Powercor
AUSTRALIA

REPEX RIN RESPONSE

PAL RIN 12 – PUBLIC

2026–31 REGULATORY PROPOSAL

Table of contents

1. Overview

This document provides responses to the 2021–2026 regulatory information notices (RIN), section 4.4.7 – replacement capex modelling. Specifically, we must provide a description of the asset category, including:

(a) the assets included and any boundary issues (i.e. with other asset categories);

(b) an explanation of how these matters have been accounted for in determining quantities in the age profile;

(c) an explanation of the main drivers for replacement (e.g. condition); and

(d) an explanation of whether the replacement unit cost provides for a complete replacement of the asset, or some other activity, including an extension of the asset's life (e.g. pole staking) and whether the costs of this extension or other activity are capitalised or not.

As such, this document provides content in relation to section 4.4.7 for the following asset groups:

- poles
- pole top structure
- overhead conductors
- underground cables
- service lines
- transformers
- switchgear
- public lighting (this asset group is excluded from the AER's replacement expenditure modelling)
- SCADA, network control and protection (this asset group is excluded from the AER's replacement expenditure modelling).

We also report 'other' as an asset group in the annual Category Analysis (CA) RINs and Workbook 1. However, the miscellaneous, unspecified and heterogeneous nature of the asset categories and types within this group does not allow this expenditure group to be modelled using the AER's replacement expenditure model. As such the description of asset group is excluded from this document.

2. Replacement capex modelling

2.1 Poles

2.1.1 Asset scope and boundary issues

The asset scope consists of all poles and towers we own and operate as follows:

- wood poles (including staked poles)
- concrete poles
- steel poles
- fibre reinforced concrete poles
- steel towers.

Attached assets such as stays, pole top structures, staking systems and pole top plant (e.g. transformers) are often replaced as part of pole replacement.

2.1.2 Age profile determination

The following assumptions were applied to determine the pole age profiles:

- Only our poles were included in the recorded quantities.
- Out of service poles were excluded from the reported quantities.
- A number of poles had an unknown or incorrect installation date. The detailed method for distributing these assets across the known population is contained within the Basis of Preparation document Table 5.2 Age Profile submitted with the annual Category Analysis RIN.[1]

Public lighting poles are excluded from this asset group and covered within the public lighting asset group.

2.1.3 Main drivers of replacement

The drivers of replacement are asset failures, including those due to external factors (such as third-party damage) and the asset condition based on cyclic inspection regime, which will identify any observable visual defects and measure the condition of the pole, where possible.

Any pole that does not meet the serviceability requirements will require intervention, which entails either replacement or staking for wood poles.

It is noted that staking of wood poles is a refurbishment (or an asset life extension) activity and not an asset replacement activity.

2.1.4 Unit cost scope

The cost in this asset group includes the materials, labour, plant and equipment, mobilisation and travel, and the project or program overheads. The cost represents the procurement, inventory, logistic, excavation, removal of old assets, hardware, installation, reinstatement and outage management.

The staking of wood pole includes the reinforcing stakes or nails or supports along. Replacement poles include the pole installation with associated cross arms, fittings and insulators. The project or

[1] PAL RIN 08: Powercor, *Basis of preparation*, 2025.

program direct overheads have been proportionally allocated, where applicable, between this asset group, overhead conductor and pole top structure asset groups.

The proposed replacement expenditure and quantities in Workbook 1, table 2.2.1 for pole staking allows for extension of existing pole's life. The proposed replacement expenditure and quantities in Workbook 1, table 2.2.1 for the remainder of asset categories in this asset group allows for complete replacement of asset. In both instances, this cost is capitalised.

It is noted that projects and programs of work are usually delivered to resolve an issue or constraint and includes multiple asset categories that has been demarcated and described separately by the AER for its review and modelling purpose.

2.2 Pole top structures

2.2.1 Asset scope and boundary issues

The asset scope consists of pole top structures we own and operate as follows:

- cross-arms—timber/steel
- insulators
- all fittings and fasteners associated with cross-arms and insulators.

The following assets are often replaced as part of a cross-arm replacement:

- high voltage (**HV**) fuses including:
  - powder filled fuses
  - boric acid fuses
  - expulsion drop out (**EDO**) fuses
  - fault tamer fuses
- surge arresters
- low voltage services.

2.2.2 Age profile determination

The following assumptions were applied to determine cross-arms age profiles based on our SAP equipment records:

- Only our cross-arms were included in the recorded quantities
- Out of service cross-arms were excluded from the reported quantities.

This information is not reported in historical category analysis RINs.

2.2.3 Main drivers of replacement

The drivers of replacement are asset failures, including those due to external factors (such as third-party damage) and defects identified by the cyclic inspection regime.

It also includes a bushfire risk mitigation program that targets HV wood cross-arms in hazardous bushfire risk areas.

2.2.4 Unit cost scope

The cost in this asset group includes the materials, labour, plant and equipment, mobilisation and travel, and the project or program overheads. The cost represents the procurement, inventory, logistic, removal of old assets, hardware, installation, reinstatement and outage management. It includes cross-arms, fittings and insulators.

The project or program direct overheads have been proportionally allocated, where applicable, between this asset group, overhead conductor and pole asset groups. The proposed replacement expenditure and quantities in Workbook 1, table 2.2.1 allows for complete replacement of asset within the described boundary. These costs are capitalised.

It is noted that projects and programs of work are usually delivered to resolve an issue or constraint and includes multiple asset categories that has been demarcated and described separately by the AER for its review and modelling purpose.

2.3 Overhead conductors

2.3.1 Asset scope and boundary issues

The asset scope consists of all bare conductor types, HV aerial bundled cable (**ABC**), low voltage (**LV**) ABC, covered conductors and associated connectors, joiners, armour rods, vibration dampers, and ties at all voltages we own and operate as follows:

- all aluminium conductor (**AAC**)
- cadmium copper conductor (**CdCu**)
- copper conductor (**Cu**)
- aluminium conductor—zinc-coated (galvanized), steel reinforced (**ACSR/GZ**)
- aluminium conductor—aluminium coated (aluminised) steel reinforced (**ACSR/AZ**)
- steel conductor/galvanised (**SC/GZ**)
- steel conductor/ aluminium clad (**SC/AC**)
- HV ABC
- covered conductor (**CC**)
- LV ABC.

The following attached assets could be replaced as part of a conductor replacement:

- poles
- pole top structures
- **HV** fuses including:
  - powder filled fuses
  - boric acid fuses
  - **EDO** fuses
  - fault tamer fuses
- surge arresters

- low voltage services.

2.3.2 Age profile determination

The following assumptions were applied to determine the overhead conductor age profiles:

- Out of service overhead conductor were excluded from the reported quantities.
- Overhead conductor lengths reported are those recorded as computed length in the geographic information system (**GIS**).
- The age profile of overhead conductors contains a number of records where the installation date of the asset is unknown or incorrect. The Basis of Preparation document Table 5.2 age profile submitted with the annual Category Analysis RIN includes the methodology of distributing these across the known age profile.[2]

2.3.3 Main drivers of replacement

Asset defects captured through inspection and asset failures including those due to external factors (such as third-party damage), are the main drivers of replacement for this asset class. In addition, we have a conductor clearance compliance program, two risk-based replacement programs and a bushfire mitigation program.

While our overhead lines were compliant with the electrical clearance standard at the time of construction, some sites become non-compliant with the clearances required in AS 7000:2016 over time due to environmental factors. We are continuing a targeted conductor compliance program to address only the high-risk non-compliant sites.

The two risk-based replacement programs for 66kV radial lines and deteriorated polyphase HV conductors address the increasing risk of conductor failure causing supply interruptions to customers.

The bushfire mitigation program addresses the bushfire start risk due to the failure of bare 22kV conductors that are not protected by rapid earth fault current limiters (REFCLs). The program will minimise bushfire risk by replacing high risk bare 22kV conductors with covered conductors.

2.3.4 Unit cost scope

The cost in this asset group includes the materials, labour, plant and equipment, mobilisation and travel, and the project or program overheads. The cost represents the procurement, inventory, logistic, excavation, removal of old assets, hardware, installation, reinstatement and outage management.

It excludes cross-arms, fittings and insulators as they are accounted for in the pole top structure asset group. The project or program overheads have been proportionally allocated, where applicable, between this asset group, poles and pole top structure asset groups.

The proposed replacement expenditure and quantities in Workbook 1, table 2.2.1 allows for complete replacement of asset within the described boundary. These costs are capitalised.

It is noted that projects and programs of work are usually delivered to resolve an issue or constraint and includes multiple asset categories that has been demarcated and described separately by the AER for its review and modelling purpose.

---

[2] PAL RIN 08: Powercor, *Basis of preparation*, 2025.

2.4 Underground cables

2.4.1 Asset scope and boundary issues

Includes all cable types that we own and operate, as well as terminations, cabus cable termination boxes, cable heads and XLPE joints.

2.4.2 Age profile determination

The following assumptions were applied to determine the underground cable age profiles:

- Out of service underground cables were excluded from the reported quantities.
- The computed underground cable length for three phase cable runs that utilise three separate single core cables has been divided by three, to enable consistent cable length reporting regardless of actual cable configuration installed.
- Where an underground cable voltage was unknown, quantity of underground cable was apportioned across the other underground cable voltages, in direct proportion with the known sub-category quantities.
- Where an underground LV cable type was unknown, the quantity of underground cable was apportioned across the other underground LV cable types in direct proportion with the known sub-category quantities.

2.4.3 Main drivers of replacement

The main drivers of replacement are asset defects captured through inspection and asset failures including those due to external factors (such as third-party damage). In addition, we are continuing a risk-based replacement program.

We are continuing a small, targeted replacement program for high voltage underground cables. This program targets the replacement of deteriorated HV underground cables that will benefit the most from cable replacement (i.e. have the highest risk reduction).

2.4.4 Unit cost scope

The cost in this asset group includes the materials, labour, plant and equipment, mobilisation and travel, and the project or program overheads. The cost represents the procurement, inventory, logistic, trenching, excavation, removal of old assets, cable, joints, conduit, communication, monitoring system, installation or cable laying or pulling, new joining pits, terminations on switchgear and outage management.

The project or program overheads have been proportionally allocated, where applicable, between this asset group, switchgear and/or transformers asset groups.

The proposed replacement expenditure and quantities in Workbook 1, table 2.2.1 allows for complete replacement of asset within the described boundary. These costs are capitalised.

It is noted that projects and programs of work are usually delivered to resolve an issue or constraint and includes multiple asset categories that has been demarcated and described separately by the AER for its review and modelling purpose.

2.5 Service lines

2.5.1 Asset scope and boundary issues

Includes underground services and all overhead service types and associated connectors, attachment fittings, service protection devices (incorporating fuses), junction boxes and connection devices we own and operate.

2.5.2 Age profile determination

The following assumptions were applied to determine the service line age profiles:

- Only in-service lines were in included in reported quantities.
- LV underground service conductor age profile has been adjusted to report the number of services installed instead of the total length of services installed.
- LV overhead service conductor age profile has been adjusted to report the number of services installed instead of the total length of services installed.

2.5.3 Main drivers of replacement

The drivers of replacement are asset failures, including those due to external factors (such as third-party damage) and defects identified by the cyclic inspection regime.

2.5.4 Unit cost scope

The cost in this asset group includes the materials, labour, plant and equipment, mobilisation and travel, and the project or program overheads. The cost represents the procurement, inventory, logistic, removal of old assets, hardware, installation and connection.

It excludes customer switchboard and metering, and also network utility cross arms, fittings and insulators as they are accounted for in the pole top structure asset group. The project or program overheads have been proportionally allocated, where applicable, between this asset group, poles and pole top structure asset groups.

The proposed replacement expenditure and quantities in Workbook 1, table 2.2.1 allows for complete replacement of asset within the described boundary. These costs are capitalised.

It is noted that projects and programs of work are usually delivered to resolve an issue or constraint and includes multiple asset categories that has been demarcated and described separately by the AER for its review and modelling purpose.

2.6 Transformers

2.6.1 Asset scope and boundary issues

Includes pole top transformers, ground mounted transformers (indoor/outdoor), kiosks, zone substation (**ZSS**) power transformers and regulators we own and operate.

Boundary issues for pole top and ground mounted transformers (indoor/outdoor) constitute:

- surge arrester replacement
- potentially include pole replacement
- LV/HV cable terminations replacement
- potentially include protection, control and communications
- LV/HV connections replacement.

Boundary issues for ZSS power transformers constitute:

- LV/HV Connections replacement
- surge arrester replacement
- cable termination replacement
- may include protection replacement.

2.6.2 Age profile determination

The following assumptions were applied to determine the transformer age profiles:

- Only in service (in-commission) transformers were included in reported quantities.
- Only our transformers were included in reported quantities.
- Where transformer voltages, capacities or phase types were unknown, the quantity of transformers was apportioned proportionately across the known sub-categories. The resulting numbers were then rounded to provide whole numbers.
- The age profile of transformers contains a number of records where the installation date of the asset is unknown or incorrect. Please refer to the Basis of Preparation document table 5.2 age profile, submitted with the annual Category Analysis RIN.[3]

2.6.3 Main drivers of replacement

For distribution transformer, the drivers of replacement are asset failures, including those due to external factors, oil leak defects identified by the cyclic inspection regime and a risk-based environmental compliance program. Our risk-based program is a prudent approach to complying with the change in our environmental obligations under the Environmental Protection Act 2017 by prioritising replacements of pole transformers with oil leaks based on risks.

ZSS transformers are replaced based on risks and the condition of the asset. We assess the risk of a transformer failure on the entire zone substation. Assessing risks at zone substation level provides greater consideration on the unique characteristics of a given zone substation, including available redundancy and load transfer capability. We will replace the transformer if the risk reduction outweighs the replacement cost.

2.6.4 Unit cost scope

The cost in this asset category includes the materials, labour, plant and equipment, mobilisation and travel, and the project or program overheads. The cost represents the procurement, inventory, logistic, factory acceptance testing (**FAT**) (if applicable or larger zone substation transformers), all associated zone substation hardware (oil, fan, tap-changer, surge arrestor or bushings), all associated distribution substation hardware (HV/LV switch/fuse, termination, and concrete plinth), removal of old assets, connection, and commissioning.

The project or program overheads have been proportionally allocated, where applicable, between this asset group and other asset groups that typically are delivered together.

The proposed replacement expenditure and quantities in Workbook 1, table 2.2.1 allows for complete replacement of asset within the described boundary. These costs are capitalised.

---

[3] PAL RIN 08: Powercor, *Basis of preparation*, 2025.

It is noted that projects and programs of work are usually delivered to resolve an issue or constraint and includes multiple asset categories that has been demarcated and described separately by the AER for its review and modelling purpose.

2.7 Switchgear

2.7.1 Asset scope and boundary issues

Includes ZSS switchboards, all circuit breakers (**CB**) (LV-66KV), all air break switches (**ABS**) and gas switch types, all isolators (LV-66KV), fuse and surge diverters, ring main unit (**RMU**) and all automatic circuit reclosers (**ACR**) types.

Boundary issues for ZSS switchboard and all CBs constitutes:

- could include protection, control and communication component
- LV/HV cable terminations
- LV/HV connections.

Boundary issues for RMUs constitutes:

- cable replacement
- could include protection, control and communication component.

Boundary issues for all ACRs and pole mounted switches constitutes:

- could include pole replacements
- communication and control unit replacements.

2.7.2 Age profile determination

As per the Basis of Preparation document table 5.2 age profile, submitted with the annual Category Analysis RIN.[4]

2.7.3 Main drivers of replacement

For distribution switchgear, the drivers of replacement are asset failures, including those due to external factors, defects identified by the cyclic inspection regime and targeted risk-based replacement of inoperable switches. We are continuing targeted replacement programs for both our RMU and HV ABS that are unable to be operated by field crew whilst energised due to safety concerns.

ZSS circuit breakers are replaced based on risks and the condition of the asset. We assess the risk of a circuit breaker failure on the entire zone substation. Assessing risks at zone substation level provides greater consideration on the unique characteristics of a given zone substation, including station black.

We have 22 rural 66/22kV zone substations that are at risk of station black if a fault or plant failure occurs at the zone substation depending on the zone substation configuration due to a legacy issue from when the substations were first constructed. As a result, these substations have a higher consequence in the event of an asset failure.

Some of this risk can be mitigated by replacing the existing outdoor 22kV circuit breakers with a new indoor 22kV switchboard that has bus sectionalisation and transformer circuit breakers.[5] As the

---

[4] PAL RIN 08: Powercor, *Basis of preparation*, 2025.

[5] Adding new outdoor circuit breakers to provide sectionalisation is technically not feasible due to insufficient space in the existing switchyard to accommodate these additional circuit breakers.

switchboard will be housed in a new building, there is an opportunity to simultaneously replace the existing relays and control building, given the age and condition of the relays and building at the zone substation.

In response, we are proposing rural zone substation rebuilds which entail 22kV switchgear, relay and building replacements based on cost benefit analysis of risks and costs, where the risk reduction outweighs the replacement cost.

2.7.4 Unit cost scope

The cost in this asset category includes the materials, labour, plant and equipment, mobilisation and travel, and the project or program overheads. The cost represents the procurement, inventory, logistics, hardware, removal of old assets, connection, and commissioning. It also represents any zone substation civil cost such as structure or foundation. It excludes zone substation civil costs such as gantry structures and electrical costs such as corresponding busbar and secondary system. At distribution level, it excludes cross arms, poles, UGOH and fencing.

The project or program overheads have been proportionally allocated, where applicable, between this asset group and other asset groups that typically are delivered together.

The proposed replacement expenditure and quantities in Workbook 1, table 2.2.1 allows for complete replacement of asset within the described boundary. These costs are capitalised.

It is noted that projects and programs of work are usually delivered to resolve an issue or constraint and includes multiple asset categories that has been demarcated and described separately by the AER for its review and modelling purpose.

2.8 Public lighting

2.8.1 Asset scope and boundary issues

This asset group includes lanterns owned and operated by us as well as public lighting poles that have the sole purpose of supporting one or more public lighting lanterns.

2.8.2 Age profile determination

The following assumptions were applied to determine the public lighting age profiles:

- Only in-service and billable assets were included in reported quantities.
- Cost share status was used to separate between major roads and minor roads.
- Where 'year lantern changed' = 1960, 1970 & 2001 and 'year lantern manufactured' varied, 'year lantern manufactured' was used in preference to 'year lantern changed'.
- Where 'cost share status' = 'full cost (VicRoads)' or 'other', these were added to Cost Shared (4/10)(6/10) (Major Road).
- The allocation of public lighting poles between major and minor roads is based on the proportion of lights installed in each road classification.

2.8.3 Main drivers of replacement

Fixed periodic frequency, irrespective of age or condition assessment as it is more economical to do so and/or asset failure for luminaires and lamps.

Asset condition based on inspection regime and/or asset failure for brackets and poles.

2.8.4 Unit cost scope

The cost in this asset group includes the materials, labour, plant & equipment, mobilisation & travel, and the project or program overheads. The cost represents the procurement, inventory, logistics, hardware, removal of old assets, and installation. It includes luminaires, lamps, brackets and poles.

The project or program overheads have been proportionally allocated, where applicable, between the respective asset categories in this asset group that typically are delivered together. Cost share status was used to separate between major roads and minor roads assets.

The proposed replacement expenditure and quantities in Workbook 1, table 2.2.1 allows for complete replacement of asset within the described boundary. These costs are capitalised.

2.9 SCADA, network control and protection systems

2.9.1 Asset scope and boundary issues

This asset group covers protection relays, network communications assets, including RTUs, supervisory cable, and distribution communications assets.

2.9.2 Age profile determination

The following assumptions were applied to determine the age profile of protection/SCADA:

- Only in-service assets were included in reported quantities
- Data is sourced from the Relay Setting Information System (**RESIS**). SAP project data is used to qualify RESIS data.

2.9.3 Main drivers of replacement

A CBRM methodology is used to drive planned replacement expenditure requirements. This considers technology obsolescence, asset age, and asset reliability, and consequence of failure.

2.9.4 Unit cost scope

The cost in this asset group includes the materials, labour, plant and equipment, mobilisation and travel, and the project or program overheads. The cost represents the procurement, inventory, logistics, hardware, and termination, removal of old assets, connection, and commissioning. It excludes any zone substation civil cost such as demountable building, switch-room building, switchyard trenching, and any primary electrical assets.

The project or program overheads have been proportionally allocated, where applicable, between this asset group and other asset groups that typically are delivered together.

The proposed replacement expenditure and quantities in Workbook 1, table 2.2.1 allows for complete replacement of asset within the described boundary. These costs are capitalised.

It is noted that projects and programs of work are usually delivered to resolve an issue or constraint and includes multiple asset categories that has been demarcated and described separately by the AER for its review and modelling purpose.

Powercor
AUSTRALIA

For further information visit:

Powercor.com.au

CitiPower and Powercor Australia

CitiPower and Powercor Australia

CitiPower and Powercor Australia