AusNet

Transmission revenue reset TRR (2027-32)

Business case: Tx Meter Replacements

Friday, 31 October 2025

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Executive Summary

AusNet's transmission business is the metering coordinator (**MC**) and metering provider (**MP**) under the National Electricity Rules (**NER**) for all relevant connection points on its transmission network. In total, we have over 730 NMIs and 882 transmission meters measuring, recording and providing over 90 TWh per annum metering data to AEMO and registered participants. For these meters, we have appointed Mondo as our contestable Meter Data Provider (**MDP**). Under the NER, the appointed Financially Responsible Market Participant (**FRMP**) for a NMI can nominate to become the MC, however due to practical access to terminal station location and the need for MC registration this does not occur.

As a MC and MP, we have regulatory obligations under the NER to ensure meters produce accurate data for the purpose of network billing and market settlement for generators and retailers. Specifically, the MC must ensure the security, integrity, accuracy and overall compliance for all assigned meters. Additionally, transmission network meter data is also used to comply with our regulatory reporting obligations for greenhouse emissions reporting.

AusNet's EDMI Mk3 and Mk6e revenue meters, installed across the transmission network, have reached a critical juncture of obsolescence, non-support and operational issues. The Mk3 meters are failing at increasing rates and exhibiting operational instability. In establishing our plans for FY2027-32, we have incorporated a full assessment of our economic costs and likely impacts to the market. Weibull analysis, including the likely market impacts, indicates these meters should be replaced in 2026 or as soon as possible. We now need to undertake a commercial acquisition process (i.e., RFP or RFT) and testing to procure a new core transmission metering. After undertaking this activity, we expect to commence replacements in 2027, in the forthcoming regulatory period.

Additionally, the manufacturer, EDMI, has discontinued support and production for both the Mk3 and Mk6e models, and the legacy EziView software used for meter testing and configuration is no longer maintained or compatible with modern IT environments.

In the FY2027-32 period we are proposing to replace all 872 meters. These meters are at end of life, leading to risk of failure without available replacement, data corruptions, accuracy drift and will be unsupported by the meter manufacturer. An extensive cost benefit analysis of 3 options demonstrates that a full replacement provides the highest net present value, and therefore, is the most prudent and cost-effective approach. A further sensitivity analysis at lower and upper bound discount rates also supported this conclusion.

This replacement program is essential to maintain the compliance of AusNet's transmission metering fleet without compromising on IT security, ensuring continued adherence to regulatory obligations and accurate data provision for market settlements, billing, and environmental reporting. By addressing meter obsolescence and associated operational risks now, AusNet aims to minimise potential inaccuracy impacts for market participants and uphold its commitments to stakeholders. The planned meter replacement from FY2027-32 will support the ongoing integrity of metering data in the Victorian transmission network.

1. Regulatory obligations

1.1 Regulatory obligations

AusNet is the Transmission Local Network Service Provider (**TNSP**) and MC for over 730 NMIs and 872 transmission meters that measure, record and provide metering data to AEMO and registered participants for settlements, billing and greenhouse reporting. For these meters, we have appointed Mondo as our contestable Meter Data Provider (**MDP**). These transmissions meters are Type 2 meters, subject to class 0.5 minimum measurement accuracy obligations, provide 5-minute trading interval data to the MDP. The MDP is required to undertake validation and substitution of metering data in accordance with AEMO's Metrology Procedure Part B.

AusNet's transmission business is the Local Network Service Provider (**LNSP**) for over 98% of transmission NMIs on the Victorian transmission network, being the TNSP for most of the Victorian transmission. For transmission NMIs, except interconnector NMIs, the LNSP is responsible as the MC, except where the Financially Responsible Market Participant (**FRMP**) nominates itself as MC. The FRMP can become the MC, where they are registered as a MC. However, no FRMPs have taken up this option, presumably to due to the need for efficiencies of scale, the cost of MC registration with yearly auditing.

As a MC and MP, we have regulatory obligations under the NER to ensure meters produces accurate data for the purpose of network billing and market settlement for generators and retailers. Specifically, the MC must ensure the security, integrity, accuracy and overall compliance for all assigned metering installations, including all relevant Current Transformers (**CTs**), Voltage Transformer (**VTs**) and measurement circuits.

As Transmission MC, AusNet is responsible for:

- Provision, installation and maintenance of a metering installation (i.e. meters, CTs, VTs and measurement circuits).
- Integrity of the metering installations, including testing and inspection requirements.
- Collection and delivery of metering data with respect to the metering installation to the metering data provider.
- The MDP's delivery of validated or substituted metering to AEMO.
- Managing access to and the security of the metering installation, energy data in the meter, and metering data from the metering installation.

To fulfil our responsibilities, it is imperative that our transmission meters are reliable and accurately managed by robust policies, procedures and systems. Our Type 2 transmission meters must be tested every 5 years in accordance with the NER, see clause 7.3.2(e)(2) a tier 1 civil penalty provision and clause 7.9.1(a) a tier 2 civil penalty provision. As MC we are audited every year and as MP every second year to confirm conformance with our obligations.

1.2 Implications of metering outcomes

The provision of accurate metering data is essential in promoting the National Electricity Objective:

> "to promote efficient investment in, and efficient operation and use of, electricity services for the long-term interests of consumers of electricity with respect to:
>
> a. *price, quality, safety, reliability and security of supply of electricity; and*
>
> b. *the reliability, safety and security of the national electricity system; and*
>
> c. *the achievement of targets set by a participating jurisdiction—*
>
> i. *for reducing Australia's greenhouse gas emissions; or*
>
> ii. *that are likely to contribute to reducing Australia's greenhouse gas emissions.*"

Our transmission meters provide the meter data used to pay generators for their generations, bill transmission customers, and settle the wholesale energy market for all distribution customers. Type 2 transmission meters are typically accurate within a range between 0.1% and 0.2% with a maximum tolerance of 0.5% across all test points.

Any inaccuracy in transmission meter data directly impact generator revenue and the settlement costs for the retailers of all distribution customers (and market customers). Inaccurate financial outcomes for generators and customers can result in inefficient investment and operational decisions. Therefore, when making investment and maintenance decisions for our transmission meters, we must consider the P50 implications of meter data accuracy to generators and market participants. This means not just consider the direct liability of service provision for failing to meet regulatory obligations but the overall accuracy outcomes in the market.

Additionally, meter data for the transmission network is used to comply with our regulatory reporting obligations for greenhouse emissions reporting. It is critical to meeting our reporting obligations under the National Greenhouse and Energy Reporting Scheme (**NGERS**). NGERS is the Australian government's mandatory reporting scheme for large energy users, producers and emitters, and is administered by the Clean Energy Regulator. Under the scheme, AusNet services must report energy losses as part of its emissions and energy consumption data. The data on losses utilises meter data from **all** transmission NMIs. We note that information on losses is also required for AEMO and AER compliance reporting.

With the recent changes to include greenhouse gas emissions in the NEO, we must give regard to all price and greenhouse gas emissions implications in establishing our plans for transmission metering for the 2027-32 transmission revenue reset.

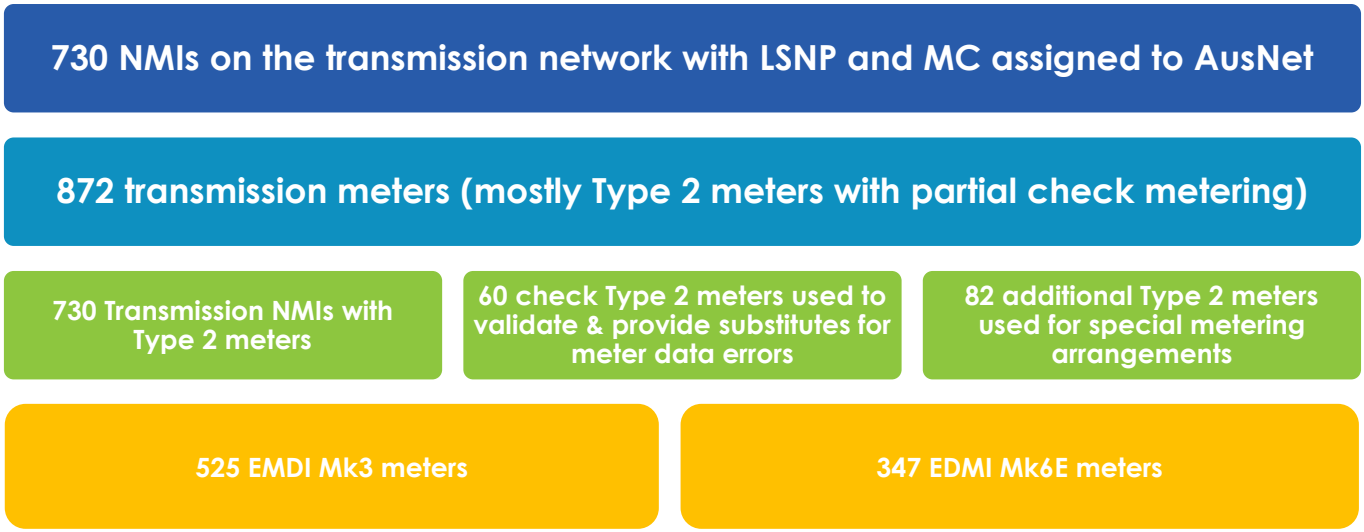
2. Current meters & performance

2.1 Current meters

AusNet is the TNSP and MC for over 730 NMIs and 882 transmission meters that measure, record and provide over 90 TWh of metering data to AEMO and registered participants for settlements, billing and greenhouse reporting. The yearly metering data for our transmission meters accumulates in over 90 TWh. Based on AEMO's published wholesale price data for Victoria from January 2024, we estimate the wholesale market value of this electricity is, on average, over $9.2 million per meter per year.

Our transmission meters generally reside within dedicated metering rooms or racks with our 60 terminal (or generator) stations consist of the following meters. There are between 2 and 30 meters in each terminal station.

Figure 1: Summary of AusNet's transmission meter assets

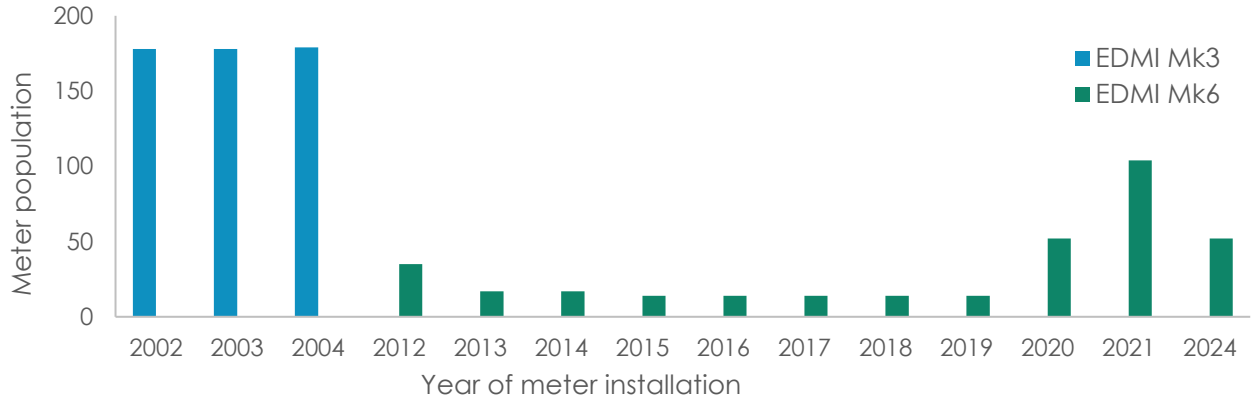


Source: AusNet

In our capacity as Metering Provider, we install, maintain, test and replace physical meters and the associated communications hardware. AusNet operates two different meter variants for our transmission metering, the EDMI Mk3 and Mk6e. These meters are connected to Intercell or Ruggedcom modems, with one modem for each rack of meters within the terminal station.

Our 525 EDMI Mk3 represent 61% of in-service transmission meters. These meters are more than 21 years old, have not been supported by EDMI for over a decade, and are failing at increasing rates and exhibiting operational instability. Our newer 347 EDMI Mk6e meter represents the remaining 39% of in-service transmission meters. These meters are less than 14 years old, have only recently become not supported by EDMI, and are **not yet** failing at increasing rates. Figure 2 below shows the age of our Mk3 and Mk6e meters based on year of installation.

Figure 2: meter age based on year of installation



Source AusNet

Our transmission meters are currently allowing us to meet our obligations as MC and MP under the NER. At the time of purchasing these meters, they represented the best meter for our needs. However, our meters are aging and are now obsolete.

Our contracted MDP uses a meter reading and meter management system (i.e., MV90) to read the meter data communicated from the physical meters, via the modem. MV90 uses a polling technology where the system periodically sends a request to a meter to retrieve data at discrete intervals. We note MV90 is considered a legacy meter data management system, and is not compatible with more modern meter technology, such as API driven data flows.

The MDP also undertakes validation, estimation and substitution of raw meter data through a Meter Data Management System (i.e., using a different third party meter data management system) and provides the validated and substituted data to AEMO and Market Participants for market settlement. The validated and substituted data is also used for AusNet's meter data quality oversight, analytics, transmission billing and NGERS reporting.

Our meters are tested onsite at the terminal station using EDMI supplied legacy software EziView. To conduct a meter test, we use a laptop with EziView software to reconfigure the meter parameters for testing and after the testing reconfigure the meter for market revenue meter operations.

2.2 Meter performance

In accordance with our obligations under the NER, we regularly inspect and test our transmission meters. Additionally, we test meters when requested by AEMO and other relevant parties. Performance data is derived from this testing and from the identification of meter data substitution events. We have identified substantial numbers of meter failures and other issues with Mk3 meters, see Table 1 below.

Table 1: Summary of identified meter failures and issues

Meter failure or issue	# of identified events
Failed meter accuracy tests but could be kept in service with the application of compensation to the meter.	104 Mk3 meters (19.8%)
Meter accuracy failure upon testing, where compensation is not an option.	22 Mk3 meters (4.2%)
Meter transposes with another meter when communicating with the modem resulting in mis-read meter data sent to market.	34 meter events – Mk3 only (not readily detectable from April 2021)
Other meter failures, such as memory failure or total failure.	8 Mk3 meters (1.5%)
Repairable failures	2 Mk6e meters (no data on Mk3 meter)

Source AusNet

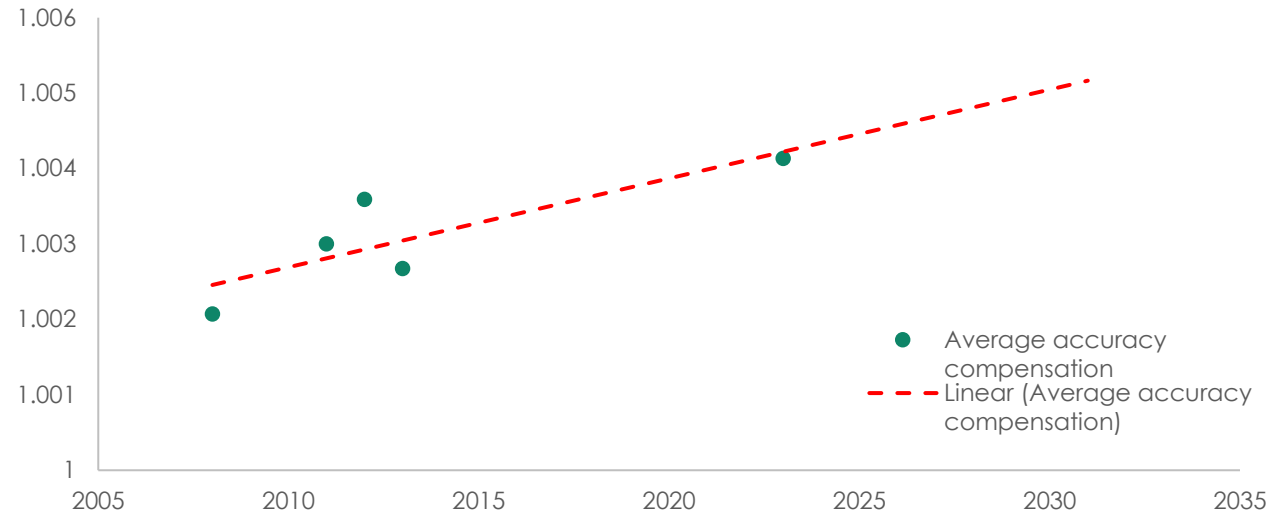
The data from these issues indicates that these meter issues and failures are increasing in frequency for Mk3 meters. Our modelling of this performance data, using Weibull analysis and other techniques, indicates the Mk3 meters are failing at higher frequency as the meter assets.

Accuracy drift

Additionally, the accuracy testing data for Mk3 meters indicates the scale of accuracy drift (and required compensation) has escalated over time. In the early years of Mk3 meter operation, meter test results had a few data points (of the 25 measured points) outside of the 0.5% limit with compensation mostly less than 0.3%. Accuracy compensation involves increasing the measurement values or decreasing the measurement values. For example, if all 25 measurement points are under-measured by 0.2%-0.5% compensation could be applied to increase the measurement values by 0.3%.

However, in more recent years we have observed in testing Mk3 meters larger inaccuracy measurement needing greater compensation (e.g., between 0.4% and 0.5%) or large inaccuracy errors (e.g., over 1%). For these meters there is a now a trend of increasing accuracy compensation values. Based on a linear escalation of the accuracy compensation data, shown in Figure 3 below, we expect the inaccuracy of tested meters to exceed the threshold for compensation in most cases and need an immediate replacement. Additionally, large inaccuracy meter test results (typically 1%) are becoming more common.

Figure 3: Average meter (Mk3) accuracy compensation applied following testing



Source AusNet

We analysed the accuracy and other meter failure data for the Mk3 meters using AWB's Weibull analysis tool, and forecast rapidly increasing probability of meter failure due to a large inaccuracy recording (greater than 0.4%). We also conducted Weibull analysis on any applied compensation event following a failed test meter test. Table 2 below shows the resulting Weibull parameters from this analysis.

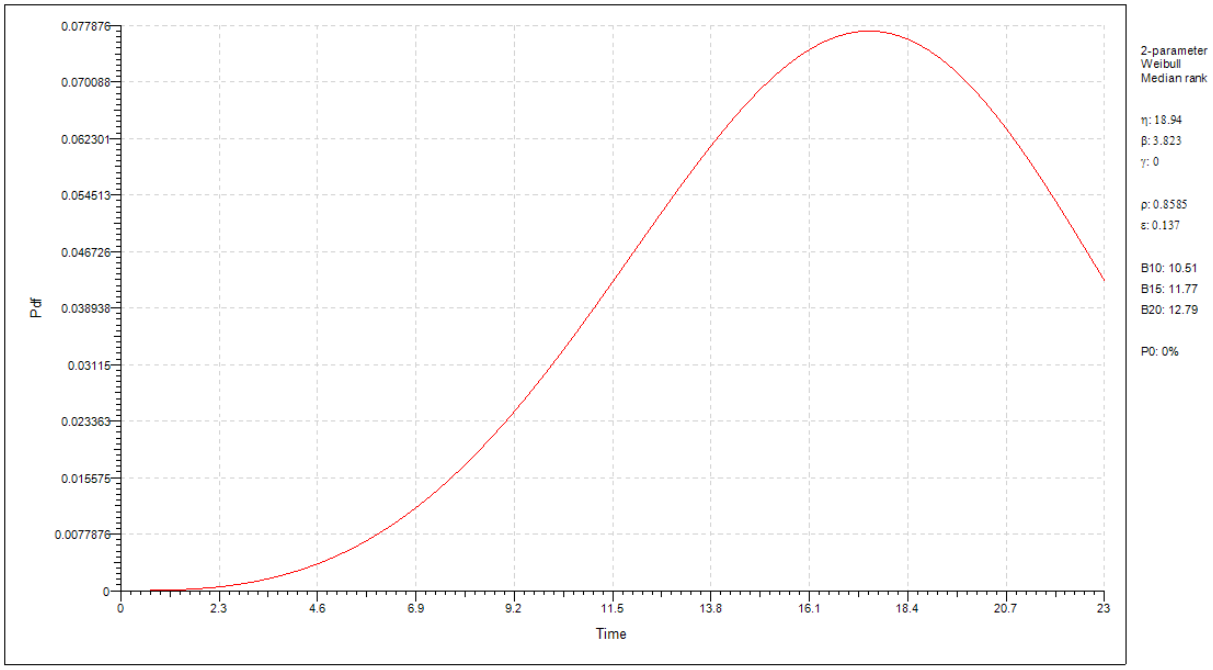
Table 2: Summary of Weibull analysis in parameters

Weibull parameters	Compensation of <0.4%	Any applied compensation following a failed test	Compensation of <0.4% or greater inaccuracy event
H	24	12	18.9
B	5.00	2.74	3.82
P	0.78	0.85	0.86

Source AusNet

We determined that the most relevant reliability performance data for a meter accuracy failure is the application of a 0.5% test result or another large inaccuracy event. This finding that large accuracy events will become more frequent, correlates with the earlier evidence of systematic accuracy drift discussed earlier. This data can be used to determine cumulative probability forecasts, see Figure 4 below, which can be used to determine our market impact assessment.

Figure 4: Weibull forecast probability density for large inaccuracy (<0.4%) or complete failure



Source AusNet

We note that our Mk6e meter have not yet exhibited the same meter failures, but we expect similar reliability performance at the same age of Mk3 meters. For the purposes of establishing our plans for the forthcoming period we applied the Mk3 Weibull probability density for large inaccuracy (<0.4%) or complete failure to Mk6e meters.

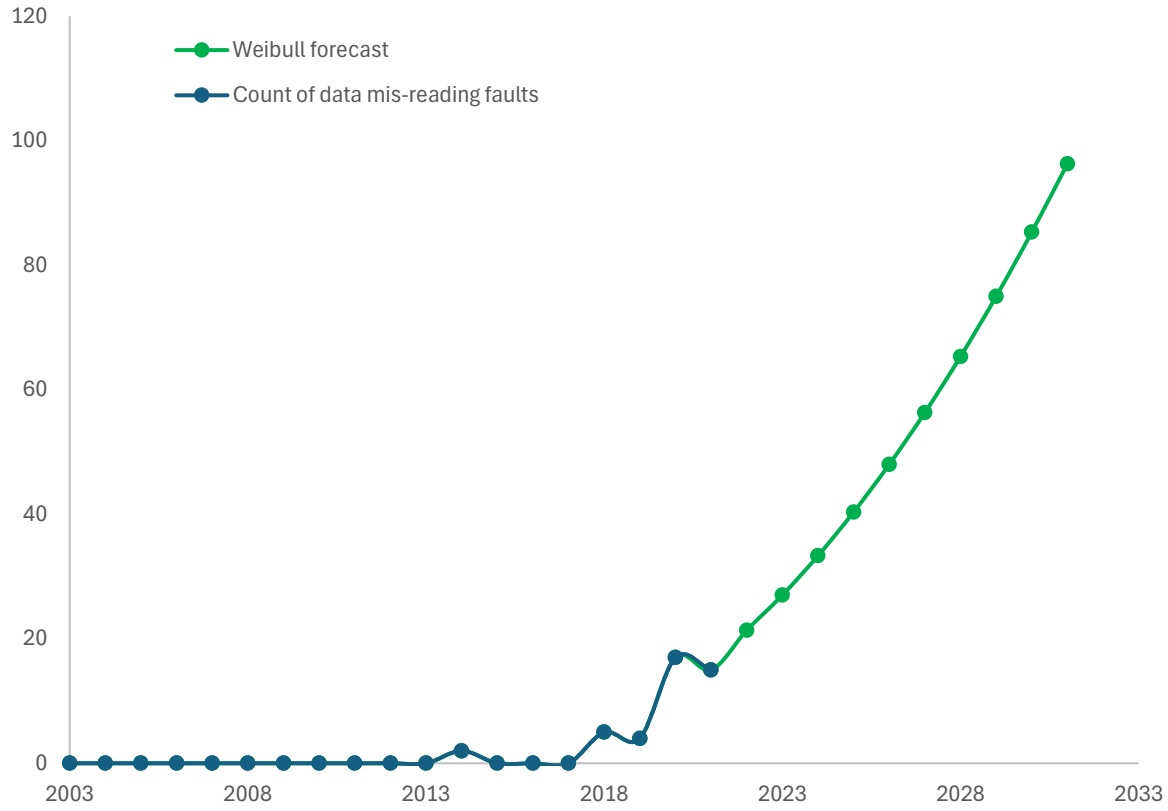
Mis-reading data from transposed meters

We have identified that our EDMI Mk3 transmission meters exhibit a communications fault, whereby the meter becomes transposed with another Mk3 meter connected to the same modem. The next day the modem resets and the meters correctly identify with the modem and the system reading the meter (i.e., MV-90). This event was first observed in 2014, and escalated until April 2021, when we changed MDP systems in the move to 5-minute settlements. The new MDP systems do not have the fine correlation capability to identify the change in consumption patterns in 5-minute interval between meters. These MDP substitution and validation systems are market compliant and used by multiple accredited MDPs.

We have only identified one occurrence of this event since Q2 2021, that was when AEMO advised of a specific observed variation resulting in data substitutions. In discussions with EDMI, the modem suppliers, the supplier of MV-90 and the MDP, it was determined the problem most likely related to deterioration within the Mk3 meter electronics or memory. The Mk3 was not supported by EDMI. We established through discussions with vendors that no further action could remediate the meter issue, other than a complete meter replacement of Mk3 meters.

Our meters with data mis-reading faults typically become transposed with a second meter for a full day until the meter modem resets the next day. At this time, we are aware that the event is occurring and forecast the likely volumes by Weibull analysis. Shown in Figure 5 below is our actual and forecast, using Weibull analysis, mis-reading data for our Mk3 meters.

Figure 5: Actual and forecast mis-reading data for Mk3 meters



Source AusNet

3. Strategy and drivers

3.1 Strategy

AusNet is currently developing a broader Strategic Asset Management Strategy for the transmission metering business. This recognises the criticality of accurate, timely and diverse data on energy consumption and power flows in a more complex and dynamic energy market.

Our current high-level strategy is to maintain compliance with all relevant obligations under the NER, undertake efficient meter operations, and apply best practice of testing with any subsequent calibration to keep meter data as accurate as economically justified. We consider a range of factors in establishing a robust compliance framework of policies, procedures and test/inspection plans.

In addition to compliance requirements, we must consider the potential impacts of metering inaccuracy on transmission line loss reporting for greenhouse gas emissions and market impacts to other registered participants. Accordingly, we are now including the P50 likely impact of inaccurate metering data. We have developed a comprehensive strategy for managing inaccurate metering and adverse market outcomes that addresses the four causes of transmission line loss errors and market impacts:

1. Meter accuracy drift or accuracy fault.
2. Transposed meters on the same modem and check meter (partial check metering).
3. Switched circuits resulting in transposed meters - collecting data for the right meter but allocating it to the wrong NMI.
4. Incorrect external meter data or with different to expected parameters resulting in bad line loss calculations.

Having assessed the market impact of recent performance issues with our EDMI Mk3 meters and forecasted Mk6e meter failure rates, we are adopting asset management practices (including more frequent testing and proactive replacements) that seek mitigate market impacts. This addresses the first two of the above causes of inaccurate meter data outcomes.

However, for the last two causes broader asset management and data integrity systems are required. This shift to multi-directional flows significantly increases the complexity of transmission meter reading and data processing – making these meter data inaccuracy issues more frequent and more difficult to identify.

Our separate business case "Technology Business Case - Metering systems.docx" proposes and describes a range of initiatives to updating our metering systems and introduces a robust capability for data integrity and analytics.

3.2 Drivers

Minimise market impacts – inaccurate meters and meter data collection

While we will continue to meet all our obligations under the NER for the provision of compliant meter data to the market, we acknowledge there are always inaccuracies in any meter data, even from meters compliant to the NER accuracy requirements. Our transmission meters are typically accurate to between 0.1% and 0.2% typically well within the total permitted inaccuracy for Type 2 meters under the NER of 0.5%. Accuracy testing occurs across 25 points of measurement and simulated conditions.

There are significant market impacts in situations where the meter accuracy drifts to point of non-compliance such as 0.5% or between 1% and 2% in the case of a large inaccuracy event. Metering Type 1 full check metering arrangements can correct for this inaccuracy, while the more common Type 2 partial check metering arrangements can't correct this level of inaccuracy.

Variations from this baseline accurate data standard do not necessarily result in regulatory breaches or liability for the service provider but has direct impacts generator revenue and the settlement costs for the retailers of all distribution customers (and market customers). We note that, on average, our transmission meters measure over $9 million per meter per annum. Further, inaccurate financial outcomes for generators and customers can result in inefficient investment and operational decisions.

Therefore, when making investment and maintenance decisions for our transmission meters, we must consider the implications of the above meter performance forecasts to generators and market participants. This means that costs of deviating from the accurate data delivery standard must be considered in options of the investments and options for alternative implementation approaches, systems and service providers.

Our objective is to replace meters before the net inaccuracies in meter data (above typical accuracy ranges) exceed the cost of meter replacement. Therefore, we compare the cost of meter replacement against the likelihood of inaccuracy event times the market impact of that event. As discussed in Section 2.2 above, we have identified two different events with market impacts:

- Accuracy drift between testing in excess of typical accuracy; and
- Mis-reading data from transposed meters.

We compare meter data impacts on the market in aggregate and adding the impact of both events. These impacts are expressed in P50 medium absolute likely errors from meter data causing impacts to the market, assuming there is no bias.

Maintain compliance with obligations

The withdrawal of vendor support for all our meter assets and key software used for testing (EDMI Mk3 & Mk6e and EziView Software) poses a risk for maintaining compliance with our obligations under the NER. Having ceased support for the Mk3 meter more than a decade ago, EDMI (the manufacturer) now has formally ceased support and production of the Mk6e meter. Failure to comply with obligations could result in civil penalties and potential liability. The EDMI provided software, EziView, needed to test the Mk3 and Mk6e meters is also no longer supported, and the new software from EDMI, Storm, is not compatible with our Mk3 and Mk6e meters.

Therefore, we must establish a plan to manage the risk of non-compliance from having meters that are no longer supported by EDMI. Having ceased support for the Mk3 meter more than a decade ago, EDMI (the manufacturer) now has formally ceased support and production of the Mk6e meter. In late 2024, EDMI advised that it was halting Mk6e manufacturing. Key implications are:

- **No spare hardware for repairs**: With production stopped, spare parts and replacement Mk6e units are extremely limited. Internal records show AusNet has only about 10 spare Mk6e meters on hand (aside from a handful already allocated to ongoing projects). Once these few spares are used, any Mk6e meter failure could not be remedied by a like-for-like replacement. This raises the risk of extended meter outages or emergency replacements with non-standard equipment, jeopardising compliance with the NER requirement to maintain continuous metering.
- **No vendor maintenance or firmware support**: EDMI is no longer providing firmware updates, technical maintenance, or expert support for Mk3 or Mk6e meters. Any latent defects or accuracy issues discovered in Mk6e units cannot be rectified by the vendor. AusNet's historical experience with the predecessor Mk3 meters illustrates the danger of relying on unsupported technology: as those meters aged (now >25 years old), they exhibited rising failure rates – e.g. memory failures, time drift, accuracy degradation – and EDMI could provide no support or fixes, forcing eventual replacement. The Mk6e meters are headed down a similar path of unsupported aging. Proactively replacing them before serious failures occur is a prudent risk mitigation.
- **Obsolete testing software EziView**: Compounding the hardware issue, the EDMI EziView application – used to program, read, and test Mk6e meters – is itself obsolete and no longer supported by the vendor. EDMI's focus has moved to a new meter management software platform which does not support Mk6e meters (i.e. the new software is only compatible with their latest meter models). This leaves EziView as the only tool for Mk6e, but EziView has not received updates to remain compatible with modern operating systems or security standards. In fact, AusNet engineers flagged EziView compatibility problems to EDMI over two years ago and did not receive any solution or updated version from the vendor – a clear indication that vendor support for the software has effectively ended.

IT security and compatibility issues

AusNet's corporate IT environment is undergoing a mandated upgrade to Windows 11 as part of cybersecurity uplift. The upgrade program is intended to provide a "modern, secure, and intuitive" operating system across all devices, with enhanced security features to keep data and systems safe. This has direct consequences for the Mk6e fleet:

- **EziView incompatibility with Windows 11**: The legacy EziView software was designed for older Windows versions and requires administrative privileges and outdated libraries to run. It is not compatible with Windows 11. Preliminary testing showed that EziView fails to operate correctly on Windows 11 machines, and EDMI has confirmed no plans to patch or certify EziView for Windows 11. AusNet's IT department cannot indefinitely delay OS upgrades or maintain insecure legacy environments for a subset of users. Microsoft has advised that it will only support security update for 3 years after October 2025. All AusNet laptops are scheduled to be migrated to Windows 11 in 2025 as part of our cyber resilience program. It is possible that we agree extended support with Microsoft until October 2028 to maintain essential meter testing – exceptional circumstances.
- **Security policy requirements**: As a TNSP, AusNet is subject to security policies. Using unpatched, end-of-life software (like EziView) on the corporate network violates these policies, potentially introducing vulnerabilities. Continuing to run EziView on an old Windows 10 machine beyond that OS's support life would similarly breach security standards. Therefore, from an IT governance perspective, AusNet must discontinue EziView in 3 years – which means we will lose the ability to test with Mk6e (& Mk3) meters unless we replace them or find an alternative solution.
- **No workaround without risk**: One theoretical workaround – keeping a few isolated PCs on Windows 10 or in a special configuration solely to run EziView – is not viable long-term. Not only would this go against the enterprise-wide Windows 11 rollout (which is designed to eliminate known "weak links"), but it also presents operational headaches: those machines would be barred from network access for security, making it difficult to receive updates or share data, and the arrangement would be inherently fragile. In summary, AusNet cannot rely on outdated systems just to support Mk6e – doing so would undermine the organisation's cyber security posture.

Unforeseen cost risk

Unforeseen cost risk represents a critical factor supporting the investment case for our proposed replacement of transmission meters and any supporting our custom developed software (replacing Eziview) to test the Mk3 and Mk6e meters. As the meters continues to age in the absence of vendor support, and meter testing occurs using custom developed software, unexpected events may occur that necessitate ongoing IT expenditure, cyber risk mitigation or the need to establish a supply of hot spare meters from an interstate transmission metering provider. The magnitude of this risk is inherently difficult to forecast.

The development of a custom software to replace Eziview to test our meters is considerably risky. If it were straightforward or not costly, EDMI would have updated Eziview with replacement software and offed it to all their customers. Once we conclude development and testing, we still have the risk of using unsupported software for operations on meters that measure 90 TWh of electricity every year, worth more than $7 billion per year in wholesale market value. AusNet could be left with a false sense of security about meter accuracy. A single undetected error in meter reading could also lead to settlement data errors. This may have implications for our insurance premiums.

The uncertainty associated with these unplanned expenditures introduces a dimension of financial risk that must be given due consideration in prudent asset management. This risk is not easily quantified but remains relevant to our decision of meter replacement options. Clearly, avoiding unforeseen costs is a driver for undertaking options and technology that have the greatest cost certainty.

4. Options consideration

This section provides an overview of the considered options in the context of the current meter population, performance data, strategy and drivers. This section seeks to evaluate the net present value of different options and identify all compliance requirements. We set out the timing and scope of credible options of the investments (to demonstrate prudency), and evaluate options for alternative implementation approaches, systems and service providers (to demonstrate efficiency). Assessment is to be made of the discounted costs against the benefits of the program.

4.1 Options analysis

We undertook an economic assessment for each transmission meter using replacement costs, forecast failure rates, the P50 market impacts from meter data inaccuracy, and the cost of increasing the frequency of meter testing to every 2.5 years. The attached model "AusNet Services – TRR 2027-32 Metering Justification - 31 Oct 2025 - CONFIDENTIAL.xlsx" applies a meter by meter assessment of capex, opex, market impacts and NPV based Weibull analysis of our most relevant population data.

Table 3 below describes 3 options assessed against strategic drivers of minimising costs, risks and market impact, and compliant. We examined the relative net benefit of delivering our transmission metering operational requirements.

Table 3: Summary of options

Option	Summary
Option 1: Replace all Mk3 and Mk6e meters	• Replace Mk3 meter in 2027-29 and Mk6e meter in 2030-31. • Test Mk6e meters more frequently where the cost is justified by expected market impact reductions
Option 2: Replace all Mk3 meters and develop custom software	• Replace Mk3 meter in 2027-29; • Defer replacement of Mk6e meters until we assess the mean residual life for each meter has been reached; • Test Mk6e meters more frequently where the cost is justified by expected market impact reductions (Mk3 testing starts in 2028 due to deliverability constraints); and • Develop custom EziView replacement software in 2027-28.
Option 3: Defer replacing Mk3 meters and develop custom software	• Defer Mk3 meter replacement to 2032-34; • Defer replacement of Mk6e meters until we assess the mean residual life for each meter has been reached; • Test Mk3 and Mk6e meters more frequently where the cost is justified by expected market impact reductions; and • Develop custom EziView replacement software in 2027-28.

Source AusNet

In our assessment to determine the preferred option, we have considered the capex, opex costs and market impacts in 2025 real dollar terms. Our NPV analysis has considered the benefit over the FY27-40 period, based on the below assumptions.

Table 4: Assumptions used for our model (numbers in real FY25)

Assumption	Value	Comments
WACC	7.00%	Based on TRR WACC
Yearly metered energy from our Tx meters	90 TWh	Based on last calendar year measured output
Average electricity spot price in Victoria ($/MWh)	$81.27	Based on AEMO's data from 1 July 2024, assuming a flat projection
Meter replacement cost per meter, assuming bulk replacement	$20,231	Based on dividing project cost by meter volumes
Meter replacement cost per meter, assuming bulk replacement, for replacement after a failed test	$[C-I-C]	Assumes 2.5 additional hours of which is overtime for our 2-person meter testing and replacement team
Cost of testing a transmission meter, not including CT and VT testing	$[C-I-C]	Includes average travel time, safety induction, setup, meter reconfiguration and testing time for a 2-person team

Source AusNet

4.2 Option 1: Replace all Mk3 and Mk6e meters

Our first option assessed was to replace all Mk3 and Mk6e meters in the forthcoming regulatory period – starting with the Mk3 meters. As shown in Figures 3, 4, and 5 above the Mk3 meters are failing at increasing volumes with increasing magnitude, and with largely undetectable meter data mis-reads resulting in transposed meter data between two meters. These meters are clearly the priority for immediate replacement subject to deliverability limitations, such as procuring new suitable, compliant meters with a robust commercial process and training new specialist technicians and engineers to replace the meters.

Option 1 plans to replace Mk6e meters in the latter 2 years of the forthcoming regulatory period (FY2027-32). For the 125 oldest Mk6e meters, we propose to minimise the likely market impacts by more frequently testing, testing every 2.5 years rather than 5 years, to reduce the expected P50 market impact from $24,504 to $8,382 per meter accuracy failure. Our criterion for this additional testing is to conduct more frequent testing where the predicted market impact from inaccuracy exceeds the incremental cost of more frequent testing. The increased testing will occur until these meters are replaced in year 4 of the forthcoming regulatory period (FY2027-32).

Additionally, replacing all meters:

- avoids $1.9m of one-off investment to implement a substitute to EziView to test meters, discussed later in section 4.2; and
- results in replacing meters with only a residual value of $906k even after the application of optimal increases in meter testing frequency – less than half the cost of the estimated cost of replacing EziView.

Our meter replacements plans include the procurement of new meter variants through a Request for Proposal (**RFP**) or similar commercial process. Additionally, they raised skilled labour deliverability constraints for transmission metering trained technical specialists and engineers that currently limit meter replacements to about 200 per year. Therefore, we are proposing to undertake a consistent meter replacement program over the 5 years of the forthcoming regulatory period.

Table 5 below summarises our forecasted expenditure and market impacts for Option 1.

Table 5: Forecast expenditure for Option 1 ($'million, real FY25)

Cost item	FY27	FY28	FY29	FY30	FY31	Total
Capex	3.53	3.53	3.53	3.53	3.53	17.6
Opex	2.70	2.71	2.72	2.73	2.65	13.5
Market impact	5.78	4.28	2.50	0.49	0.15	13.2
Total	12.0	10.5	8.7	6.7	6.3	44.3

Source AusNet

We set the NPV value to zero under Option 1, and effectively it is a counter-factual to compare with Options 2 or 3 have a lower net present value. We note that 'do nothing' is not an option because it would breach NER obligations.

4.3 Option 2: Replace all Mk3 meters and develop custom software

This option entails replacing all in-service EDMI Mk3 meters in FY2027-30 and not replacing any functional EDMI Mk6e meters. The cost of this meter replacement is $12.7m and includes one-off investment to implement a custom software substitute to EziView.

This involves procuring a bespoke software tool that can communicate with EDMI Mk6e meters for configuration and testing, as an alternative to EziView. In theory, this custom tool would allow AusNet to continue using the Mk6e hardware for an additional 13 years, on average, per meter by restoring the ability to test/read them on Windows 11 (or in a modern environment). Essentially, we would bridge the gap left by EDMI's software withdrawal with an in-house solution.

AusNet estimates the cost of implementing a substitute to EziView for testing Mk6e meter is estimated at $1.9m using our Digital Idea Cost Estimation (**DICE**) tool. EDMI has not published full communication protocols for the Mk6e in the public domain; we might have to reverse-engineer protocols or negotiate with EDMI for technical specifications (and the vendor may have little incentive to assist, since they'd prefer selling new meters). The project would require specialised software engineers with knowledge of metering communications. Even after development, extensive testing would be needed to assure that the tool reads the meter correctly under all conditions. Additionally, we may need to pay an independent code auditor to check each line of code – consistent with MP auditor expectations for meters testing equipment.

The Mk6e devices would still be unsupported and aging. The custom software would not make them any less obsolete, it would merely buy time. We would still face the eventual need to replace the meters – potentially under more urgent conditions if failures start occurring. Thus, this option would actually increase operational risk by extending the use of assets until evidence is deduced that a bulk meter replacement is justified.

This option involves extending the economic life for Mk6e meter by doubling the frequency of meter testing from 5 year to 2.5 years for those meters, where cost justified by P50 market impacts. Starting with 83 of the oldest Mk6e meters and increasing as the other meters age and become more likely to be inaccurate.

Table 6 below summarises our forecasted expenditure and market impacts for Option 2.

Table 6: Forecast expenditure for Option 2 ($'million, real FY25)

Cost item	FY27	FY28	FY29	FY30	FY31	Total
Capex	4.48	4.48	3.54	0.04	0.05	12.6
Opex	2.70	2.71	2.72	2.73	2.76	13.6
Market impact	5.78	4.28	2.50	0.42	0.50	13.5
Total	13.0	11.5	8.8	3.2	3.3	39.7

Source AusNet

The calculated NPV difference of Option 2 compared to Option 1 is $1.1m, that is Option 2 represents 1.1m higher net costs to AusNet and the market. Additionally, it leaves exposed on to potential security issues, and uncertainty that the custom replacement of EziView results in unforeseen costs and liability.

Additionally, we undertook sensitivity analysis with different discount rates, on the NPV for the Option 2 comparison with Option 1. This analysis found Option 1 remains NPV positive compared to Options 2 with a difference of $1.7m at a 3% discount rate and $0.3m at a 10% discount rate.

4.4 Option 3: Defer replacing Mk3 meters and develop custom software

This option sets the option with the least amount of capex investment in FY2027-32 possible without breaching NER obligations. It entails replacing only failed EDMI Mk3 or Mk6e meters in FY2027-32, replacing remaining Mk3 meter in FY2027-30, and not replacing any functional Mk6e meters. The cost of expected meter replacements in the forthcoming regulatory period is $8.0m with an additional $1.6m in more frequent meter testing to mitigate millions in market impacts. Similar to option 2, this option includes a $1.9m one-off investment to implement a custom software substitute to EziView and accepting the security and feasibility risks of doing so.

Additionally, with over $20m of million in likely market impacts this option may impact our NGERS outcomes and result in financially impacted market participants taking legal action or arguing we breached the Rules. Although, this option assumes compliance with NER obligations it could be argued that we should do more to demonstrate accurate measurement outcomes. AEMO and our auditors may also request improvements to ensure higher levels of meter data accuracy.

Table 7 below summarises our forecasted expenditure and market impacts for Option 3.

Table 7: Forecast expenditure for Option 3 ($'million, real FY25)

Cost item	FY27	FY28	FY29	FY30	FY31	Total
Capex	5.19	1.38	0.46	0.47	0.49	8.0
Opex	2.70	3.07	3.08	3.09	3.13	15.1
Market impact	5.78	3.60	3.97	4.36	4.77	22.5
Total	13.7	8.1	7.5	7.9	8.4	45.5

Source AusNet

The calculated NPV difference of Option 3 compared to Option 1 is $26.5m, that is Option 3 represents $26.5m higher net costs to AusNet and the market. Additionally, it leaves exposed on to potential breaches of NER obligations, security issues, and uncertainty that the custom replacement of EziView results in unforeseen costs and liability.

5. Preferred option

Table 8 below shows the overall assessment of each option against the identified drivers and impacts from each option. Option 1 best meets our obligations, minimises market impacts from inaccurate data, supports IT security objectives and is the most cost effective for AusNet in the long term. Our analysis has found that it has meter life NPV higher than Option 2's -$1.1 million and Option 3's -$26.5 million. A further sensitivity analysis at lower and upper bound discount rates of %3 and 10% also supported this conclusion.

Therefore, Option 1 is preferred as it has the highest NPV, addresses each of the identified criteria.

Table 8: Options analysis summary

Criteria	Option 1	Option 2	Option 3
Capex ($'million, real FY25)	17.6	12.7	8.0
Opex ($'million, real FY25)	13.5	13.6	15.1
Market impact ($'million, real FY25)	13.2	13.5	22.5
NPV ($'million, real FY25)	0	-1.1	-26.5
Avoiding unforeseen costs	✓	(at risk)	(at risk)
NER compliant and reputationally sound	✓	✓	(at risk)
Meet IT security requirements	✓	(at risk)	(at risk)

Source AusNet