Rapid Earth Fault Current Limiter Functional Performance Review

Energy Safe Victoria Response to Recommendations

Energy Safe Victoria's response to the Rapid Earth Fault Current Limiter Functional Performance Review

ESV's has accepted or supported in principle the eight recommendations from the Performance Review. Three of the recommendations (C, E & F) will be submitted to distribution businesses for their response.

Recommendation A

ESV should provide its acceptance criteria to the distributors. ESV should ensure its approach to anomalous test results is reflected in the distributors' testing policies to ensure a consistent approach to resolving issues.

Response – Accept

ESV will provide to the distribution businesses (DBs) the details of considerations it makes when assessing compliance testing results. However, the regulatory obligation to demonstrate compliance and the method by which this is achieved remains with the DBs.

Recommendation B

Fault information should be analysed by each distributor annually after each summer period to assess REFCL performance. Ideally, this analysis should be captured in a common database designed by the distributors to enable data sharing. Fault reports should contain information such as local weather conditions, fault type categorisation, fault impedance, photos, REFCL operating mode and detection thresholds, network configuration, any abnormal behaviour or sequence of events, fault impedance and a cross check of actual waveform data against REFCL commissioning and regulatory benchmarks. In addition to regularly assessing REFCL performance, this information and accompanying analysis should assist in identifying opportunities to optimise REFCL operation to deliver better community outcomes in terms of bushfire risk reduction, reliability performance and costs. Fault reports produced by the distributors should not only validate that the REFCL device has operated as intended, but also comment on the likelihood that REFCL operation has avoided a fire. These reports should be provided annually to ESV in June.

Response – Accept in principle

ESV is currently working with distribution businesses (DBs) and the Department of Environment, Land, Water and Planning (DELWP) to improve weekly reporting and establish end of fire season reporting of faults that occur on REFCL-protected networks over the declared fire season. ESV will ensure the data provided is targeted and relevant. ESV will aim to leverage existing reporting systems wherever possible in order to limit the associated burden and cost. As a result, the specific data to be reported may differ from the recommendation, but will meet the overall intent.

Weekly reporting was established for the 2019/20 fire season and will continue for each fire season into the future. It ensures ESV and the Minister have adequate and timely oversight of REFCL performance over the fire season.

End of fire season reports will include greater detail of validated fault and incident data, and will be used to inform future reviews into the REFCL program. The outcome of future reviews will assist future policy decisions of government. The first end of fire season reports will be submitted to ESV in 2021 and cover the 2020/21 fire season.

Recommendation C

It is recommended that distributors ensure that they hold sufficient strategic spares to ensure that REFCLs can be returned to service in the event of a component failure. In addition, distributors should ensure that the impact on REFCL performance as a result of a component failure is minimised. In this regard, the distributors should continue to explore ways to better integrate the REFCL and provide back-up protection which utilises the Arc Suppression Coil in the event that the REFCL controller fails.

Response – Support in principle

ESV will submit this recommendation to distribution businesses for their formal reply. ESV and the wider industry are aware of these issues and have been working towards improving the integration, reliability and availability of REFCL technology since the program began.

ESV will continue to work with distribution businesses (DBs) to ensure they have sufficient asset management practices and contingencies in place to minimise the duration of any increase to powerline bushfire ignition risk resulting from component failures, as far as practicable. ESV will also continue to oversee the industry's technical developments to improve REFCL integration and back-up protection schemes through its involvement in the Victorian Electricity Supply Industry REFCL Technical Working Group.

Recommendation D

It is recommended that ESV provides better information on its website in relation to the overall progress of the REFCL program, including the current status of the program in terms of compliance and time extensions. The information should provide a high-level summary in a customer-friendly format.

Response - Accept

ESV acknowledges that while this information is publically, available it may not be easily accessible or in a format that can be easily understood by the public. ESV will commence the publication of this information in the first quarter of 2021. We will provide a summary of the program delivery status, and information on exemptions and time extensions that have been granted. Updates will be provided quarterly.

Recommendation E

It is recommended that the distributors explore methods to better predict damping values accurately, and remove the reliance on the bounded range currently adopted to mitigate the risk to the program and to maintaining compliance.

Response – Support in principle

This recommendation relates to delivery and economic risks that are a matter for distribution businesses (DBs) to manage. ESV will submit this recommendation to distribution businesses for their formal reply, ESV agrees that a method for more accurately determining network damping would assist DBs to perform network planning activities more efficiently that may result in lower delivery costs. Once a REFCL is installed, network damping can be measured directly and changes can be made to address this issue if the true damping values exceed initial estimates. Therefore DBs should consider whether investment in developing a method for accurately determining network damping before a REFCL is installed will be offset by associated network planning and augmentation savings. ESV will continue to oversee the industry's development of improvements/solutions to this and several other technical issues through its involvement in the Victorian Electricity Supply Industry REFCL Technical Working Group.

Recommendation F

It is recommended that the distributors continue to collaborate with REFCL suppliers to develop fast voltage reduction and reduced energy released at the fault site with the objective of further reducing bushfire risk. The distributors are required to demonstrate their REFCL device can be operated at Required Capacity however if the REFCL can be configured and operated differently to deliver an improved risk reduction at the fault site then this should be explored.

Response – Support in principle

ESV will submit this recommendation to distribution businesses for their formal reply. DBs specify how they intend to operate REFCLs in their bushfire mitigation (BFM) plans. Since the legislation does not specify how REFCLs must operate, DBs have the flexibility to propose operational settings that differ from the 'required capacity' in their BFM plans, which ESV has a duty to review, challenge and ultimately accept or reject. If ESV and the DB cannot agree, ESV has the power to determine the operational settings, pursuant to section 83BH of the Electricity Safety Act 1998.

There may be settings that can deliver greater powerline bushfire ignition risk reduction than the 'required capacity' and ESV will explore this issue in collaboration with DBs through the Victorian Electricity Supply Industry REFCL Technical Working Group, with the aim of making any necessary changes before the 2021/22 fire season.

Recommendation G

It is recommended that the distributors continue to explore fault locating technologies, including fault finding tools, to assist in improving network reliability impacts from sustained outages.

Response – Accept

ESV supports this recommendation, but notes that distribution businesses (DBs) are already exploring various technology solutions to improve electricity supply reliability. DBs are heavily incentivised through the Service Target Incentive Performance Scheme (STIPIS) administered by the Australian Energy Regulator (AER) to improve supply reliability. ESV will continue to actively oversee DB developments in this space.

Recommendation H

We recommend that the distributors review and align their approach to maximise the benefits from reduced electrocution and the integration with live line sequence on REFCL protected networks.

Response - Accept

ESV accepts this recommendation. REFCL technology has proven to be effective at reducing the risk of electrocution and arc flash resulting from contact events with 22 kV powerlines. In an incident where an excavator made contact with bare overhead 22kV powerlines in early 2020 REFCL-protection prevented workers from sustaining serious injuries or death.

ESV wrote to distribution businesses (DBs) in August 2019 regarding the protection settings they deploy while line-workers are working on or near live bare overhead 22 kV powerlines. At that time some DBs were still gathering data to justify changing their existing work practices and to confirm that there were no other unidentified safety risks associated with the change. ESV understands that this assessment is nearly complete and it is likely that all DBs will adopt the same practices to ensure that this additional safety benefit is realised both for line-workers and the general public.