Risk Based Proactive Pole Replacement Program

RIT-D Non-Network Screening Notice

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Essential Energy

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Executive Summary

Document	Risk based Proactive pole Replacement program - RIT-D Non-Network Options Screening Notice
Description	Recent climate change modelling has indicated that Essential Energy's assets are likely to experience increased risk of failure due to climate change and in particular the impact of bushfires on the Essential Energy network. Essential Energy customers, through an extensive engagement process identified a strong preference for improving resilience of the network. Options, of varying levels of proactive pole replacement to address the increased risk, were presented with greatest support from customers for replacing upwards of 25,000 poles. In response, Essential Energy proposed a spend of $85.3M to the AER to proactively replace timber poles with composite equivalents as part of the 2024-29 regulatory proposal. This was a reduced number of interventions compared with proposals during customer engagement however this was required to balance deliverability, cost benefit with customer expectations. This resilience expenditure was approved by the AER in April 2024.
Identified Need	To provide adequate customer supply by improving network resilience (network destruction due to increasing bushfire risk from climate change).
Options Considered	Essential Energy has considered the below options in its assessment of improving network resilience in high bushfire risk areas: • Base Case - Essential Energy continues with its current pole condition-based inspection and replacement program • Option 1 – Proactive replacement with Composite poles (preferred option) • Option 2 – Proactive replacement with other materials (Steel or Concrete) • Option 3 – Proactive removal of assets and replacement with Standalone power systems (SAPS) • Option 4 – Proactive removal of assets and replacement with underground assets After comprehensive assessment, options 2-4 above were not deemed suitable solutions, due to: • Exceeding levels of customer willingness to pay; or • Having a negative or low benefit compared to the preferred option; or • Technically or commercially not feasible Option 1 was chosen as the preferred solution to improve network resilience at a cost of $82.6M to proactively replace 11,220 poles with an NPV of $23.2M over 120 years.
Drivers for Transition	The main drivers of proactive risk-based pole replacement program are: • Managing increasing bushfire risk • Improving network resilience
Conclusion	Essential Energy has completed a comprehensive assessment and has concluded that no non-network solution or SAPS could form a credible option solution, or could form a significant part of a potential credible option to address ensuring adequate

electricity supply to customers, by improving network resilience in the face of increasing bushfire risk. This Non-network screening notice has been published in accordance with NER clause 5.17.4 (d)

1. Background

Essential Energy has a network of 183,000km of overhead powerlines of which 162,000km are in designated bushfire zones[1]. The overhead powerlines are managed by a network of 1.4 million power poles. During the 2019-20 bushfire season, Essential Energy's network experienced functional failures of approximately 2,600 timber poles and with over 3.4 million hectares of land inside the network footprint impacted. Whilst that bushfire season was particularly devastating, for both communities and Essential Energy it was by no means isolated; with on average 95 poles per annum being destroyed by fire within our network footprint.

To understand the impact of climate change and the prevalence of future events (windstorm, bushfire and flood) Essential Energy commissioned third party reviewed modelling to forecast possible scenarios[2]. This modelling identified that under likely emissions pathways (RCP4.5 (Representative Concentration Pathways)) Essential Energy would likely see an increase in failures of 10.95% by 2050 compared to the 2022 baseline.

As part of the 2024-29 regulatory proposal Essential Energy proposed a transition to composite poles as a like-for-like alternative for conditional replacements with full utilisation by 2030. However, given the low condition based replacement rate compared to the total pole population and the increasing risk of damage to assets by bushfires driven by climactic changes, the rate of replacement would not see an uplift in customer resilience within reasonable timeframes. To address the increasing risk and improve resilience for Essential Energy customers, a pro-active pole replacement program was proposed to customers as part of the 2024-29 regulatory proposal process. This program received very strong support with an option of up to 25,000 poles being endorsed through this process. For the final proposal the investment program was scaled back to meet delivery and manufacturing limitations for a total expenditure of $85.3M over the 2024-29 period[3].

Since the regulatory proposal was submitted, there have been updates to bushfire data and modelling, and this has been reflected in the University of Melbourne's Phoenix RapidFire fire consequence model. The risk modelling undertaken analyses the potential loss of houses, property and life in the event of fires within an area. Essential Energy utilises this modelling to target areas through capital and maintenance activities to manage the increased risk of losses in our communities in the event of fire ignition. Whilst not driving the identified need of this investment, this modelling reinforces the localities where fire ignition will have the greatest impact on communities and Essential Energy.

2. Identified need

Essential Energy has initiated this RIT-D (Regulatory Investment Test for Distribution) process to further ensure all reasonable options are considered in the long-term interest of our customers and to minimize the impact on electricity bills. The identified need for this RIT-D is for Essential Energy to ***"provide adequate customer supply' by improving network resilience (destruction due to increasing bushfire risk)"***. This RIT-D will identify the best investment option that meets the identified need which maximises the net economic benefits.

[1] Essential Energy Annual Report 2023-24 (https://www.essentialenergy.com.au/ext/AR2024/)
[2] 6.01 Climate Impact Assessment (https://www.aer.gov.au/documents/essential-energy-attachments-ch-6-601-and-602)
[3] 10.06.01 Resilience Risk Based Pole Replacement Investment Case (https://www.aer.gov.au/documents/resilience-investment-cases-100601-100606)

Based on feedback from the AER to Essential Energy's *10.06.01 Resilience Risk Based Pole Replacement Investment Case*, Essential Energy has undertaken further modelling to improve site selection based on climactic modelling. A final population of poles was identified by limiting eligibility criteria to:

- Location; Non-urban, located in either P1(High bushfire risk) or P2 (Moderate bushfire risk) Bushfire priority zones and in a location exhibiting a likely increase in bushfire risk due to climate change.
- Lack of alternative supply; HV/LV distribution and radial sub-transmission assets only
- Economic; Economically viable to replace based on probability of failure and consequence of failure (risk) of the existing asset
- Material Type; Natural round timber poles
- Lack of viable alternatives to address risk; Assets flagged for potential SAPS have been excluded.

Essential Energy has determined that there is no viable non-network option that could form a potential credible option on a standalone basis or that could form a significant part of a potential credible option. Essential Energy's determination is made under clause 5.17.4(c) of the *National Electricity Rules (NER)* and as per NER clause 5.17.4(d), Essential Energy is publishing this non-network screening notice setting out the reasons for this determination. This RIT-D will explore all credible and any other options available which will address the identified need and will be receptive of any non-network solution suggestions through public feedback in the various stages of the RIT-D process.

3. Rationale that there is no viable non-network solution

Essential Energy does not consider any non-network option currently exists that would meet the criteria of being commercially and technically feasible as an alternative to improve resilience. In particular, due to the scale of the identified need, the cost of non-network options that would enable poles to be decommissioned rather than replaced will be excessively expensive compared to the proposed network options. Essential Energy has a current condition-based pole replacement program that inspects poles at an interval of every 4.5 years. Effective replacement and maintenance of Essential Energy's overhead network is necessary to maintain network reliability and resilience, and to ensure that Essential Energy is compliant with power system performance and supply standards.

Due to increased bushfire risk in the Essential Energy network, the only alternative non-network option relating to reducing bushfire impact on timber assets would be permanently removing the overhead network of poles and wires. Only this scenario will remove the risk caused by bushfire to network assets completely. Because Essential Energy is obliged to supply electricity to customers under the *National Energy Retail Law (NSW),* removal of powerlines is only possible where there is an alternate source of supply provided to the customers reliant on that powerline. There isn't an option to do nothing in case of candidates identified in increased bushfire risk areas. Replacing timber with timber only reduces the age risk and hence more resilient materials need to be used to improve network resilience. The number of assets identified for replacement under the proactive pole replacement program is 11,220. As approximately 90,000 customers rely on these poles and powerlines, permanent removal of the whole identified population is not feasible and not a viable option.

We consider that no Non-network option could form a potential credible option, or could form a significant part of the credible option for this RIT-D.

4. The case for Stand Alone Power Systems (SAPS)

Under the NER, RIT-D and RIT-D application guidelines, Essential Energy is required to consider whether a SAPS option can fully or partly address an identified need. As discussed above, removal of powerlines is only possible if an alternate source of supply is provided to the customers that are reliant on that powerline. As approximately 90,000 customers will be impacted by the removal of the 11,220 identified pole population,

replacing that pole population with SAPS is not a practical or efficient solution. A few reasons are described below:

- Installation of regulated SAPS can be an expensive solution dependant on customer load and site requirements. The cost to install a 5kW SAPS solution ranges upwards of $150,000 whereas the cost of installing a composite/steel/concrete pole will be cheaper < $10,000. A composite pole has a life of over 60 years compared to steel/concrete which has 40 years - both of which are higher compared to an average life of 25 years for a regulated SAPS system. This will mean a network wide transition to SAPS will end up with a higher cost to customers compared to composite pole transition in locations identified.
- As a single powerline services multiple customers in most cases, removal of a powerline will need to be supported by Explicit Informed Consent (EIC) from all affected customers along that line. If EIC is not obtained from all parties, Essential Energy cannot remove the section of the powerline which will result in additional costs. Even if EIC is obtained, the customer needs to have sufficient footprint available on the premises to have the SAPS system installed. In the customer engagement results as part of the 2024-29 regulatory proposal, approximately 40% of customers surveyed were interested in transitioning to SAPS and hence acquiring EIC from all affected customer's would be improbable. Current conversion rates have also been lower, which would further decrease the likelihood of acceptance. The final population of 11,220 poles identified based on the selection criteria, excluded any poles identified as part of any potential SAPs locations (approximately 350 pole locations). Essential Energy is committed to utilising SAPS on an ongoing basis where installation of SAPS is the most viable option compared to other network solutions.
- Essential Energy's current SAPS strategy is focussed on high cost to serve customers and as such, is best suited for tailored solutions on a case-by-case basis i.e. long powerlines serving very few customers or areas with known reliability or access issues.
- Essential Energy is currently planning to install 400 SAPS solutions in the 2024-29 regulatory period. This is already at the upper limit of supplier and third-party contractor availability. This makes alleviating the risks driving this investment, unrealistic to be addressable by additional investment beyond the current SAPS program. The 400 sites identified for SAPS installation have been settled after analysing close to 100,000 sites which again shows the number of feasible sites is minimal (approximately 0.4%)
- An NPV analysis done on the 1,185 poles in the final identified population of 11,220 (where SAPS may be an option with negative value) showed a negative NPV value of -$1.7B over a 40-year period. The 1,185 poles served a total of 1,648 customers and this resulted in an average cost of close to $913,358 per customer which again shows SAPS is not a feasible solution. The analysis will be explained further in the draft project assessment report (DPAR) due to be published shortly.

We consider that no SAPS option could form a potential credible option, or could form a significant part of the credible option for this RIT-D.

5. Conclusion and next steps

This non-network screening notice confirms that Essential Energy has therefore made a determination that no non-network solution or SAPS solution is feasible or cost effective to improve network resilience in light of increasing bushfire risk from climate change. As such a Non-Network Options Report has not been prepared in accordance with NER clause 5.17.4(c) - Essential Energy is instead publishing this Non-network screening notice as per NER clause 5.17.4 (d).

Essential Energy will be publishing a DPAR shortly and consultation on that report will be open for a period of 6 weeks. Essential Energy aims to publish a final project assessment report as soon as practical after that consultation period ends, taking into consideration any submissions received.

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