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Consultations
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Dear ESV,

Rapid earth fault current limiters (REFCL) operations consultation paper dated January 2024 (“Consultation Paper”)

AusNet Electricity Services Pty Ltd (“**AusNet**”) appreciates the opportunity to provide input into ESV’s preliminary views on the obligations in relation to REFCLs under the *Electricity Safety Act 1998* (the “**Act**”).

This letter reflects our high-level position on the matters raised in the Consultation Paper and we would welcome the opportunity to provide more detailed submissions to ESV.

Context

AusNet’s Single Wire Earth Return (“**SWER**”) remote controlled Automatic Circuit Reclosers (“**ACRs**”), and the REFCL roll-out were all fully completed as of December 2015 and November 2023 respectively. This included AusNet’s development and deployment of an alternative REFCL technology to mitigate single technology and supplier risk that existed at the time the legislation was introduced. AusNet’s commitment to delivering these legislated programs, alongside investment in additional network initiatives, have delivered a reducing bushfire risk profile as measured by the Government’s F-factor performance incentive scheme.

As technology and bushfire risks continue to change, ESV’s proactive monitoring and oversight has also ensured that Distributors’ Electricity Safety Management Schemes (“**ESMSs**”), Vegetation Management and Bushfire Mitigation Plans (“**VMPs** and **BMPs**”) are responsive to these changes and are enforceable.

High level observations

AusNet considers that implementing a principles-based approach in the Act and relevant subordinate legislation (rather than prescriptive requirements for operation of REFCL technology) will allow the expert technical regulator to respond and adapt the regime as operational experience with the new REFCL technology increases. For example, it has also been demonstrated through testing and operational experience, that different settings are appropriate for different parts of the network, depending on design and topography. However, AusNet requires flexibility to balance all the required network considerations.

AusNet considers that legislation is best used to set out the high-level intent of the obligations and requirements, the delegation of appropriate enforcement and exemption powers to the expert technical regulator (in this case, ESV) and delegation of detailed technical matters, including definitions, to the regulations or other appropriate ESV Guidelines or Directions.

AusNet considers that the ability to retain flexibility on how we achieve the principles of the legislation will ensure that our systems and processes reduce risks as far as reasonably practicable, but we understand that this comes with the corresponding obligation that AusNet will continue to demonstrate to ESV in both our ESMS, VMP and BMP how we will do so. This aligns with Recommendation 36 of the Independent Review of Victoria’s Electricity and Gas Network Safety Framework – Final Report,¹ which stated that the general safety duties should remain outcomes-based, allowing flexibility in compliance arrangements.

¹ December 2017, p. 37.

While AusNet agrees with ESV's objectives as set out in the Consultation Paper, we make the following specific points in relation to ESV's preliminary views on operation of REFCL technology:

- REFCL technology in service in AusNet's network is still relatively new and AusNet is still working through reliability issues that have been caused by use of REFCL technology on its network.
- In AusNet's experience, the statement by ESV that "*supply reliability has improved on many powerlines since the implementation of REFCLs*" is not reflected in current performance. Since implementation, reliability data shows that the REFCL protected areas of AusNet's network have seen an increase in the frequency of outages and the duration of outages which can be attributed to the operation of REFCL technology.
- REFCL technology was primarily designed and tested for bushfire mitigation outcomes. Although there are likely to be other safety benefits, these have not been adequately tested or quantified. It is important that other safety benefits are not overstated until they are tested and quantified, as they need to be given the appropriate weighting in balancing overall network considerations, like reliability.
- AusNet's Energy Sentiments tracker² consistently shows reliability, safety and lowering costs are ranked by customers as the top 3 areas they would like to see prioritised for further improvements, showing that the balance of all three needs to be considered and is important to get this right to meet customers' overall expectations.
- While operating REFCL technology at set points 1 – 3 continuously throughout the year is likely to:
 - allow AusNet to detect and address latent defects that AusNet may not be able to detect with traditional inspection or fault detection measures; and
 - monitor and maintain capacitive balancing of AusNet's network during high fire danger periods,

Operational experience has demonstrated that there are many occasions where AusNet is required to bypass or disable REFCL technology to:

- locate and rectify high impedance network defects that have involved a combination of deployment of fault detection devices or replacement of equipment suspected of having a high impedance defect. The detection and rectification of these types of defects has taken from days to several weeks; and
- manage the dynamic nature of networks, particularly through network growth, which requires AusNet to bypass or disable REFCL technology to perform augmentation works outside fire danger periods. The duration for bypassing or disabling REFCL technology will be determined by AusNet on a case-by-case basis, due to the differing nature of the augmentation works. These activities are in addition to daily operational requirements to bypass/disable for network switching, REFCL equipment faults and other unforeseen issues. Accordingly, a prescribed availability benchmark may be impracticable to enforce on a station-by-station basis.

AusNet operates REFCL technology using a "protection philosophy", which means that AusNet attempts to balance the primary purpose of bushfire mitigation with customer reliability and electrical safety. In practice, this means AusNet:

- considers that the application of "set point 1", the most sensitive setting (required capacity performance level), to mitigate the risk of bushfire is effective when applied on days of Total Fire Ban ("**TFB**"), for periods when the Fire Behaviour Index ("**FBI**") is above 30. Analysis of ten years of network related fire incidents indicates that the FBI threshold remains appropriate. A day of TFB is normally declared when the FBI is expected to exceed 50.

² <https://communityhub.ausnetservices.com.au/research/energy-sentiments>

- considers that the application of alternative less sensitive REFCL settings (set point 2 & 3) aligned with the Australian Fire Danger Ratings are considered appropriate in balancing customer reliability, electrical safety and fire mitigation outcomes.
 - recognises the safety benefits of REFCL technology associated with accidental contact with bare overhead high voltage powerlines, but notes that the incremental benefit above standard electrical protection schemes has not been adequately tested or quantified.
 - can demonstrate that REFCL has increased the frequency and duration of customer supply interruptions and is an aspect the industry is currently addressing. However, technology to address this issue is still in development; and
 - with the exception of compliance with the existing prescribed REFCL requirements, application of REFCL technology may vary between and within network businesses for a variety of reasons (such as terrain/topography, scale of network, complexity of assets). AusNet requires the flexibility to apply REFCL settings based on the range of network risks that the business is managing at any given point in time.
- AusNet has several projects in place to improve REFCL performance in service, being the implementation of Advance Automatic Circuit Reclosers ("AACRs"). Once the trials have proven the benefits for fault targeting, AusNet will look to roll out operational changes and install AACRs on REFCL protected parts of the network.
 - Prescriptive requirements for the operation of REFCL technology could have unintended detrimental impacts, in particular, in relation to reliability, and there is currently insufficient operational experience with the technology to fully understand what those impacts might be.

We look forward to working with ESV in relation to the Consultation Paper. If you have any queries on this matter, please do not hesitate to contact our Manager Network Safety, Phil Bryant

Yours faithfully



Sarah Hannah
General Manager, Asset Management

AusNet