10 June 2024

Kris Funston
Executive General Manager
Australian Energy Regulator
GPO Box 3131
Canberra ACT 2601

Submitted via: vnr2024@aer.gov.au

Dear Kris,

Value of Network Resilience 2024 – Issues Paper

Erne Energy is pleased to provide a submission on the AER's Issues Paper on the Value of Network Resilience (VNR) 2024. The exploration of network resilience is welcome, especially given the increasing costs of network repairs following severe weather events[1].

While it is true that electricity networks are increasingly impacted severe weather, exacerbated by the changing climate[2], developing a new metric to underpin investment in electricity network resilience is likely to result in a significant growth in the electricity network Regulated Asset Base (RAB), which will have flow on effects on consumer electricity bills.

Additionally, while ***electricity resilience***, as opposed to electricity ***network*** resilience, is a major focus of consumers facing the increasing threat of or having experienced prolonged outages, delivering electricity resilience is not the entire responsibility of the Network Service Providers (NSPs).

Electricity customers are concerned, particularly with electrification and the increasing dependence on electricity, that any outage and prolonged outages may have significant detrimental consequences. However, electricity customers are equally clear that affordability and keeping electricity bills low are their highest priorities[3,4].

With over 95 % of electricity outages impacting the distribution network[5], the interest will be on how the Distribution Network Service Providers (DNSPs) choose to address resilience through their planned investment, particularly with a number of key DNSP revenue determinations due[6].

Clearly, the DNSPs have a key role in identifying the vulnerabilities and risks to their network infrastructure[7], but mitigating those vulnerabilities and reducing those risks may not be entirely the responsibility of the DNSP.

Customer electricity resilience can be delivered in a number of ways, including hardening the network infrastructure or taking new approaches such as Stand-Alone Power Systems (SAPS) or

[1] https://www.aer.gov.au/system/files/2022%20Electricity%20network%20performance%20report%20-%20July%202022.pdf
[2] https://www.energynetworks.com.au/resources/reports/electricity-networks-a-guide-to-climate-change-and-its-likely-effects/
[3] https://energyconsumersaustralia.com.au/publications/report-talking-consumers-energy-bill-reduction
[4] https://www.csiro.au/en/news/all/news/2024/april/csiro-survey-reveals-australians-attitudes-toward-the-renewable-energy-transition
[5] https://www.aemc.gov.au/media/92652
[6] https://www.aer.gov.au/system/files/2024-05/Issues%20paper%20-%20Value%20of%20Network%20Resilience%202024_2.pdf
[7] https://www.energy.vic.gov.au/__data/assets/pdf_file/0030/594930/network-resilience-review-final-recommendations-report.pdf

islandable microgrids. But there are likely to be more cost-efficient approaches that effectively deliver electricity resilience at the household and community level, that are not the appropriate responsibility of the DNSP.

DNSPs are not currently able to secure a business case for resilience on the Value of Customer Reliability (VCR) alone, and this is particularly the case for islandable microgrids, which retain the vulnerable feeder and its associated maintenance, while investing in the assets, generation, storage and controller, needed for a microgrid.

While a SAPS reduces costs for all customers of a DNSP and improves the reliability for those on the SAPS, there are significant equity issues with islandable microgrids. This is because DNSP-owned islandable microgrids and batteries increase costs for all customers of the DNSP while improving reliability only for those customers associated with the islandable microgrid or battery.

The SµRF Microgrid project[8] has identified a number of governance issues with microgrids that include:

- Customers identify the newest technology as the solution they want with low understanding of what the technology can actually deliver;
- An islandable microgrid (or SAPS) may be just as vulnerable to severe weather as the original/traditional network solution;
- Not all communities that believe they are vulnerable, are vulnerable when network data is assessed[9];
- SµRF identified that microgrids offer no better resilience since the microgrid assets may directly be impacted by severe weather;
- It is not clear who determines which customers within a microgrid have priority access to the limited electricity resource; and
- A "community" microgrid may exclude neighbours as an "accident" of network design.

Further the economics of large SAPS and islandable microgrids are weak[10]. The work of Energy Network Australia (ENA) identified that while it was possible to secure the business case for a SAPS with a small number of customers, large SAPS and islandable microgrids could not "get over the line"[11]. The federally-funded Energy Sector Climate Information (ESCI) project also explored using climate metrics (the Forest Fire Danger Index, FFDI) to assess the risk to bushfire vulnerable feeders, but recommended the exploration of SAPS, rather than islandable microgrids, to deliver both benefits to impacted customers and the wider customers of the DNSP[12]. For both projects a specific "bushfire vulnerability" metric would be needed to progress an islandable microgrid.

Some aspects of network hardening to improve recovery times, such as replacing fire-damaged wooden poles, as needed, with composite poles, as was done following the 2019-2020

[8] https://bsgip.com/wp-content/uploads/2024/05/Challenges-and-opportunities-for-grid-tied-microgrids-1.pdf
[9] https://bsgip.com/wp-content/uploads/2024/01/Zepben-Vulnerability_Assessment_Report.pdf
[10] https://bsgip.com/wp-content/uploads/2024/05/Exploring-design-challenges-and-opportunities-for-microgrids-to-improve-resilience-in-the-Eurobodalla.pdf
[11] https://www.energynetworks.com.au/resources/reports/opportunities-for-saps-to-enhance-network-resilience/
[12] https://www.climatechangeinaustralia.gov.au/media/ccia/2.2/cms_page_media/732/ESCI%20Case%20Study%205_Bushfire%20risk%20to%20distribution%20120721.pdf

bushfires[13] or replacing poles to meet higher wind stress standards[14], may be merited, particularly as part of the routine maintenance and emergency repair schedule.

The notion that the VNR may result in a higher value than the current VCR to successfully underpin the business case for an islandable microgrid (or any other DNSP-led resilience solution) is likely to be erroneous. The earlier work in the UK of Electricity North-West identified that customers impacted by prolonged outages that impacted the entire community, placed a ***lower*** value on reliability as an outage progressed[15].

While DNSP customer councils have expressed a strong preference for investment in resilience, the prevailing desire for lower electricity bills and a better customer understanding of the likelihood of events like the 2019-2020 bushfires reoccurring is needed before allowing additional value to be placed on the RAB.

Climate change will increase the number and severity of severe weather events, but just as we use the Reliability Standard to ensure that investment in power system reliability is proportionate, a better understanding of the localised vulnerabilities and risks associated with severe weather is needed by both customers, the DNSPs, governments at all levels and the market bodies.

Universal access to a consistent national set of climate projections, downscaled for each state, would facilitate informed conversations about risk reduction and appropriate investment. Currently, each entity invests heavily in their own climate projections (e.g. individual DNSPs engaging different consultants to generate projections and risk assessment frameworks during revenue resets) increasing costs for consumers.

The Royal Commission into National Natural Disaster Arrangements[16] identified that resilience was a shared responsibility. There are very few projects exploring electricity resilience[17,18] and interdependencies at the community or precinct level, but there is a role for all levels of government in supporting electricity resilience, beyond the DNSPs.

For instance, electricity resilience could be provided via appropriately designed rooftop solar PV, plus battery combinations (able to generate in the absence of the network) or community energy hubs. The DNSP has a critical role in identifying vulnerable customers and communities who are at risk of prolonged outages, and this should be the focus of any DNSP work on electricity resilience, rather than investment in new assets.

Only DNSPs have the data and insights on poor reliability outcomes, the causes of prolonged outages and the locations and specific assets that are vulnerable[19]. DNSPs must be required to share and utilise that information to underpin the delivery of electricity resilience through collaborative approaches not just through DNSP-led solutions that may be more costly.

[13] https://engage.essentialenergy.com.au/level1asp/news_feed/essential-energy-s-gradual-transition-to-composite-poles
[14] https://www.publish.csiro.au/rs/pdf/RS19005
[15] https://www.enwl.co.uk/globalassets/innovation/enwl010-voll/voll-general-docs/voll-phase-3-report.pdf see page 21
[16] https://www.royalcommission.gov.au/system/files/2020-12/Royal%20Commission%20into%20National%20Natural%20Disaster%20Arrangements%20-%20Report%20%20%5Baccessible%5D.pdf
[17] https://www.csiro.au/en/about/challenges-missions/smart-energy
[18] https://www.sunshinecoast.qld.gov.au/news/ground-breaking-investigation-launched-into-cascading-climate-impacts
[19] E.g. https://bsgip.com/wp-content/uploads/2024/01/Zepben-Vulnerability_Assessment_Report.pdf

a. The DNSP would be able to identify that a customer who has applied for a connection for rooftop PV, could benefit from upgrading their proposed system to one that can operate "off-grid". This would come with an additional cost, which may then need to be supported by additional "resilience funding" from the state government or local government authority.
b. The DNSP could share information with the LGA and state government that would clearly identify at risks communities so that a joint process could deliver an "emergency community electricity hub" (off-gridable solar plus battery, telecommunications, water, connection for plug in diesel generator etc.).

While it is admirable that the DNSPs are considering the resilience of their assets to the changing climate, the AER should be cautious in developing a new metric to drive investment in DNSP-driven technology heavy solutions. There is a very real risk that either a VNR or an incentive scheme for resolving Major Event Days[20], will result in significant investment by the NSPs that will drive up electricity bills for all customers, without improving electricity resilience outcomes for targeted customers and communities.

Electricity resilience is a shared responsibility and cost-efficient and effective solutions that deliver electricity resilience will be successfully and supportively delivered through collaborative approaches that recognise the many partners needed to deliver true community and customer electricity resilience.

Thank you for the opportunity to provide input on the VNR Issues Paper. Please just get in touch if you need further information.

Yours Sincerely

Dr. Jill Cainey

[20] https://www.publish.csiro.au/rs/pdf/RS19005