ASSET CLASS OVERVIEW

DISTRIBUTION TRANSFORMERS

UE BUS 4.06 – PUBLIC
2026–31 REGULATORY PROPOSAL

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1. Overview

Our distribution transformer replacement program is critical to our ability to maintain network reliability, minimise safety risk as far as practicable and reduce the risk of harm to the environment.

In the current regulatory period, high priority defects have been slightly increasing, driven by increases in pole mounted transformer defects.

Our fault-based and defect replacement forecasts have been based on historical five-year replacement trends of distribution transformer types.

A summary of our distribution transformer replacement forecast is set out in table 1.

TABLE 1 DISTRIBUTION TRANSFORMER: EXPENDITURE ($M, 2026)

EXPENDITURE	FY27	FY28	FY29	FY30	FY31	TOTAL
Defective pole transformer replacement	2.9	2.9	3.0	3.1	3.1	15.1
Defective kiosk transformer replacement	3.2	3.3	3.5	3.6	3.8	17.3
Defective ground transformer replacement	1.7	1.7	1.7	1.7	1.7	8.5
TOTAL	**7.8**	**8.0**	**8.2**	**8.4**	**8.6**	**40.8**

2. Background

As electricity is delivered from generators to customers, it undergoes several voltage transformations. Transformers perform these voltage transformations, with distribution transformers performing the final transformation step between the high voltage (HV) network and customers.

This section provides an overview of our distribution transformer asset class, including a high-level summary of our compliance obligations, asset population and age profile.

2.1 Our compliance obligations

We operate under a combination of national and state legislation which establish our obligations and the regulatory framework under which we operate.

The National Electricity Rules sets out reliability and safety obligations and the Electricity Distribution Code of Practice include performance requirements. We must also manage our network assets in accordance with the Electricity Safety Act 1998, the Electricity Safety (Management) Regulations 2019, the Electricity Safety (Bushfire Mitigation) Regulations 2023 and the Victorian Environment Protection Act 2017.

These obligations can be summarised as follows:

- Electricity Safety Act 1998 – requires us to minimise safety risk 'as far as practicable' including bushfire danger
- Electricity Distribution Code of Practice – requires us to manage our assets in accordance with principles of good asset management and to minimise the risks associated with the failure or reduced performance of assets
- National Electricity Rules – requires us to forecast expenditure to maintain the quality, reliability and security of supply of our networks and maintain the safety of the distribution system
- Victorian Environment Protection Act (2017) – requires us to reduce the risk of harm from our activities to human health and the environment and from pollution or waste.

In short, we must maintain reliability, minimise safety risk 'as far as practicable' including bushfire danger arising from our network, and reduce the risk of harm to the environment.

2.2 Asset population

As shown in table 2, our distribution transformer population comprises both pole-mounted and non-pole mounted transformers. The majority of our distribution transformers are pole mounted transformers

TABLE 2 DISTRIBUTION TRANSFORMER: POPULATION BY TYPE

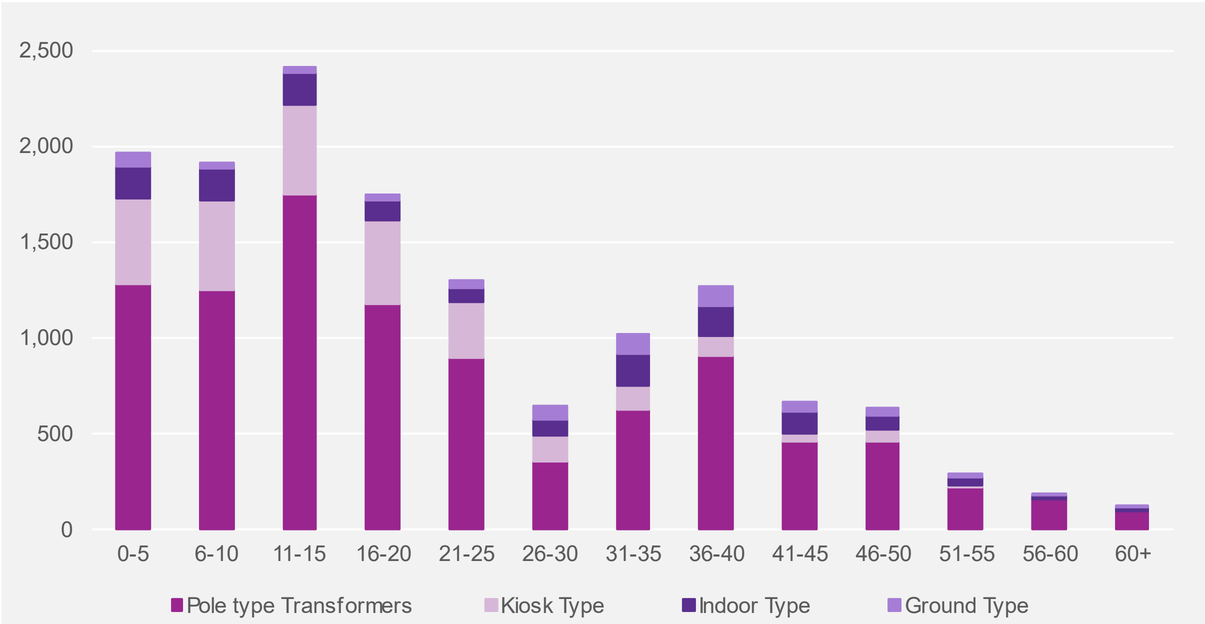
DISTRIBUTION TRANSFORMER TYPE	VOLUME
Pole-mounted	9,581
Kiosk	2,613
Ground	605
Indoor	1,371
Total	**14,170**

2.3 Asset age profile

The expected service life for our distribution transformers is typically around 50 years. This service life is the expected period of time after which the asset is unlikely to be fit for purpose, typically determined by safety, technology and/or obsolescence.

The age profile of our population is shown in figure 1.

FIGURE 1 DISTRIBUTION TRANSFORMER: AGE PROFILE



3. Identified need

The performance of our distribution transformer asset class may lead to a loss of supply for customers, pose safety risks to our personnel and the public, potential fire starts and potentially pollute the environment if there is an oil leak.

The identified need, therefore, is to manage our distribution transformer assets to maintain reliability and minimise safety and environmental risks as far as practicable, consistent with our regulatory and legislative obligations.

This section outlines the historical performance of our distribution transformers, which has informed how we assess (and respond, as required to) this identified need.

3.1 Historic asset performance

The historical performance and underlying asset management approach for our distribution transformers differs for pole and non-pole mounted assets. Accordingly, we discuss these separately below.

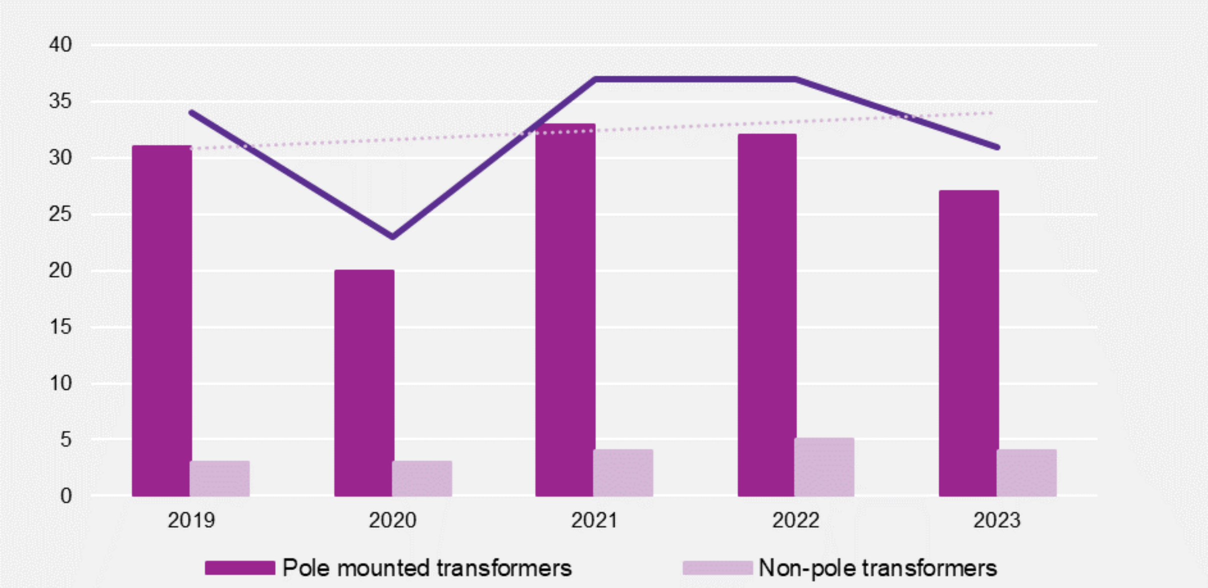
However, for both types of transformers, in assessing the need to intervene we monitor several performance indicators, including asset failures, high priority defects, and asset condition. These indicators inform our underlying asset management response—for example:

- increasing unassisted asset failures indicates a likely need to act immediately and review asset management practices (noting that robust inspection practices and governance over the application of these methods may drive low failure rates, but if the underlying condition of the relevant asset population is poor and/or deteriorating, high and/or increasing intervention volumes may still be prudent and efficient)
- increasing high-priority defects or deteriorating condition (relative to asset management thresholds) indicates a likely need to act soon to increase interventions over time, and/or undertake risk-based assessments.

3.1.1 Historical asset failures

Figure 2 shows our distribution transformer failures which has been largely consistent, with a slight increasing trend.

FIGURE 2 DISTRIBUTION TRANSFORMER: FAILURES

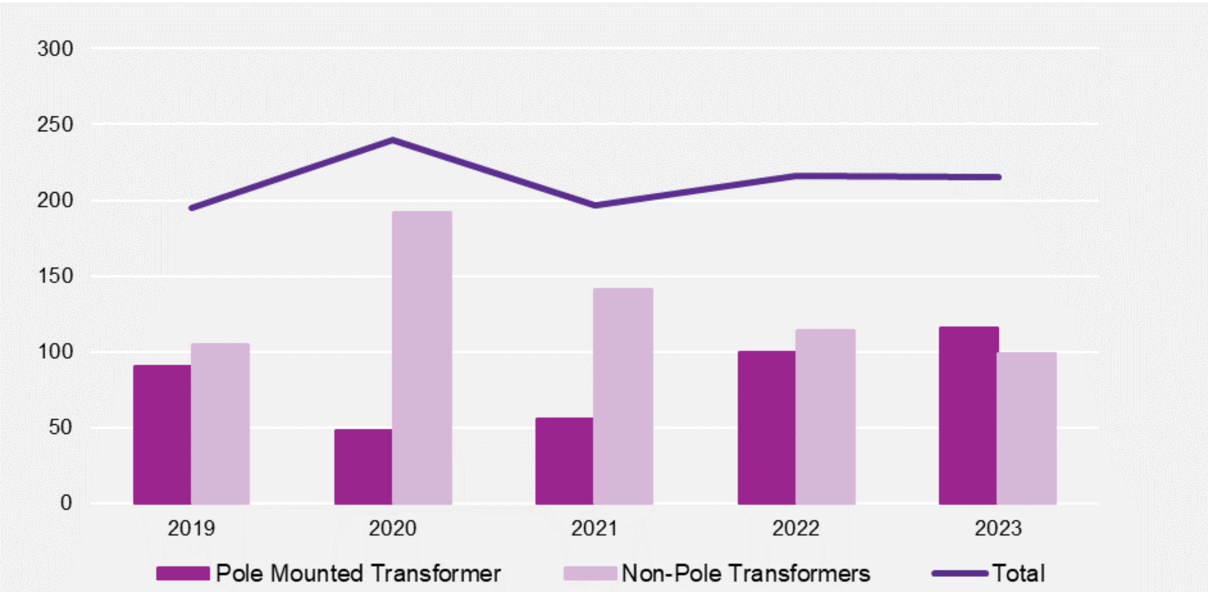


3.1.2 Historical asset defects

Consistent with our regulatory obligations, we inspect our pole transformers every three years and five years for pole transformers located in HBRA and low bushfire risk area (LBRA) respectively. We inspect non-pole transformers every six months. These cyclic inspections provide snapshots in time of the asset condition and identify any defects.

As shown in figure 3, our distribution transformer high priority defects have been slightly increasing from 2019 to 2023, driven by increases in pole mounted transformer defects. This indicates the condition of our pole mounted transformers is deteriorating.

FIGURE 3 DISTRIBUTION TRANSFORMER: HIGH PRIORITY DEFECTS



3.2 Demand growth

The electrification of everything from homes to transport, along with ongoing population growth, will require our energy system to evolve. By 2031, for example, we are forecasting a 25 per cent increase in annual consumption and five per cent growth in peak demand.

Growth in demand increases the energy that would not be supplied to customers if our distribution switchgear failed.

We forecast demand at an asset level. Our risk modelling uses these asset level demand forecasts to accurately evaluate the energy at risk of not being supplied to customers downstream of specific assets.

4. Forecast interventions

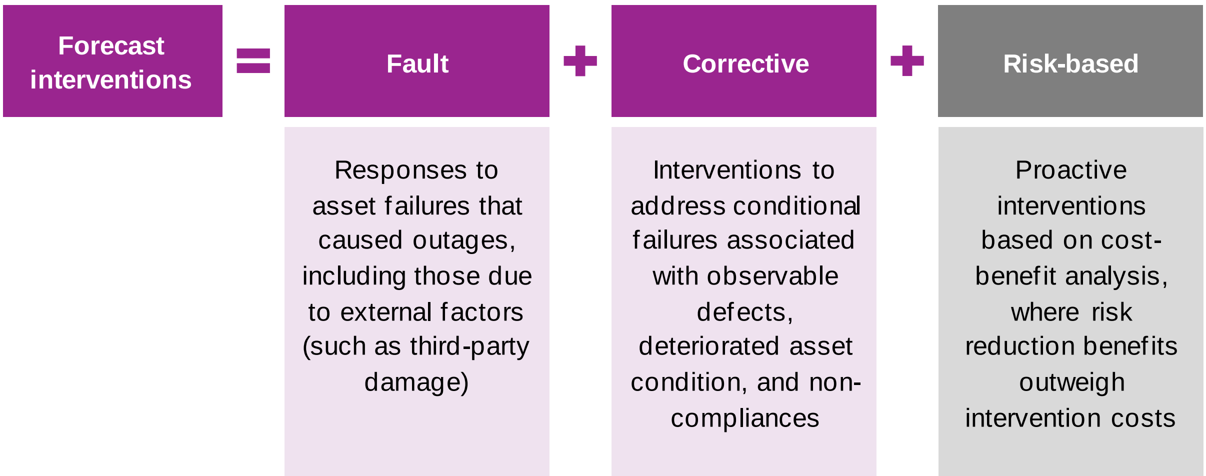
Our current asset management approach for distribution transformers includes cyclic inspections and interventions, where required, to meet service levels consistent with our compliance obligations and stakeholder expectations.

Typically, replacement of distribution transformers is the only credible response to major defects and failures, as there is no viable repair option and additional inspection and maintenance will not address the underlying asset condition. For example:

- for pole-mounted transformers, these cannot be repaired in-situ and removal and repair in the workshop would be more costly than replacement
- for non pole-mounted transformers, repairs can address minor defects (such as minor oil leaks) by tightening seals or applying patching compounds, however, major defects and failures (such as major oil leaks) will require replacement.

The derivation of our forecast interventions for the 2026–31 regulatory period, for our high-volume assets such as distribution transformers, are based on three broad categories—faults and corrective. We are not proposing any risk-based programs. This approach is summarised in figure 4.

FIGURE 4 FORECAST CATEGORIES



4.1 Forecast volumes

For the 2026–31 regulatory period, a summary of our forecast intervention volumes for distribution transformers is shown in table 3.

TABLE 3 DISTRIBUTION TRANSFORMER: VOLUMES

VOLUMES	FY27	FY28	FY29	FY30	FY31	TOTAL
Defective pole transformer replacement	164	169	175	180	185	873
Defective kiosk transformer replacement	35	37	39	40	42	193
Defective ground transformer replacement	20	20	20	20	20	100
Total	**220**	**226**	**233**	**240**	**247**	**1,166**

Note: Volumes associated with faults are consolidated into the defective categories above

4.1.1 Fault and corrective forecasts

Our fault and correct replacements are forecast together, as that is how we capture them in our system. Our fault-based and defect replacement forecasts have been based on historical five-year replacement trends of distribution transformer types. More specifically:

- pole mounted transformers less than 200kVA and kiosk transformers have been based on a linear trend of historical five-year replacement volumes; and
- pole mounted transformers greater than 200kVA and ground and indoor transformers have been based on historical five-year average replacement volumes.

4.1.2 Top-down portfolio review

At a high-level, our annual forecast replacement rate equates to around 1.4 per cent of our population, which means our distribution transformers on average would need to last 69 years before we replace them. This supports a view that our proposed interventions are likely least-regrets.

4.2 Expenditure forecast

To develop expenditure forecasts for our distribution transformers, we have multiplied the forecast intervention volumes by observed unit rates for different transformer types.

Table 4 summarises this expenditure forecast for the 2026–31 regulatory period.

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