AUGMENTATION

CUSTOMER-DRIVEN ELECTRIFICATION

UE RRP BUS 3.3.01 – PUBLIC
2026–31 REVISED PROPOSAL

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1. Overview

For most customers, the demand for and supply of electricity starts and ends with our low voltage (LV) network. As our energy system continues to change, particularly in Victoria, the strength of our LV network is a fundamental enabler of the energy transition.

We are already observing sharp growth in winter demand and consumption from increasing electrification, alongside increasing traditional peak demand following the most recent hotter summer period. Our customers are continuing to further electrify their homes and businesses, and a key challenge is ensuring that undervoltage impacts do not negatively impact customer experiences.

In our regulatory proposal, we outlined a program of proactive and reactive augmentation to maintain undervoltage service levels as they are today and remediate non-compliant voltage supplies to customers who complain to us due to receiving poor quality services. This is consistent with our jurisdictional obligations.

The AER did not accept our proposal, based on its view that we overstated the impacts of undervoltage (including through the number of complaints we received and the economic measure used to value undervoltage). The AER also stated that, in the absence of intervention, we will not become non-compliant until FY31. As a result, the AER provided a draft allowance that is consistent with historical expenditure.

Overall, we consider the AER's allowance to be insufficient to meet our compliance obligations or the expectations of our customers in an electrified future. The likelihood of this challenge growing at speed is almost certain, and the evidence available today shows that our LV networks are not yet set up sufficiently for systemic electrification. Addressing these issues at the point of functional non-compliance is no longer a prudent or efficient response—for example, a failure to address this proactively will result in the following:

- significant, sustained and growing customer disruption and power quality issues in high demand periods, where electricity supply is essential for critical services like heating and cooling
- an inability for customers to access value from innovative retail offers that support wholesale market benefits or align to Government mandates (such as recent announcements regarding the Solar Sharer offer)
- the stagnation of progress for a central pillar of the energy transition, being the mass uptake of electrified heating and transport
- inefficiently high costs across multiple regulatory periods.

Alternatively, investing in targeted areas to minimise and delay non-compliance will be the most economical way of ensuring investments made by our customers are unencumbered, result in positive environmental impacts and ensure continuous momentum in CER uptake.

This business case addendum sets out our response to the AER's draft decision in further detail and describes the further work undertaken since our original proposal. This is supported by our revised modelling.[1]

For example, since submitting our regulatory proposal we have sought to further understand the impact of undervoltage directly from customers who have experienced it:

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1 UE RRP MOD 3.31 – Customer-driven electrification – Dec2025 – public

- additional engagement has corroborated existing evidence that undervoltage impacts are real and tangible for our customers—tellingly, 72 per cent of customers in our survey reported undervoltage issues as equal to or more disruptive than a typical outage
- additional analysis has identified how undervoltage impacts are now limiting the value customers can derive from retail offers with 'free' electricity windows in the middle-of-the-day. At scale, this will limit wholesale market benefits and the achievement of net-zero targets
- we have incorporated updated demand forecasts into our modelling and validated these increases with our own smart meters and external data. This analysis demonstrates that electrification is increasing consumption and demand, and that history is no longer a reasonable predictor of the future.

In response to the AER's draft decision, we have also included additional options to value the benefits of remediating undervoltage constraints. Specifically, we have included alternative methodologies that use 10 per cent of the AER's value of customer reliability (VCR) to determine an economic level of proactive investment. This is consistent with the approach used by the AER to determine an alternative substitute estimate for Powercor's regional and rural program (which similarly addresses undervoltage levels).

We remain concerned that the AER's approach will underestimate the true value our customers place on remediating undervoltage. Nonetheless, we have relied on this approach in developing our preferred option—a balance of proactive investments valued using 10 per cent of the VCR, and reactive investments consistent with our compliance obligations to rectify undervoltage levels once identified by customers.

A summary of our revised expenditure proposal associated with this approach is set out in table 1.

TABLE 1 EXPENDITURE FORECAST COMPARISON ($M, 2026)

INVESTMENT NEED	REGULATORY PROPOSAL	DRAFT DECISION	REVISED PROPOSAL
Reactive upgrades	25.0	7.8	30.2
Proactive upgrades	41.6	-	56.1
Avoided augmentation from non-network solutions	-0.8	-	-0.8
TOTAL	**65.7**	**7.8**	**85.6**

2. Background

This section summarises our regulatory proposal and the AER's draft decision on customer-driven electrification.

2.1 Our regulatory proposal

In our regulatory proposal, we sought an allowance for network capacity upgrades to remediate load-driven undervoltage non-compliance across our network in the 2026–31 regulatory period. Our proposal included expenditure to reactively address voltage non-compliance experienced by customers who complain to us in line with our jurisdictional obligations. It also included proactive augmentation to limit increasing voltage non-compliance on the highly constrained sections of our LV network to limit poor customer experiences and maintain existing service levels (i.e. 97.5 per cent network-level compliance) for our customers.

Maintaining our existing 97.5 per cent service level was supported by our customers, who consistently demonstrated concern with the impacts that electrification will have on the stability and power quality of their electricity supply. Undervoltage is disruptive to our customers and may impact their ability to heat and cool their homes, cook meals, charge electric vehicles (EVs) and have general agency day-to-day with their electricity supply.

Our customers prioritised developing better infrastructure to prevent outages, while expressing clear preferences for maintaining a reliable electricity supply even during times of high demand. To our customers, reliability was perceived as a consistent and uninterrupted supply of electricity, where customers did not delineate between reliability and power quality.

Unlike other states, Victoria's high penetration of smart meters allows for granular assessment of both customer level impacts and network level compliance. Our compliance is assessed by the share of total customer connections receiving compliant voltages each week and is reported quarterly to the Essential Services Commission (ESC).[2] Augmentation was targeted by prioritising the number of customers that a project would return to compliance, to meet a targeted customer service level at minimal cost, and informed by the amount of electricity supplied to customers below 216 volts.

2.2 AER draft decision

The AER's draft decision did not accept our proposed capital expenditure and instead provided a materially lower substitute forecast in line with our historical reactive power quality expenditure. The AER cited alignment with our historical LV power quality program expenditure through the 2021–26 regulatory period as the basis for its substitute allowance.

In making its draft decision, the AER had regard to the review from its technical consultant, EMCa, which determined the proposed level of augmentation was not economic for the following reasons:

- the number of complaints published in our Regulatory Information Notice (RIN) is inconsistent with the number of complaints forecast in our model, leading us to overstate the number of complaints we expect to receive
- we have incorrectly applied the AER's VCR to value energy served to customers below 216 volts, which leads to a significant overestimation of the economic cost of undervoltage supply

[2] Our voltage compliance is assessed under the Electricity Distribution Code of Practice (EDCoP), with reporting data available on the ESCs website at this location, Voltage performance data | Essential Services Commission

- our modelling indicates that we will remain compliant with overall voltage levels until FY31 with no proactive investment and the impact of voltage decline is likely to be less than we have forecast
- we did not appropriately consider the benefits of non-network solutions in mitigating voltage decline and subsequent opportunity to defer network augmentation.

2.3 Changes since our regulatory proposal

Since the submission of our regulatory proposal in January 2025, the external environment has continued to evolve rapidly. In response to this, we have updated key inputs including our demand forecasts and the VCR.

We are also seeing sharp growth in winter consumption and evidence of increasing electrification, alongside increasing reactive remediation costs per site that are already in excess of our expectations.

These changes are discussed further below.

2.3.1 We have updated demand forecasts with more recent information

We have updated our demand forecasts to include more recent AEMO inputs and assumptions, as well as another year of network and customer smart meter demand data. We have not changed the methodology of our demand forecasts between the regulatory proposal and the revised proposal.

In particular, the 2024/25 summer was hotter than other summers we have experienced in recent history. For example, south-east Melbourne experienced double the number of days above 35 degrees compared to the previous five-year average (with this weather trend generally consistent across our entire network area).

This hotter weather had the impact of unearthing latent temperature dependant demand of customers connected to our network that we had been unable to see due to the milder prevailing weather in recent years. This led to a near record maximum demand for our network in FY25 when temperatures were around 39 degrees for less than one day and on a weekend (where demand is typically lower). Our demand forecasts for the revised proposal are therefore higher than in the regulatory proposal.

For the avoidance of doubt, our forecasts do not consider the new Victorian Government policy to mandate replacement of existing gas hot water systems with electric appliances at end-of-life in residential buildings due to the timing of its release. This policy was announced after our updated demand forecasts had been finalised but continues to support our view that the balance of evidence suggests that our demand forecasts are most likely understated.

2.3.2 We have triangulated evidence of increasing electrification

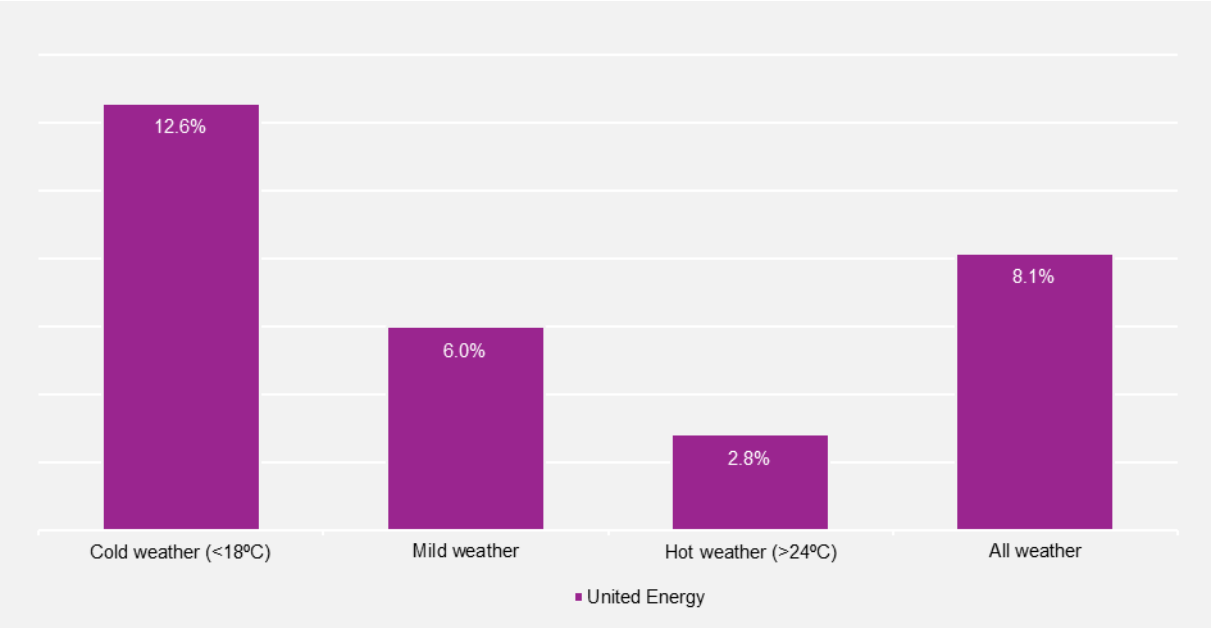
This increase in forecast demand is consistent with the trends we are seeing from both our smart meter consumption data and published electrification data from the Victorian Energy Upgrades program.

Increasing electrification is driving a network-wide increase in consumption, particularly in colder temperatures

Analysis of the consumption levels of our customers indicates that consumption during both colder and warmer temperatures has increased from 2023 to 2025. For example, figure 1 shows the change in household consumption for different temperature ranges across our network. This analysis is normalised for weather differences between these years and excludes the impacts of new connections and new solar installations.

The change in consumption is most evident in colder temperatures, reflecting the likely impacts of the electrification of gas and other heating loads.

FIGURE 1 CHANGE IN HOUSEHOLD CONSUMPTION: 2023–2025

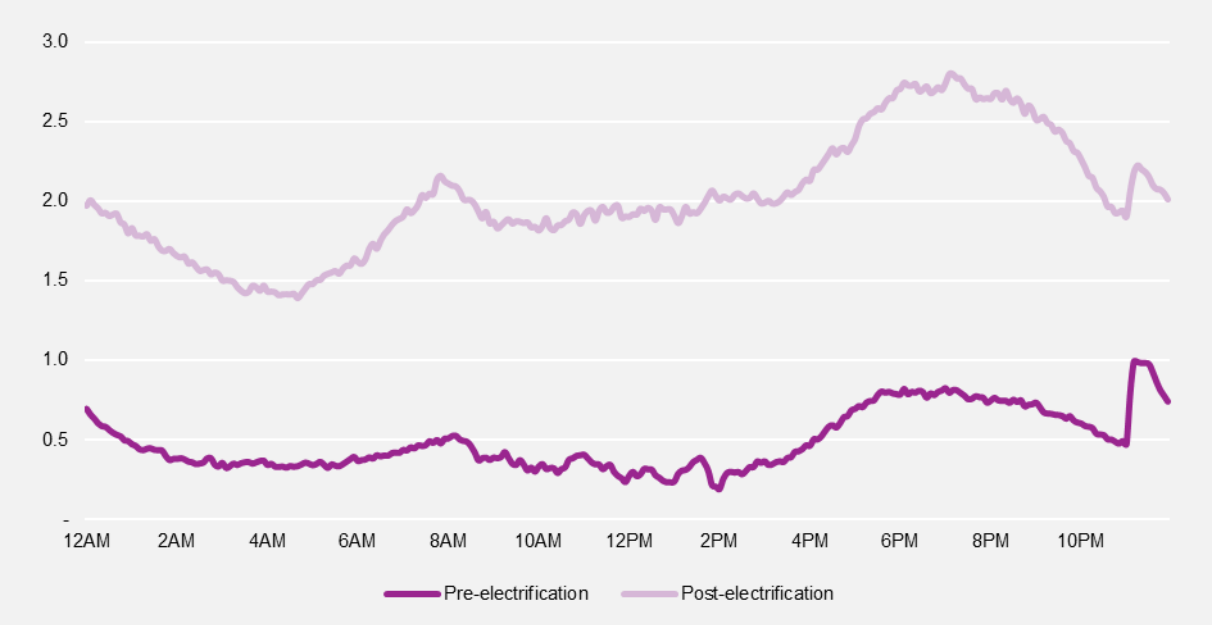


Electrification is driving significant changes to the daily and monthly load profiles of our customers

In addition to the above network-wide analysis, we have also identified the difference in the load profiles for a sample of 1,101 customers who have electrified their households, both pre and post-electrification. In addition to being the same connections, we have also confirmed that they are the same customer.

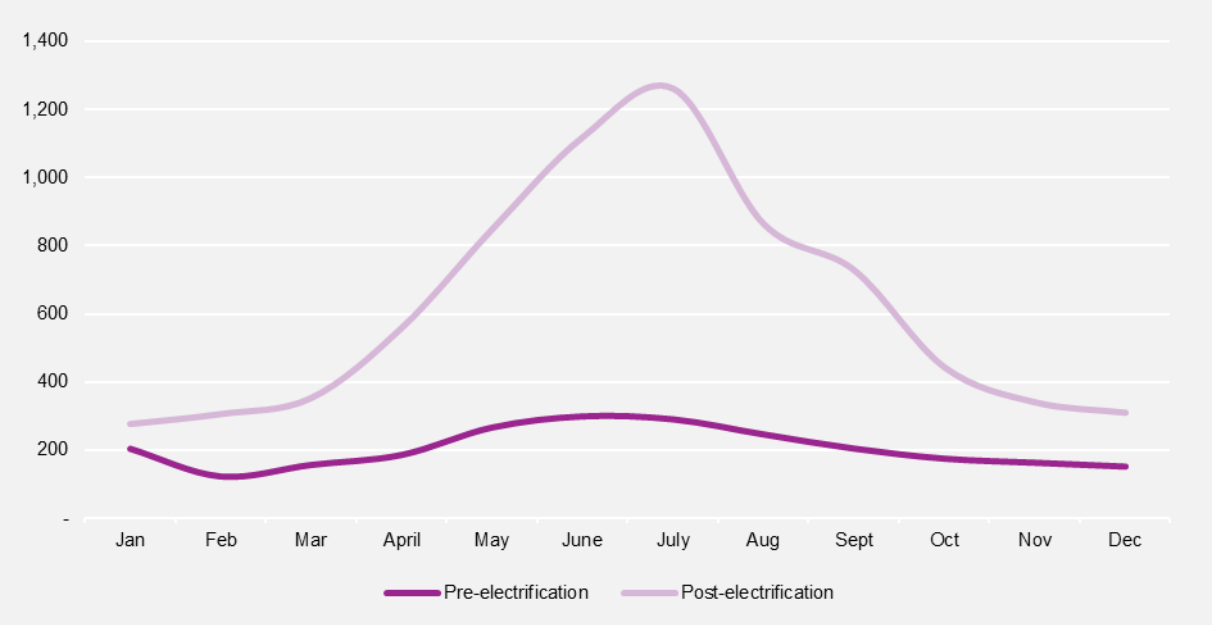
Specifically, figure 2 shows that on cold days these customers consumed more than four times as much electricity in the morning and evening windows after they had electrified. This is a staggering increase in consumption.

FIGURE 2 AVERAGE COLD DAY CUSTOMER LOAD PROFILE (KW)



Further, figure 3 below shows that their average monthly consumption has more than doubled in each month after electrification. Growth in load consumption is particularly pronounced during winter, increasing by almost 300 per cent after electrification.

FIGURE 3 AVERAGE MONTHLY NET CONSUMPTION PRE AND POST ELECTRIFICATION (KWH)



Increasing electrification is corroborated by Victorian Energy Upgrades program data

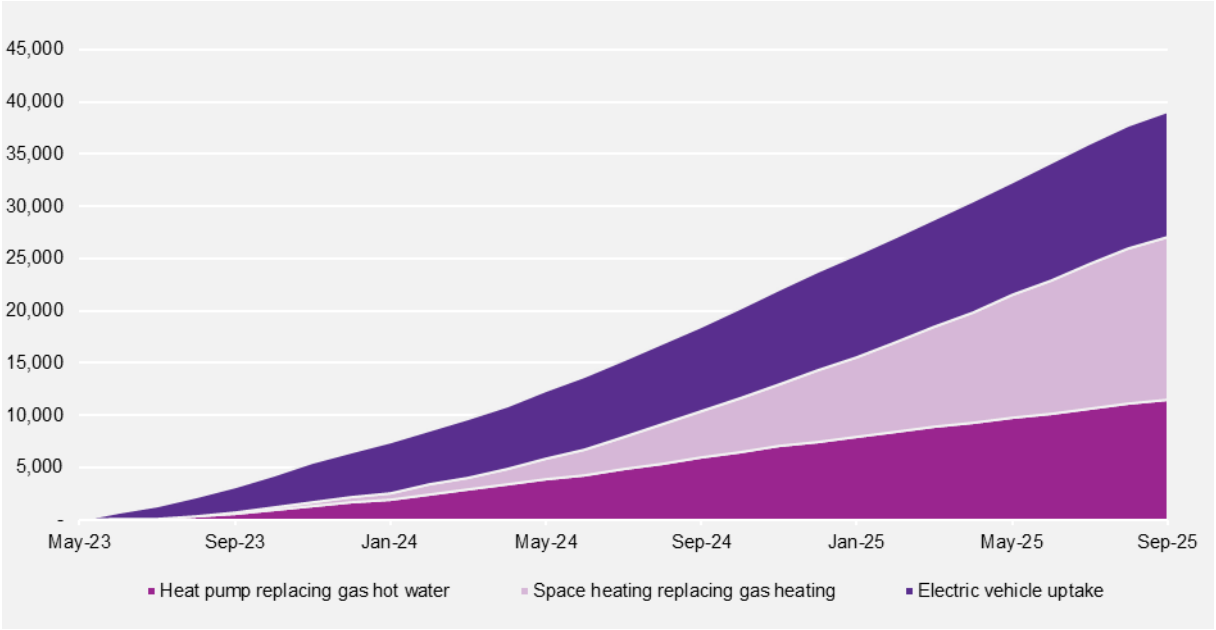
Customer uptake of electrification under the Victorian Energy Upgrades program supports the rapid growth in consumption that we are observing. The program expanded support for electrified water and space heating in May 2023, since which time our customers have replaced gas space heating with electric space heating at approximately 15,600 locations to September 2025.[3] Over the same period, our customers registered approximately 12,000 electric vehicles.[4] These customer electrification uptake numbers are shown in figure 4 below.

Additionally, the VEU program is not available for new builds, meaning that the number of customers that have actually electrified their loads is much higher.

[3] United Energy analysis of VEU program registry data, available at: VEU Registry

[4] United Energy analysis of VicRoads registration data, available at: Whole Fleet Vehicle Registration Snapshot by Postcode - Data Collection - Open Data - Transport Victoria

FIGURE 4 CUSTOMER ELECTRIFICATION UPTAKE



3. Our revised proposal

The AER's draft decision provided an allowance that is insufficient to meet our compliance obligations or the expectations of our customers in an electrified future.

As set out in section 2.3.2, we are seeing increasing evidence that our customers are electrifying and demanding more electricity. As these changes drive voltage performance lower, matching historical spend is no longer a prudent or efficient response.

We accept, however, some of the AER's concerns with our regulatory proposal, based on the information we provided. Our revised proposal, therefore, provides more evidence to inform the AER's decision making process.

In particular, we respond directly to the AER's reasons for not accepting our original proposal. This includes the following:

- the complaint numbers presented in our regulatory proposal are based on actual complaints received, which we must address under jurisdictional compliance obligations
- our proactive program is now based on an economic assessment, rather than service or compliance levels
- we accept that the VCR's intended application is not to value undervoltage, however, alternative valuations are not available and the VCR represents a reasonable proxy
- our options analysis gives consideration to the balance between reactive and proactive approaches, as well as the likely viability of non-network solutions at scale.

We are now also experiencing undervoltage in the middle of the day rather than just during peak periods, with increasing evidence of this becoming available since our regulatory proposal. We detail these impacts further in this section, demonstrating the impacts on wholesale markets and net-zero targets from undervoltage (and the subsequent benefits from strengthening our LV network).

In total, our revised proposal forecasts are similar to that included in our original proposal. This forecast, however, is now based on a methodology consistent with that used by the AER to determine a substitute estimate for Powercor's regional and rural SWER upgrades program (e.g. using a valuation of 10 per cent of the VCR). In effect, this approach represents a more explicit economic test, rather than targeting a defined service level and compliance outcome.

We discuss in detail the different options considered in developing our revised proposal in section 3.2.

3.1 Response to AER draft decision

We have considered the feedback set out in the AER's draft decision, which has been informed by EMCa's review of our proposed program. Our responses to this feedback are below.

In addition, we have updated our forecasts with more recent information, including for more recent demand forecasts and the AER's updated VCRs released in December 2024.

3.1.1 Complaint numbers presented in our regulatory proposal were based on actual complaints received, which we must address under jurisdictional compliance obligations

In its technical report, EMCa identified what it considered a misalignment between how we report voltage complaints in our RINs and the complaints forecast that supports our business case. EMCa

identified that only four complaints reported in the FY24 RIN relate to technical quality of supply, a different figure to the 146 complaints we reported receiving in FY24 in our business case.

EMCa concluded that either our RIN data is incorrect or the forecast number of 'technical quality of supply' complaints is overstated, which would lead to our complaints and expenditure forecasts also being wrong. The AER concurred with EMCa's findings, stating that they 'consider that the increase in voltage complaints is not reasonable' and that we have 'not provided sufficient justification for the gap between the RIN and the inputs to United Energy's model'.

Our RINs only report complaints escalated beyond our standard remediation process, which underrepresents actual undervoltage complaints

Under the EDCoP, we are obligated to remediate voltage non-compliance when we become aware of it. This typically occurs when a customer contacts us to report non-compliance, after which that customer is engaged in our voltage remediation process. We then investigate, design, schedule and implement a reactive resolution to their complaint.

Where a customer engaged in our voltage remediation process is not satisfied with our response, they can request their case be escalated internally or to the Energy and Water Ombudsman of Victoria (EWOV).[5] The four quality of supply complaints in the FY24 RIN are where customers have requested to have their complaint escalated internally or to EWOV and therefore underrepresents the amount of complaints we receive.

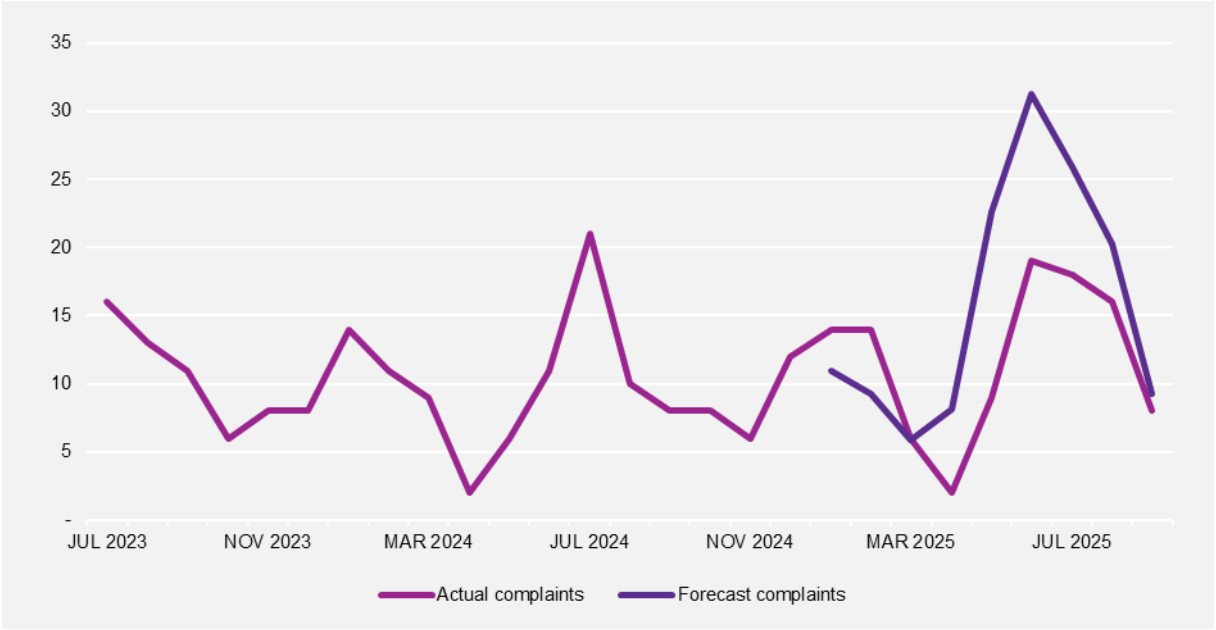
We have attached de-identified records of each customer complaint made to our business to ensure the AER has visibility of all undervoltage-driven customer complaints.[6]

Actual complaints since our regulatory proposal are reasonably consistent with our regulatory proposal forecast

In addition to the above, actual complaints are reasonably consistent with our forecasts since our regulatory proposal was developed. These forecasts are shown below in figure 5, and supports the robustness of our voltage complaint forecasts.

5 United Energy 2023-24 Annual Reporting – Basis of Preparation - ANPAL3.6BOP5, 3.6
6 UE RRP ATT 3.3.01 – Undervoltage complaints register – Dec2025 – Public

FIGURE 5 ACTUAL AND FORECAST WEEKLY COMPLAINTS



3.1.2 The risk of breaching functional compliance is material if we do not invest proactively

The AER's draft decision cites EMCa's finding that we do not breach our compliance obligations until FY31 as a basis for not accepting our proposal. The AER also concurred with EMCa's findings that the period between FY27 and F31 provides sufficient flexibility to consider alternative investments in line with existing expenditure, such as using 'AMI data to deploy a mix of focused HV, LV, proactive and reactive interventions where and when required', in addition to non-network solutions.[7]

These findings, however, do not consider the sensitivity of our forecasts and customer-level impacts, or the use of alternative options which now provide an economic justification for our proactive investment program (rather than a compliance or service level-based assessment).

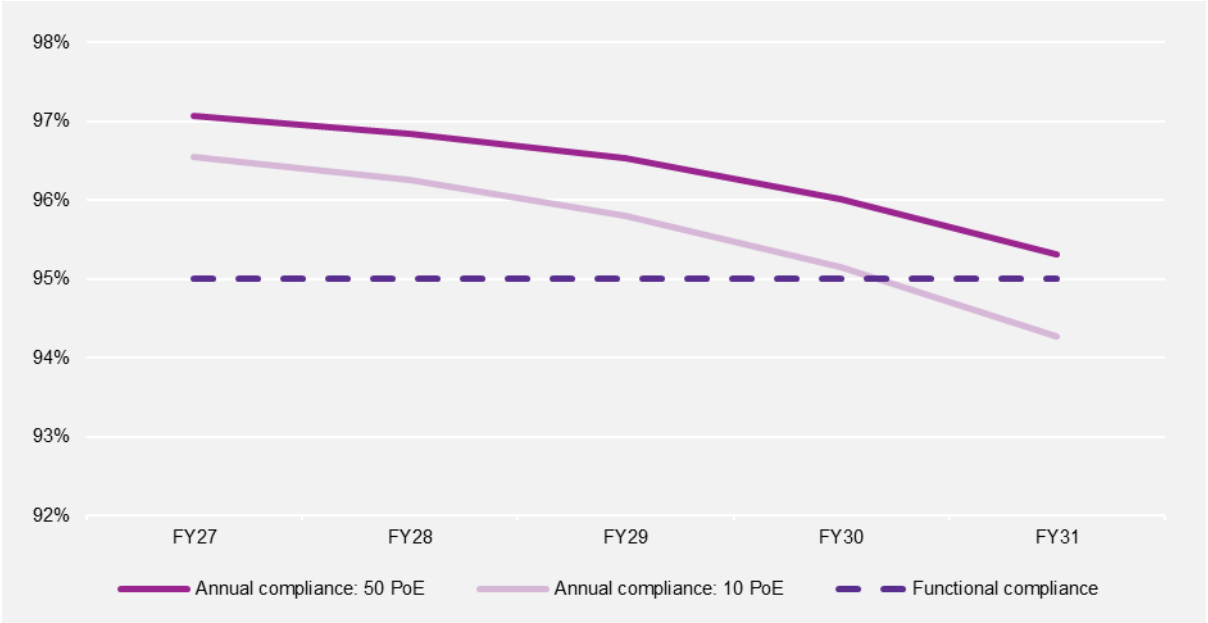
Our forecasts assume 'typical' demand, but we will breach compliance under downside sensitivities

In developing our undervoltage forecasts, we adopted a conservative approach and forecast voltage compliance using only a 50 per cent probability of exceedance (PoE). This contrasts with typical industry practice, whereby demand forecasts are weighted to include the probability of higher demand occurring in some years. This weighting is important, as it recognises the asymmetric impacts on customers from our network being unable to supply electricity.

Using a lower 50POE forecast is conservative and under-represents the likely scale of undervoltage events in the future. Figure 6, for example, shows that we are forecast to breach our compliance obligations early in FY31 under a 10 per cent PoE forecast.

[7] AER, Draft decision, United Energy electricity distribution determination 1 July 2026 – 30 June 2031, Attachment 2 - capital expenditure, p. 28.

FIGURE 6 VOLTAGE COMPLIANCE FORECAST



Given the AER's draft decision is consistent with historical interventions, we consider the risk of breaching functional compliance at a network-wide level under the AER's draft decision is material. To the extent our network-wide service levels drop towards a lower service level (consistent with the AER's approach), the volume of non-compliance at an individual customer level will also increase.

The AER's substitute estimate, therefore, is not internally consistent. It assumes historical investment will be sufficient, yet a deterioration in network-wide service levels will lead to increased non-compliance at a customer level, particularly given increasing electrification. Deteriorating to functional compliance will result in disruption for more customers, leading to more customer complaints and higher required expenditure to resolve complaints.

Our preferred option is now justified on economic analysis, not compliance

In response to the AER's draft decision feedback, we have now updated our options analysis to include consideration of proactive investments based on an economic assessment using a proportion of the VCR. As outlined in section 3.3, our preferred option applies 10 per cent of the VCR.

The use of a VCR-based approach does not require consideration of forecast compliance for proactive investments. That is, forecasts justified on a VCR-basis are economic in their own right and unlock value for customers.

3.1.3 We accept that the VCR's intended application is not to value undervoltage, however, alternative valuations are not available and the VCR represents a reasonable proxy

The AER's draft decision indicated that the use of VCR to value undervoltage energy served to customers is not a valid application of the VCR, and that using the VCR to determine the customer impact of supplied undervoltage is not consistent with the AER's intended application of it.[8]

Undervoltage issues at scale are a relatively new and growing occurrence and it has become apparent that the existing regulatory framework is lagging the pace of change in electrification on this issue.

[8] AER, Draft decision, United Energy electricity distribution determination 1 July 2026 – 30 June 2031, Attachment 2 - capital expenditure, p. 28

Notwithstanding this, we consider a proportional weighting of the VCR is a suitable proxy in the interim.

We outline below how we used the VCR in a limited manner in our original proposal and how this contrasts to an alternative approach based more fulsomely on a proportional weighting of the VCR.

We also outline customer feedback on the relativities of how they value undervoltage compared to typical outages (which are commonly valued using the full VCR).

Our regulatory proposal methodology primarily targeted customer numbers and service levels rather than direct economic valuations of undervoltage

Our regulatory proposal sought to determine the minimum capital expenditure necessary to supply compliant voltages to 97 per cent of our customers, which is the service level our customers receive today. This target was based on feedback from our customers that they were not prepared to trade off lower prices for lower reliability.

We therefore prioritised sites that would maximise the number of non-compliant customers who would become compliant after our proposed solution. The number of necessary projects, and therefore capital expenditure, was set by the service level we aimed to achieve rather than the economic value of remediating undervoltage.

However, we wanted to ensure that the sites we were targeting also had sufficient undervoltage energy at risk (i.e. to have some regard to an economic value of energy at risk as well as number of customers). To do this, we applied the VCR as a first step to define a ‘pool’ of economic projects. All projects with higher benefits for customers (using 100 per cent of the VCR) than costs were included within the ‘pool’. Option three of our business case—to ‘improve service levels’— is the resulting method that includes all these solutions, however our methodology did not stop here.

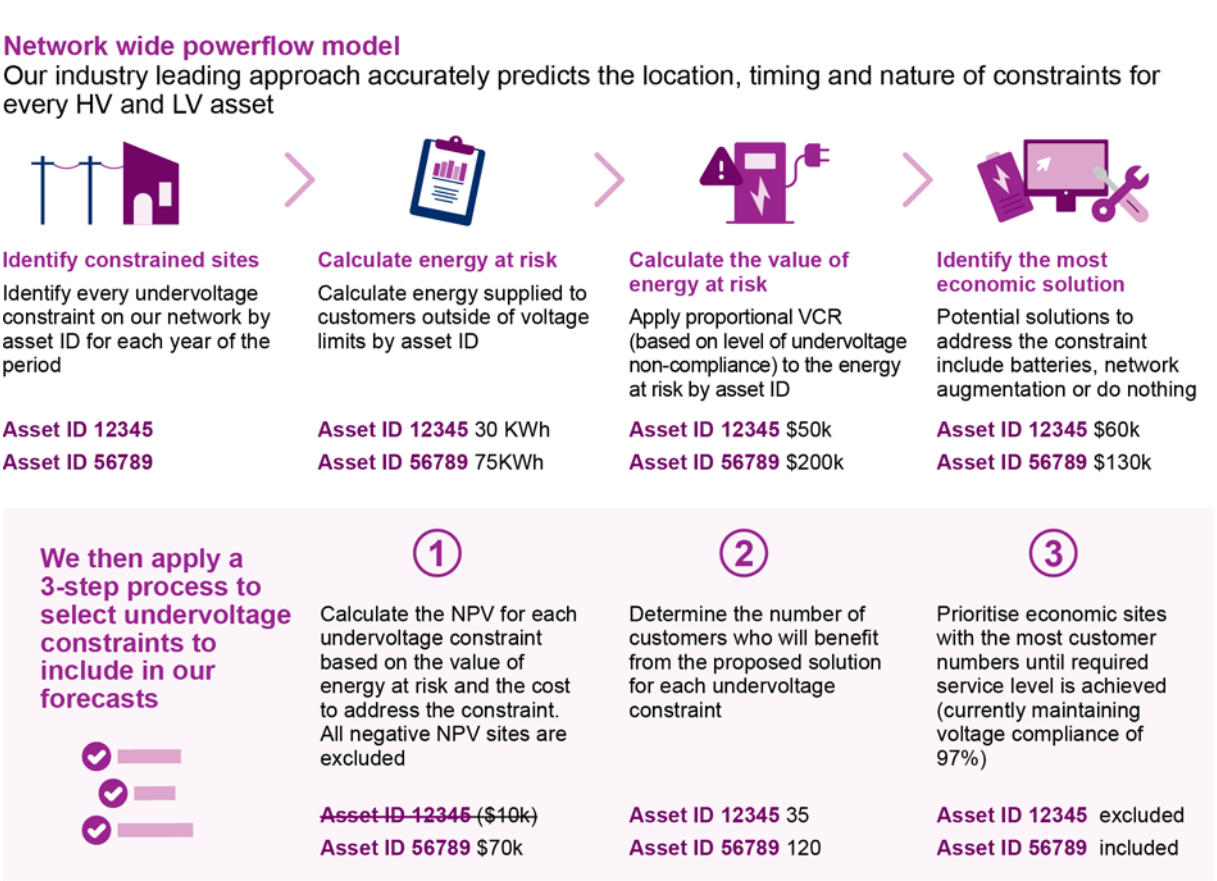
Rather, our preferred option assessed all sites under option three and only selected the sites with the highest number of customers returned to compliance. This methodology minimised our capital expenditure requirement (relative to option three) while also ensuring that we maintained service levels and targeted sites with a level of undervoltage energy at risk. Had we not considered the first step of our methodology to define a pool of sites using the VCR, our expenditure proposal would have been marginally lower but the sites we would have selected would have addressed less undervoltage energy at risk.

Under this service level methodology, reducing the VCR shrinks the pool of eligible projects that can be used to optimise service levels. Meeting a service level target (e.g. certain number of customers back to compliance) with a smaller pool of eligible projects increases the likelihood that we need to address more sites to meet a service level.

This creates a perverse outcome where achieving a service level requires augmentation to multiple smaller sites (for example, two sites with 10 customers each) rather than one site with higher customer numbers (for example, one site with 20 customers) resulting in higher total investment to deliver the same outcome.

Figure 7 describes our methodology with examples below. We acknowledge that this methodology is not straightforward, however it ensures that sites selected for proactive augmentation target the highest number of customers where customers are also experiencing material amounts of undervoltage energy at risk.

FIGURE 7 ECONOMIC ASSESSMENT METHOD



We have considered an alternative economic methodology based on a weighting of the VCR

Notwithstanding the benefits of a service level-based approach, an alternative methodology would be to determine proactive projects solely based on the value of undervoltage energy at risk at each site compared to the augmentation cost. We recognise the benefits of a purely economic methodology that compares the value of energy at risk to augmentation cost; namely, it is simpler and applies a more explicit economic test (rather than targeting a defined service level and compliance outcome).

The challenge with this approach is that because no standard industry value for undervoltage currently exists, our best option is to use the VCR or a weighting of the VCR to determine the risk cost and therefore benefits of alleviation. This was the methodology we used to determine the non-preferred 'improve service levels' option in our regulatory proposal, using 100 per cent of the VCR.

The AER's draft decision did not propose a specific alternative metric to value undervoltage constraints for our customer-driven electrification program. However, the AER used 10 per cent of the VCR as an appropriate value measure for undervoltage in developing its substitute estimate for Powercor's regional and rural program.

Further consideration of this VCR-based approach is set out in our options analysis in section 3.2.

Customers have told us that undervoltage is tangible and highly disruptive, with the ongoing effects impacting their daily lives

In addition to considering that valuing undervoltage was not consistent with the AER's intended application of it, EMCa stated that they expect the VCR is much higher than the economic cost of an

undervoltage excursion and much higher than what people would be prepared to pay, given what (they) assume to be modest impacts.[9]

Similarly, the AER stated that the use of VCR leads to a significant overestimation of the economic cost of undervoltage supply because while the risk of loss of supply may increase, energy supply is generally not lost when voltage falls below thresholds specified in voltage compliance standards. Therefore, customer impacts of undervoltage would be much less than VCR.[10]

We agree with the AER and EMCa that use of the full VCR may overestimate the direct value lost from electricity customers through undervoltage. However, neither the AER nor EMCa cited any evidence to substantiate the extent to which customers value undervoltage impacts relative to a typical outage.

Given the lack of an alternative valuation of undervoltage besides the VCR, we sought to better understand the lived experience of undervoltage directly from our customers. Between June and October 2025, we surveyed all customers who complained about non-compliant voltage levels and were engaged in our remediation process. In total across our three networks, we surveyed 85 customers, which is a representative sample of all customers who contacted us with an undervoltage complaint during that period.

We asked our customers how impactful undervoltage is relative to an outage and asked them to identify how their appliances were behaving differently than normal. To capture the impact of undervoltage within the context of a power outage, the survey's language is aligned with the language the AER used to assess the baseline VCR in its 2024 VCR research.

Customers were presented five response options including significantly less impactful, less impactful about the same impact, more impactful and significantly more impactful. Most customers surveyed were residential and their responses affirmed that undervoltage is highly disruptive:

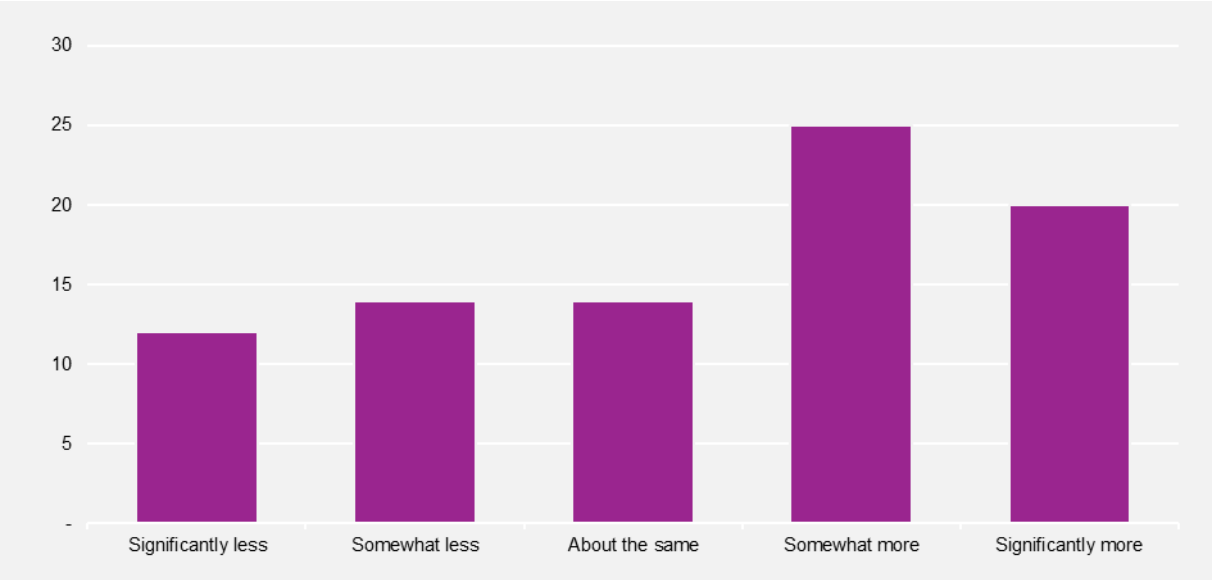
- 26 customers reported being unable to heat or cool their home
- 14 customers reported being unable to charge their EVs
- 18 customers reported broken or malfunctioning appliances
- eight customers reported losing income as a result of undervoltage levels
- seven customers reported their family's health being impacted.

In total, almost 70 per cent of residential customers responded that their issue was about the same or more disruptive than the baseline VCR, as shown in figure 8.

9 EMCa, 2025, Review of Aspects of Proposed Expenditure on Augex, Repex and Vegetation Management, p. 102

10 AER, Draft decision, United Energy electricity distribution determination 1 July 2026 – 30 June 2031, Attachment 2 - capital expenditure, p. 28

FIGURE 8 CUSTOMER RATING OF UNDERVOLTAGE IMPACTS VS AN OUTAGE



As more homes, businesses and vehicles electrify, we expect these trends to continue. This will be particularly challenging for our customers as they live in the country's most poorly insulated houses in the coldest climates across mainland Australia, and malfunctioning space heating is expected to be a predominant driver of increasing undervoltage complaints through the 2026–31 regulatory period.[11]

A number of customers also volunteered detailed descriptions of how undervoltage impacted their lives and livelihoods. Several examples from customers across Powercor, CitiPower and United Energy are highlighted below:

> *"My lights flicker, I've had my heat pump air con repaired multiple times, my heat pump hot water repaired, and the performance of my welder has degraded."*
>
> *"This is more disruptive than winter outages. My lights constantly pulse"*
>
> *"Undervoltage disrupts the whole operation of the school, from teaching to basic facilities management. A generator kicks in during undervoltage periods. Each time it kicks in, all systems need to be reset, which takes 5-10 minutes each time, up to 10 times a day. The process causes significant disruption to the staff who need to reset the systems and to teaching periods for the students."*
>
> *"You can't run a business when you haven't got enough power. I have considered moving premises."*
>
> *"I am a primary producer and have not been able to irrigate produce."*
>
> *"I didn't realise it was undervoltage. I spent three hours trying to fix my dryer."*
>
> *"Undervoltage is a regular occurrence stopping me from being able to weld properly. Its impacting my personal projects and some projects I am being paid to do."*
>
> *"The water pumps on the golf course I manage are being impacted. Each pump costs $65,000 to replace. Pumps are important to the operation of the golf course*

[11] CSIRO, 2025, Australian Housing Data, Energy Rating – National Overview – Victoria, available at: https://ahd.csiro.au/dashboards/energy-rating/energy-rating-national-overview; Australian Government, 2025, Your Home – Australian climate zones, available at: https://www.yourhome.gov.au/getting-started/australian-climate-zones

as they aerate the water in the billabongs to ensure water is not stagnant. Stagnant water impacts the health of my customers, and fresh water is an important the atmosphere our customers experience."

"Its frustrating and impacting my quality of life. I have spent a lot of money building a new house and have spent more on electricians to investigate the issue. I already try to use energy when solar is available."

"Lifts at a shopping centre I manage are not working properly."

"I drive 30,000 kilometres a year and need to have full charge every day, which means I have to charge at 32amp three phase. If I can't, I am forced to go to a super charger, which is inconvenient and more expensive."

"This is highly disruptive. The constant pulse of my lights is annoying."

"My EV charger turns off when there are other loads used at the same time, particularly my reverse cycle air conditioning system."

"My car app reports that I do not have enough power to charge my EV. I am also concerned by the impact low voltage is having on my appliance operation, particularly that my appliances will not have the lifespan expected."

"I am worried about the impact of low voltage on my appliances. Given the voltage drops corresponding to higher load consumption, my recently installed 12.5 kW home battery has limited capacity to import from the grid."

We recognise the limitations of our survey evidence above and acknowledge that it does not substitute for the longer-term need for a full valuation of undervoltage (similar to the AER's VCR and VNR processes). But we consider the evidence is directionally relevant and corroborates other customer feedback on their willingness to pay to remediate or avoid undervoltage impacts (such as the widespread support for our original proposal in our trade-off evaluation forums).

Given the first-hand experiences of customers and their described impacts, we also consider that is more likely than not that a VCR weighting of 10 per cent is too low (i.e. the balance of evidence suggests a higher value).

3.1.4 Our options analysis considered the balance between reactive and proactive approaches and the likely viability of non-network solutions

In its draft decision, the AER concluded that we needed to consider lower cost solutions to maintain compliance. This statement reflected feedback from EMCa regarding the relative value customers would receive from a network solution and the extent to which we had fully considered non-network solutions.

Remediation costs on a per-customer basis are significantly lower than EMCa calculated, as each solution improves outcomes for many customers

In their review, EMCa calculated the cost to proactively remediate a complaint to be around $113,500 per customer. EMCa found that 'intuitively, it seems unlikely that a customer would 'value' their complaint at this level'.[12]

EMCa's calculation, however, assumes that capital works remediate only the customer that complained. This is not the case as solutions typically remediate non-compliance for multiple

[12] EMCa, 2025, Review of Aspects of Proposed Expenditure on Augex, Repex and Vegetation Management, p. 33

customers supplied by the same circuit, which significantly reduces the cost per non-compliant customer.

We investigated a subset of 25 separate complaints that we remediated in FY25 that required network capital expenditure to identify the cost per customer of our upgrades. The results of our assessment are shown below in table 2.

TABLE 2 REMEDIATION COSTS PER CUSTOMER ($ NOMINAL)

PROGRAM	NON-COMPLIANT CUSTOMERS	COST PER NON-COMPLIANT CUSTOMER	TOTAL CUSTOMERS ON CIRCUITS	COST PER CUSTOMER
Reactive investment	611	$4,222	2,991	$2,003

In addition to reactive solutions addressing several customers who have complained, proactive upgrades are more valuable because they allow us to target circuits with the highest number of non-compliant customers to maximise value per customer, while also utilising service delivery efficiencies through scheduling works. The cost per customer for proactive works is therefore lower than reactive works.

Non-network solutions are not realistically capable of addressing persistent undervoltage issues across the 2026–31 regulatory period

The AER's draft decision stated that we need to consider approaches that are less expensive to maintain our functional compliance obligations. Similarly, in its review, EMCa stated the following:[13]

> *United Energy can remain within its functional compliance obligations with a considerably lower level of proactive intervention and, through utilisation of its extensive AMI data, can monitor PQ [power quality] at the LV level, utilising its DVM [dynamic voltage management] system and taking account of the impact of flexible services, and target any augmentation-based interventions as may be required, when required.*

The proposed approach set out by EMCa is largely consistent with the approach we undertake today in managing our network. Our dynamic voltage management system (DVMS) has been operational since 2019 (unlike other distributors who are just commencing this journey), and optimises our network voltage performance every 15 minutes based on voltage data received from our smart meters. In addition, we have deployed phase balancing and tap changing programs as low-cost solutions to address export-driven overvoltage through the 2021-26 period, which other distributors are observing today.

These solutions are now saturated and can no longer deliver material improvements. Zone substation taps have no additional step range, phase balancing can no longer shift enough load under high demand, and DVMS has reached its limit in headroom and reactivity. In effect, our network is already fully optimised with these tools at their limit.

We have also considered the realistic capabilities of non-network solutions to defer or avoid LV augmentation, and our regulatory proposal assumed a small amount of avoided augmentation procured through our Piclo non-network marketplace.

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13 EMCa, 2025, Review of Aspects of Proposed Expenditure on Augex, Repex and Vegetation Management, p. 37

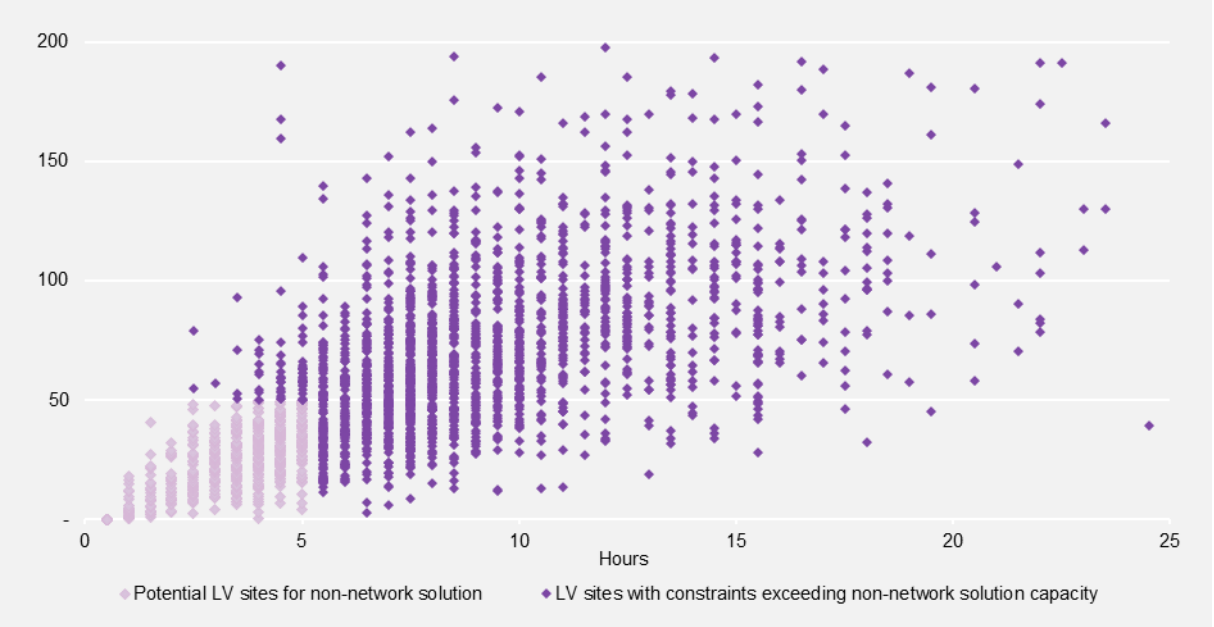
Non-network solutions need specific characteristics to effectively defer LV constraints

Ideal targets for non-network solutions are constraints with a low amount of capacity required for a low amount of time. This means that the non-network solutions provider is free to use their capacity for other purposes, such as market or retail arbitrage, at other times.

We have assessed the amount of load and duration of each forecast undervoltage constraint across our network to identify which constraints could feasibly be deferred or avoided by non-network solutions. Figure 9 below shows the network support capacity required to return a constraint to compliant voltage levels (y-axis), and the duration this capacity would need to be provided for (x-axis).

For context, a typical community-scale BESS installed on our network today has capacity to supply up to 50 kW of load for five hours.

FIGURE 9 SUITABILITY OF NON-NETWORK SOLUTIONS (KW)



Unfortunately, most of the forecast our constraints are unlikely to be suitable for non-network solutions, either requiring too much capacity or requiring near total dedicated capacity for a payment that would not be financially viable for customers to accept. For example, we modelled a community BESS as an option in our economic assessments and in all cases, batteries were not the most economic solution.

Alternatively, rather than individual customers, aggregators could act to coordinate the CER of customers on our network to address one or more constraints. This would require:

- CER resources to be available from customers connected to the specific LV circuit, where it is typical for 100 or fewer customers connected
- aggregators to be willing to coordinate for small scale constraints, noting they are not currently coordinating resolutions on LV circuits today. Despite tendering all of our recent HV and LV constraints in our non-network solutions market-place trial, we have not yet received a successful tender offer that is more economic than direct augmentation
- a sufficient number of customers on that specific LV circuit would need to be willing to sign up to aggregation products via retailers. Our research with Monash University shows that customers prefer control of their electrical devices and want access to them when they need them. Customers signing up to these products would need to forgo control of their CER for a significant portion of winter (because undervoltage is typically pervasive through winter)

- customers being sufficiently incentivised to provide the service. Deferring a $100,000 distribution transformer upgrade at a standard discount rate of 5 per cent means it is only economic to defer with a total of $5,000 in operating expenditure per annum. Aggregators are profit-seeking, so aggregators would incentivise customers with benefits that were much lower than $5,000 to sign up their aggregation products, accounting for all of their other costs
- our compliance obligations are also deterministic, meaning that we must resolve a constraint once we are made aware. This means that we would likely need to over-procure non-network solutions to ensure that sufficient capacity was always available to maintain compliance for our customers.

Notwithstanding the above, we continue to seek efficient ways to manage constraints. As noted previously, we already publish the majority of our LV constraints to our existing non-network procurement platform (e.g. as of October 2025, we have 255 LV constraints 'live', up from 175 in March 2025).[14] In addition, our demand forecasts already incorporate inputs from AEMO's Inputs, Assumptions and Scenarios Report (IASR) that inherently consider some level of flexibility through their shift to time of use tariffs and EV charging profiles.

We are committed to growing the non-network market by improving the ease with which non-network service providers can effectively defer network constraints. To this end, we are reproposing investment to improve data visibility and in our non-network marketplace to facilitate the long-term growth of the flexibility market, which the AER's draft decision rejected.[15]

However, the existing evidence remains that a material proportion of LV constraints are:

- unsuitable for non-network solutions
- unattractive for aggregators to seek to resolve
- unattractive to a sufficient proportion of customers on the relevant LV circuit who are engaged and have available flexible capacity to shift their load.

3.1.5 Undervoltage issues are now limiting wholesale market benefits and the subsequent achievement of net-zero targets; strengthening our LV capacity is increasingly required to enable long-term DSO benefits

While flexible services and non-network solutions have historically been seen as substitutes for network investments, network investments will increasingly become complementary to supporting the wholesale market and other system-level requirements.

As rooftop and utility solar generation continues to result in abundant renewable electricity and cheap wholesale prices during the day, new retail offers are taking advantage of network tariffs and wholesale incentives to encourage consumption locally and pass this cheap electricity to customers.

For example, one of these products, OVO's 'Free 3 Plan', is an innovative new retail product that offers free electricity for customers between 11am and 2pm. This offer directly tells customers to:

> *plug in all the things, the kettle and the washing machine, your aircon and your EV. From 11am to 2pm all your electricity usage is free. Every day.*

We consider the electricity system needs more of this kind of innovation, which seeks to make use of renewable generation when it is cheap and abundant. The Australian Government's recent 'Solar Sharer Offer' reinforces this position. From July 2026, a similar daily $0/kWh window will be introduced to states subject to the default market offer. While this doesn't immediately affect Victoria, the

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14 Our published constraints are available at: https://aus.picloflex.com/dashboard

15 AER, CitiPower electricity distribution determination 1 July 2026 – 30 June 2031, Attachment 2 – Capital expenditure, pp. 47-51

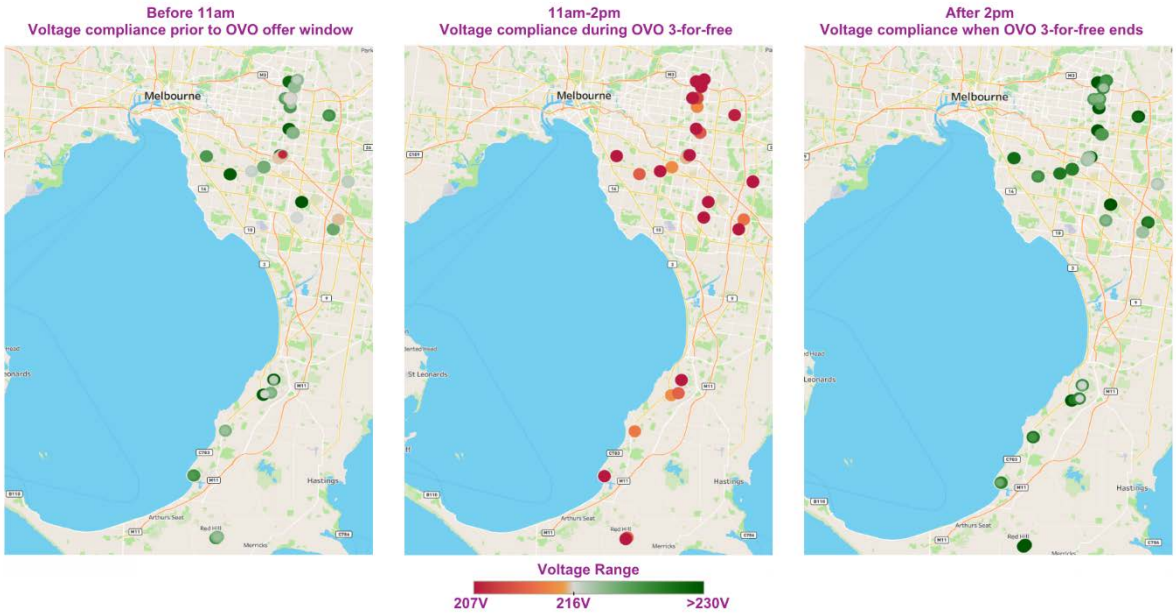
government committed to further consultation to support a potential roll out in other jurisdictions in 2027.[16]

More opportunities to use low-cost or free electricity should lead to lower running costs for customers and incentivise electrification. Increased electricity usage in the middle of the day across the NEM has the potential to deliver transmission-level benefits during morning and afternoon demand peaks and reduce curtailment of excess generation during the day.

However, our low voltage network must be strong enough to support a significant shift in how electricity is consumed for this electricity to be usable for customers and deliver benefits to customers and the electricity system. The low voltage network is designed based on natural diversification of load, which is now being replaced with concentrated, sudden periods of peak demand. We are already observing that customer responses to innovative retail products create undervoltage constraints on our LV network when they act to turn on most if not all electric appliances during the free electricity window.

For example, figure 10 shows the voltage levels at distribution substations across our network before, during and after OVO's Free 3 Plan offer period. Between 11am-2pm, voltage levels rapidly decline from compliant to significantly below 207 volts and recover after 2pm.

FIGURE 10 OVO 'FREE 3 PLAN' VOLTAGE COMPLIANCE IMPACTS



Under our jurisdictional compliance obligations, we are obligated to address these constraints if notified by customers.

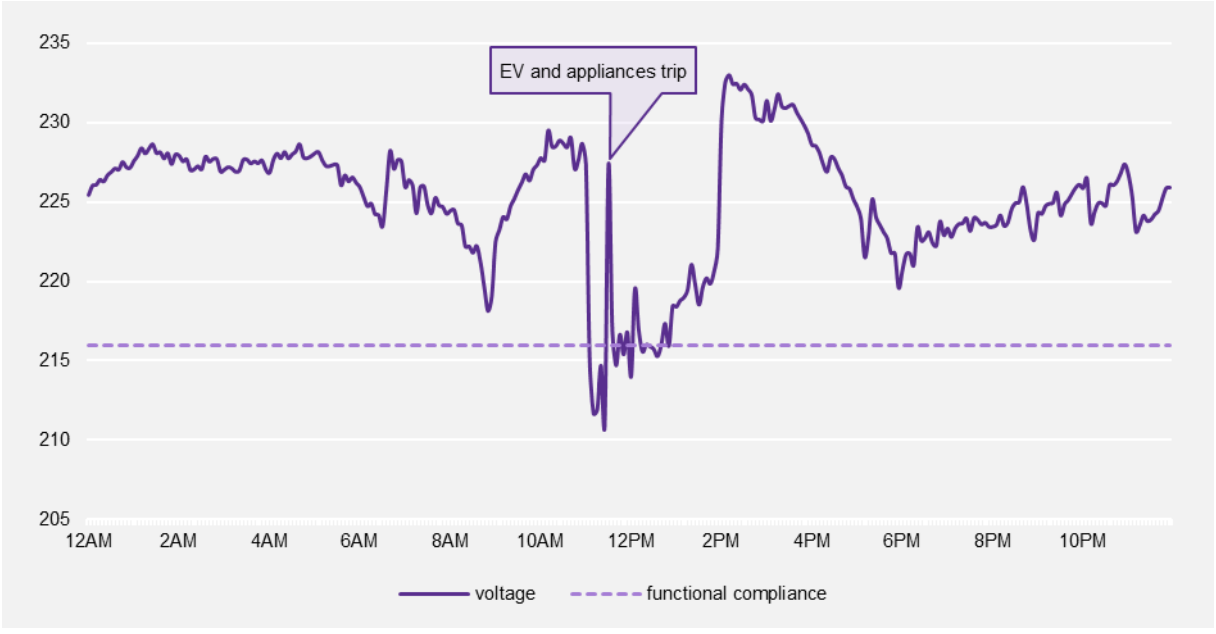
At this customer level, in the short period of time that the new offer has been available, we have detected 41 non-compliant customers signed up to OVO's retail offer. For every non-compliant OVO customer, they are responsible for creating an additional six non-compliant neighbours on the same circuit on average. This non-compliance at street level is shown in figure 11.

16 Australian Government, 2025, More Australian homes to get access to solar power, available at: More Australian homes to get access to solar power | Ministers

FIGURE 11 STREET LEVEL OVO CUSTOMER EXAMPLE

Figure 12 also shows an example of how OVO customers experience undervoltage. Voltage at the customer's connection dropped sharply (twice) as a result of the customer's response to the tariff, proceeding to trip the customer's EV and home appliances for undervoltage on both occasions.

FIGURE 12 DAILY OVO CUSTOMER VOLTAGE (VOLTAGE)



Fundamentally, what OVO's Free 3 Plan highlights is that our network is not universally capable of supporting the scale of electrified load that is required in a dynamic and high CER future. Weak LV networks will not support broad customer participation in wholesale market responses, including through CER aggregation and engagement with cost-reflective time of use tariffs. Specifically:

- CER such as home batteries are not designed to operate on weak networks. Australian batteries must comply with Australian Standard 4777.2, which requires charging rates to rapidly scale down

between 215 and 207 volts. At 207 volts, a battery will charge at 80 per cent slower rates than at compliant voltage[17]

- our customers are some of Australia's leaders in battery uptake, having installed approximately 1,850 batteries since the launch of the Cheaper Home Batteries program in July 2025
- while most batteries today self-consume rooftop solar, the share of grid-sourced charging is likely to rise as more systems participate in virtual power plants (VPPs) and as time of use tariffs become more common.

The culmination of these outcomes is that impacted customers are unable to access cheap wholesale generation during the day, particularly in winter with low rooftop solar generation, which defers consumption to more expensive peak periods with larger shares of fossil fuels in the generation mix. Orchestration and market benefits are also at risk, as aggregators experience lower than expected supply from participating batteries. As our network performance degrades, the first experience for many customers adopting CER on weak sections of our network will be unresponsive or curtailed assets.

The disruption customers experience will have flow-on impacts to the achievement of Australia and Victorian government net-zero targets. By 2030, the Australian Government's net zero plan requires new CER to be 'well integrated and responsive to price signals' and 'the share of orchestrated CER to be actively increasing' by 2035 to achieve its 2035 emissions reduction target. The government's Solar Sharer scheme signals that the policy and market shifts to reach these targets will take shape during the 2026-31 regulatory period.

Sufficiently strong LV networks are critical and foundational in a highly electrified and flexible future. These themes are explored further in our DSO vision.[18]

3.2 Options analysis

For our revised proposal, we have reviewed our options analysis in response to AER and stakeholder feedback and updated for key input assumptions.

We considered maintaining our service level approach because of its advantage in prioritising sites to optimise service levels for the greatest number of customers. However, we have ultimately applied a more direct economic test, using a value measure based on the AER's implicit acceptance of such an approach in its substitute estimate for Powercor's regional and rural upgrade program. That is, our revised proposal has been developed using a proportional weighting of 10 per cent of the VCR (by applying zero per cent of the VCR at 216V and 10 per cent of the VCR at 207V and below, with a linear ramping rate between 216V and 207V).

Using a weighting of the VCR is the best available value measure given that there is no agreed undervoltage value measure at this time. We remain of the view though that the balance of available customer evidence suggests it is more likely than not that a weighting of 10 per cent of the VCR understates the 'true' impacts of undervoltage, particularly into the future as electrification accelerates.

We have also maintained the reductions in our proactive program driven by HV clustering (where a single HV solution can more efficiently resolve multiple LV constraints) and our reduction in capital expenditure from cheaper non-network services deferring some LV augmentation projects.

In total, we considered four options, consisting of two that target a service level of network-wide compliance, and two that deliver augmentation assessed as economic at a weighting of the VCR:

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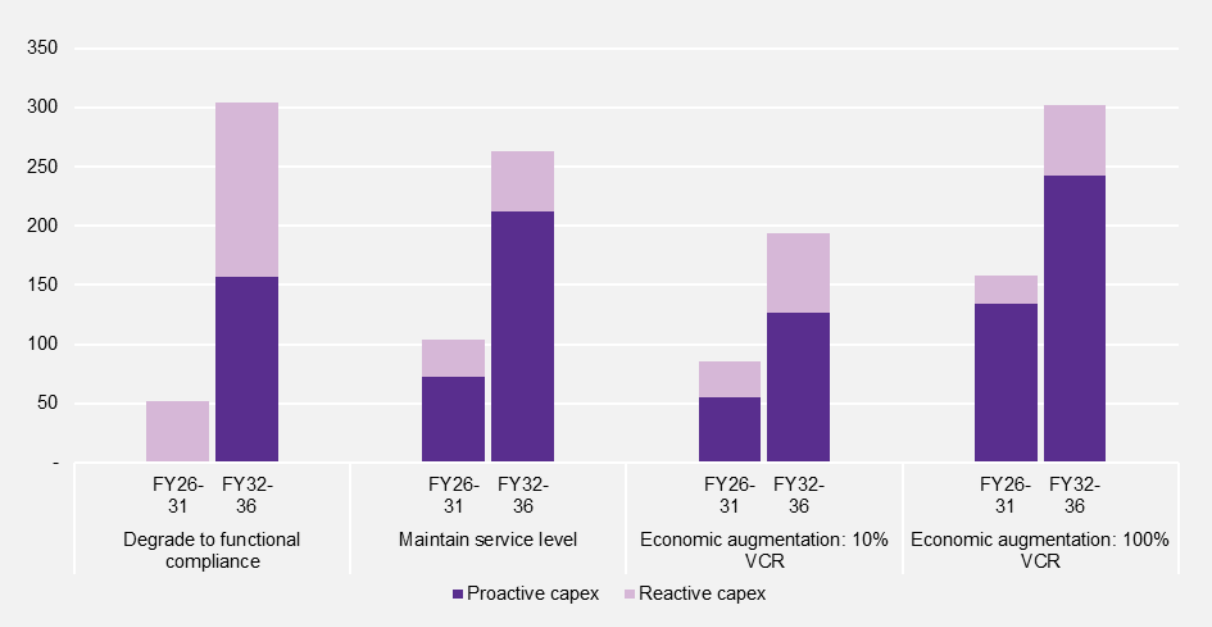
17 Australian Standards, 2020, AS/NZS 4777.2 – Inverter Requirements standard, Table 3.8, available at: https://www.intertekinform.com/en-au/

18 UE RRP ATT 3.2.01 – DSO vision – Dec2025 – Public

- option one – deteriorate to functional compliance: 95 per cent of customers compliant
- option two – maintain our service level: 97 per cent of customers compliant
- option three – economic augmentation at 10 per cent of the VCR
- option four – economic augmentation at 100 per cent of the VCR.

Figure 13 below shows the required reactive and proactive expenditure for each option in the 2026–31 regulatory period, including the explicit or implicit (for service level options) weighting of the VCR. Generally, proactive expenditure in the 2026–31 regulatory period has the impact of avoiding expenditure in the 2031–36 regulatory period and letting service levels decline results in unavoidable functional compliance-driven expenditure soon after.

FIGURE 13 AUGMENTATION OPTIONS: TOTAL CAPITAL EXPENDITURE ($M, 2026)



As evident in table 3, proactive expenditure also has a tangible impact on customer experience through the year. For example, options two through to four, which prioritise proactive expenditure, lead to additional customers experiencing compliant voltage compared to the base case in a given week by FY31.

TABLE 3 AVERAGE WEEKLY NON-COMPLIANT CUSTOMERS

OPTION	FY31	Δ BASE CASE	FY36	Δ BASE CASE
Option one: base case	16,343		25,734	
Option two: maintain service	11,298	▼5,045	15,807	▼9,927
Option three: 10% VCR	12,019	▼4,324	25,029	▼ 705
Option four: 100% VCR	9,658	▼6,685	20,105	▼5,628

Note: **Table 3 shows the average weekly number of non-compliant customers. This is different to how compliance levels are defined, which is the highest number of non-compliant customers in any week in a financial year.**

We have considered these multi-period impacts and their implications for our compliance obligations under the EDCoP within our analysis. We have also considered the expectations of our customers and the impacts they would face under each of our options and assessed the economic value of each option in our revised model.[19]

3.2.1 Option one (base case): deteriorate to functional compliance

Under our base case scenario, existing service levels would deteriorate to functional compliance, defined as 95 per cent of our customers receiving compliant voltage 99 per cent of the time in a given year. We will continue to remediate voltage non-compliance only after a customer complains in order to meet our obligations under the EDCoP with no proactive solutions.

A summary of forecast expenditure under option one (over two regulatory periods) is shown below in table 4, with the corresponding customer compliance outcomes shown in table 5.

Degrading to functional compliance leads to declining customer outcomes over time and functional compliance-driven augmentation in the 2031-36 regulatory period.

TABLE 4 TOTAL EXPENDITURE: OPTION ONE ($M, 2026)

INVESTMENT	FY27–31	FY32–36
Proactive augmentation	0.0	157.5
Reactive augmentation	52.1	147.0
TOTAL	**52.1**	**304.5**

TABLE 5 CUSTOMER OUTCOMES: OPTION ONE

OUTCOME	FY27–31	FY32–36
Average weekly non-compliant customers (last year of regulatory period)	16,343	25,734
Total customer complaints	1,328	3,098
Total Constrained load (GWh)	64.1	114.2

Overall, the customer impacts of deteriorating to functional compliance are expected to include the following:

- **multi-period expenditure:** as shown in table 4, while this option minimises proactive spend through to FY31, this is effectively deferred investment rather than avoided investment. From FY32 onwards, proactive and reactive augmentation must escalate sharply to maintain compliance in response to a continually expanding non-compliant customer base
- **deliverability:** to maintain compliance as the volume of non-compliant sites and customer complaints increases, total expenditure needs will increase by 484 per cent across regulatory

[19] UE RRP MOD 3.31 – Customer-driven electrification – December 2025 – Public

periods. The scale of this increase creates a deliverability challenge where we must shift from planned, optimised projects to urgent remediation that forgoes opportunities for efficiency. This uplift is likely unrealistic to achieve, and therefore carries a significant cost burden while delivering a persistently poor customer experience

- **scale and duration of disruption:** the number of non-compliant customers will rise through to FY31, with complaints also increasing annually. This is consistent with a declining service level at the same time as increased electrification is driving greater instances of non-compliance at a customer level**.** In addition, customers experiencing undervoltage continue to be impacted for up to 15 months until remediation, which can include sustained disruptions to heating, cooling, EV charging, and appliance performance. Option one means we will not remediate these impacts prior to their occurrence for an estimated 4,426 customers and their neighbours
- **customer expectations:** deteriorating to functional compliance does not meet customer expectations, with customers telling us clearly that undervoltage is highly disruptive and they expect us to maintain today's service levels as they electrify
- **wholesale market and net-zero impacts:** we have already observed that retail offers such as OVO's Free 3 Plan create off-peak undervoltage on weak circuits with relatively low levels of offer take-up and limited electrification. In the short time since 2023, customer issues have gone from virtually undetected to increasingly pervasive for those participating in similar retail offers. Customers will be more frequently impacted as their appliances malfunction more persistently while facing long remediation timeframes. Wholesale and net-zero benefits will be limited due to insufficient capacity to get electricity to and from the market.

3.2.2 Option two: maintain service levels

Under option two, we will maintain the network-wide service level we provide today, meaning 97 per cent of our customers will receive compliant voltages 99 per cent of the time. This includes proactive investment to counterbalance growth in non-compliant sites, as well as the deferral of network augmentation where non-network solutions exist and efficiencies through HV clustering of LV constraints and planned works.

To target a service level at minimum cost to customers, proactive augmentation will be prioritised by the number of non-compliant customers returned to compliance to maintain service levels, with the VCR used only to filter the economic value of each project.[20]

A summary of forecast expenditure under option two (over two regulatory periods) is shown below in table 6, with the corresponding customer compliance outcomes shown in table 7.

TABLE 6 TOTAL EXPENDITURE: OPTION TWO ($M, 2026)

INVESTMENT	FY27–31	FY32–36
Proactive augmentation including reductions for non-network solutions	72.3	212.1
Reactive augmentation	32.1	51.5
TOTAL	**104.4**	**263.6**

[20] This is consistent with our methodology described in section 3.1.3

TABLE 7 CUSTOMER OUTCOMES: OPTION TWO

OUTCOME	FY27–31	FY32–36
Average weekly non-compliant customers (last year of regulatory period)	11,298	15,807
Total customer complaints	1,132	1,589
Total constrained load (GWh)	56.8	85.0

The customer impacts of maintaining service levels are expected to include the following:

- **multi-period expenditure:** as shown in table 6, near term capital expenditure will be higher than in the base case (option one), however the increase in cost and compliance risk post-FY31 is avoided. As proactive upgrades deliver more value per customer than reactive remediation, this approach also reduces costs per non-compliant customer
- **scale and duration of disruption:** as shown in table 7, the number of non-compliant customers and complaints is lower than the base case and option three. While customers experiencing disruption that necessitates a reactive response will still experience the impacts of undervoltage for the full duration it takes for a solution to be tested, planned and implemented, the benefit of a proactive program is that fewer customers are exposed to this outcome
- **customer expectations:** customers told us they expect to maintain today's service levels as they electrify. This option meets customers' expectations and was explicitly supported by customers in the development of our original regulatory proposal. A service level approach is also a more equitable approach to residential remediation as sites with the most constrained customers will be prioritised.
- **wholesale market and net-zero impacts:** this option would start to strengthen areas of our LV network, and accordingly, would better support the ability for customers to fully utilise retail market offers that encourage use of renewable generation during periods when electricity is expected to be cheap and abundant
- **social license**: maintaining the service level we provide today maintains and potentially builds customer trust through the provision of acceptable service levels, having spent the minimum capital expenditure necessary to do so. This would place us in a better position to earn the social license we will require from customers for them to increasingly participate in non-network solutions and flexible services.

3.2.3 Option three: all economic augmentation valued at 10 per cent of the VCR

Option three applies a direct economic test, with the customer benefit of proactively remediating undervoltage constraints valued at 10 per cent of the VCR. This approach targets investments that remediate circuits with the highest constrained load first. Like option two, we will also seek to defer network augmentation where available non-network solutions are economic and undertake HV augmentation where it is economic to address a cluster of LV constraints.

A summary of forecast expenditure under option three (over two regulatory periods) is shown below in table 8, with the corresponding customer compliance outcomes shown in table 9.

TABLE 8 TOTAL EXPENDITURE: OPTION THREE ($M, 2026)

INVESTMENT	FY27–31	FY32–36
Proactive augmentation including HV clustering and reductions for non-network solutions and efficiencies	55.4	126.3
Reactive augmentation	30.2	67.7
TOTAL	**85.5**	**194.0**

TABLE 9 CUSTOMER OUTCOMES: OPTION THREE

OUTCOME	FY27–31	FY32–36
Average weekly non-compliant customers (last year of regulatory period)	12,019	25,029
Total customer complaints	1,007	2,527
Total constrained load (GWh)	2.6	11.9

Targeting projects by the value of load delivered rather than by the number of non-compliant customers produces different customer outcomes. For example, the customer impacts of this option are expected to include the following:

- **multi-period expenditure:** as shown in table 8, near term capital expenditure will be higher than in the base case (option one), however the increase in cost and compliance risk post-FY31 is avoided such that multi-period expenditure is lower than the base case
- **scale and duration of disruption:** as shown in table 9, the quantum of non-compliant customers and complaints will increase more than option two, but will remain relatively lower compared to the base case
- **customer expectations:** customers told us they expect to maintain today's service levels as they electrify. This option partially meets that expectation, but by targeting load rather than customer numbers, this option would prioritise larger loads over typical residential customers (all else equal). The level of expenditure is similar to option two, and we consider therefore that it is consistent with customers' overall expenditure expectations
- **wholesale market and net-zero impacts:** this option would start to strengthen areas of our LV network, and accordingly, would better support the ability for customers to fully utilise retail market offers that encourage use of renewable generation during periods when electricity is expected to be cheap and abundant
- **social license**: like option two, strengthening our LV network proactively is likely consistent with positive or maintaining existing customer lived experiences, which will give our customers confidence to commit to increasing their involvement in non-network solutions and flexible services.

3.2.4 Option four: all economic augmentation at 100 per cent of the VCR

Under option five, we would proactively remediate all undervoltage constraints assessed as economic using the full VCR.[21]

The pool of projects assessed as delivering economic value at 100 per cent of the VCR is around triple that of 10 per cent of the VCR. This program will generally result in a stable number of non-compliant customers, accounting for slight growth in non-compliant sites commensurate with growth in total connections. We expect to see a corresponding trend for complaints, which remain largely stable through the period.

Targeting projects by constrained load value rather than customer count produces the best overall customer outcomes across all options (e.g. the lowest number of non-compliant customers, complaint and load, as well as equity factors), virtually eliminates compliance risk and reduces reactive spend post-FY31. However, valuing constraints at 100 per cent of the VCR risks overstating the value of disruption today (given the uncertainty associated with an appropriate metric) and carries significantly higher costs in the 2026–31 regulatory period.

The scale of investment under this option would also challenge our delivery capacity and market capacity to supply labour and materials.

Given the materially higher expenditure associated with this option compared to others, it is unlikely to meet the affordability expectations of customers.

3.3 Preferred option

Of the options assessed, we consider both option two and three represent reasonable alternatives that would deliver positive value to customers, consistent with their stated preferences to proactively address the growing impacts of undervoltage on our LV network. On balance, option three is our preferred option, noting it:

- aligns with the AER's preference for a more direct economic valuation methodology, and is consistent with the derivation of the AER's substitute estimate for Powercor's regional and rural program (which also values undervoltage impacts)
- balances cost and customer outcomes as it reduces both complaints and non-compliant customers relative to the base case while avoiding the increasing future capital expenditure requirements of doing-nothing
- targets high-impact constraints to maximise economic benefit, while maintaining flexibility to scale investment if undervoltage valuation standards evolve
- avoids 321 more customer complaints that we will be compelled to address over the period relative to the base case
- reduces undervoltage energy at risk by 61.5 GWh compared to the base case, improving appliance performance, EV charging reliability and other daily customer experiences
- facilitates orderly market tenders for non-network service provision as an alternative to a planned works program that can be tendered to market for efficient deferral opportunities
- enables customers to derive value from electrification, take advantage of innovative retail offers and contribute to wholesale price reductions
- preserves social licence by delivering proactive improvements that support customer confidence in the energy transition.

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[21] This is consistent with option three in our original regulatory proposal, updated for demand forecasts

The net present value of the sum of our investments under our preferred option is presented below in table 10. A summary of the expenditure associated with our preferred option is also shown in table 11.

TABLE 10 NET PRESENT VALUE: PREFERRED OTPION ($M, 2026)

PREFERRED OPTION	PV OF COSTS	PV OF BENEFITS	NET PRESENT VALUE
Option three: All economic augmentation at 10 per cent of the VCR	65.2	557.6	492.5

TABLE 11 TOTAL EXPENDITURE: PREFERRED OPTION THREE ($M, 2026)

PROJECT	FY27	FY28	FY29	FY30	FY31	TOTAL
Proactive augmentation, including non-network solution deferrals	11.0	11.2	11.4	11.1	10.7	55.4
Reactive augmentation	3.9	4.7	5.6	7.0	9.0	30.2
TOTAL	**14.9**	**15.9**	**16.9**	**18.1**	**19.7**	**85.6**

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