



The Hon Lily D'Ambrosio MP

Minister for Energy, Environment and Climate Change
Minister for Suburban Development

8 Nicholson Street
East Melbourne, Victoria 3002
Telephone: 03 9637 9504
DX210098

Mr Chris Pattas
General Manager
Australian Energy Regulator
GPO Box 520
MELBOURNE VIC 3001

Ref: MBR033148



Dear Mr Pattas

Contingent Projects - Installation of Rapid Earth Fault Current Limiters - Tranche 1

The Andrews Labor Government welcomes the opportunity to make a submission on the applications for contingent project funding from AusNet Services and Powercor for the first tranche of Rapid Earth Fault Current Limiters (REFCL) installations and associated works.

This important bushfire safety project flowed from the tragedy of the Black Saturday bushfires in 2009, in which 159 of the 173 deaths were found to have resulted from ignitions started by powerlines. The Andrews Labor Government is committed to substantially reducing the bushfire risk posed by powerlines, and to ensure that the enhanced safety benefits flow to community members as quickly as possible. The enhanced safety of the electricity distribution network is being achieved through a number of initiatives, of which the amended bushfire mitigation regulations, requiring enhanced network capabilities on high voltage power lines originating from specified zone substations, is the most significant.

In 2011, the Victorian Government accepted the 67 Recommendations of the Victorian Bushfires Royal Commission (VBRC). The Contingent Project Applications now under the consideration of the Australian Energy Regulator (AER) apply to critical works associated with the implementation of VBRC Recommendations 27 and 32. In keeping with the decision of 2011, the Andrews Labor Government requires the introduction of enhanced network protection technologies to be deployed as quickly as is practically possible, while limiting the cost burden on consumers to only those costs which are being reasonably incurred by distribution businesses. This submission is presented to you in that context.

The amended *Electricity Safety (Bushfire Mitigation) Regulations 2013* require progressive installation of the new network capabilities, with the first tranche of network deployment required by 1 May 2019. It is pleasing to see the level of detail that Powercor and AusNet Services have included in their respective applications, reflecting a strong move on their part towards scoping the cost dimensions of the implementation and designing a working engineering solution. However, it is disappointing that the opportunity was wasted to commence the process to design a working solution earlier using the AER approved funding in 2012 of \$12.8 million for a REFCL installation at Woori Yallock Zone Substation, a fully funded project that was due to be operational by the end of 2014, some two and a half years ago.

The applications ignore this history, implying that the new regulatory requirements come as a surprise, despite new network technologies being a key focus of joint government and industry planning dating back to 2010. The tenor of the distribution business applications creates a sense of urgency that indirectly encourages the AER to make a quick decision that may well stifle the capacity to fully explore implementation alternatives and to thoroughly investigate and test cost components.

It is a key objective of this submission to support the AER in reaching a decision that approves only those funds that it is reasonable to pass on to Victorian electricity consumers.

The first of the three implementation tranches is both novel and of a significant size; each tranche, however, is of a similar size. It is important that the funding applications be carefully reviewed, as these contingent project applications are likely to set a precedent for the following deployment tranches. There are a number of inconsistencies within and between the two applications as outlined in this submission's supporting documentation, which would benefit from assessment by an independent expert. It is noted that the AER engaged Cadency Consulting in 2012 to provide independent advice on costs associated with the AusNet Services project to install and test a REFCL at Woori Yallock. A similar approach would be useful at this time, particularly given the greater engineering detail now available in 2017 compared to 2012 and also given the magnitude of the overall project costs that have been presented.

I do not agree with the suggestion made by the distribution businesses that Swedish Neutral may not be able to supply the request number of REFCLs to meet the need of Victoria. I have met with representatives of Swedish Neutral and they have assured me that they can deliver sufficient REFCL units in the timeframe required. Further to this, Swedish Neutral have provided a written statement of confidence that they are committed to the Victorian REFCL project.

Furthermore, it is important to note that the present allowable nominal voltage variation levels set down in the current Electricity Distribution Code does not constitute a barrier to REFCL implementation. I recommend that the AER consider the letter sent by the Essential Services Commission to AusNet Services on 7 February 2017 on this matter.

The businesses have pre-emptively asserted that compliance with the Victorian Electricity Distribution Code compels them to install isolation transformers on connections to high voltage customers (HV customers). For reasons listed below, this is not the case, and prudent and efficient distribution businesses would thoroughly consider and evaluate other solutions before adopting a high cost network solution. At a minimum, the Victorian Government would expect to see some evidence that the HV customers have been consulted and some preliminary scoping of HV customer works undertaken. The AusNet Services notice of determination under clause 5.17.4(c) of the National Electricity Rules (non-network options to comply with the Bushfire Mitigation Regulations') references a potential alternative solution to the use of isolating transformers but provides no detail whatsoever.

I note the fact that both AusNet Services and Powercor have proposed packages of project works for Tranche 1 that exceed the regulatory requirements that must be met by 1 May 2019. While this approach is inconsistent with their assertions of unrealistic scheduling demands, I greatly welcome the accelerated delivery of safety benefits to the Victorian community that this approach provides.

On behalf of Victorian communities, I support the work of AusNet Services and Powercor to expeditiously retire powerline bushfire risk in line with Recommendations 27 and 32 of the VBRC. But this outcome must not be at an unreasonable cost to Victorian households.

AusNet Services are forecasting capital expenditure of \$104.5 million and Powercor of \$91 million for Tranche 1 REFCL works. Given this significant size, and the novelty of these works, it is recommended that:

- the AER should commission independent expert review of costs; and
- the AER should extend the time limit to consider these applications in accordance with Clause 6.6A.2 (j) of the NER to enable sufficient time for the review.

The AER should not accept without a full and detailed due diligence review of the technical, financial and regulatory issues that AusNet Services and Powercor have no alternative but to install isolation transformers for their HV customers.

Equally, despite other challenges that may be inherent to addressing the unique requirements of zone-substations and local networks to support REFCL deployment, the AER must be sure that its determinations support only those claims that are demonstrably justified.

On behalf of Victorian consumers, I therefore expect that the AER will undertake all regulatory, technical and financial due diligence in its interrogation of the claims put forward in the AusNet Services and Powercor contingent project applications, in support of this important Victorian bushfire safety investment.

This submission is supported by information presented in the following attachments:

- **Attachment 1:** Detail of Submission;
- **Attachment 2:** Statement of Commitment by Swedish Neutral; and
- **Attachment 3:** Letter from Essential Services Commission to AusNet Services concerning the Electricity Distribution Code

If you require further information please contact Ashley Hunt, Director, Powerline Bushfire Safety Program, Department of Environment, Land, Water and Planning, on (03) 9412 4554.

Yours sincerely



Hon Lily D'Ambrosio MP
Minister for Energy, Environment and Climate Change
Minister for Suburban Development

5/5/17

Encl.

Attachment 1 – Detail of Submission

1. Tranche 1 - Novel and significant in size – independent review required.

The level of granularity provided by both businesses in their applications is to be commended, and reflects the detailed planning that they have undertaken to implement this Government’s bushfire risk reduction initiatives. The businesses have been required to estimate costs in two core areas:

1. **Substation works:** The installation of Rapid Earth Fault Current Limiters (REFCLs) in substations has few Victorian precedents. Design decisions need to be made, particular to each substation, and then the cost of the installation and modification works estimated. The large-scale deployment of REFCLs is novel and there is no cost history to rely on.
2. **Feeder works:** Hardening work will be required on each substation feeder. The unit costs of such work are well established. What is novel is the identification of the equipment to be replaced and the costs of balancing and testing.

The first tranche cannot be considered a “pilot”. It is of a similar size to the subsequent tranches.

Table 1: Poly-phase line length by REFCL Tranche

Tranche	ZSSs	Line Length (kms)
1	17	11,504
2	14	9,563
3	14	10,400
Grand Total	45	31,467

Source: PBSP GIS Database, April 2017

It is critical therefore to ensure that the cost estimates submitted by the distribution businesses accurately reflect the costs that they will incur, and that this first tranche is not regarded as purely a “learning” exercise, with costs to be refined in latter tranches.

A high-level review of the contingent project applications indicates a number of anomalies and inconsistencies with these novel costs, which are detailed below.

It is recommended that an external expert review of the costs proposed by the businesses be undertaken for these novel works. This is particularly required to establish if the forecast costs reflect “arm’s length terms”¹.

¹ AER is required to have regard the extent to which forecast capital expenditure reflects arm’s length terms
NER 6.6A2 (g) (6)

2. Costs requiring review

The Andrews Labor Government is committed to supporting the approval of funding to distribution businesses that fairly reimburse these businesses for the costs associated with delivering these important infrastructure initiatives on behalf of the Victorian community. However, the government is equally determined to ensure that significant cost claims are fully substantiated.

Items of expenditure that are excessive or relate directly to areas of cost where prior funding has been approved must be thoroughly investigated.

In reviewing the Contingent Project Applications of AusNet Services and Powercor, there would seem to be items of expenditure that require review and further substantiation. In particular:

1. AusNet Services costs for Zone Substation works at five (Kingslake, Seymour, Wangaratta, Wonthaggi and Myrtleford) of the nine Tranche 1 Zone Substations, in light of prior re-build project works for the same Zone Substations;
2. Powercor costs for Zone Substation works at one (Winchelsea) of the six Tranche 1 Zone Substations, in light of prior re-build project works for the same Zone Substation;
3. AusNet Services costs for the Zone Substation works at Woori Yallock, in light of funds of \$12.8 million granted by the Australian Energy Regulator (AER) for the same purpose in 2012;
4. AusNet Services cost associated with modifications to distribution feeder automation (DFA) system, in light of funding sought for similar works through the 2016-20 Electricity Distribution Price Review (EDPR) process;
5. AusNet Services costs for surge arrestor replacement as part of its line hardening strategy, in light of funds sought for surge arrestor replacement through the 2016-20 EDPR process;
6. Powercor program management related costs of \$5.7 million which include project management office costs, which are far in excess of similar costs estimated by AusNet Services;
7. AusNet Services use of standard unit costs of \$1.18 million for isolating transformers, compared to a variable cost structure developed by Powercor to reflect the differing demand capacities of its high voltage customers (HV customers).

To illustrate the Victorian Government's request for added vigilance to prevent inequitable consumer pricing outcomes, reference is also made to the AER approval of \$54 million to fund an Automatic Circuit Recloser (ACR) replacement program as part of the 2016-20 EDPR determination for Powercor. The approved level of funding may now provide a windfall gain for Powercor in light of a cheaper alternative technology solution, which was an established industry product, as proposed by Powercor subsequent to the final 2016-20 EDPR determination.

Further details on each of these cost matters are presented below for AER consideration.

2.1 Zone Substation works (AusNet Services)

The AusNet Services *Distribution Annual Planning Report, 2017 – 2021*, published on 23 December 2016, includes details of 13 Zone Substations to be re-built or modified.

AusNet Services provided the following rationale for this investment²:

'These projects are driven by either deteriorated condition of the assets or the implementation of Rapid Earth Fault Current Limiting (REFCL) technology.'

Of the 13 nominated Zone Substations previously identified in the AusNet Services *Distribution Annual Planning Report 2017 - 2021*, five are Zone Substations at which REFCLs are to be installed in Tranche 1 and are therefore the subject of AusNet Services' Contingent Project Application.

Almost \$50 million of the cost estimated by AusNet Services for its nine tranche 1 Zone Substations is attributed to Zone Substation works. This is a substantial proportion of the overall capital costs, constituting 57% of capital costs (excluding the costs attributed to the installation of isolating transformers for HV customers).

The refurbishment and replacement costs included in the planning report of AusNet Services are similarly high. Excerpts and costs³ from the AusNet Services document for the relevant five Zone Substations are included below for reference:

Zone Substation	Project Description	Cost Estimate
Wonthaggi	AusNet Services has approved works to selectively replace assets at the Wonthaggi Zone Substation (WGI). WGI was established in 1966 and contains outdoor bulk oil 22 kV circuit breakers that were installed when the station was originally built. The station also contains two original 10/13.5 MVA transformers installed when the station was built and a third of 1970s vintage. This deteriorated equipment has elevated risk of failure and poses unacceptable safety, network security, environmental and plant damage risks from possible explosive failure and subsequent oil fires. WGI station and bus switching is such that any station transformer and bus fault or secondary equipment fault results in the loss of all supply to 16,100 customers.	The total project cost in 2014 real dollars is expected to be \$14.0 million.
Seymour	AusNet Services is currently investigating asset failure risks at the Seymour Zone Substation (SMR). SMR was established in 1955 and contains outdoor bulk oil 66 kV and 22 kV circuit breakers that were installed when the station was originally built. The station also contains two original 10/13.5 MVA transformers and a third of 1970s vintage. This equipment has elevated risk of failure and poses unacceptable safety, network security, environmental and plant damage risks from possible explosive failure and subsequent oil fires. SMR station and bus switching is such that any station transformer and bus fault or secondary equipment fault results in loss of all supply to 11,200 customers. The control room is of timber and asbestos sheet construction and presents both occupational health and safety risks and network security risks through fire ignition or unauthorised access. This project will address asset failure risks due to deteriorated electrical equipment whilst ensuring integration with the Rapid Earth Fault Current Limiting (REFCL) technology	The total project cost in 2016 real dollars is approximately \$32 million ±30%.

² Distribution Annual Planning Report, 2017 – 2021, AusNet Services, 23 December 2016

³ Ibid, pages 66-72

Zone Substation	Project Description	Cost Estimate
Myrtleford	<p>AusNet Services is currently scoping a project to selectively replace assets at the Myrtleford Zone Substation (MYT). MYT was established in 1973, but was built using refurbished 10 MVA transformers manufactured in the late 1940s. The condition of these transformers has further deteriorated and they now have an elevated risk of failure. The station also has bulk oil 22 kV circuit breakers and minimum oil 66 kV circuit breakers that were installed when the station was built. These assets pose unacceptable safety, network security, environmental and plant damage risks from possible explosive failure and subsequent oil fires.</p> <p>This project will address asset failure risks due to deteriorated electrical equipment whilst ensuring integration with the implementation of REFCL technology</p>	The total project cost in 2014 real dollars is approximately \$10 million ±30%.
Kinglake	<p>AusNet Services is currently scoping a project to install REFCL technology at the Kinglake Zone Substation (KLK). KLK was established in the 1960s and supplies the township of Kinglake and surrounding areas. REFCL technology is being installed in KLK to reduce the likelihood of fire ignition as specified in section 13.3.1.1. In order to install the technology, some assets will require replacement.</p>	The total project cost in 2016 real dollars is approximately \$9 million ±30%
Wangaratta	<p>AusNet Services is currently scoping a project to install REFCL technology at the Wangaratta Zone Substation (WN). WN was established in the 1960s and supplies the city of Wangaratta and surrounding towns including Glenrowan. REFCL technology is being installed in WN to reduce the likelihood of fire ignition as specified in section 13.3.1.1. In order to install the technology, some assets will require replacement.</p>	The total project cost in 2016 real dollars is approximately \$13 million ±30%.

While two of these projects have their genesis in REFCL integration, the other three have no such stated origin. Clearly, all of these projects carry an imperative to update Zone Substations to remove performance and safety risks associated with aged assets and assets in poor condition.

Given the magnitude of costs associated with Zone Substation works included in the Contingent Project Application, the Victorian Government has an expectation that a detailed assessment of underlying costs will be undertaken to ensure that there is no inadvertent duplication in cost recovery across contingent projects and prior re-build project approvals.

2.2 Zone Substation works (Powercor)

In its *Distribution Annual Planning Report*, December 2016, Powercor provides information about refurbishment works that have been committed for a transformer replacement project at Winchelsea Zone Substation.

The project scope description is as follows⁴:

The zone substation in 1.1.8 Winchelsea (WIN) is served by 66kV sub-transmission lines from the Terang Terminal Station (TGTS) and provides supply to the town of Winchelsea and surrounding areas.

The WIN zone substation is comprised of two 66kV/22kV transformers; however, only one is in operation at any time. The nameplate ratings of the transformers are 5/7MVA for No1 transformer and 10/13.5MVA for No2. The zone substation summer N-1 cyclic rating is 10.5MVA.

No2 transformer was replaced in 2016 and No1 transformer is aged, deteriorated and at risk of failure. The table below details the current Health Index for all transformers at WIN zone substation.

- *transformer No1: health index 9.09 (currently cold standby); and*
- *transformer No2: health index 2.24 (currently in service).*

In order to address the elevated risk of failure of No1 transformer, Powercor is currently refurbishing the No1 transformer. These works are due to be completed in 2017 at an estimated cost of \$0.3 million.'

While the cost for the prior Powercor refurbishment works may not be large compared to those of AusNet Services, the Andrews Labor Government would anticipate that measures are adopted to scrutinise prior cost commitments to avoid any duplication of cost approval through this contingent project application process.

2.3 Zone Substation funding for Woori Yallock (AusNet Services)

In 2012, with the support of the State's Energy Safety Regulator, AusNet Services sought cost pass through funding to enable the installation and trial of a REFCL at Woori Yallock, to be completed by the end of 2014.

AusNet Services (operating then as SP AusNet), stated that the primary objectives for undertaking this trial were:

- *Design and construct a REFCL that will operate on a complex rural distribution network in high fire loss consequence areas without deterioration to customer supply reliability, and*
- *Confirm the capability of the REFCL, installed on complex networks supplying high fire loss consequence areas, to reduce or eliminate fault current (energy) delivered to phase to ground faults below limits determined to result in fire ignition.⁵*

The AER approved funding of \$12.8 million to install and trial a REFCL at Woori Yallock⁶.

⁴ Powercor Distribution Annual Planning Report, December 2016, page 96

⁵ AMS – Electricity Distribution Network: Enhanced Network Safety (AMS 20-13), SP AusNet, 14 June 2012, page 25 - submitted to AER in support of cost pass through application

⁶ AusNet Electricity Services Pty Ltd Electricity Distribution Price Review 2016-20 Proposal, 30 April 2015, page 259

In making its determination, the AER noted⁷ that:

'The AER accepts that the ESV has approved the REFCL trial at Woori Yallock substation. It is now an obligation on SP AusNet to undertake this trial. As such, the AER's role is to determine the amount for this activity, having regard to the factors in clause 6.6.1(j).'

The AER decision also noted⁸ the benefit of the Woori Yallock trial in containing future costs:

'The trial will at least minimise the risk of a significant investment in an unproven technology. It will explore the adaptations necessary in a network to make the technology effective in a Victorian context. This knowledge will be important in minimising the future cost of implementing these bushfire risk mitigation measures.'

While not the focus of the current AER determination, the Victorian Government chooses to express its concern and disappointment that these formally approved funds were not used expeditiously to fulfil their stated purpose and reduce cost escalation pressures now being raised by AusNet Services.

Notwithstanding this fact, the Victorian Government is adamant that the total funding for any Zone Substation should not exceed a level that can be reasonably substantiated. In the case of Woori Yallock, any consideration of costs should consider the current contingent project cost estimate of \$7.0 million (real, 2016) as well as the approved funding of \$12.8 million (real 2012) provided in July 2012.

Combining the funding for 2012 and the current application (and without any escalation of the 2012 allocation), the total cost of the Woori Yallock project approaches \$20 million. This places Woori Yallock as the costliest Zone Substation of all those presented in AusNet Services Contingent Project Application. It seems untenable, for example, that the total aggregate cost for Woori Yallock is several million dollars higher than the cost for Wangaratta, which has more than double the powerline length and three more feeders.

We encourage the AER to consider what the previous funds have procured in terms of the preparation of Woori Yallock Zone Substation for REFCL operation and to take into account any underspend of the 2012 allocation in determining the future funding allocation.

2.4 Modifications to distribution feeder automation system (AusNet Services)

In its Contingent Project Application, AusNet Services references adjustments that will be made to its Distribution Feeder Automation (DFA) system to maintain reliability. It notes:

*'The application includes costs that will be incurred to maintain network reliability. The extensive use of Distribution Feeder Automation developed by AusNet Services and deployed on the network significantly increases the number of switchable sections, and with REFCL implementation, additional switch upgrades and network balancing are necessary to maintain reliability.'*⁹

⁷ AER Final Decision, SP AusNet cost pass through application of 31 July 2012 for Costs arising from the Victorian Bushfire Royal Commission, page 36

⁸ *ibid*, page 40

⁹ AusNet Electricity Services Pty Ltd, Contingent Project Application: Bushfire Mitigation, 31 March 2017, page 7

The total cost of these adjustments is \$7.9 million, which is assumed to apply to the Tranche 1 implementation works alone.

It is not clear that these costs are appropriately claimable under these contingent project applications, and the AER must consider whether these costs are reasonably included. With respect to AusNet Services proposed DFA costs, the AER must also determine the impact of these works on the STPIS revenue adjustment that will accrue to AusNet Services, and if this will lead to a duplicated payment for these works.

In its 2016-20 EDPR proposal, AusNet Services sought funds for what it referred to as a Downed Conductor Sectionalisation project, for which it sought \$16.4 million (\$2015 real). This project involved three related projects, one of which was 'Modifying existing DFA systems'.

In its revised proposal for 2016-20, AusNet Services had indicated that the AER had not accepted their initial proposal and had developed a 'substitute forecast':

'The Downed Conductor Sectionalisation project was included in AusNet Services' Initial Proposal 2016-20. The expenditure proposed for this project (\$16.4M \$2015 real) was included in the Reset RIN (2.2 Repex) in the SCADA, Network Control & Protection System asset group. The AER did not accept AusNet Services' proposed expenditure in the SCADA, Network Control & Protection System asset group, and developed a substitute forecast based on historical expenditure'¹⁰

In the revised proposal, AusNet Services provides a description of the DFA modification works, which seeks to provide the same additional functionality as is referenced in the Contingent Project Application:

'The second project modifies or replaces DFA schemes where items such as ACRs and switches don't currently have the functionality to identify the direction of a fault. This 'automatic sectionalisation' of downed conductors will be implemented at stations where new MEF protection relays and DFA has been installed.'¹¹

Having addressed the question as to whether it is appropriate to fund the DFA works through the contingent project process, the AER should also consider the extent to which any and all earlier Repex allocations which may have correlation to these contingent project applications.

¹⁰ AusNet Electricity Services Pty Ltd Electricity Distribution Price Review 2016–20 - Revised Regulatory Proposal: Appendix 3A: Capital Expenditure Supporting Information, page 16

¹¹ Ibid, page 17

2.5 Replacement of surge arrestors (AusNet Services)

As part of its line hardening works to support the effective operation of REFCLs, AusNet Services proposes to replace 40% of its pool of 30,858 Tranche 1 surge arrestors, amounting to some 12,000 surge arrestors.

In its revised proposal to the AER for 2016-20, AusNet Services sought funding of \$30.3 million for the targeted replacement of surge arrestors over a ten year period:

'The replacement of surge arrestors was included in AusNet Services' initial Regulatory Proposal 2016-20. Forecast expenditure of (\$30.3M \$2015 real) was included in the Reset RIN (2.2 Repex) in the Other asset group. The AER did not accept AusNet Services' proposed expenditure in the Other asset group, and developed a substitute forecast based on Repex modelling'¹²

'This program will replace an average of 2,700 surge arrestors or 1,350 installations per annum and will be completed in 2025.'

In considering the contingent project application of AusNet Services with respect to surge arrestor replacement, the Victorian Government anticipates that the AER will consider any earlier allocation designated for this purpose previously under general Repex funding.

2.6 Program Management Office costs (Powercor)

Both AusNet Services and Powercor have presented program management costs, which reflect very different patterns of cost expense and capitalisation.

While both businesses will manage projects of similar size, at around \$95-104 million, the nominated costs for program management vary markedly, comprising:

- \$0.5 million for AusNet Services; and
- \$4.4 million for Powercor .

The operating costs plus capitalized costs for program management related factors are quite different for the two businesses, being:

- \$3.3 million for AusNet Services is; and
- \$5.7 million for Powercor.

This difference is significant (\$2.4 million) and any additional expense on the part of Powercor should be substantiated.

¹² Ibid, page 19

2.7 Isolating Transformer costs (AusNet Services)

Both AusNet Services and Powercor posit a view that the only viable approach to fulfilling their regulatory obligations and contractual obligations to their HV customers is through the installation of isolating transformers at each point of high voltage connection (see section that follows for further comment).

Irrespective of the question of the need for isolating transformers, it is noted that each business has adopted a different strategy to scoping this input and for ascribing cost.

To the extent that the AER determines that the businesses should be funded for the installation of some isolation transformers, it needs to carefully scrutinise the proposed costs. It is noted that Powercor have estimated that HV customer isolation substation costs will vary from \$823 thousand to \$962 thousand depending on size. AusNet Services have estimated that every high voltage isolation transformer will cost \$1.18 million.

2.8 ACR costs (Powercor)

Recommendation 27 of the VBRC recommends the:

Progressive replacement of all single-wire earth return (SWER) power lines in Victoria with aerial bundled cable, underground cabling or other technology that delivers greatly reduced bushfire risk.¹³

The Powerline Bushfire Safety Taskforce (PBST) provided further analysis to inform the optimal approach to implementing VBRC Recommendation 27. The PBST made six recommendations, including Recommendation 1(a), which requires distribution businesses to:

- “a) install new generation protection devices to instantaneously detect and turn off power at a fault on high fire risk days:*
- on SWER powerlines in the next five years (new generation SWER ACRs)¹⁴*

In April 2012, Energy Safe Victoria (ESV) issued a direction to Powercor pursuant to section 141(2)(d) of the Electricity Safety Act 1998, that included requirements to ensure that:

- “c) A program is developed by 31 October 2012 to ensure that all locations identified in (a) and (b) above that are located in the highest 80% fire loss consequence area, have new generation ACRs installed by 30 November 2015 which can be remotely controlled by the business’ SCADA system.”¹⁵*

In its annual safety performance report for 2012, ESV found that Powercor had fully met this requirement:

¹³ Victorian Bushfires Royal Commission Final Report, July 2010

¹⁴ Powerline Bushfire Safety Taskforce Final Report, 30 September 2011

¹⁵ Direction to G.Audley, General Manager Electricity Networks from P.Fearon, Directory of Energy Safety, April 2012

“In April 2012, ESV directed Powercor to install sufficient SWER ACRs to eliminate the need to attend and manually suppress the automatic reclose function on any SWER powerline in the worst fire consequence areas of its network. Powercor complied and installed 178 new electronic SWER ACRs controlling the 179 SWER lines in the highest risk areas.”¹⁶

In August 2012, Powercor presented a program of ACR deployment to protect the remainder of its SWER network, to be implemented between 2016 and 2020¹⁷.

“A nominal program for the 2016 – 2020 period presuming an even distribution of work would be as follows. The distribution may vary due to weather and resourcing constraints and should be considered as indicative only.

Period	2016	2017	2018	2019	2020
Volume	217	217	218	218	218

In its revised proposal seeking a pricing determination for the 2016 -20 EDPR, Powercor confirmed its forecast expenditure of \$54.4 million for the installation of these 1,088 ACRs, consistent with the above schedule¹⁸. The approved funding is far greater than the likely expenditure given the details provided below.

On 5 December 2016, Powercor released an updated Bushfire Mitigation Plan, framed to specifically address its obligations in relation to Regulation 7 of the *Electricity Safety (Bushfire Mitigation) Regulations 2013*.

In relation to ACR deployment, Powercor noted that the entire SWER network will be protected through the installation of 1,062 ACRs. This represents a notional saving of \$1.3 million against the pricing allowance granted for the installation of 1,088 ACRs included in Powercor’s Revised Regulatory Proposal 2016–2020 (based on an average cost per unit of \$50,300).

Powercor’s proposed program of ACR replacement was described as follows¹⁹:

“A program for the replacement of all SWER ACRs identified in (1) and (2) is shown below.

Period	2016	2017	2018	2019	2020
Volume	100	241	241	240	240

Powercor identified that the total ACR installation target of 1,062 consists of:

- 417 SWER systems without an ACR; and
- 645 SWER systems with an existing manual ACR.

¹⁶ *Safety Performance Report on Victorian Electricity Distribution and Transmission Businesses 2012*, ESV, June 2013

¹⁷ *Powercor Bushfire Mitigation Strategy Plan 2012-2013*, issued 28 August 2012

¹⁸ *Powercor Revised Regulatory Proposal 2016–2020: Powercor - Capex - MOD 1.53 PAL Repex Output with Switchgear adjustment - January 2016* (model including with supporting material)

¹⁹ *Powercor Bushfire Mitigation Plan – Electricity Safety (Bushfire Mitigation) Regulations 2013*, 5 December 2016

At the inaugural meeting of the Powerline Bushfire Safety Committee (**PBSC**) on 5 December 2016, Powercor’s approach to SWER protection was discussed and minuted as set out below:

‘Powercor presented their program to achieve the regulatory requirement with over 1000 ACRs to be installed by 2020, which is before the date specified in the amended regulations. Powercor propose to achieve this large program using an innovative solution.’²⁰

It is now understood that the “innovative solution” referred to is a smart fuse (Fusesaver) with a level of fault detection automation.

In its revised Bushfire Mitigation Plan of 29 March 2017, Powercor amended its plan with respect to the protection of its SWER network. The amended plan states:

‘Powercor will install SWER ACRs as per the program summarised in section 6.6. The program will achieve completion of all SWER ACRs within the 2016 – 2020 regulatory period. The program allows for 100 units in 2016 including project planning and initiation activities and higher volumes in the following 4 years to complete the entire program of 1,062 SWER ACRs.

Given the high volumes involved, Powercor will use alternate approved products dependent on supplier availability and contractual arrangements over the duration of the program. Subject to Powercor technical approval processes, this may include but not be limited to the Schneider W27, the Siemens Fusesaver O-CO and/or the Noja OSM models.

Where Fusesaver is used on SWER lines, in place of an existing ACR or fuse protection, the Fusesaver will be installed on its own without a collocated partnering fuse, and the existing ACR or fuse at that site will be removed.’²¹

Subject to ESV approval of these devices, the use of Fusesavers may constitute an acceptable approach by Powercor in meeting its regulatory obligations. The Victorian Government simply notes that the:

- high volume demand that gave rise to the consideration of an alternative to ACRs was not an issue at the time of Powercor submitting its proposal for the 2016-20 pricing period; and
- Powercor’s unit cost for a Fusesaver²² is \$11,660, a unit cost saving of \$38,640 (77%) against the cost of an ACR.

The use of this established alternative technology provides Powercor with an opportunity for a significant saving against its EDPR allocation, at the expense of the Victorian consumer. This illustrates the need for alternative options to be fully scoped and evaluated prior to funds being committed.

²⁰ Minutes of Meeting No. 01/2016 of the Powerline Bushfire Safety Committee, 5 December 2016

²¹ Powercor Bushfire Mitigation Plan – Electricity Safety (Bushfire Mitigation) Regulations 2013 (revised), 29 March 2017

²² REFCL_MOD.01 - Expenditure build-up model (tranche one), Powercor, 28 March 2017

3 High voltage customers

Both businesses have asserted that the Victorian Electricity Distribution Code leaves them with no alternative other than the installation of isolation transformers at HV customers connection points. I have indicated to both businesses that this position is not justifiable, and that they should be working with their HV customers to ensure that the most appropriate solution is adopted. AusNet Services in their application to the AER acknowledge that that lower cost solutions may be possible²³. The correct position with respect to HV customers is that:

- The Essential Services Commission (ESC) has advised the businesses that it recognises their obligations to comply with the Bushfire Mitigation Regulations and that they will undertake a comprehensive review of the Code, which will include review of the nominal voltage requirements.
- The ESC has informed my Department that it is confident that compliance with the REFCL regulations and the obligations under the code can be effectively addressed under its Compliance and Enforcement Policy

The distribution businesses have not evidenced that they have engaged with the limited number of HV customers in Tranche 1 to establish what customer network hardening, if any, is required given the businesses proposed operating modes for the REFCLs. Both businesses have been aware of the need to resolve the overvoltage issue with their HV customers for many years. For example, AusNet Services are proposing to install an isolation transformer for a HV customer served from Woori Yallock, which was funded for a REFCL installation in 2012.

A more detailed scrutiny of HV customer networks should reveal:

- what are the hardening requirements (if any) applicable to each HV customer;
- whether then use of an isolating transformer is appropriate for every HV customer; and ultimately
- what is the most prudent and efficient solution to apply in relation to each individual HV customer.

The blanket proposal to install isolating transformers by each business provides little confidence that alternative options have been given any consideration whatsoever, providing less certainty that this category of cost can be considered prudent and efficient.

²³ "Conceptually, a lower cost solution may be possible if HV customers undertook works on their electrical assets to enable them to withstand higher voltage variations." P30 AusNet Services Contingent Project Application 31 March 2017



Swedish Neutral commitment to Victorian REFCL project

Niklas Winter to: Ashley.Hunt, lily.d'ambrosio,
Andreas.Winter@swedishneutral.se

03/05/2017 11:34 PM

History: This message has been forwarded.

2 attachments



Swedish Neutral Victoria REFCL Project.pdf 2017-03-28 Letter Swedish Neutral Victoria Latrobe Valley.pdf

Dear Ashley,

Swedish Neutral is very proud to be a part of the Victorian REFCL project and we understand the need for our long term commitment to this project.

Victoria is now the place in the world that has and will have the best protection for its high voltage networks.

Swedish Neutral has already been working in the Victorian market for more than 10 years and our plan is to stay for a long time and deepen our local presence.

The REFCL project offers a fantastic potential for reduction of the bushfire risk and Swedish Neutral has developed the GFN system specifically, based on the testing in Victoria, to be able to meet all requirements for this.

In addition to the reduction of the bushfire risk, which is the goal of the program, the introduction of the Ground Fault Neutralizers also has potential for substantial improvements to reliability of power supply (fewer and shorter outages).

We know that utilities from different parts of the world are watching the project in Victoria and we are firmly convinced that the GFN will be the new standard for protection for high voltage networks.

Swedish Neutral celebrates its 30th anniversary this year and up till today we have commissioned around 200 GFN systems so we understand that this conversion will take time but we are looking forward to work with this during the next thirty years, or more.

Our presence at site in Victoria will of course be very important but we understand that local presence also is very beneficial.

To achieve this local presence we are deepening our co-operation with local service company Ennesty Energy, looking into the potential of a local Swedish Neutral branch (possibly in Latrobe Valley) and transferring knowledge on how to install and operate the GFN to the utilities

We have strong, large and long time partners for the delivery of the GFN systems and we have discussed the importance of this project with them and we have their full support and enthusiasm. Our main suppliers has already shown us their commitment by forcing production to shorter delivery times than normal in order to meet deadlines despite late orders from end customer.

Please find attached a brief presentation of Swedish Neutral Victoria REFCL project as well as the initial ideas for our local establishment.

Best Regards

Niklas Winter
Executive Vice President
Swedish Neutral

7 February 2017

Our ref: C/17/1515

Mr Andrew Griffin
Manager Resilience & Compliance
AusNet Services
Level 30, 2 Southbank Boulevard
Southbank VIC 3006

By email: Andrew.griffin@ausnetservices.com.au

Dear Mr Griffin,

Re: Electricity Distribution Code Compliance and Rapid Earth Fault Current Limiters (REFCLs)

I write in relation to your request for:

1. amendment of the 'Phase to Earth' voltage variation thresholds contained in clause 4.2.2 of the *Electricity Distribution Code (EDC)* for consistency with the *Bushfire Safety (Bushfire Mitigation) Amendment Regulations 2016* (the Bushfire Mitigation Regulations); and
2. a letter of no action in relation to potential breaches of clause 4.2.2 of the EDC associated with the introduction of Rapid Earth Fault Current Limiters (REFCLs) for the period until the EDC has been amended.

1. Review of the EDC

You have requested that the Commission amend clause 4.2.2 of the EDC to ensure consistency with the Bushfire Mitigation Regulations. You are concerned that the operation of the REFCLs on the network may result in a breach of this clause.

You will understand that any amendments to the EDC must be properly considered and consulted upon in line with our *Charter of Consultation and Regulatory Practice*.

We do not intend to undertake a review of the EDC in relation to this specific issue. Rather, we anticipate undertaking a more comprehensive review of the EDC to consider a number of changes. At that time the Commission will consider whether and what, if any, changes are appropriate to be made to the 'Phase to Earth' voltage variation thresholds in clause 4.2.2 of the EDC.

The timing of this will be considered in our planning for 2017-18.

2. Letter of no action in relation to potential breaches of clause 4.2.2 EDC

In relation to the second request, we are of the view that a letter of no action is not appropriate as it may unduly fetter the Commissions' ability to consider the circumstances of breaches of clause 4.2.2 of the EDC.

It is important to note that we fully recognise the obligations on AusNet Services to comply with the Bushfire Mitigation Regulations.

Accordingly, AusNet Services should continue to report any breaches of clause 4.2.2 of the EDC. If such breach was a result of compliance with the Bushfire Mitigation Regulations and not some other matter, you should provide that information when reporting the breach. In this regard I refer you to section 3.2.1(k) of the Commission's *Energy Compliance and Enforcement Policy*.

Yours sincerely



Cara O'Shanassy
Manager, Licensing and Standards