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| REFCL Program Status at 1 November 2023 |
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## Overview

This document provides a snapshot of the Rapid Earth Fault Current Limiter (REFCL) program delivery status at 1 November 2023.

The mandated REFCL rollout is now complete. This document provides a summary of the program delivery and exemptions and time extensions granted throughout the delivery program.

## Program Delivery

### Jemena

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **REFCL Location** | **Code** | **Tranche** | **Points** | **Available for Service** | **Accepted as Compliant** |
| Coolaroo | COO | 3 | 1 | Yes | Yes |
| Kalkallo1 | KLO | 3 | 3 | Yes | Yes |
| **Total Program (1 May 2023)** |  | | **4** | **4** | **4** |

**Notes:**

1. Kalkallo substation is owned by AusNet Services but supplies three feeders owned by Jemena that must have the required capacity or meet the requirements of an exemption.

### United Energy

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **REFCL Location** | **Code** | **Tranche** | **Points** | **Available for Service** | **Accepted as Compliant** |
| 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** | **Points** | **Available for Service** | **Accepted as Compliant** |
| Barnawartha | BWA | 1 | 3 | Yes | Yes |
| Kilmore South | KMS | 1 | 3 | Yes | Yes |
| Kinglake1 | 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 Yallock1 | WYK | 1 | 5 | Yes | Yes |
| **Tranche 1 (29 April 2021)** |  | | **32** | **32** | **32** |
| Bairnsdale | BDL | 2 | 4 | Yes | Yes |
| Belgrave2 | BGE | 2 | 3 | Yes | Yes |
| Eltham2 | ELM | 2 | 2 | Yes | Yes |
| Ferntree Gully | FGY | 2 | 2 | Yes | Yes |
| Lang Lang | LLG | 2 | 1 | Yes | Yes |
| Lilydale2 | LDL | 2 | 3 | Yes | Yes |
| Mansfield | MSD | 2 | 2 | Yes | Yes |
| Moe | MOE | 2 | 3 | Yes | Yes |
| Ringwood North | RWN | 2 | 2 | Yes | Yes |
| Wonthaggi | WGI | 2 | 1 | Yes | Yes |
| **Tranche 2 (1 Nov 2022)2** |  | | **23** | **23** | **23** |
| Benalla | BN | 3 | 2 | Yes | Yes |
| Kalkallo | KLO | 3 | 3 | Yes | Yes |
| Sale | SLE | 3 | 1 | Yes | Yes |
| Wodonga Terminal Station1 | WOTS | 3 | 3 | Yes | Yes |
| **Tranche 3 (1 Nov 2023)3** |  | | **9** | **9** | **9** |
| **Total Program** |  | | **64** | **64** | **64** |

**Notes:**

1. Energy Safe Victoria (Energy Safe) granted a time extension for tranche 1 in regard to the two sites noted that were impacted by unique technical challenges. The 1 May 2019 deadline was initially extended to 1 November 2019 and then extended again until 29 April 2021.
2. Energy Safe 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. Some sites were moved from tranche 2 to tranche 3 and vice versa to ensure REFCL’s were brought online as soon as practicable to provide bushfire risk reduction and meet compliance requirements.
3. Energy Safe granted a time extension for tranche 3 in regard to one site impacted by technical issues and third party delays beyond AusNet Services’ control.

### Powercor

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **REFCL Location** | **Code** | **Tranche** | **Points** | **Available for Service** | **Accepted as Compliant** |
| 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 |
| **Tranche 1 (1 May 2019)** |  | | **30** | **30** | **30** |
| 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 |
| **Tranche 2 (1 May 2021)** |  | | **25** | **25** | **25** |
| Corio1 | CRO | 3 | N/A | N/A | N/A |
| Geelong1 | GL | 3 | N/A | N/A | N/A |
| Gheringhap1 | GHP | 3 | 5 | Yes | Yes |
| Hamilton | HTN | 3 | 2 | Yes | Yes |
| Terang | TRG | 3 | 2 | Yes | Yes |
| Merbein | MBN | 3 | 1 | Yes | Yes |
| Stawell | STL | 3 | 1 | Yes | Yes |
| Torquay2 | TQY | 3 | N/A | Yes | Yes |
| Waurn Ponds2 | WPD | 3 | 4 | Yes | Yes |
| **Tranche 3 (1 May 2023)** |  | | **15** | **15** | **15** |
| **Total Program** |  | | **70** | **70** | **70** |

**Notes:**

1. Energy Safe 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.
2. Due to growth of the Waurn Ponds network, Powercor has split the network and supplies part of the former Waurn Ponds network from a new REFCL-protected substation in Torquay. An exemption is not necessary.

## Exemptions and Time Extensions

|  |  |  |  |
| --- | --- | --- | --- |
| Date Granted | Company | Details | Risk Assessment |
| 7/11/2018 | AusNet Services & Powercor | Energy Safe 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. Energy Safe determined the associated risk to be close to zero. |
| 12/07/2019 | AusNet Services | Energy Safe 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 | Energy Safe 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 | Energy Safe 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. Energy Safe found that this exemption delivered an equivalent safety outcome to strict compliance. |
| 12/10/2020 | AusNet Services, Jemena and Powercor | Energy Safe 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. |
| 2/12/2020 | Jemena | Energy Safe 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. | 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. Energy Safe found that this exemption delivered an equivalent safety outcome to strict compliance. |
| 27/04/2021 | AusNet Services | Energy Safe 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. | AusNet Services adjusted its delivery program to move some sites from tranche 2 to tranche 3 and vice versa to ensure REFCLs were brought online as soon as practicable to provide bushfire risk reduction and to meet compliance requirements. |
| 21/10/2022 | AusNet Services | Energy Safe granted an exemption for powerlines originating from Kalkallo zone substation. AusNet Services proposed an alternative arrangement using remote located REFCL's to provide REFCL protection to Kalkallo powerlines. The non-REFCL protected powerlines located between the Kalkallo substation and the remote REFCL's were replaced with covered conductor which provides a greater bushfire risk reduction compared to REFCL protection. | This exemption delivers savings to Victorian electricity customers and provides for a greater reduction in bushfire risk associated with Kalkallo powerlines. |
| 27/04/2023 | Jemena | Energy Safe granted a revised exemption for powerlines originating from Coolaroo zone substation that are located within low bushfire risk areas from being REFCL protected. The remaining powerlines with bushfire ignition risk will be REFCL-protected. Any new powerlines supplied from Coolaroo and in a hazardous bushfire risk area must be covered, placed underground or be REFCL-protected. | The exempt powerlines are located in an urban area and thus do not pose a bushfire ignition risk. The remaining powerlines with ignition risk will be REFCL protected as intended by the legislation. Energy Safe found that this exemption delivered an equivalent safety outcome compared to strict compliance. |
| 27/04/2023 | AusNet Services | Energy Safe granted an exemption to the requirement to REFCL protect a section of powerline originating from the Wodonga Terminal Station due to technical challenges associated with induced current from nearby transmission lines. | By electrically isolating the exempt powerline section from the rest of the Wodonga Terminal Stations supply network, the non-exempt and highest bushfire risk parts of the network were able to be REFCL-protected and receive the maximum bushfire risk reduction benefits provided by REFCL. |
| 28/04/2023 | AusNet Services | Energy Safe granted a time extension to AusNet until 1 November 2023 to achieve REFCL compliance at Benalla. It was determined during the Benalla REFCL testing that one of the feeders at Benalla, the longest on the AusNet network, was causing REFCL performance issues. This will be resolved by the installation on an additional remote- REFCL part way along the feeder. | Granting the time extension will allow AusNet time to install, commission and test the additional REFCL before the 2023/24 bushfire season. This will enable the wider Benalla community to benefit from the maximum bushfire risk reduction benefits attributable to REFCL before Summer. |
| 28/04/2023 | AusNet Services | Energy Safe granted AusNet an exemption to being REFCL compliant at Benalla until 1 November 2023 to align with the time extension. | Granting the time extension will allow AusNet time to install, commission and test the additional REFCL before the 2023/24 bushfire season. This will enable the wider Benalla community to benefit from the maximum bushfire risk reduction benefits attributable to REFCL before Summer. |