accessed 6 May 2026.

3 Legislative requirements

On 23 August 2024, the Victorian Minister for Energy and Resources submitted a rule change request to the AEMC seeking to improve how distribution network service providers (DNSPs) and the AER account for distribution network resilience. This followed the Victorian Government’s 2 expert reviews into electricity network resilience following widespread power outages caused by severe weather events in Victoria.¹¹

In response to the Victorian Minister’s rule change request, the AEMC made a final rule to explicitly recognise distribution network resilience in the NER. The AEMC stated that this will provide regulatory clarity for DNSPs and the AER around how to assess the economic efficiency of resilience expenditure proposals to reduce the risk and impact on consumers caused by severe weather events, accounting for the impacts of climate change.¹²

The rule also establishes a formal framework for distribution network resilience in the NER, which includes the following 3 changes.¹³

1) New network resilience expenditure factors

‘New resilience expenditure factors’ have been added to the existing capital and operating expenditure factors that the AER must have regard to in determining whether it is satisfied that the forecast expenditure reasonably reflects the capital expenditure and operating expenditure criteria.¹⁴ Specifically, it requires the AER to have regard to the extent to which the capital and operating expenditure forecast would efficiently reduce the risk and impact on consumers of power outages caused by severe weather events.¹⁵

The AEMC’s rule also provides that from 2 October 2025, the Victorian DNSPs may take the new resilience expenditure factors into account in their revised proposals for the 2026–31 regulatory control period.¹⁶ Accordingly, the AER had regard to the new factors in its final determinations on those proposals.¹⁷

We note that the rule does not change the current arrangements and existing expenditure factors in the NER which we already have regard to when assessing DNSPs’ proposed expenditure.

¹¹ Expert Panel for the Victorian Government, *Electricity Distribution Network Resilience Review, 2022; Network outage review expert panel, Independent review of transmission and distribution businesses operational response – February 2024 storm and power outage event, 2024.*

¹² AEMC, [Rule determination: National Electricity Amendment \(including distribution network resilience in the national electricity rules\) Rule](#), 8 May 2025.

¹³ AEMC, Rule determination, p ii.

¹⁴ ‘New resilience expenditure factors’ means the amendments made by the AEMC’s rule change to the *operating expenditure factors* in clause 6.5.6(e) and the *capital expenditure factors* in clause 6.5.7(e)(4).

¹⁵ NER, cl 6.5.6(e)(4), 6.5.7(e)(4).

¹⁶ NER, cl 11.185.3(a).

¹⁷ NER, cl 11.185.3(c).

2) Network resilience guidelines

By 1 December 2026, the AER must develop and publish the network resilience guidelines in accordance with clause 6.4.6 of the NER.¹⁸ Clause 6.4.6 sets out 5 categories of information that must be included in the guidelines – these requirements form our terms of reference, which we detail in section 3.1.

Additionally, to develop and publish the guidelines, we are required to follow the standard consultation procedure set out in the NER. This involves a 3-stage process where we release a consultation paper in stage 1, our draft guidelines in stage 2, and the final guidelines in stage 3. We will be consulting stakeholders and seeking submissions during stages 1 and 2 to help inform our guideline. The indicative milestones for our guidelines process are set out in section 1.2.

Finally, we note the AEMC's rule determination recognises that the resilience space continues to evolve and, as such, its rule change did not require the network resilience guidelines to be binding.

3) New DNSP planning and reporting requirements for resilience

'New resilience reporting rules' have been added to the existing requirements that DNSPs follow in their planning and reporting obligations under the NER.¹⁹ The first year in which DNSPs are required to comply with the new resilience reporting rules is 2028.²⁰

The AEMC's ruling will require DNSPs to self-assess their performance and outcomes for consumers in any severe weather event that occurred in the preceding year and set this out in their Distribution Annual Planning Reports (DAPRs). In its determination, the AEMC noted that:²¹

'... the purpose of new resilience reporting in the DAPR is to improve accountability and transparency by requiring each DNSP to summarise their resilience activities, expenditure and performance in a single report that is easily accessible by interested stakeholders (e.g. consumers, stakeholders and jurisdictions).'

We note that the network resilience guidelines will need to specify the information DNSPs need to include in their distribution annual planning reports.

3.1 Terms of reference

By 1 December 2026, the AER must develop and publish the network resilience guidelines in accordance with clause 6.4.6 of the NER as in force on the commencement date.²² NER clause 6.4.6 provides that:

¹⁸ NER, cl 11.185.2.

¹⁹ 'New resilience reporting rules' means the amendments made by the AEMC's rule change to clause 5.13.1 (*distribution annual planning review*) and Schedule 5.8 (*distribution annual planning report*).

²⁰ NER, cl 11.185.4

²¹ AEMC, Rule determination, p 37.

²² NER, cl 11.185.2.

- (a) The AER must, in accordance with the NER consultation procedures, develop, maintain and publish guidelines (the network resilience guidelines) that:
- (1) Provide examples of resilience expenditure, which may include expenditure to assist DNSPs to:
 - (i) continue to safely provide adequate network services despite severe weather events
 - (ii) communicate effectively with consumers, emergency services personnel and other relevant bodies before, during and after a severe weather event
 - (iii) promptly provide a level of supply to support consumers' essential needs while the DNSP works to restore full supply through its network, if a power outage occurred as a result of a severe weather event.
 - (2) Provide examples of the types of information DNSPs could include in their regulatory proposals to support forecasts of resilience expenditure, including information on climate change impacts.
 - (3) Specify the information DNSPs must include in their Distribution Annual Planning Reports under clause S5.8(j1).
 - (4) Explain how resilience expenditure will be addressed in incentive schemes provided for in Chapter 6 of the NER; and
 - (5) Include any other matters the AER considers relevant.
- (b) Nothing prevents the AER from publishing the network resilience guidelines in the same document as another guideline published in Chapter 6.
- (c) There must be network resilience guidelines in force at all times after the date on which the AER first publishes the network resilience guidelines under the NER.
- (d) The AER may, from time to time and in accordance with the NER consultation procedures, amend or replace the network resilience guidelines.
- (e) Clauses 6.2.8(e) and (f) do not apply to the network resilience guidelines.

The AEMC's ruling also introduced new resilience expenditure factors. The AER must have regard to these new factors alongside the existing capital and operating expenditure factors in determining whether the AER is satisfied that the total of the forecast capital and operating expenditure reasonably reflects the capital and operating expenditure criteria. Specifically, the AER must have regard to the extent to which the capital expenditure and operating expenditure forecasts would efficiently reduce the risk and impact on consumers of power outages caused by severe weather events.²³

²³ NER, cl 6.5.6(e)(4), 6.5.7(e)(4).

4 Key topics for feedback

We are seeking stakeholders' views on the following topics to inform our resilience guideline:

- Section 4.1 – Definition of network resilience.
- Section 4.2 – Supporting information for resilience expenditure proposals.
- Section 4.3 – Community resilience.
- Section 4.4 – New resilience elements in Distribution Annual Planning Reports.
- Section 4.5 – Addressing resilience expenditure in incentive schemes.

We note the list of topics raised in this chapter is not exhaustive. We encourage stakeholders to include feedback in their submission on matters that are not covered in this paper but are relevant to the discussion around network resilience.

4.1 Definition of network resilience

In this section, we discuss the definition of 'network resilience' – we explore the definition of 'community resilience' in section 4.5.

The definition of network resilience is critical to the regulatory treatment of proposed resilience-related expenditure. The AEMC did not include a definition of network resilience in its amendments to the NER, where it observes:²⁴

'The Commission has not defined resilience in the NER. The AER already has a definition of resilience in its guidance note, which the AER may update when it develops guidelines to improve its guidance to DNSPs. This will also enable the definition to evolve over time as appropriate in consultation with stakeholders, noting the evolving nature of our understanding of severe weather events and the interaction with climate change.'

We acknowledge that network resilience can have a different meaning depending on the context. In our 2022 network resilience guidance note, we defined network resilience as a performance characteristic or feature of a network:²⁵

'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.'

As a performance characteristic or feature of a network, it directly influences (brings about) service level outcomes (namely, maintenance of reliability, safety and network security) in the NER. There is therefore a close relationship that exists between resilience and reliability because resilience is an input that contributes to the achievement of reliability – the service level outcome. While improved reliability is generally referred to as the service level

²⁴ AEMC, Rule determination, p 22.

²⁵ AER, guidance note on network resilience, p 6.

outcomes from a more resilient network, other service-level outcomes like maintenance of safety and network security of the network can also be affected. For instance, undergrounding more of an electricity network would make the network more resilient, resulting in a more reliable provision of services for consumers. It may also lead to a safer network if the probability and consequence of failure decreases from undergrounding. The key factor in determining whether the expenditure is resilience-related is whether resilience is the primary driver of the proposed expenditure; that is whether the primary driver or need for the expenditure is to address outages of more than 12 hours from extreme weather events.

Since the release of our guidance note and the review of resilience-related proposals, the definition of network resilience has been tested. There were incidences where proposed resilience expenditure was inconsistent with the definition of network resilience which was subsequently re-categorised. Conversely, we also found expenditure embedded elsewhere in a business' proposal where resilience is the primary feature of the proposed expenditure. For instance, in the Essential Energy 2024–29 distribution revenue determination, we re-categorised Essential Energy's proposed replacement expenditure for relocation of its Lismore depot to resilience expenditure because the relocation was to bring the depot to higher ground after recent flood events.²⁶ This is because the underlying primary reason for the proposed expenditure was to address damage from an extreme weather event.

We note that the AEMC's rule change applies specifically to distribution network resilience:²⁷

'Our final rule provides clarity in the rules for DNSPs as the issues raised in the rule change request related to resilience for electricity distribution and not electricity transmission. Transmission Network Service Providers... are already able to seek approval for resilience expenditure under the current economic regulatory framework and our final rule will not change these arrangements and should not create any uncertainty relating to these existing arrangements.'

We concur with the AEMC that the issues raised in the rule change request relate more to electricity distribution networks. At the same, we acknowledge that transmission networks have also been impacted by extreme weather events, and we therefore seek stakeholder views as to whether the network resilience guideline should also apply to transmission network providers.

Questions

1. What are your views on the definition of network resilience?
2. What are your views on whether the network resilience guidelines should apply to transmission network service providers?

²⁶ AER, *Essential Energy 2024-29 Distribution Revenue Determination – Draft Decision, Attachment 5 – Capital Expenditure*, p 21.

²⁷ AEMC, Rule determination, p ii.

4.2 Supporting information for resilience expenditure proposals

In our guidance note, we outlined the framework we use to assess resilience funding and our expectations of NSPs in providing evidence to support ex-ante resilience-related funding.²⁸ As part of providing evidence that the proposed resilience funding is prudent and efficient to achieve the expenditure objectives, we expected NSPs to demonstrate, within reason, that:

1. *There is an identified need*: there is a causal relationship between the proposed resilience expenditure and the expected increase in the extreme weather events.
2. *There is testing of the preferred option*: 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.
3. *There is genuine consumer engagement*: Consumers have been fully informed of different resilience expenditure options, including the implications stemming from these options, and that they are supportive of the proposed expenditure.

Since we released our guidance note in 2022, almost all businesses that have proposed resilience-related expenditure have used these criteria as a guide as to the supporting information to provide as part of its resilience-related proposal. Overall, we consider that the supporting information has been to a good standard for some criteria, especially having regard to the uncertain nature of forecasting the impact on the network from extreme weather events and therefore forecasting the associated expenditure.

Most of the feedback we received from stakeholders was for more detail and clarity around the network resilience criteria. Therefore, we have structured this consultation paper around these 3 criteria given they are familiar to stakeholders. We note we are not wedded to these criteria and are open to revisiting our position and include other measures.

4.2.1 An identified need for the resilience expenditure

We acknowledge that climate change has increased the severity and frequency of extreme weather events. Since the 2022 network resilience guidance note, a number of NSPs have identified the need for resilience expenditure by making a distinction between increasing climate risk (forecasting climate change at a macro level) and the subsequent impact that the increased climate risk has on the NSP's network (forecasting network impacts).

Forecasting climate risk

Several NSPs have invested in climate risk models to forecast the frequency and severity of climate events to better understand the increasing risk their networks and communities are facing. We appreciate the considerable efforts by NSPs to forecast climate risk. We appreciate that there can be a great deal of uncertainty in modelling and forecasting climate change risk and have been cognisant of these challenges by accepting the outcome of most climate risk modelling submitted in regulatory proposals. Some of the features of good climate risk modelling include:

²⁸ AER, guidance note, pp 9–13.

- Alignment with established and recent climate research – there is significant climate risk modelling work has been undertaken by research bodies, universities and government agencies. There is growing awareness of reasonable assumptions and inputs to apply when forecasting climate risk. For instance, the application of a reasonable Representative Concentration Pathway (RCP) in a risk assessment. The RCP projects future greenhouse gas concentrations. The forecast scenarios usually range from RCP 8.5 (high emissions scenario) where emissions continue rising, assuming little curbing of emissions, to RCP 2.5 (low emissions scenario) where emissions peak early and then begin declining.
- Reasoning and modelling as to how specific perils are relevant to the NSPs' network – translation of the climate change modelling to apply to the NSP's network to demonstrates the NSP's network is impacted by specific perils such as windstorms, bushfires, floods.

Forecasting network impacts

To date, business have provided quantitative evidence of the impact on the network and communities from the change in risk. Information that has been useful to demonstrate the need for the resilience-related expenditure has been:

- *Historical outage data* – We acknowledge that there is uncertainty as to a business' future resilience needs. Historical information provides a useful starting point for our assessment of a business' resilience proposal as it shows the severity, frequency and location of outages over time. To enhance our assessment, we are considering:
 - Requesting businesses that are proposing resilience expenditure to fill in a standardised template to include specific data which would minimise the need for subsequent information requests and allow for better comparisons between DNSPs.
 - Implement reporting requirements through our Annual Information Orders related to the actual spend on resilience in the regulatory control period.²⁹ This has already been raised as a possibility in our decisions on resilience. As resilience remains a dynamic and uncertain area of expenditure, we consider that analysing data and information that relate to the effectiveness of NSPs' proposed investments would assist the AER in future decision making.
 - The possible option of requiring more granular data from NSPs (such as through Annual Information Orders) that we have found useful in our bottom-up assessments. This includes feeder information at the postcode level.
- *Comparison of base year risk against historical revealed risk* – This is an action we would expect DNSPs to perform to provide some assurance that the expected risk for the base year (i.e. year one) is not disproportionately higher than recent historical revealed risk without an explanation.
- *Evidence of the integration of resilience planning in a business' asset management and investment governance frameworks* – this information would demonstrate that resilience

²⁹ The AER collects information from regulated businesses to undertake its functions. Annual Information Orders impose annual reporting obligations on regulated electricity distribution and transmission networks and are made using our information gathering powers under the National Electricity Law.

is an important feature of a business' overall asset planning framework which balances a business' costs, risk and performance. We also note that this information is aligned with the new reporting requirements for DNSPs in the DAPR which is intended to ensure that DNSPs consider the impact of climate change on their networks when developing and implementing their asset management plans and strategies.

We also note that where businesses have proposed operating expenditure (opex) step changes in resilience proposals, in most cases we have not accepted these as being consistent with the opex forecasting and assessment framework.

For opex, our approach is to assess a business's forecast opex over the regulatory control period at a total level, rather than to assess individual opex projects. To do so, we develop an alternative estimate of total opex using a top-down forecasting method, known as the base-step-trend approach. In developing our alternative estimate of total opex, we may include prudent and efficient step changes if the level of efficient base year opex and the rate of change in opex does not already account for the proposed step up in costs required to meet the opex criteria. That is, in assessing a step change, we must ensure it does not double count costs likely to be already provided for through the base and trend components of our top down opex forecasting approach.

We consider what might constitute a step change at each revenue reset, on a case-by-case basis. Our starting position is that only exceptional events are likely to require explicit compensation as step changes. In determining whether the incremental cost of a proposed step change may be double counted, we do not apply a quantitative threshold, but may have regard to a range of factors, and the specific circumstances of a decision. These can include the extent to which the proposed cost represents an increase in a business's existing recurrent opex requirements, is likely to otherwise be provided for through the base year and trend growth used to forecast total opex; and is the result of an exceptional change to a business's existing inputs, activities, or level of service provision.

Questions

3. What are your views on a standardised resilience template?
4. What are your views on implementing a requirement on DNSPs to provide actual resilience spend through Annual Information Orders?
5. What are your views on the type of data that might be useful and publicly available?

4.2.2 Testing the preferred option to address the identified need

There can be a number of different solutions to addressing the impact on a network and community of an extreme weather event. In assessing resilience proposals, the AER's focus is ensuring that the business' are funded for the solution that results in the greatest net benefit to consumers. In particular, the rule change contemplates that the AER assess the efficiency of solutions by incorporating resilience expenditure into the NER that refer to:³⁰

³⁰ AEMC, Rule determination, p 8.

‘... the extent to which the capital or operating expenditure forecast will efficiently reduce the risk and impact on consumers of power outages caused by severe weather events’

In this regard, a degree of quantitative evidence to demonstrate that the business’ preferred option results in the greatest net benefit to consumers is required to support resilience-related expenditure. Evidence that has been useful includes:

- *An options analysis* – This analysis should test the preferred option against all other feasible options including stand-alone power systems (SAPS), mobile generation, other non-traditional network options like community batteries, education campaigns and self-insurance. We are seeing support for, and the development/adoption of, alternatives like SAPS and pole wraps to the traditional ‘poles and wires’ to mitigate the risks associated with extreme weather events.
- *Demonstration of the probable benefit realisation of each option* – Studies, peer reviews, historical experience, and the associated quantitative analysis on the effectiveness of each feasible option. While we may consider international studies, we are cognisant of the differences in asset management practices and other exogenous factors in Australia compared to other countries. For example, we are aware of oversea studies on the effectiveness of covered conductors and poles against extreme weather events. However, different design practices, materials and climatic conditions may not be directly comparable to Australia. Notwithstanding, we encourage DNSPs to share lessons learnt with each other including any trials of new technologies to enhance network resilience.
- *Assessment of the application of a service target performance incentive scheme (STPIS) adjustment* – Improved reliability generally results from resilience investments. Therefore, to ensure that consumers receive maximum benefit from resilience investments, we would expect businesses to offer a STPIS adjustment where it proposes resilience expenditure that is likely to result in improved reliability. This is because a STPIS adjustment would in effect mean a higher reliability target meaning a commitment to better reliability outcomes for its customers. A STPIS adjustment also means that there is no double-counting of reliability benefits (as there are reliability benefits from resilience investments as well as what they would receive from STPIS). Where an adjustment is not proposed, we would expect reasons and analysis to explain this position and for businesses to explain this reasoning to its customers.
- *Where VNR is applied, consistency with the VNR guideline* – If VNR is applied in a different way to the guideline, we would expect sufficient information be provided to support the alternative approach. In particular, we expect information and research undertaken at a regional disaggregated level to support the business’ VNR position.
- *Transparent supporting models* – We would encourage businesses to submit models that allow for the ease of testing of critical inputs and assumptions so that we can have confidence in the benefits and costs of the forecast. While we appreciate that there are confidentiality and intellectual property issues and/or large complex models, we consider that these can be overcome and encourage NSPs to work with us to discuss practical solutions.

Questions

6. What are your views on the evidence that the AER has had regard to in assessing a business' preferred resilience solution?

4.2.3 Genuine consumer engagement to determine customer preferences

High quality consumer engagement is essential for ensuring that networks provide the services that meet the needs of their consumers, at a price that is affordable and efficient.

In developing resilience expenditure proposals to address consumers' concerns, we expect NSPs to identify, test (including through engagement), and choose from credible options and solutions that they can satisfy us will—when included in a total capex or opex forecast—reasonably reflect the expenditure criteria.

Consumers are not well served by engagement that focuses on solutions that do not reflect those criteria, or by proposals that are not supported by rigorous and robust analysis, and which do not demonstrate that proffered options are prudent and efficient.

To date, we have observed that, in the lead up to submission of initial and revised resilience proposals, most NSPs had engaged well with their customers about resilience-related expenditure. We also observed that the engagement methods were different but were effective, as they were tailored to best suit the needs and circumstances of their customers. We found the following information useful in demonstrating that consumer preferences were identified and resilience proposals were being tested with consumers:

- Evidence of support from the wider consumer base on their preferences for bearing resilience costs to address localised impact that would otherwise not directly affect them— this evidence was key information we had regard to when assessing proposed resilience expenditure. This information includes a discussion about the various solutions available to address the impact on the network and communities.
- Demonstration of how competing preferences were addressed. We appreciate that consumers will have different preferences. A NSP should seek to understand these differences and balance the interests of its consumer cohorts. Where network businesses identify competing interests, they should seek to develop agreed positions with consumers.
- Evidence of discussions and outcomes from studies, workshops, and forums to demonstrate how consumers' preferences were identified.
- Demonstration of how the NSP has developed and canvassed credible alternative options for consumer consultation. We have observed that consumer preferences are less likely to be reflected in regulatory proposals where narrow range options or a single preferred solution is presented for consultation. In developing credible options for consumer consultation, NSPs should be transparent regarding the trade-offs for alternative options.

- Evidence of business working collaboratively with not just the affected communities but also other resilience actors to understand what the communities' genuine needs are to plan and prepare for, as well as recover from, a natural disaster. We would be also interested in the different engagement methods used by NSPs to ensure that consumers are sufficiently informed to meaningfully explore and challenge a NSP's resilience proposal.
- Demonstration of how NSPs have given effect to consumers' preferences. Where consumer views on an issue are diverse, NSPs need to set out those views and how they were balanced in developing their regulatory proposal.

Questions

7. What are your views on the key features of genuine consumer engagement on resilience proposals?

4.3 Supporting community resilience

Network resilience has sometimes been used interchangeably with community resilience. These are different but related concepts.

A resilient electricity network can assist in building community resilience. But many different entities have a role in supporting communities to withstand and recover from the impacts of natural disasters. Government agencies, individuals, and other essential service providers (beyond electricity networks) have a role to support community resilience.

4.3.1 Definition of community resilience

We recognise that climate change is a global issue with localised impacts that can profoundly affect communities. These localised impacts – severe bushfires, storms and floods – have devastated communities, raising the awareness about the role that different entities have in supporting community resilience to prepare, plan and recover from natural disasters.

The definition of community resilience in the 2022 network resilience guidance note applies the definition used in the 2020 Royal Commission into National Natural Disaster Arrangements, this being:³¹

'The ability of communities to withstand and recover from the impacts of natural disasters.'

Since this time, we've heard from stakeholders that the community may be impacted in different ways from an extreme weather event, with different responsible entities providing support. Collaboration between essential service providers is a key aspect of providing support for community resilience. We recognise that increased cooperation between resilience actors is likely to support better outcomes for local communities. In this regard, we

³¹ Royal Commissions, *Royal Commission into National Natural Disaster Arrangements: Final Report*, 2020, p 396.

have accepted resilience expenditures that further support collaboration such as for enhanced information sharing between NSPs and other resilience actors.

The specific role that NSPs play in supporting community resilience is an important one in the lead-up to, during, and after, a natural disaster. There are regulatory and statutory requirements that prescribe minimum service levels or standards to ensure continued supply and restoration of services following unplanned outages. However, we appreciate that NSPs' role in supporting community resilience is broader. At the same time, we are aware that other resilience actors may be better placed to provide the appropriate support for local communities to plan and recover from the impact of extreme weather events. In this regard, delineation of a NSPs role is important in providing clarity to all stakeholders involved in community resilience.

To date, the AER's approach has been to accept prudent and efficient community resilience linked to the provision of a distribution service as defined under the NER, where a distribution service is defined as:

'A service provided by means of, or in connection with, a distribution system'³²

For instance, we have accepted community resilience proposals where it relates to the preparation, safety, planning and restoration of the distribution system in the event of an extreme weather event because it aligns with the provision of a network service. We see benefits for the local community in proposals that not only result in quicker restoration but also inform communities so they can plan in the event of an extreme weather event. In this regard, we have accepted:

- Mobile Engagement and Emergency Vehicles to further support DNSPs in relaying key safety and outage information to communities;
- Mobile generators, substation and quick connection points to temporary restore network supply to communities in strategic locations; and
- Other mobile assets to assist electrical workers and related parties in restoring network services.

In assessing community resilience proposals, we have been cognisant that a quantitative assessment of the costs and benefits of a proposal may not be straightforward. We have balanced our consideration of the quantitative evidence alongside other qualitative factors such as:

- As noted above, funding related to quicker restoration of services when there is an extreme weather event as this relates to maintaining network services. For instance, we have accepted some community resilience proposals where there is a 'portable' or 'mobile' element to the asset investment as mobile assets can be moved easily to specific locations where disaster management is required. In short, we will positively consider good industry practices.
- Consideration of the findings from government reviews. For instance, we had regard to the Victorian Government's response to the Victorian outage review, where the review

³² NER, Chapter 10.

considered responses from Victorian DNSPs to the catastrophic storm event of February 2024. In short, we will positively consider lived experiences and subsequent reviews by government agencies.

- Evidence of engagement with the affected local community about the community resilience proposal, and demonstration that the local community was fully informed including engagement on feasible options including the costs and benefits of these other options. These options should include self-insurance and local council funded initiatives in addition to the network solutions funded by the wider consumer base.

Questions

8. What are your views on the definition of community resilience?
9. What are your views on the factors the AER has regard to when assessing community resilience?

4.4 New resilience elements in the Distribution Annual Planning Reports

The Distribution Annual Planning Reports (DAPRs) are required to be developed by DNSPs under clause 5.13.1 of the NER. These reports set out the 5-year forward projections of a DNSP about how it intends to manage electricity demand, network constraints and asset replacement. The DAPR provides transparency to stakeholders about existing and proposed investments to address different network limitations as well as opportunities for non-network options in subsequent Regulatory Investment Tests (RITs).

The AEMC's rule change requires new reporting on resilience investments in the DAPR. The effect of this rule is that DNSPs will need to consider the impacts of climate change on their networks and identify risks of network outages caused by severe weather events. DNSPs will also need to reflect this impact in the development and implementation of their asset management, risk management and the associated investment strategies. The network resilience guideline must specify the resilience information a DNSP needs to include in its DAPR.

The AER also collects information through annual information orders when assessing forecast capital and operating expenditure proposed by DNSPs.

We are interested in stakeholders' views on the type of information that would be useful to include in the DAPR to better understand a DNSP's strategy to manage its resilience needs. We would also be interested in views on how this new information collection relates to the AER's existing information collection through the annual information orders.

Questions

10. What are your views on the type of information that should be included in the DAPR to better understand a DNSP's strategy to manage its resilience needs?

11. What are your views on of how this new information collection relates to the AER's existing information collection through the Annual Information Orders?

4.5 Addressing resilience expenditure in incentive schemes

Incentive schemes form an important part of our approach to regulating electricity networks in Australia. We seek to incentivise network service providers to run an efficient business so that customers pay no more than necessary for services that they value the most.

Of relevance to resilience expenditure is the capital expenditure sharing scheme (CESS), the efficiency benefit sharing scheme (EBSS), and the service target performance incentive scheme (STPIS).

- The CESS incentivises businesses to undertake efficient capex throughout the period by rewarding efficiency gains and penalising efficiency losses, each measured by reference to the difference between forecast and actual capex.
- The EBSS incentivises businesses to incur efficient operating expenditure. In general, it works by allowing businesses to keep the financial benefit for a set period if it manages to spend less than its allowance in a given year. Once this retention period expires, the ongoing savings are passed on to consumers.
- The STPIS incentivises improved reliability of supply. The STPIS applies a reward or penalty to NSPs' regulated maximum allowed revenues each year, depending on whether they have over- or under-performed against a benchmark level of reliability (which is based on past performance).

In calculating the STPIS reward or penalty, certain extreme weather events (known as major event days) are excluded from the calculation. In this regard, the STPIS is not designed to incentivise improvements in managing the impact of major exogenous events which includes extreme weather events. It is designed to incentivise reliability improvements under standard conditions. Since its introduction in 2008, most NSPs have been outperforming their reliability benchmark targets demonstrating improved power supply reliability over time.

Questions

12. What are your views on how resilience expenditure should be addressed in the incentive schemes?

5 Summary of questions

Number	Question
1.	What are your views on the definition of network resilience?
2.	What are your views on whether the network resilience guidelines should apply to transmission network service providers?
3.	What are your views on a standardised resilience template?
4.	What are your views on implementing a requirement on DNSPs to provide actual resilience spend through Annual Information Orders?
5.	What are your views on the type of data that might be useful and publicly available?
6.	What are your views on the evidence that the AER has had regard to in assessing a business' preferred resilience solution?
7.	What are your views on the key features of genuine consumer engagement on resilience proposals?
8.	What are your views on the definition of community resilience?
9.	What are your views on the factors the AER has regard to when assessing community resilience?
10	What are your views on the type of information that should be included in the DAPR to better understand a DNSP's strategy to manage its resilience needs?
11	What are your views on of how this new information collection relates to the AER's existing information collection though the annual information orders?
12	What are your views on how resilience expenditure should be addressed in the incentive schemes?

Glossary

Term	Definition
AEMC	Australian Energy Market Commission
AER	Australian Energy Regulator
CESS	capital expenditure sharing scheme
DAPR	Distribution Annual Planning Report
DNSP	Distribution Network Service Provider
EBSS	efficiency benefit sharing scheme
NER	National Electricity Rules
NSP	Network Service Provider
opex	operating expenditure
STPIS	service target performance incentive scheme
VCR	value of customer reliability
VNR	value of network resilience
