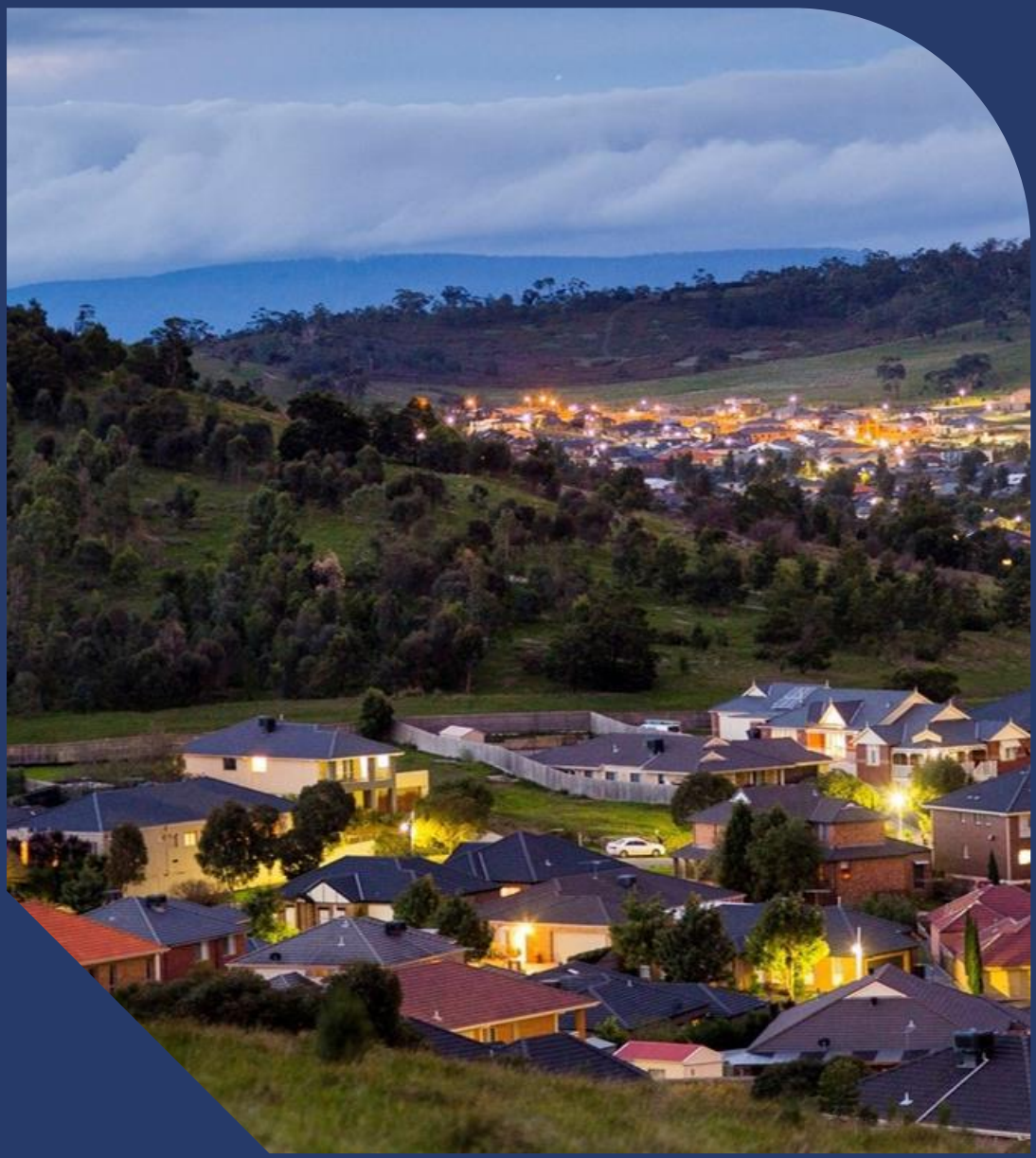
AusNet

Electricity Distribution Price Review FY2027 to FY2031 (EDPR 2027-31)

Business case: Metering Systems

Date: January 2025



AusNet

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Document history

DATE	VERSION	COMMENT
03/10/2024	V1.0	Initial draft business case for review
18/11/2024	V2.0	Updated draft incorporating review and SME input
05/12/2024	V3.0	Updated and issued for final review
02/01/2025	V4.0	Final business case document

Related documents

DOCUMENT	VERSION	AUTHOR
Technology Strategy and Investment Plan	V3.0	AusNet Services
AusNet EDPR 2027-31 Digital Program NPV model	V3.0	AusNet Services

Approvals

POSITION	DATE
Digital & Technology – Strategy, Regulatory and Partner Management	January 2025
Digital & Technology – Architecture	January 2025
Distribution – Strategy and Regulation	January 2025
Gas and Metering – Strategy and Regulation	January 2025

1. Executive summary

Metering data is essential to accurately bill our customers and to efficiently settle the wholesale market. The data is also used to help us plan a safe and reliable network and to improve restoration times for our customers. We utilise technology systems to store and distribute information collected from our smart meters and any remaining manually read meters.

In this business case, we have identified the need for recurrent capex to ensure our metering technology systems remain reliable and secure. Our proposed ICT capex for the 2027-31 period includes updating our smart metering systems, our smart meter power quality information systems (i.e., voltage and power factors), and non-smart metering data systems. The recurrent capex reflects the expected costs for updating products at the end of vendor support periods, together with regular patching and refreshes. We note that this proposed capex on metering and metering data systems is not included in our Technology Asset Management (TAM) - Applications business case.

We have also identified a need for non-recurrent capex on our metering systems driven by existing and new compliance obligations. Firstly, we will need to invest in upgrading our meter data management to meet the increase volume in meters subject to the 5-minute settlement provisions in the National Electricity Rules. We expect to install 275,000 new and replacement meters in the 2027-31 period. We have obligations to provide AEMO and retailers with meter interval data on recorded consumption for all our smart meters in accordance with the Minimum Advanced Metering Infrastructure (AMI) Service Levels Specification Victoria - September 2008. Significantly, we must provide 95% of actual metering data to AEMO and retailers by 6:00am the following day. Our existing Meter Data Management system will require significant upgrades to cater for the increased data processing from new meters that provide 5-minute data.

Secondly, we expect to incur non-recurrent capex on meeting new obligations under the Flexible Trading Arrangements Rule change. The Rule change allows for secondary settlement points for customers in relation to customer energy resources. The Rules impose an obligation on DNSPs to store, use and bill retailers in relation to Type 9 meters and other Rule obligations that require to use Type 8A and Type 9B meter data.[1] The preferred option, having assessed alternative architectures, is to meet these obligations is through updating our existing Meter Data Management System to accommodate the data. The proposed capex in the 2027-31 period relates to the residual costs of completing the update, which is proposed to commence in 2026.

[CIC]. The total cost of the program is $16.3 million, with recurrent capex comprising $10.3 million and non-recurrent capex comprising $6.0 million.

[

CIC

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[1] Connection charge guidelines for electricity customers Clause 7A.1.1 requiring us to establish whether there is a high probability of new embedded generation resulting in us not meeting our regulatory obligation or to maintain the network within its technical limits.

2. Recurrent capex

The proposed expenditure in this section relates to prudent lifecycle management of AusNet's metering systems, which the AER categorises as recurrent expenditure in its guidance note – "Non-network ICT capex assessment approach" of November 2019.

In this section we identify the criticality of metering systems in providing accurate data to bill and settle the market, and to perform efficient asset management practices. We discuss the overarching drivers of recurrent investment in metering systems based on vendor support, identify the systems requiring expenditure in the 2027-31 period and detail our recommended investment based on consideration of options.

2.1 Criticality of current systems

AusNet is responsible for meter data provision and validation. We rely on technology systems to collate and validate meter data from our customer's meters either through remote reading or manual reads. Metering data is also used to provide analytics for network operations and asset management including voltage management performance[2] and outage detection and restoration.

AusNet relies on key technology systems to operate our metering solutions grouped into 2 categories:

- Enterprise Systems that are designed to integrate business functions and exchange information across multiple platforms and organisation structures. These include analytics and reporting software that enable AusNet to monitor and track compliance with market obligations
- Operational systems that include the meter and network management systems

The integrated application suite supports us in providing a compliant metering solution, delivering the required capabilities to specified service levels. It also underpins our smart network capabilities, providing timely delivery of the necessary consumption, supply quality and voltage data, and enabling key functions in the monitoring of the electricity distribution network.

Appendix A details AusNet's key metering systems and their interconnectivity. The key functions performed by the suite of metering systems include:

- Communication of information on energy consumption and demand that enable customers to be billed accurately and in a timely manner.
- Provision of information to AEMO to settle the market.
- Consolidation of information to monitor and detect issues with our network infrastructure that enable accurate effective and risk-based planning to ensure a reliable and safe service for our customers.
- Improved response to outages and other incidents including more precise detection of location of outages and quicker restoration.
- Enabler of customer energy resources by facilitating timely and accurate data.

2.2 Drivers of investment

Consistent with other technology systems and applications, our metering systems require ongoing vendor support. Vendors regularly update their products and may not provide support for out-dated versions.

Unsupported systems give rise to higher risk of failure and cyber-security vulnerabilities. When applications are no longer supported by a vendor, patches and upgrades are not made available to address functionality defects and security vulnerabilities. The risk of unauthorised access leading to data loss, loss of service, or non-compliance with regulatory requirements increases over time.

It is for this reason that our current risk management and digital architecture approach is to keep applications current by implementing version updates, patches and bug fixes in line with vendor advice on timing. Through the process, we test:

[2] As required by Victorian Electricity Distribution Code of Practice for 95% of our meters.

- Whether the underlying business or network need for the application or system remains relevant and suitable for future drivers.
- Whether there are alternative options to updating the current system or application, including third party support from alternative providers, moving to a new product or providing the capability through a new platform in our non-recurrent program.

2.3 Identified needs

Our approach to identification of needs was to determine the known or likely timing of vendor updates to each of our metering technology systems. In some cases, we did not have exhaustive bottom-up information on vendor upgrades given that we are forecasting to 2031. In these cases, we sought to apply an estimate of the likely vendor update cycle which is generally about 5 years.

Our identification of needs also sought to identify whether there remained a continued business need for the application or system. This considered whether the function may be provided via an alternate platform or means, or through a planned non-recurrent ICT investment.

Table 1 sets out the metering systems requiring an upgrade in the 2027-31 regulatory period:

Table 1 – Metering systems requiring recurrent capex in the 2027-31 period

System or Application	Description of current function	Cost
Our smart metering systems ([CIC])	These technology systems include [CIC]'s [CIC] and market systems ([CIC]) that together collate the remote reads on advanced meters. These systems are forecast to require updating in FY2028 and FY2029.	[CIC]
Non-AMI meter reading refreshes	These technology systems collate the data on accumulation meters including [CIC] and [CIC]. These systems will require updating in FY2029.	[CIC]
Our Power Quality data system ([CIC]) upgrade	These technology systems enable real time monitoring of voltage at the customer's premises. These systems are forecast to require updating in FY2029 and FY2030	[CIC]

2.4 Options assessment

In developing this business case we have focused on the AER's expectations on the method and approach that should be applied to proposed recurrent ICT expenditure as set out in the AER's guidance note – "Non-network ICT capex assessment approach" of November 2019.

The AER identifies three approaches to assess recurrent expenditure. In terms of bottom-up analysis, the AER recognises that recurrent expenditure relates to maintaining an existing service and that it will not always be the case that the investment will have a positive NPV. It expects that a business case will consider possible multiple timing and scope options of the investments (to demonstrate prudency) and options for alternative systems and service providers (to demonstrate efficiency). The AER also assess the program as a whole including whether the proposed expenditure varies from historical trends, and benchmarking analysis compared to peer networks.

To give effect to this methodology we used risk-cost analysis to determine the optimal strategy for recurrent expenditure on applications as set out in **Table 2**. Option 1 was to actively manage metering systems without refreshes. Option 2 was to refresh our metering systems in line with vendor recommendations.

Table 2 - Options

OPTION	SUMMARY
Option 1: Actively manage without vendor support	Operate our metering systems without performing updates, patching or refreshes and actively manage the risks in-house
Option 2: Perform lifecycle refreshes **(Recommended option)**	Where prudent and efficient, performing refreshes, upgrades and patching of metering systems in line with vendor recommendations and maintaining vendor support

2.4.1 Option 1 – Actively manage without vendor support

Under this option, we would undertake minimal refreshes and actively manage the risks of operating metering systems and applications beyond their expected or recommended cycle. This would effectively operate the metering system longer than the recommended refresh period. We would seek to actively manage the risks of systems and applications that fail in service.

There are a number of risks associated with this option, as highlighted in the assessment below relative to our Enterprise Risk Management Framework. **Table 3** shows the risk level matrix to which we have assessed each of risks within the options. Risks of highest concern are rated red, whereas those of lowest concern are rated blue.

We consider that overall, this option has elevated risk, does not meet the needs of the business and is therefore not a recommended option.

Table 3 - Risk assessment of Option 1

		Consequence				
		1	2	3	4	5
Likelihood	Almost certain					
	Likely				R1.1	
	Possible					
	Unlikely					R1.2
	Rare					

Legend
A
B
C
D
E

	RISK	CONSEQUENCE	LIKELIHOOD	RISK RATING
R1.1	Increases system failures, outages and downtime lead to delay or inability to provide meter data transactions.	Level 4. Outage means that regulatory reporting requirements will not be met exposing business to potential penalties.	Likely	B
R1.2	Security intrusion into the system due to absence of patches and bug fixes on later versions of software results in outage to metering systems or threat actor taking control.	Level 5. Threat actor results in mass unwanted disconnection of customer electricity services. Result is significant impact, with further regulatory implications and exposing business to potential penalties.	Unlikely	B

2.4.2 Option 2 – Perform lifecycle refreshes (recommended option)

This option involves refreshing metering systems and applications in line with vendor recommendations. This ensures that metering systems receive required security and functionality upgrades, and maintain vendor support.

This option is recommended due to reducing associated risks to as low as practical, and reducing likelihood and minimising consequences relative to Option 1. This can be seen in **Table 4** where all risks are rated as D. Based on this assessment, Option 2 was the preferred option.

Table 4 - Risk assessment of Option 2

		Consequence				
		1	2	3	4	5
Likelihood	Almost certain					
	Likely					
	Possible					
	Unlikely			**R2.1**		
	Rare			**R2.2**		

Legend
A
B
C
D
E

	RISK	CONSEQUENCE	LIKELIHOOD	RISK RATING
R2.1	Increases system failures, outages and downtime lead to delay or inability to provide meter data transactions.	Level 3. Outage means that regulatory reporting requirements will not be met exposing business to potential penalties.	Unlikely	D
R2.2	Security intrusion into the system due to absence of patches and bug fixes on later versions of software results in outage to metering systems or threat actor taking control.	Level 3. Threat actor can be contained to minimise unwanted disconnection of customer electricity services. Materially lessened risk of regulatory implications and potential exposure to penalties	Rare	D

3. Non-recurrent capex

In addition to maintaining our existing metering systems, as detailed in Section 2, in the FY2027-31 regulatory control period non-recurrent investment will be required to further enhance metering capabilities. The purpose of this section is to detail these needs for non-recurrent capital expenditure, the options evaluated to meet these needs, and the resulting investment recommendation.

3.1. Identified needs

The underlying driver of non-recurrent capital expenditure relates to our compliance obligations to provide and store meter data. There are two compliance obligations that underpin these needs.

Ensuring new or replacement meters comply with the obligation to provide 5-minute data for settlement

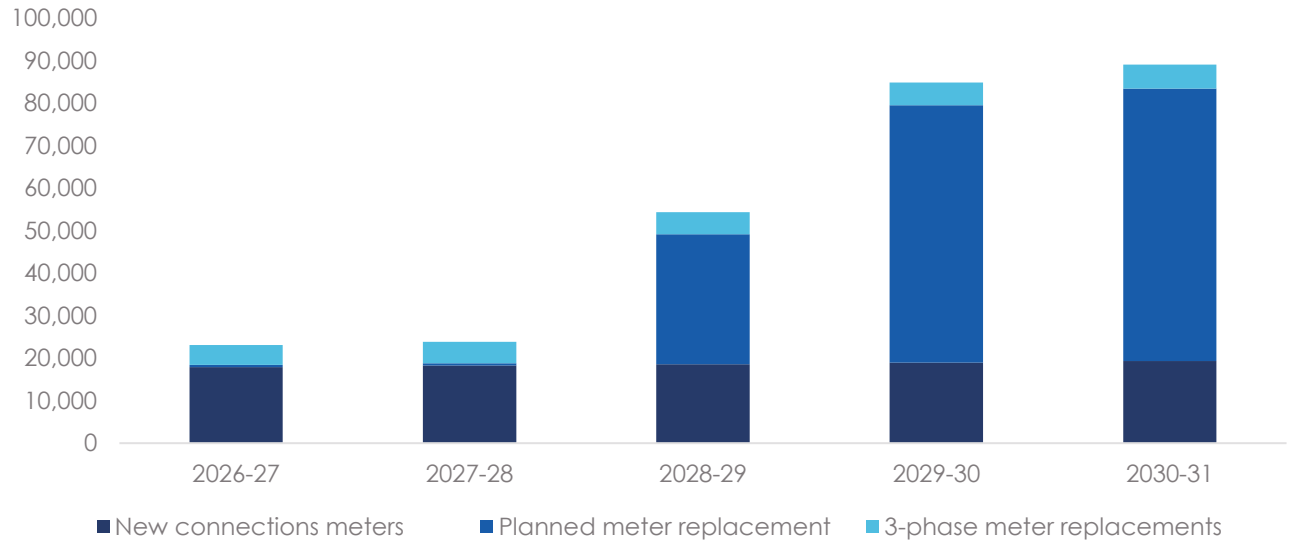
AusNet has an obligation to provide 5-minute data from applicable meters to AEMO for the purposes of settling the market. The obligation commenced in 2018 for any new or replaced Type 4 meter. Under the 2008 Minimum AMI Service Levels Specification Victoria, AusNet Services provides energy data from meters to AEMO and retailers by 6am the following day for no less than 95% of customers.

We have been meeting this obligation through our Meter Data Management System ([CIC]) which manages the validation, substitution, and reporting of all our metering data. Importantly, we scaled our solution to meet the proportionate needs in the current 2021-26 regulatory period such that we did not over-invest.

The identified need in the 2027-31 period relates to the forecast increase in new and particularly replacement meters as seen in **Figure 2**. As identified in our Metering business case, AusNet will need to install 275,000 new meters in the 2027-31 regulatory period.

As each existing 30-minute energy data meter is replaced with a 5-minute settlement data meter, the volume of data associated with that meter increases sixfold. Our analysis demonstrates that the existing capability of the Meter Data Management System will not be able to process the additional information, and there is a high risk that we will not meet our compliance obligations to provide 5-minute data to AEMO in the specified daily timeframes. For this reason, there is a need to expand our meter data management and processing capabilities to enable this volume of new 5-minute settlement data meters.

Figure 1 – Forecast annual meter installations in the 2027-31 regulatory period



New AEMC Rule change on flexible trading arrangements

In August 2024, the AEMC implemented the flexible trading rule change to unlock customer energy resources (CER) benefits. Under the Rule change, small and large customers will be able to separate and manage 'flexible' CER from 'passive' loads in the energy market - leading to innovative products and services for consumers. This means that EV chargers and batteries can be separately metered and visible in the energy market, distinct from 'passive' consumer loads, such as lights and fridges.

A key concept under the Rule change is the introduction of secondary settlement arrangements. Secondary settlement arrangements are allow Market Participants to establish a metering installation within the premises of an end user as a 'secondary settlement point'.

The final rule also provides for the two new metering installation types:

- Type 8A and 8B installations can be provided for or on behalf of the customer, with type 8B available to be used at secondary settlement points for small customers and (subject to volume limits and other technical requirements), type 8A at other points.
- Type 9 metering installations are intended for streetlights and street furniture and the final rule allows these devices to be aggregated under one NMI.

AusNet's metering systems will need to capture and store information on Type 8A, Type 8B and Type 9 installations, triggering a need for a capability uplift.

The new Rules will commence in November 2026, which means that a solution will be required to be implemented through the current 2021-26 regulatory period, with continued investment in the 2027-31 period.

We note that there is the prospect of the obligations being expanded in Victoria but there is no specific information at this stage. If new obligations arise, we will seek a pass through of costs.

3.2. Options assessment

In developing this business case for the non-recurrent element of metering systems, we have focused on the AER's expectations on the method and approach that should be applied to proposed non-recurrent ICT expenditure as set out in the AER's guidance note – "Non-network ICT capex assessment approach" of November 2019. In its final decision the AER note that for investments relating to achieving compliance, it would require information to evidence the need and evidence to demonstrate prudency and efficiency. That is, there is no requirement to demonstrate that the benefit of these investments exceed the cost.

For this reason, our analysis does not consider the 'do nothing' option, nor does it seek to demonstrate that the benefit of the project exceeds the costs. We have focused on evaluation of options that will most prudently and efficiently deliver the required compliance-driven capabilities.

Our analysis has identified 3 potential options that address the identified need, are technically feasible, and can be implemented within the required timeframe, which are summarised in **Table 5** below and discussed further below.

Table 5 – Options considered

OPTION	SUMMARY
Option 1: Maintain existing systems, augment with task specific applications	Maintain the existing systems and any new functionality required will be addressed with new task specific packages that may be from different vendors.
Option 2: Maximise use of existing systems with vendor updates or upgrades where possible.	Maintain the existing systems and any new functionality required will be addressed through upgrading existing modules or adding new modules from the existing vendor and software environment. Configuration and development of new capabilities will be implemented via these systems.
Option 3: Implement a new platform that addresses all needs	Replace all relevant systems with a single software platform from a different vendor that will provide all functionality.

3.2.1. Option 1: Maintain existing systems, augment with task specific applications

In this option, the core system [CIC] and [CIC] would remain rather than replacing these systems with costly alternatives as described in Option 3. The meter data collection system, [CIC], used for manually read meters, is only used for a relatively small number of meters. This could be replaced with a stand-alone reading solution. The MDMS solution based on [CIC] could be replaced with the [CIC] solution. To achieve this a significant uplift is non-recurrent send is required to implement the new systems in parallel with the existing systems (as shown in **Table 6** below).

Note that retirement of [CIC] MDMS would result in a reduction in recurrent capex, as currency would not need to be maintained (total of $1.1m reduction in nonrecurrent relative to Chapter 2). Additionally, on retirement a small opex saving may be materialised through systems consolidation.[3]

Given the need to migrate significant capability and data from MDMS to [CIC], this Option has moderate deliverability risk, given the complexity of the systems involved.

Table 6 Forecast expenditure for Option 1 ($'million, real FY24)

Cost item	FY27	FY28	FY29	FY30	FY31	Total
Capex	$12.8m	$3.0m	-	-	-	**$15.8m**
Opex	$0.2m	$0.38m	-$0.12m	-$0.12m	-$0.12m	**$0.24m**
Total	**$13.0m**	**$3.38m**	**-$0.12m**	**-$0.12m**	**-$0.12m**	**$16.04m**

3.2.2. Option 2: Fully leverage and augment existing systems

Under this option, the MDMS would be scaled up to ensure sufficient capacity to enable the migration from 30-minute settlement to 5-minute settlement for 275,000 meter installations in the 2027-31 period. In addition, the MDMS would be re-configured and include a new module to create and store data for Type 8A, Type 8B and Type 9 meters to meet compliance obligations arising from the Flexible Trading Rule change.

Table 7 identifies the forecast expenditure for this option, which reflects required MDMS upgrades and opex for required new module.[3] Given all modifications for this Option are occurring in existing and well understood systems, it has low deliverability risk.

Table 7 Forecast expenditure for Option 2 ($'million, real FY24)

Cost item	FY27	FY28	FY29	FY30	FY31	Total
Capex	$2.8m	-	-	-	$3.2m	**$6.0m**
Opex	-	$0.1m	$0.1m	$0.1m	$0.1m	**$0.3m**
Total	**$2.8m**	**$0.1m**	**$0.1m**	**$0.1m**	**$3.3m**	**$6.3m**

3.2.3. Option 3: Deploy a new platform / system architecture

Ordinarily we would develop an "Option 3" being a greenfields deployment of a new solution. In this case, our current systems, [CIC], and are at the core of AusNet's metering architecture (as detailed in Appendix A). Fully replacing these systems with an alternative system would be cost probative, in excess of $50M for ICT costs. It would also require the replacement of all the field infrastructure (access points, meter network interface cards (NICs), backhaul services, etc). These costs are not part of the ICT business case and would need to be covered in a Meter Replacement Business Case at an expected cost in excess of $300M.

Additionally, a full system replacement project of this scale would introduce significant deliverability risk. Given the cost and risk involved with this option, Option 3 is not recommended.

[3] Refer AusNet EDPR 2027-31 Digital Program NPV Model

3.3. Preferred option

The results of our options assessment are outlined in **Table 8** below. Note that Option 1 capex includes the reduction in recurrent capex through systems consolidation (and associated opex reduction), however total capex is higher due to the increased non-recurrent spend (as described in Section 3.2.1).

Option 2 is recommended based on the lowest cost and delivery risk, to address the identified needs.

Table 8 Options analysis summary ($'thousand, real 2024)

Criteria	Option 1	Option 2	Option 3
Capex ($'000, real FY25) – Recurrent	$9,200	$10,300	
Capex ($'000, real FY25) – Non-recurrent	$15,800	$6,000	c.$50,000
Opex ($00, real FY25)	-$100	$336	
Technically feasible	✓	✓	✓
Addresses identified need	✓	✓	✓
Deliverable within timeframe	✓	✓	✓
Delivery risk	Moderate	Low	High
Preferred	×	✓	×

The proposed scope and costs of the preferred Option 2 are set out in **Table 9** below.

Table 9 – Scope and forecast capital expenditure on preferred option

System or Application	New capability to meet need	Cost
MDMS – [CIC] and [CIC]	Scale up the MDMS to ensure sufficient processing power to meet the switch from 30-minute settlement to 5-minute settlement for 275,000 meter installations in the 2027-31 period.	$3.2m
MDMS - [CIC] and [CIC]	Re-configure and a new module for MDMS to create and store data for Type 8A,Type 8B and Type 9 meters to meet compliance obligations arising from the Flexible Trading Rule change.	$2.8m

Appendix A – AusNet metering architecture

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CIC

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