

# REFCL Program

Status at 1 May 2022

## Overview

This document provides a snapshot of the Rapid Earth Fault Current Limiter (REFCL) program status at 1 May 2022. This document provides a summary of the program delivery and exemptions and time extensions granted to date.

## Program Delivery

### Jemena

REFCL Location	Code	Tranche	Target	Available for Service	At Required Capacity
Coolaroo	COO	3	1	No	No
Kalkallo <sup>1</sup>	KLO	3	3	No	No
<b>Total Program (1 May 2023)</b>			<b>4</b>	<b>0</b>	<b>0</b>

#### Notes:

1. Kalkallo substation is owned by AusNet Services but supplies three feeders owned by Jemena that must have the required capacity.

### United Energy

REFCL Location	Code	Tranche	Target	Available for Service	At Required Capacity
Dromana	DMA	N/A	N/A	Yes	N/A
Frankston South	FSH	N/A	N/A	Yes	N/A
Mornington	MTN	N/A	N/A	Yes	N/A

#### Notes:

1. United Energy does not have a legislative obligation to install REFCLs anywhere on its network, but has voluntarily installed REFCLs at three substations. Since these sites are not prescribed in legislation they are not expected to achieve the same performance as mandated sites.

**AusNet Services**

REFCL Location	Code	Tranche	Target	Available for Service	At Required Capacity
Barnawartha	BWA	1	3	Yes	Yes
Kilmore South	KMS	1	3	Yes	Yes
Kinglake	KLK	1	4	Yes	Yes
Myrtleford	MYT	1	3	Yes	Yes
Rubicon	RUBA	1	4	Yes	Yes
Seymour	SMR	1	5	Yes	Yes
Wangaratta	WN	1	5	Yes	Yes
Woori Yallock	WYK	1	5	Yes	Yes
<b>Tranche 1 (1 May 2019)</b>			<b>32</b>	<b>32</b>	<b>32</b>
Bairnsdale	BDL	2	4	Yes	Yes
Belgrave <sup>1</sup>	BGE	2	3	Yes	No
Eltham <sup>1</sup>	ELM	2	2	No	No
Lilydale <sup>1</sup>	LDL	2	3	Yes	Yes
Mansfield	MSD	2	2	Yes	Yes
Moe	MOE	2	3	Yes	Yes
Ringwood North	RWN	2	2	Yes	Yes
Wodonga Terminal Station <sup>1</sup>	WOTS	2	3	No	No
Wonthaggi	WGI	2	1	Yes	Yes
<b>Tranche 2 (1 Nov 2022)<sup>1</sup></b>			<b>23</b>	<b>18</b>	<b>15</b>
Benalla	BN	3	2	No	No
Ferntree Gully	FGY	3	2	No	No
Kalkallo	KLO	3	3	No	No
Lang Lang	LLG	3	1	No	No
Sale	SLE	3	1	No	No
<b>Tranche 3 (1 May 2023)</b>			<b>9</b>	<b>0</b>	<b>0</b>
<b>Total Program</b>			<b>64</b>	<b>50</b>	<b>47</b>

**Notes:**

1. ESV granted a time extension for tranche 2 in regard to the four sites noted that were impacted by unforeseen technical issues and third party delays beyond AusNet Services' control.

**Powercor**

REFCL Location	Code	Tranche	Target	Available for Service	At Required Capacity
Camperdown	CDN	1	4	Yes	Yes
Castlemaine	CMN	1	4	Yes	Yes
Eaglehawk	EHK	1	5	Yes	Yes
Gisborne	GSB	1	3	Yes	Yes
Maryborough	MRO	1	5	Yes	Yes
Winchelsea	WIN	1	5	Yes	Yes
Woodend	WND	1	4	Yes	Yes
<b>Tranche 1 (1 May 2019)</b>			<b>30</b>	<b>30</b>	<b>30</b>
Ararat	ART	2	1	Yes	Yes
Ballarat North	BAN	2	4	Yes	Yes
Ballarat South	BAS	2	5	Yes	Yes
Bendigo	BGO	2	1	Yes	Yes
Bendigo TS	BETS	2	5	Yes	Yes
Charlton	CTN	2	2	Yes	Yes
Colac	CLC	2	5	Yes	Yes
Koroit	KRT	2	2	Yes	Yes
<b>Tranche 2 (1 May 2021)</b>			<b>25</b>	<b>25</b>	<b>25</b>
Corio <sup>1</sup>	CRO	3	N/A	No	No
Geelong <sup>1</sup>	GL	3	N/A	No	No
Gheringhap <sup>1</sup>	GHP	3	5	No	No
Hamilton	HTN	3	2	No	No
Terang	TRG	3	2	Yes	Yes
Merbein	MBN	3	1	Yes	Yes
Stawell	STL	3	1	Yes	Yes
Torquay <sup>2</sup>	TQY	3	N/A	No	No
Waurm Ponds <sup>2</sup>	WPD	3	4	No	No
<b>Tranche 3 (1 May 2023)</b>			<b>15</b>	<b>4</b>	<b>4</b>
<b>Total Program</b>			<b>70</b>	<b>59</b>	<b>59</b>

**Notes:**

2. ESV granted an exemption on 5 June 2020 to remove Powercor's obligation to REFCL-protect Corio and Geelong on the condition that it construct a new REFCL-protected substation at Gheringhap that will supply/protect the powerlines with risk formerly supplied from Corio and Geelong.
3. Due to growth of the Waurm Ponds network Powercor plans to split the network and supply part from a new REFCL-protected substation in Torquay. An exemption is not expected to be necessary.

## Exemptions and Time Extensions

Date Granted	Company	Details	Risk Assessment
7/11/2018	AusNet Services & Powercor	ESV granted eight exemptions to AusNet Services and 15 exemptions to Powercor related to the isolation of incompatible high voltage customer installations from REFCL protection. This was required because a small section of powerline between the isolating transformer and the customer's point of supply would not be REFCL-protected.	The exemption related to very short sections of underground lines. ESV determined the associated risk to be close to zero.
12/07/2019	AusNet Services	ESV granted a time extension up to 1 November 2019 to allow AusNet Services to resolve unique technical challenges at Woori Yallock and Kinglake. Following further investigation AusNet Services submitted a detailed plan to achieve compliance on 26/07/2019 that showed additional time would be required to implement the necessary network changes.	Over this period Kinglake and Woori Yallock REFCLs were available for service on high risk days, so the risk was appropriately managed. However this temporary relief ultimately allowed AusNet Services to achieve full compliance at these sites and achieve the full bushfire mitigation benefit for the local communities.
21/11/2019	AusNet Services	ESV extended the previous time extension for the delivery of Kinglake and Woori Yallock to 29 April 2021 and 1 November 2020 respectively. AusNet Services has complied with the time extension and compliance has been achieved at Woori Yallock and Kinglake.	
5/06/2020	Powercor	ESV granted an exemption for the powerlines supplied from Corio and Geelong zone substation that are located within the city of Geelong from being REFCL protected. The remaining powerlines with bushfire ignition risk will be supplied from a new REFCL-protected zone substation at Gheringhap by 1 May 2023. Any new powerlines supplied from Corio or Geelong and in a hazardous bushfire risk area must be covered or underground.	The exempt powerlines are located in an urban area within the city of Geelong and thus do not pose a bushfire ignition risk. The remaining powerlines with risk will be REFCL protected as intended by the legislation. ESV found that this exemption delivered an equivalent safety outcome to strict compliance.
12/10/2020	AusNet Services, Jemena and Powercor	ESV granted general exemptions from the requirement to REFCL-protect underground cable. As the proportion of underground cable increases on a network it becomes challenging to achieve the 'required capacity' performance standard associated with REFCL technology. Since REFCL protection is unlikely to provide any bushfire mitigation benefit for underground cable the most cost effective solution in many cases is to isolate these network sections.	This blanket exemption delivers significant savings to Victorian electricity customers without affecting bushfire safety.

<p><b>2/12/2020</b></p>	<p>Jemena</p>	<p>ESV granted an exemption for the powerlines supplied from Coolaroo zone substation that are located within the city of Melbourne from being REFCL protected. The remaining powerlines with bushfire ignition risk will be REFCL-protected by 1 May 2023. Any new powerlines supplied from Coolaroo and in a hazardous bushfire risk area must be covered or underground.</p>	<p>The exempt powerlines are located in an urban area within the city of Melbourne and thus do not pose a bushfire ignition risk. The remaining powerlines with risk will be REFCL protected as intended by the legislation. ESV found that this exemption delivered an equivalent safety outcome to strict compliance.</p>
<p><b>27/04/2021</b></p>	<p>AusNet Services</p>	<p>ESV granted a time extension in relation to REFCL delivery at Belgrave, Lilydale and Eltham that supply railway sites. The railway sites will not be REFCL-compatible in accordance with the regulatory deadline and is beyond AusNet Services' control. The time extension also relates to Wodonga, where a new technical issue has been encountered that is making compliance difficult to achieve. The time extension delays delivery of these sites from 1 May 2021 to 1 November 2022 and covers one bushfire season.</p>	<p>AusNet Services has implemented several transfers to allow the vast majority of the Belgrave and Lilydale networks to be REFCL-protected in accordance with the regulatory deadline, so any change in risk is likely to be small.</p> <p>AusNet Services is exploring options to mitigate the risk at Wodonga to provide some protection before the next fire season.</p> <p>AusNet Services is exploring options to accelerate delivery of other tranche 3 sites.</p>