

Ref: 20240510AY:HP

10 June 2024

Dr Kris Funston
Executive General Manager
Australian Energy Regulator
Submitted by email

Dear Dr Funston,

Value of Network Resilience – response to issues paper

Essential Energy welcomes the opportunity to respond to the Australian Energy Regulator's (**AER**) issues paper canvassing the need to extend the value of customer reliability (**VCR**) to establish a value of customer resilience associated with long duration outages, termed value of network resilience (**VNR**).

Essential Energy has a strong commitment to deliver and manage its electricity network in the long-term interest of our customers in a prudent and efficient manner. Throughout the engagement conducted to shape Essential Energy's 2024-29 regulatory proposal, our customers identified the need for a more resilient network, particularly following major weather events within our network footprint in recent years. Specifically, our customers were keen to ensure that Essential Energy do more to improve the resilience of the network, to assist those affected by long-duration outages and to do more to be adaptive and responsive to local emergency situations.¹ Customer interest in resilience expenditure has not waned even in the light of cost of living pressures but has remained of the highest interest.

The resilience-driven investment expenditure in Essential Energy's 2024-29 regulatory proposal specifically included composite pole replacements and undergrounding in high-risk bushfire areas program, portable Stand-alone Power Systems (**SAPS**), microgrids, solar and battery back-up generation and other assets and equipment to support the network and community resilience.²

Essential Energy is mindful the AER acknowledged the strong customer support for our proposed resilience-driven investment in making its determination of Essential Energy's revenue for 2024-29. However, we do note that the AER did not accept the evidence presented by Essential Energy to support a causal relationship of network impact between the proposed resilience expenditure and the expected increase in the extreme weather events.³

Essential Energy acknowledges that this is a new type of expenditure and that evidence to support the causal relationship will continue to develop to the extent necessary to determine prudent and efficient

¹ Essential Energy, 10.06.11 Community Resilience Investment Case, January 2023, p. 4 and pp 8-9.

² Essential Energy, 2024-29 regulatory proposal overview, January 2023, p.49, and Attachment 10.06.11 Community Resilience Investment Case, January 2023, pp. 6-7.

³ AER, Essential Energy 2024-29 – Draft Decision – Attachment 5 – Capital Expenditure, September 2023, pp. 16-17.

expenditure. Essential Energy is keen to work with the AER in this area as we foresee that major weather and other events that may disrupt the provision of network services are likely to increase over time.

Please find Essential Energy's response to the consultation questions in Attachment 1 and we provide the following additional feedback on the issues paper.

The assessment of resilience expenditure proposals

Essential Energy believes it is critical that resilience expenditure is included in the assessment of revenue proposals based on the feedback from our customers. However, clear guidelines are necessary.

Part of the reason the AER did not accept Essential Energy's proposed expenditure can be explained by the application of its network resilience guidance note on the assessment of resilience expenditure proposals.

In particular, the guidance note states that NSPs should "*demonstrate, within reason that:*

1. *there is a causal relationship between the proposed resilience expenditure and the expected increase in the extreme weather events*"⁴

However, the guidance note also defines resilience as: "*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*"⁵.

Essential Energy's view is that the assessment methodology for related expenditure doesn't take into account the definition but relied on a measure related to proving a causal relationship between the proposed expenditure and the increased frequency of events. This seeming misalignment may allow the AER considerable discretion as to whether or not to accept a network's proposed resilience expenditure designed to allow it to "*adequately provide network services and recover those services when subjected to disruptive events*".

Essential Energy agrees with the definition above and notes that there are other hazards that may disrupt network operator's ability to provide network services than just weather events. The *Security of Critical Infrastructure Act (2018)* and the Commonwealth Department of Home Affairs' Critical Infrastructure Resilience Strategy⁶ include cyber, information, and physical risks, in addition to natural events, that may disrupt the delivery of network services. As the VNR develops, the AER should ensure that expenditure to build network resilience against all potential hazards that may disrupt network services are addressed.

Essential Energy believes it is important that the guidance not be reviewed in the short term to ensure that there is clarity in the assessment approach that aligns with the definition of resilience and the objectives of any proposed expenditure. Essential Energy would welcome the opportunity to work with the AER on how more clarity may be achieved in the assessment approach in future.

Towards a robust VNR measure that Network Service Providers (NSPs) can apply with confidence

Essential Energy acknowledges there are time constraints to the development of a VNR measure. This is due to, in part, a recent request by the Energy and Climate Change Ministerial Council (ECMC) and for use in the reset of Victorian networks regulated revenue.

⁴ AER, Network resilience; a note on key issues, April 2022, p. 11., AER, Issues Paper: Value of network resilience 2024, May 2024, p.9.

⁵ AER, Network resilience; a note on key issues, April 2022, p. 8.

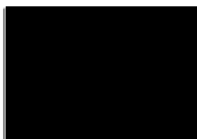
⁶ [Critical Infrastructure Resilience Strategy \(Cisrc.gov.au\)](https://www.cisrc.gov.au/)

Therefore, Essential Energy supports options 2 or 3 as they seek to deliver a VNR result that extrapolates on the process developed for the AER's Value of Customer Reliability (**VCR**). We do see the benefit of a consistent approach among NSPs which is a stated objective of the current VCR review.⁷ However, Essential Energy is mindful that in seeking to expediency and consistency, the AER may miss the opportunity to develop a robust measure of VNR.

Essential Energy believes a more robust measure for VNR requires more time for development, particularly to deliver confidence to all stakeholders, especially our customers. We would suggest that the AER commit to a more thorough review of the VNR in the near future to ensure a robust measure is developed. This is particularly important as the experience and evidence to support resilience expenditure continues to develop.

If you have any questions in relation to this submission, please contact Mr Adam Young, Regulatory Strategy Manager via email at [REDACTED]

Yours sincerely



Hilary Priest
Head of Regulatory Affairs

⁷ [AER, Values of customer reliability methodology, draft determination, March 2024, p.17.](#)

Attachment 1

Questions on outage scenarios, unserved energy and criteria for assessing potential approaches

3.1.1 What outage length do you consider is the most important for us to focus on? (e.g., 1 day, 2-3 days, 7 days etc.)? Please explain why you consider this outage length is the most important.

Duration of outage is just one consideration when considering value of resilience (or service). Other considerations include:

- ▶ Type of connection or customer, their expectations, vulnerability and capacity to cope with the loss of supply
- ▶ Criticality of service including potential consequences and knock-on effects.

A specific length of time may vary depending on the customer type. For example, a small remote community with limited services, or a large commercial centre, or a single critical telecommunications site.

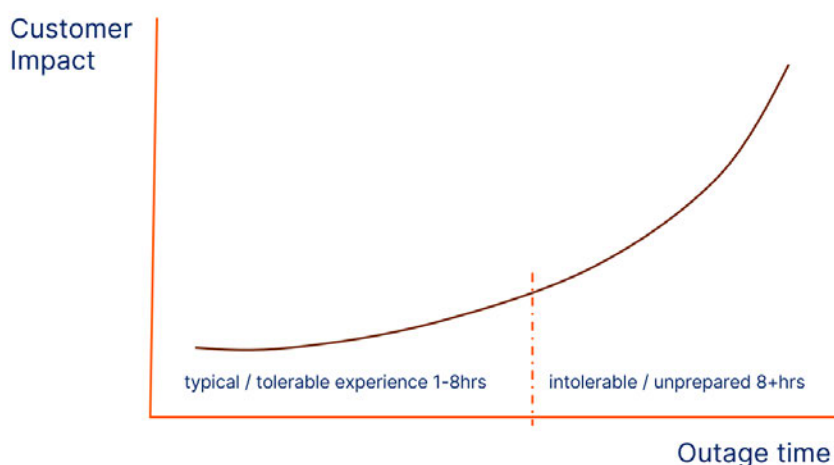
For the purpose of this response though, Essential Energy will focus on community outage impact, excluding single life support customers or single critical load sites.

Essential Energy acknowledges that there is a typical tolerance of, and experience of outages lasting up to potentially 6 to 8 hours. Outages lasting greater than 8 to 12 hours, whilst rare, are when impacts increase exponentially and would likely be most important for the value of network resilience (**VNR**), especially for regional communities and remote customers. In these areas, extended power outages can be particularly detrimental due to the limited availability of alternative resources and the greater distances involved in accessing services.

Prolonged disruptions can severely impact daily life, activities, and essential services such as healthcare and emergency response, which are often more critical in isolated communities. Prolonged outages are rare and therefore are not something customers are reasonably prepared to manage.

We would expect the outage impact to be represented like Figure 1 for majority of our customers.

FIGURE 1: OUTAGE IMPACT



By focusing on minimising the duration and frequency of long outages, Essential Energy aims to enhance the resilience of the energy network, ensuring that even the most remote customers have a reliable and continuous power supply. This approach helps to support the well-being and economic stability of regional and remote communities, emphasising the importance of a robust and resilient energy infrastructure in these areas.

For a critical load like a key/strategic telecommunications site an outage of more than 4 to 6 hours may extend beyond availability of backup capacity and significantly impact customers, businesses and service providers relying on such services (knock-on effects). For example, regional residential customers telehealth, working from home, education services, banking systems, retail services, and water and sewage.

3.1.2 How granular do you think the values need to be (e.g., specific feeders, etc)? Please explain why you consider this level of localisation is important.

For Essential Energy, the values of network resilience need to be highly granular, down to the level of specific feeders. However, understanding the issues of data availability and scope, Essential Energy would likely extrapolate this data itself from a higher level of analysis.

Essential Energy would be seeking data with a regional focus based on delineation in a number of factors such as population, demographics, socio-economic and other factors which delineate areas that increase the impact of long duration outages. Essential Energy's preliminary view would be a focus on Statistical Area 1 (SA1s) or Local Government Areas (LGAs). This will ensure that resilience measures result in targeted investment where required.

3.1.3 Do you have any views on the use of unserved energy to derive a \$/kWh value for network resilience?

For Essential Energy, using unserved energy to derive a \$/kWh value for network resilience can be a useful approach, but it has limitations that need to be carefully considered. Unserved energy, which quantifies the amount of electricity not delivered during outages, provides a tangible metric to assess the economic impact of power interruptions. Deriving a \$/kWh value from this metric can help in understanding the financial implications of outages and in prioritising investments to enhance network resilience.

However, this method might not fully capture the broader social and economic costs of outages, especially in regional and remote areas. These costs can include disruptions to essential services, impacts on community well-being, and long-term economic losses that are not easily quantified in \$/kWh terms. Additionally, the criticality of the load served by different parts of the network varies significantly, meaning that an outage in a densely populated area or one affecting critical infrastructure may have far more severe consequences than an outage in a less critical part of the network. Conversely, smaller communities are disadvantaged due to smaller consumption rates that although they may experience debilitating outages, value represented by \$/kWh is still insignificant compared to heavily loaded areas of the network.

Therefore, while the \$/kWh value derived from unserved energy can provide a useful baseline, it should be supplemented with other considerations such as the criticality of affected services, customer demographics and community well-being, and regional economic factors to ensure a comprehensive approach to enhancing network resilience.

3.1.4 What are your views on the assessment criteria we have developed for considering the potential methodological options?

Essential Energy acknowledges the assessment criteria developed in the AER's issues paper for valuing network resilience and finds them to be a comprehensive foundation to build on for evaluating potential methodological options. The criteria's focus on reliability, economic impact, and community well-being aligns well with the practical needs of ensuring a resilient energy network, particularly in the diverse and often challenging environments we serve.

We appreciate the emphasis on both quantitative and qualitative measures, recognising that while data-driven metrics such as unserved energy provide a tangible basis for analysis, qualitative factors like customer impact and service criticality are equally vital. This holistic approach ensures that the assessment captures not just the direct economic costs of outages but also the broader social and operational impacts, which are crucial for regions with varying levels of infrastructure and population density.

We support the criteria's flexibility to accommodate different regional contexts, which is essential for accurately reflecting the unique challenges faced by regional and remote customers. Tailoring the methodology to consider local conditions, such as geographic isolation and the criticality of local services, helps ensure that the resilience measures adopted are effective and appropriately targeted.

3.1.5 Are there any additional assessment criteria we should include? Please explain why.

For Essential Energy, there are a few additional assessment criteria that could enhance the evaluation of network resilience methodologies in the AER's issues paper:

- ▶ **Community Impact and Vulnerability:** Including criteria that specifically assess the social impact on vulnerable populations, such as elderly residents, low-income households, and individuals with medical needs, would provide a deeper understanding of how outages affect the most at-risk groups. This ensures that resilience measures prioritise those who are most adversely affected by power interruptions.
- ▶ **Environmental Impact:** Considering the environmental consequences of outages and network interventions, such as increased use of backup generators and the environmental benefits of more resilient renewable energy integrations, could provide a more comprehensive view of the resilience measures' sustainability.
- ▶ **Critical Infrastructure:** Assessing the ability of the network to integrate and adapt to new technologies, such as smart grid solutions and advanced monitoring systems, ensures that resilience measures are future-proof and capable of evolving with technological advancements.

These additional criteria would provide a more rounded evaluation framework, capturing a wider range of factors that influence the effectiveness and impact of network resilience strategies. By considering these aspects, Essential Energy can better ensure that resilience measures are comprehensive, equitable, and forward-looking.

Potential Approaches

Essential Energy's current preference is for undertaking options 2 or 3 for establishing a VNR at this time, with a longer-term view of moving toward option 5. The reason for this position is the ease of calculation by the AER and implementation by NSPs. As these options are extensions of 'standard' VCR they can be implemented utilising similar data and forecasting methodologies already employed within the business. Calculating utilising Options 2 and 3 will give a reasonable foundation to compare any modelling completed in future with more elaborate modelling methodologies.

Nonetheless, Essential Energy believes that the AER needs to undertake a full review of the VNR in the near future to ensure that a robust measure is developed. Essential Energy would like to, as part of this engagement in approach, understand future commitments to revise and review this value metric by the AER.