

POWERLINE BUSHFIRE SAFETY COMMITTEE

MINUTES OF MEETING No. 01/2016

Held: Monday 5 December 2016, at 9:30am

Location: Level 5, Building 2, 4 Riverside Quay, Southbank

Attendees:	Status	
David Harris	Member	Chair
Gaye Francis	Member	Director, R2A Pty Ltd
Steve MacDonald	Member	Engineering Support Manager at Orion NZ Ltd
Tony Marxsen	Member	Director, Marxsen Consulting Pty Ltd
Claire Noone	Member	Principal, Nous Group
Gary Towns	Member	Director, Facio Pty Ltd
Ian Burgwin	Observer	General Manager Electrical Safety & Technical Regulation, ESV
Paul Fearon	Observer	Director of Energy Safety, ESV
Tom Hallam	Observer	General Manager Regulation and Network Strategy, AusNet Services
Ashley Hunt	Observer	Director, Powerline Bushfire Safety Program, DELWP
Steven Neave	Observer	General Manager Electricity Networks, CitiPower and Powercor
Robert Skene	Secretariat	Senior Technical Advisor, ESV
Roger Riley	Guest*	REFCL Program Manager, AusNet Services
Dean Ward	Guest*	Government Programs Manager, Electricity Networks, CitiPower and Powercor
Apologies		
Gail Moody	Member	Deputy Secretary, Corporate Governance and Infrastructure, Department of Justice & Regulation

* Topic specific attendance only

Agenda item Discussed:

Item	Matter	
1	Introduction	Paul Fearon
2	Attendee introductions	all attendees
3	Meeting Rules	David Harris
4	Alignment of diaries	all attendees
5	Legislation	Ashley Hunt
6	REFCL Research	Tony Marxsen
7	DB progress to-date	Steve Neave/ Tom Hallam
8	Discussion	all attendees

Note: Attachment A provides a glossary of acronyms/abbreviations used within these minutes.

1. Introduction

Paul Fearon welcomed members and observers to this the first meeting of the Powerline Bushfire Safety Committee (PBSC), noting the Committee members' diverse expertise and extensive experience.

A brief description of the journey in the implementation of the Victorian Bushfire Royal Commission (VBRC) recommendations regarding electricity networks was provided, including the establishment of the Powerline Bushfire Safety Taskforce (PBST) which provided the government with recommendations on the implementation of VBRC recommendation 27.

Some of these PBST recommendations accepted by government are some of the most challenging that the industry, government and the regulator have had to deal with. The recommendations have meant government intervening to an extent not previously seen, but consistent with ensuring that a more stringent risk appetite is applied in the areas of highest bushfire consequence.

In their Statement of Reasons the government recognised and documented some of these challenges contained in the Electricity Safety (Bushfire Mitigation) Amendment Regulations, and the potential value of the establishment of a statutory committee to provide advice.

Paul emphasised the importance of the Committee's role in providing advice regarding the implementation new regulatory requirements which in some cases require the adoption of newly developed technology, and thanked members for their participation.

Paul recognised the presence of David Harris as the Chair and Robert Skene as providing the secretariat for the Committee and handed over the meeting to the Chair.

David emphasised that the role of this Committee was an advisory by nature and that advice provided by the Committee need to be supported by concise technical logic, of sufficient detail to allow third parties to understand the basis of the Committees decision making processes and recommendation.

David set the tone of this meeting recognising that this being the first meeting and as such will be largely one of information sharing, with subsequent meetings being potentially more challenging.

2. Attendee introductions

Each member and observer introduced themselves giving a brief overview of their expertise and experience. Where applicable their involvement in electricity distribution networks, governance and bushfire mitigation was also provided.

3. Meeting rules

The Chair outlined a number of principles for the efficient, respectful and professional conduct of the Committee's meetings. These included:

- the need for members to recognise that each Committee member brings a wealth of expertise in different fields, and that each member respect the collective expertise in the committee's deliberations;
- that the conduct of meetings will be relatively informal and observers will be invited to contribute to discussions, while naturally only actual Committee members will resolve any decisions , recommendations or advice;

- that the attendance of industry observers needs to be at a senior accountable level and recognise that those persons may need for specific agenda items technical advisers to also attend;
- that the fundamental purpose of the Committee is to provide expert advice to the Director of Energy Safety (DoES), and that the Chair would seek the Committees support that any advice is supported by concise technical logic. Where there are multiple views within the Committee those differing views would also be recognised and included in any recommendation. The level of detail should be sufficient to allow third parties, such as any subsequent Inquiry or Commission concerning bushfires to understand the basis of the Committees decision making processes and recommendations;
- that any views that are expressed may call for a supporting written advice to be provided from a proponent/member (especially within the minutes) so that the advice provided to the DoES is comprehensive, precise and able to be readily considered by the DoES;
- similarly resolving a draft of the minutes may include asking member(s) to provide specific technical content;
- that we agree upon and finalise the text minutes out of session in the month or so after a meeting while formally confirming the minutes at the next meeting;
- that for reasons of efficiency of process and completeness of record keeping all PBSC communications be channeled through the Secretariat (Robert Skene);
- an endeavour to include on the PBSC website any reference papers, either directly or by web link, that are referred to in PBSC so that members have simple access to them;
- an intent that for future quarterly meetings each of the two distributors be allotted not less than forty minutes for their reports, normally to be at the early part of the Agenda. It would be helpful if their presentations are provided to Committee members prior to meetings.

4. Alignment of Diaries

The following schedule for meetings for the 2017 year was agreed by the members:

- March 14, 2017
- June 13, 2017
- September 12, 2017
- December 12, 2017

Meetings to be scheduled to start at 10:00am and finish at 1:00pm, preceded by a meet and greet at 9:30am.

5. Legislation

Ashley Hunt provided an overview of the purpose, background and rationale for the making of the Electricity Safety (Bushfire Mitigation) Amendment Regulations.

The presentation included an overview of the;

- content of the regulations and specifically in regard to the requirement to;
 - both limit the amount of earth fault current during a fault and the time in which this is to be achieved;
 - replacing powerlines in the highest bushfire consequence areas at the end of their life or where major refurbishment is undertaken;
 - install automatic circuit reclosers (ACRs) on all single wire earth return powerlines (SWER);
 - include certain information in electricity businesses bushfire mitigation plans;

- Statement of Reasons for the Electricity Safety (Bushfire Mitigation) Amendment Regulations, including the recognition that the DoES may establish a committee to provide advice on variations and exemptions to the regulations.
- proposed revision to the f-factor which places a value on each electricity distribution network generated fire, including the introduction of consideration of both the time and location of the fire in calculating its value. The proposed revision also provides for a decrement over time for each electricity distribution businesses number of fires benchmark.

Action: Copy of the presentation to be distributed with the minutes and made available on the ESV PBSCs web page.

6. Rapid Earth Fault Current Limiter (REFCL) research

Tony Marxsen provided a brief update of the Victorian Government managed research and testing undertaken since 2010 in regard to fire starts from electricity distribution 22kV powerlines, from;

- the arc testing and the effect of varying the reclose times as part of and subsequent to the PBST deliberations,
- through to the behavior of powerlines when they fall to the ground,
- to testing at the United Energy Frankston zone substation using the standard Swedish Neutral manufactured Ground Fault Neutraliser (GFN) REFCL,
- to vegetation testing at United Energy's Springvale zone substation, and then
- the last testing at AusNet Services Kilmore zone substation using a soft fault confirmation enhanced Swedish Neutral manufactured GFN REFCL, where the current specification for REFCL performance was drafted.

The presentation included a number of videos taken during the testing.

Tony also spoke to the assumptions contained in the research and the challenges in achieving the unique regulatory requirements in large rural electricity distribution networks.

Action: Copy of the presentation is expected to be available in January 2017 and will be forwarded to members (size limitations permitting) and made available on the ESV PBSCs web page.

7. Electricity Distribution Business - progress to-date

7.1. Powercor

Steve Neave provided an update on their progress on implementing the requirements contained in the Electricity Safety (Bushfire Mitigation) Amendment Regulations, with the theme of "getting on with it".

Much of the presentation was focused on the work associated with introduction of REFCLs.

- REFCLs

The presentation included reference to the excellent collaboration and cooperation not only with AusNet Services, but within VESI, ESV as well as NZ electricity boards. Current and future examples were cited in the presentation.

The following was included in the summary presented:

- The project commenced in Q2 2015 with Swedish Neutral manufactured GFN REFCLs installed in two trial sites; Gisborne zone substation (one GFN) and Woodend zone substation (2 GFNs). Two GFNs have had to be installed at Woodend zone substation to achieve the legislated performance requirement.
 - Significant technical challenges have included the requirement to create a finely balanced the network and dealing with software and component failures.
 - The REFCLs at both the Gisborne and the Woodend zone substations are not currently in operation.
 - Capital expenditure was higher than budgeted.
 - Future installation program described as aggressive was included in the presentation showing the planned dates for all of the zone substations identified in the regulations as required to meet the legislated performance requirement, is to be achieved through three similarly sized tranches.
 - The early reliability concerns were being realized with actual experience when the REFCLs are operating in the Total Fire Ban mode (albeit at only 50% of the required sensitivity to achieve the required performance).
 - Program risks were identified and articulated associated with there currently being only a single available supplier, Swedish Neutral, of a REFCL.
 - Lessons learnt from NZ electricity businesses experiences, where one third of the installed REFCLs were out of service at the time of a VESI visit undertaken in April 2016.
 - The effect of the potential deleterious effect associated with the over voltage associated with the operation of the REFCL on some industrial customers who receive their electricity supply directly from the electricity businesses HV network. The presentation included;
 - Customer owned installations and assets
 - Limited understanding of their network
 - Who reviews any impact on their network?
 - Who funds any required upgrade?
 - A hold point to REFCL operation
 - Recommend Government initiate a separate program
 - Enable 3rd party assessment.
 - The conflict with the maximum allowable voltage limits specified in the current Electrical Distribution Code approved by the Essential Services Commission (ESC) and the voltages which result from the operation of a REFCL was included in the presentation.
- Powerline replacement

The presentation included reference to;

- The development and trialing of a LoSAG covered conductor for SWER and non-backbone single and polyphase powerlines.
- The adoption of a hybrid underground design which utilises the existing high cost above ground assets so as to minimise costs.

- Significant volumes of powerlines have been replaced to date under the government powerline replacement fund with 200km of underground cable installed, retiring 150km of overhead conductor (>\$45m).

- SWER ACRs

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.

Action: Copy of the presentation to be distributed with the minutes and made available on the ESV PBSCs web page.

7.2. AusNet

Tom Hallam provided an update on their progress on implementing the requirements contained in the Electricity Safety (Bushfire Mitigation) Amendment Regulations. The presentation was briefer than that for Powercor as time available before the end of the meeting was limited. Tom indicated his view that the technical and delivery challenges of the AusNet REFCL program were similar to that expressed by Powercor in their presentation.

Much of AusNet Services presentation was focused on the work associated with introduction of REFCLs.

- REFCLs

The following was included in the presentation presented:

- AusNet's initial installation is a single Swedish Neutral manufactured GFN REFCL at Woori Yallock in the Yarra Ranges. The target was to have an enhanced level of fault protection available for the high risk days in the 2016/17 summer period.
- As with Powercor there have been significant technical challenges to create the required largely balanced network for the REFCL to function as required, and dealing with software and component failures.
- The REFCL at the Woori Yallock zone substations is not currently in operation.
- A chart was included showing the relative energy released in earth faults with the different earthing technologies, ranging from the present current based system through to a REFCL system operating at the regulatory performance level.
- Detailed slides were provided listing the identified implementation risks, with the top three items listed being;
 - Sole Supplier of a suitable REFCL product
 - Inconsistencies between the Electricity Distribution Code and RECF operation, and
 - potential adverse impacts on high voltage customer installations resulting from REFCL operation.

Time limited the discussion on these matters, with AusNet stating that they had similar views to those expressed earlier by Powercor.

- Future installation program was included showing the planned dates for all of the zone substations identified in the regulations. The program is planned in three tranches, with the much of the delivery in being in the first tranches.
- A proposed delivery schedule for the Barnawartha and Rubicon zone substations was included and identified the greatest risks to achieving the schedule as the outcome of the HV customer issue and the physical engineering solution being finalised for all components prior to Christmas 2016.

- Powerline replacement

The presentation on the Electric Line Construction Areas identified that:

- AusNet had approximately 1,600km of high voltage bare wire constructed powerlines in the designated areas.
- There were no current customer or network augmentation projects in the designated areas.
- Approximately 50km of powerlines had been replaced to date through the government powerline replacement fund.
- Other conductor replacement proposals had been rejected by the AER in the EDPR 2016-20 final decision and required a separate application through the contingent project framework, which requires a detailed costed scoping and design study to be included in the submission.
- Current design solutions included; hybrid underground (which utilises the existing current high cost above ground assets so as to minimise costs), HV Aerial Bundled Cable (ABC), and spacer cable. AusNet are considering the use of the LoSAG covered conductor and are awaiting the completion of Powercor's trials.

- SWER ACRs

AusNet confirmed that it had completed its deployment program in 2015, having installing more than 500 remotely controlled SWER ACRs.

AusNet's presentation also included advice that;

- on days of Total Fire Ban and Code Red Days that they group control more than 1000 devices on polyphase and SWER networks, and
- they have and control more than 165 devices in the highest fire consequence areas based upon the Phoenix Rapid Fire AN140 consequence modeling.

Action: Copy of the presentation to be distributed with the minutes and made available on the ESV PBSCs web page.

8. Discussion

Discussion was limited in this inaugural meeting of the committee.

There was nevertheless a brief discussion during the meeting regarding the need for the extensive replacement of surge diverters being conducted, as the initial operating mode was for a limited compensation period. This matter was not concluded during the meeting.

There were no matters referred to the committee seeking a variation of the requirements in the regulations.

9. Next meeting – 10.00 am March 14, 2017

Meeting closed at 12:40pm.

List of Attachments

- A. Glossary of acronyms/abbreviations
- B. DELWP presentation on bushfire amendment legislation and the F-Factor
- C. Powercor presentation progress to date
- D. AusNet presentation on progress to date
- E. Marxsen presentation on REFCL research