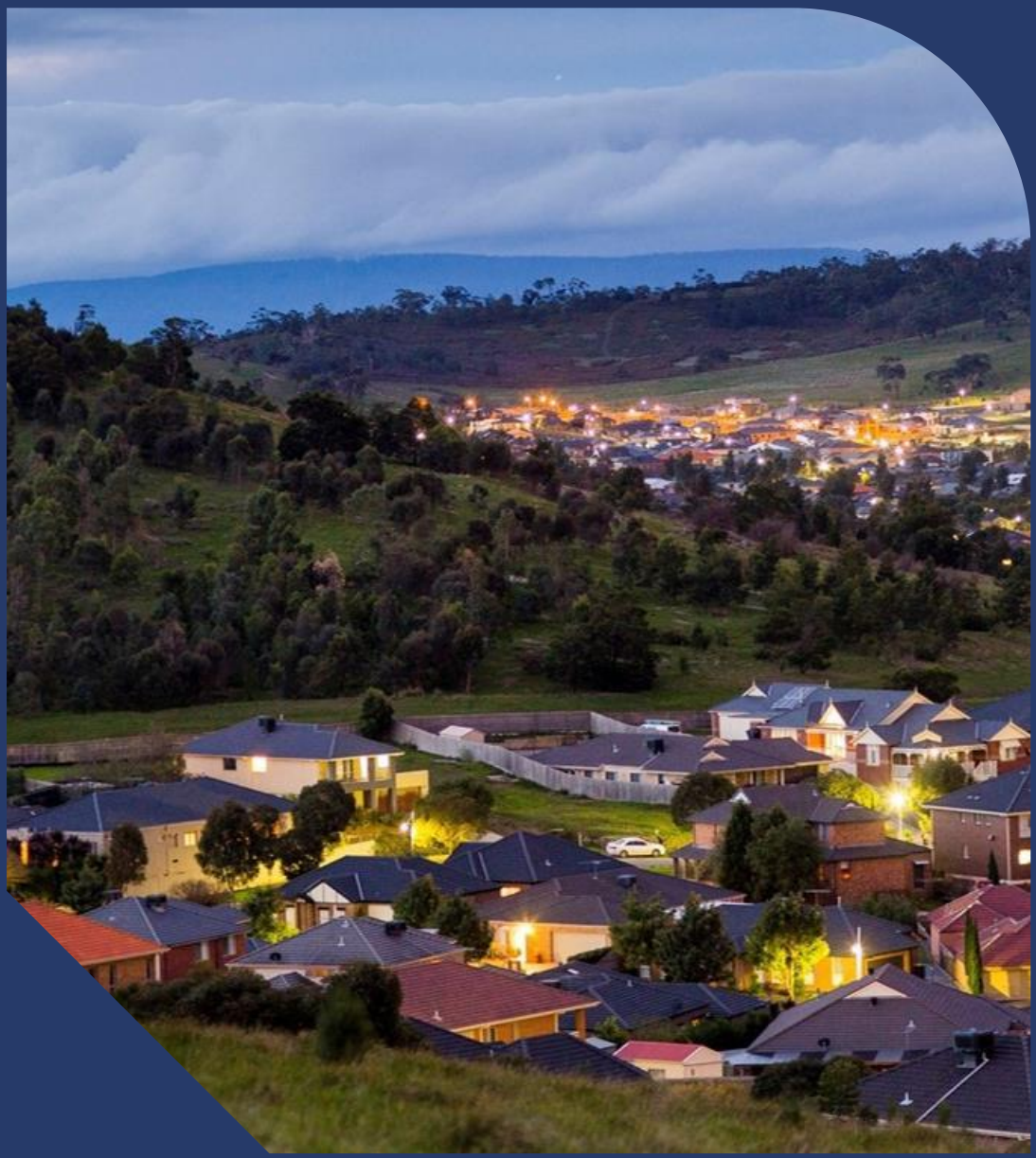
AusNet

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

Business case: Distribution System Operator (DSO)

Date: January 2025



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Document history

DATE	VERSION	COMMENT
24/10/2024	V1.0	Draft business case for review
08/01/2025	V2.0	Final business case document

Related documents

DOCUMENT	VERSION	AUTHOR
Technology Strategy and Investment Plan	V3.0	AusNet Services
AusNet CER Integration Strategy	V2.0	AusNet Services
AusNet EDPR 2027-31 Digital Program NPV model	V3.0	AusNet Services

Approvals

POSITION	DATE
Digital & Technology – Strategy, Regulatory and Partner Management	December 2024
Digital & Technology – Architecture	December 2024
Distribution – Strategy and Regulation	December 2024

1. Executive summary

Key objectives of the program

- **Introduce flexibility in network management of customers' solar exports to increase network utilisation, reduce network costs and improve customer outcomes**
- **Introduce flexibility in connections of flexible commercial load, to increase network utilisation, reduce network costs and deliver optionality to customers**
- **Provide more customers and third parties an opportunity to participate in non-network solutions, providing direct rewards to customers/third parties while deferring network augmentation**
- **Enable customers, community groups and third parties to access network information that helps them plan and deliver their energy projects**
- **Integrate systems with Australian Energy Market Operator's (AEMO) Consumer Energy Resources (CER) Data Exchange, to improve data sharing and connectivity of aggregated CER on the network**

Key benefits to customers

- Increased network utilisation and deferred augmentation, reducing long term network cost for all AusNet customers
- Optionality for customers when connecting to the network (both load and embedded generation)
- Lower cost of connection for flexible loads
- Faster connections of energy projects through better informed decision making on where and how to connect to the network
- Lower cost of aggregation of CER and participation in non-network solutions, to the benefit of all AusNet customers and electricity consumers in the National Electricity Market (NEM)

Options considered

Three options were evaluated, assessing two alternate implementation approaches relative to the do nothing case

OPTION	SUMMARY
Option 1: Do nothing	Do not undertake any investment and maintain the existing systems without new capabilities.
Option 2 (Recommended): Maximise use of existing systems with required enhancements	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.
Option 3: Maintain existing systems, augment with new 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.

Recommended option

Option 2 is recommended as it provides highest NPV and lowest deliverability risk

Criteria	Option 1	Option 2	Option 3
Capex ($million, real FY24)	-	$37.0	$50.0
Opex ($million, real FY24)	-	$11.1	$22.7
NPV ($million, real FY24)	-	$4.8	-$24.0
Technically feasible	N/A	✓	✓
Aligned with CER Integration Strategy	×	✓	✓
Delivery risk	N/A	**Low**	**High**
Preferred	×	✓	×

Expenditure forecast	Expenditure forecast for recommended Option 2:

Cost item	FY27	FY28	FY29	FY30	FY31	Total
Capex	$10.50	$10.50	$4.00	$9.00	$3.00	**$37.00**
Opex	$0.00	$0.75	$2.36	$3.91	$4.06	**$11.08**
Total	**$10.50**	**$11.25**	**$6.36**	**$12.91**	**$7.06**	**$48.08**

Customer engagement	Initiatives in this business case are consistent with the initiative under the National Consumer Energy Resources (CER) Strategy and Victorian government policies. There is strong support for these initiatives from the energy industry as well as the EDPR Future Networks panel.

2. Context

Please refer to our CER Integration Strategy for a broader context behind the energy transition, evolving customer needs and the need to integrate Consumer Energy Resources (CER) effectively and efficiently.

This section focuses on the context behind investment specific to the digital systems needed to enable AusNet's transition to the 'Distribution system operator' (DSO).

2.1. Current capability

In 2023, the Victorian Government introduced the Victorian Emergency Backstop Mechanism (VEBM) to ensure all new and replacement solar systems connected to distribution networks can be remotely curtailed in a minimum system load emergency to maintain system security. This has placed new obligations on DNSPs through new conditions in distribution licences. The VEBM has been implemented in two stages:

- Stage 1: New and replacement distributed solar systems greater than 200 kW, from 25 October 2023.
- Stage 2: New and replacement distributed solar systems 200 kW and below, from 1 October 2024.

These new electricity distribution licence condition amendments required us to invest in digital capabilities, people and process to ensure all new solar units are connected to a network utility server and capable of remote interruption or curtailment. While this will provide a minimum demand backstop measures, importantly, this investment has provided us with foundational capabilities for smart inverter management, allowing us to roll-out Flexible Export using the same technology, for example.

The key VEBM capabilities developed under this work program are summarised in the **Table 1** below along with the GridView platform which seeks to provide access to network information to community groups and other parties working on renewable energy project.

Table 1 – Key Victorian Emergency Backstop Mechanism Systems and Capabilities

System	Vendor	Description
[CIC] Installer Portal	[CIC]	These are the front-end systems which allow installers to submit connection applications. The systems implement process follow that support installers through preapproval, installation, commissioning and post commissioning tasks.
Distributed Energy Resources (DER) Gateway	[CIC]	This application provides integration capabilities for Original Equipment Manufacturer (OEM) applications and devices to communicate to the AusNet DERMS systems. Outgoing communications from the DERMS systems to customer devices are also channelled through the gateway. The gateway is designed to securely facilitate the communication of CSIP-AUS transactions across tens of thousands of devices via aggregation platforms as well as directly.
Distributed Energy Resources Management System (DERMS)	[CIC]	This application provides core DER management capabilities for the operational teams at AusNet. It represents our LV network and tracks the CER installations on the network such that each site and device can be registered, commissioned, monitored and under backstop directions, be controlled.
DERMS Pre-Processor	[CIC]	This is a bespoke integration application that was developed for the emergency backstop functionality. This works with other AusNet systems to define control limits for VEBM enabled devices that the DERMS systems then publish.
Data and Analytics (DNA)	[CIC]	Enhancements to the backend data integration and reporting capabilities.

Advanced Distribution Management System (ADMS) User Interface / Minimum System Load Adapter	[CIC]	Added VEBM control functionality to ADMS to initiate a backstop event via integration to the DERMS.
SNet	[CIC]	Export limit calculations (legacy) to support end device commissioning.
GridView	[CIC]	AusNet GridView Portal is a freely accessible map of our electricity distribution network which provides access to network data that can be used by community energy groups and other organisations.

3. Identified need

3.1. Customer expectations

For the EDPR FY2027-31 Regulatory Proposal we have engaged in detail with our Future Networks panel on emerging customer needs and how we should best invest to unlock more value from all CER on our network, including rooftop solar, batteries and Electric Vehicles (EVs) / EV charging units. We have also been engaging directly with the Victorian government and community energy groups on their energy ambitions, particularly through the implementation of the Neighbourhood Battery Initiative. This includes an AER-run Phase 2 Low-voltage network visibility data trial between community battery proponents and Victorian distributors.

We engage with our customers every day on their energy needs and pain points, including most recently with customers looking to install public charging stations across our network, or to upgrade existing connections to incorporate EV charging units.

All of this has informed the scope and timing of our DSO program of work in the next period.

The summarised key themes from the EDPR engagement and our engagement with our customers and community groups are:

- **Strong support to introduce Flexible Exports as an option for all new solar customers from 1 July 2026**, with an alternative of a low static limit. Flexible Exports are a new way of managing solar exports, by sending varying export limits to solar generation systems on the network based on local network conditions at the time. By taking this approach, we are only constraining solar exports at the time when they are likely to either cause network constraints or create minimum demand risk. This is a more efficient and more equitable way of managing exports than applying conservative static constraints that are allocated on a 'first come first serve' basis, penalising solar installations that are implemented later.
- **Strong demand for more network data to be shared in a uniform streamlined manner.** This is best summarised in AER's final report on the Phase 2 Low-voltage network visibility data trial.[1]Being able to compile and provide efficient and timely access to network data will allow customer and community groups to make better informed decisions regarding their investments in renewables.
- **Strong demand for flexible connection options for flexible load.** This includes having capabilities to send dynamic signals to connecting load around network limits, which allows them to connect at lower cost (for example, not having to pay for a transformer upgrade as part of the connection cost). Battery proponents and EV charging providers are continuously seeking these services from us. This is also summarised in the DCCEEW options paper on Streamlining the connection of Electric Vehicle Supply Equipment (EVSE) and large CER.[2]
- **Strong desire to simplify processes and opportunities to be rewarded for flexibility, through 'flexibility services'.** With more and more CER on our network, including installations of very flexible batteries of any size (including behind and in front of the customer connection point), there is increasing demand on us to reward these customers for their flexibility through network support payments if they are able to provide flexible network services, or 'flexibility services'. We have also heard that the current processes for signing up to offer and provide non-network solutions or flexibility services can be onerous and not clear from the start what the potential value of the service might be. This deters potential providers of non-network/flexible services.
- **AEMO is currently designing a national CER Data Exchange, with AusNet as a key participant,** through a co-design process with the industry. The Australian Renewable Energy Agency (ARENA) is supporting this initiative through a grant from its Advancing Renewables Program.

These are strong themes and new initiatives that are driving the need for new capabilities in our digital systems, people and processes. In the following section, we identify the current limitations in AusNet meeting these customer expectations without further investment.

[1] AER, Low-voltage Network Visibility, Summary of neighborhood battery trials, 11 October 2024.
[2] DCCEEW & Oakley Greenwood, Streamlining the connection of Electric Vehicle Supply Equipment (EVSE) and large Consumer Energy Resources (CER), Options Paper for consultation, 26 August 2024.

3.2. Limitations of existing systems

We aim to deliver services to the level of quality that is expected (or will be expected over the next pricing period) by our customers. However, we are unable to meet these new customer expectations presently due to identified limitations in our systems, summarised in **Table 2** below.

Table 2 - limitations of existing system and impact on customers

Identified limitation	Customer impact	Functionality required to address need
Inability to accurately measure network capacity allocation when deploying Flexible Exports	Exporting customers are given more conservative limits than they could get, wasting renewable energy and increasing individual customers' bills Network is not utilised to its maximum and augmentation is needed to enable more exports, at a cost to all customers	Sophisticated and accurate network allocation methodology and real-time algorithms, when deploying Flexible Exports to each customer
GridView application is only capable of showing limited data and only manually updated by AusNet	Community energy groups and third-party providers cannot get sufficient or current data to assist their energy projects, delaying project delivery, potentially cancelling projects and potentially resulting in more expensive connection projects than necessary Inefficient connections of new energy projects, resulting in lower network utilisation and higher costs to customers	Data portals that can provide high volumes of network data for our whole network and can be updated in 'near real time' automatically using data from other AusNet systems
Manual and bespoke non-network solutions contracts only	Accessibility of non-network solution contracts is poor, meaning fewer customers participate than they otherwise might, leading to potentially higher network augmentation than could be unlocked through flexibility services Network assets are not utilised to their maximum and augmentation is needed to enable more import and export services	Sophisticated platform that allows any customers or third parties to easily sign up to provide flexible services, with the terms and conditions and pricing of the services easily available, to inform participation. a
Inability to provide dynamic connections for load	Customers connecting flexible load, who wish to take up dynamic connections but can't, have to pay for inefficient network capacity that decreases network utilisation, resulting in higher costs to connecting parties and in the long term, all AusNet customers. These costs can deter investment in CER, potentially delaying benefits that efficiently integrated CER can deliver for all energy consumers.	Systems that can communicate with customer's load devices to provide signals on network limits, including sophisticated and accurate network allocation methodology and real-time algorithms that always ensure the best use of the network
No link between our current systems to AEMO's CER Data Exchange	In the long term, without an efficient integration of aggregated CER into the single data exchange, the cost to all NEM customers may be higher from inefficient integration of aggregated CER, where aggregators, retailers and other providers of aggregated services need to integrate with each distributor and AEMO separately.	Systems that integrate with AEMO's CER data exchange platform.

These limitations are resulting in poor customer outcomes, including for customers who are investing in CER but also all AusNet customers where inefficient integration is occurring.

4. Options assessed

This section provides an overview of the options evaluated to enable AusNet to address the limitations with our existing systems identified in Section 3. In developing these options, we considered alternative approaches for addressing the issues and gaps identified. Each option considers a different approach to implementation, using a different system architecture, with differing cost and risk profiles.

The AER's guidance note – "Non-network ICT capex assessment approach" of November 2019 notes that non-recurrent expenditure must have a positive net present value unless a compliance requirement. We have assessed the timing and benefits of the investments relative to the 'do noting' case (to demonstrate prudency) and developed and evaluated options for alternative systems and service providers (to demonstrate efficiency). Assessment has been made of the discounted costs of each option against the program benefits to identify the option with the highest NPV.

4.1. Quantifying benefits

We have assessed the benefit of providing new types of services and initiatives through deferred augmentation and the unlocked value of exports, using the AER's customer export curtailment value (CECV) and value of emissions reduction (VER). We have not quantified the benefit of providing better data sharing or systems that integrate into AEMO's CER data exchange, as we do not have sufficient data from our customers to quantify the value this unlocks. However, we know there is strong demand for both services in the current environment.

The options were assessed using the fixed benefit analysis and the capital cost to implement the improvements under the two different system architecture options. The base case (Option 1) assumes that no additional investment is required, and existing systems will be retained. This option has zero customer benefits as a result.

Each of the two investment options assesses the investment required to implement the proposed system architecture using the functionality of identified existing systems as a starting point. Since each option has been designed to deliver the same outcomes, the key difference between options is in relation to the ability to deliver options within the required timeframe, risk to delivery timeframes, and overall cost of the option.

Table 3 below outlines key assumptions used in the economic assessment of identified options, and Table the resulting quantification of benefits.[3]

Table 3 - Key assumptions

Assumption	Value	Comments
WACC	5.45%	Based on EDPR WACC

Source: AusNet analysis

Table 4 - Summary of expected benefits

Realised benefit	Benefit (FY27-35) $m NPV ($real 2024)
Reduced customer export curtailment and value of emissions reduction	$20.7m
Deferred augmentation	$35.4m
Reduced operations and maintenance expenditure (opex)	$0.9m

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

4.2. Options analysis

We identified two credible options that address the identified needs, are technically feasible, and can be implemented within the required timeframe. Each of these two options uses a different system architecture to deliver the identified needs and improve our systems and/or functionality by implementing the following improvements:

- **DER optimisation/integration algorithms for efficient network capacity allocation**—ensuring that Flexible Exports, dynamic connection agreements and flexible services are sufficiently sophisticated to deliver genuine efficiencies and improved network utilisation.
- **Effective network data sharing platforms**—ensuring community energy groups and other third parties are able to effectively search and access current network visibility data that assist in their energy project development, including finding the most efficient point of connection to the network.
- **Communications and control capabilities with new load devices on our network**—allowing us to communicate with commercial load devices in real time and provide network instructions and controls specific to each device.
- **Simple to use and effective non-network solutions trading platform**—simplifying sharing of network constraints and ability for customers and third parties to provide flexible services in near real time, including simplified terms and conditions and pricing.

These two options were assessed relative to the counterfactual 'do nothing' option, as shown Table 5 below.

Table 5 - Options Summary

OPTION	SUMMARY
Option 1: Do nothing	Do not undertake any investment and maintain the existing systems without new capabilities.
Option 2 (Recommended): Maximise use of existing systems with required enhancements	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.
Option 3: Maintain existing systems, augment with new 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.

4.2.1. Option 1: Do nothing

This option has been established as the base case, or counterfactual case, to provide comparison to Options 2 and 3. Under this option no additional investment in AusNet's systems to improve its functionality to enhance customers' experience is proposed and instead under this approach existing systems and functionality is retained.

This option will not enable AusNet to address the identified limitations in its ability to optimally manage and support the increasing consumer energy resources being connected to our network, nor does it align with AusNet's CER Integration Strategy and support meeting customer expectations. Therefore, this option is not considered a credible option.

4.2.2. Option 2: Maximise use of existing systems with required enhancements (Recommended)

This option proposes to update and/or upgrade the existing software products to obtain the functionality required to address the identified limitations. This approach will retain the current vendors and software environment.

AusNet will leverage the investments made in [CIC]'s DERMS implemented as part of the Victorian Emergency Backstop Mechanism, constraint engine used for flexible exports, [CIC] analytics platform, Advanced metering Infrastructure (AMI) and [CIC]. The required new functionality will be built into these existing systems or implemented via new, pre-integrated, functionality modules from the same vendors. The benefits and potential disadvantages of this approach are detailed in the following table.

Benefits	Disadvantage
• This option reduces integration and implementation risk as core systems are already in place. • Simplifies the user experience and system maintenance as familiarity with core systems grows. • Simplifies vendor management.	• The resultant systems may not be considered 'best of breed' solutions and there may be the need for some compromise in functionality or other features. • May delay delivery as core system vendors develop the required features/capabilities into their systems.

Our analysis has found that this option minimises implementation risk as it will primarily leverage existing systems and existing integrations with other systems. It is also the most likely to be implemented within the required timeframe. Existing system vendor will be leveraged or engaged to provide the required new business capabilities.

The overall cost is estimated to be $37.0 million capex and $11.1 million opex for licences and support required for new functionality modules. Our analysis has found that it has an NPV of $4.8 million.[4]

Table 6 - Forecast expenditure for Option 2 ($'million, real FY24)

Cost item	FY27	FY28	FY29	FY30	FY31	Total
Capex	$10.50	$10.50	$4.00	$9.00	$3.00	**$37.00**
Opex	$0.00	$0.75	$2.36	$3.91	$4.06	**$11.08**
Total	**$10.50**	**$11.25**	**$6.36**	**$12.91**	**$7.06**	**$48.08**

The NPV of this option is the highest of the options assess and it also has the lowest implementation risk profile, hence this option is recommended.

4.2.3. Option 3: Maintain existing systems, augment with new task specific systems

This option proposes to maintain existing DSO solutions, e.g. those implement for Victorian Emergency Backstop Mechanism and leverage those systems where the capability already exists. Task specific solution will be identified to address new DSO business capabilities such as CER Gen/Load Management, CER Open Data Exchange Integration, Flexible Demand Orchestration, etc.

While open market selection of new functionality systems ensures access to best of breed solutions, our experience has found that implementing new systems from diverse vendors requires significantly more time and is highest risk of exceeding the forecast expenditure budget compared to working with existing vendors to provide the capability in their systems.

Benefits	Disadvantage
• This may result in the best of breed solution being implemented for each task. • This option minimises any regression testing and potential impacts to current VEBM functionality. • Removes the dependence on the exist vendors e.g. GE, to provide the required functionality into their products.	• This option has high implementation cost as new task specific solutions would need to be implemented. • There may be data integration issues which need to be addressed and impact our ability to implement some of the solutions within the required timeframe. This could require additional configuration or 'work arounds' to ensure seamless flow of information and may pose a long-term risk if the business loses knowledge of the work around (such as by departure of staff). Experience has found that the cost of integration of new systems with our existing systems has a

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

Benefits	Disadvantage
	high cost with potentially 100's of integration points. • This approach will result in additional software packages that may be from different vendors, hence there will be additional vendor management and licence fees payable with some administrative burden and ongoing vendor management. • Depending on the system and its functionality, staff may be required to undergo training on how to use or manage the new systems.

Our analysis has found that this option has a higher forecast cost and higher implementation risk. With new vendor solutions needing to be identified, implemented an integrated for new business capabilities, procurement and installation (labour, integration and infrastructure) of these new solution would incur higher capex cost. These new solutions will also require additional vendor licensing and support costs resulting in an increase in ongoing opex spend.

The overall cost is estimated to be $50 million capex and $22.7 million opex, and our analysis has found that it has an NPV of -$24.0 million.[5]

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

Cost item	FY27	FY28	FY29	FY30	FY31	Total
Capex	$16.50	$17.50	$4.00	$9.00	$3.00	**$50.00**
Opex	$1.20	$3.35	$4.96	$6.51	$6.66	**$22.68**
Total	**$17.70**	**$20.85**	**$8.96**	**$15.51**	**$9.66**	**$72.68**

The NPV of this option is negative and it also has the highest risk profile is, hence this option is not recommended.

4.3. Preferred option

Our analysis has found that Option 2 provides the highest NPV. Option 2 also fully addresses the identified needs and achieves the CER Integration Strategy, while minimising delivery risk through utilisation of existing systems.

As a result, Option 2 best meets AusNet's customer expectations and is the preferred option, as summarised in Table 7.

Table 7 - Options analysis summary

Criteria	Option 1	Option 2	Option 3
Capex ($million, real FY24)	-	$37.0	$50.0
Opex ($million, real FY24)	-	$11.1	$22.7
NPV ($million, real FY24)	-	$4.8	-$24.0
Technically feasible	N/A	✓	✓
Aligned with CER Integration Strategy	×	✓	✓
Delivery risk	N/A	**Low**	**High**
Preferred	×	✓	×

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

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