EMCa

energy market consulting associates

Jemena 2026 - 2031 Regulatory Proposal

REVIEW OF PROPOSED EXPENDITURE ON ICT AND CER

Public Version

Report prepared for:

AUSTRALIAN ENERGY REGULATOR (AER)

August 2025

Preface

This report has been prepared to assist the Australian Energy Regulator (AER) with its determination of the appropriate revenues to be allowed for the prescribed distribution services of Jemena from 1st July 2026 to 30th June 2031. The AER's determination is conducted in accordance with its responsibilities under the National Electricity Rules (NER).

This report covers a particular and limited scope as defined by the AER and should not be read as a comprehensive assessment of proposed expenditure that has been conducted making use of all available assessment methods nor all available inputs to the regulatory determination process. This report relies on information provided to EMCa by Jemena. EMCa disclaims liability for any errors or omissions, for the validity of information provided to EMCa by other parties, for the use of any information in this report by any party other than the AER and for the use of this report for any purpose other than the intended purpose. In particular, this report is not intended to be used to support business cases or business investment decisions nor is this report intended to be read as an interpretation of the application of the NER or other legal instruments.

EMCa's opinions in this report include considerations of materiality to the requirements of the AER and opinions stated or inferred in this report should be read in relation to this over-arching purpose.

Except where specifically noted, this report was prepared based on information provided to us prior to 1 June 2025 and any information provided subsequent to this time may not have been taken into account. Some numbers in this report may differ from those shown in Jemena's regulatory submission or other documents due to rounding.

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ABBREVIATIONS

Term	Definition
ACS	Alternative Control Service
ADMS	Advanced Distribution Management System
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
AFAP	As Far as Practicable
AMI	Advanced Metering Infrastructure
AWS	Amazon Web Services
B2B	Business to Business
BC	Business Case
BST	Base Step Trend
CAPEX	Capital expenditure
CBA	Cost Benefit Analysis
CBAM	Cost Benefit Analysis Model
CECV	Customer Export Curtailment Value
CER	Consumer Energy Resources
Current RCP	2022-2026 RCP
DER	Distributed Energy Resources
DERMS	Distributed Energy Resources Management System
DNSP	Distribution Network Service Provider
DOE	Dynamic Operating Envelopes
DPV	Distributed Solar PV
DVM	Dynamic Voltage Management
EDCoP	Essential Services Commission, Electricity Distribution Code of Practice
EOI	Expression of Interest
ESC	Energy Services Commission
EV	Electric Vehicle
FTA	Flexible Trading Arrangement
FTE	Full-Time Equivalent
GIP	Good Industry Practice
GIS	Geographic information System
HBRA	High Bushfire Risk Area
HV	High Voltage

Term	Definition
ICT	Information and Communication Technology
IDAM	Identity and Access Management
IDX	Industry Data Exchange
IFRS	International Financial Reporting Standard
IR	Information Request
IT	Information Technology
JEN	Jemena Electricity
LBRA	Low Bushfire Risk Area
LV	Low Voltage
ME	Mobile Enterprise
MITE	Market Interface Technology Enhancements
MSI	Market Systems Interface
NEM	National Electricity Market
NEO	National Electricity Objective
NER	National Electricity Rules
NMI	The National Meter Identifier
NPV	Net Present Value
NSP	Network Service Provider
Opex	Operational expenditure
OLTC	On Load Tap Changer
OMS	Outage Management System
OT	Operational Technology
PLN	Plumpton zone substation (proposed)
PQ	Power Quality
PV	Present Value
RCP	Regulatory Control Period
RIN	Regulatory Information Notice
RP	Regulatory Proposal
SCADA	Supervisory Control and Data Acquisition
SCS	Standard Control Service
SNAP	Strategic Network Analytics Platform
STPIS	Service Target Performance Incentive Scheme
TOTEX	Total expenditure
UFLS	Underfrequency Load Shedding
VCR	Value of Customer Reliability

Term	Definition
VEBM	Victorian Emergency Backstop Mechanism
VVC	Volt Var Control
ZSS	Zone Substation

EXECUTIVE SUMMARY

Introduction and context

1. The AER has engaged EMCa to undertake a technical review of certain expenditure that Jemena has proposed in its Regulatory Proposal (RP) for the 2026-31 Regulatory Control Period. The assessment contained in this report covers:
   - Proposed ICT capex and opex step changes[1]
   - Proposed capex and opex step changes for CER and electrification, and which is comprised of ICT capex and opex, certain network augex and some non-ICT opex.
2. Our assessment is intended to assist the AER in its own analysis of the proposed capex and opex allowances as an input to its draft determination on Jemena's revenue requirements for the next RCP.

Expenditure under assessment

Overview

3. As shown in the table below, Jemena has proposed ICT capex of $153.5m, ongoing ICT opex of $21.6m and ICT project opex of $38.2m. Of these amounts, $46.7m is for CER-related ICT, which combines with $45.7m augex and a further $3.0m non-ICT opex to a total of $95.4m that Jemena proposes for CER-related programs.[2]
4. We assess Jemena's proposed cyber security expenditure in a separate report, and the remainder of the expenditure shown in this table in the current report.

Table ES.1: Jemena's proposed ICT and CER expenditure ($m, real 2026)

Programs	ICT			Total ICT	Augex	Non-ICT opex	Total: Non-ICT	TOTAL
	Capex	Ongoing opex	Propex					
ICT - other than CER and cyber	114.7	11.8	31.8	**158.3**	-	-	-	**158.3**
CER	38.8	7.5	0.4	**46.7**	45.7	3.0	**48.7**	**95.4**
Cyber security	-	2.3	6.0	**8.4**	-	-	-	**8.4**
Total	**153.5**	**21.6**	**38.2**	**213.4**	**45.7**	**3.0**	**48.7**	**262.0**

Source: EMCa, derived from Jemena's capex and opex models and associated workbooks

Assessment of proposed recurrent ICT capex

5. Jemena proposes $34.4m for recurrent ICT capex. Jemena has forecast this amount using a 'base step trend' approach, projecting forward from a base expenditure level for which it utilises the past three years actual expenditure and its estimated expenditure for the subsequent two remaining years of the current RCP.

[1] Our review of ICT for cyber security is covered in a separate report

[2] Expenditure is shown in this report in escalated $2026 terms, consistent with Jemena's regulatory proposal, unless stated otherwise.

Assessment of proposed non-recurrent ICT expenditure (other than for CER and cyber security)

6. Other than for CER, Jemena proposes $80.3m capex for non-recurrent capex projects. This comprises proposed capex for 13 non-recurrent projects that Jemena has categorised as either:
   - Maintaining existing services (7 projects totalling $34.4m)
   - Providing new or expanded capability (3 projects totalling $21.8m), and
   - Providing for new or altered obligations (3 projects totalling $24.1m)
7. Jemena's proposed ICT ongoing opex and project opex is associated with its non-recurrent capex projects but also includes an allocation of some 'enterprise' project and ongoing opex.

Assessment of proposed CER-related expenditure

8. Jemena proposes the $95.4m CER-related expenditure under three strategic programs as follows:
   - Data visibility and analytics program
   - Grid stability and flexible services program
   - Voltage and power quality program.
9. Jemena's data visibility and analytics program is primarily an ICT program, for which Jemena plans to complete is deployment of a 'data hub' and then proposes capex totalling $9.1m continuing over the period for development of network analytics.
10. Jemena's grid stability and flexible services program is also primarily an ICT program, for which Jemena proposes to develop first flexible export capability and then, at the end of the period, flexible import capability at a combined cost of $26m. Jemena also proposes UFLS development within this program, though the proposed augex for this was not within the scope of our review.
11. Jemena's voltage and power quality program is primarily for $25.6m augex to deploy VVC and to improve supply quality through distribution substation augmentations. It also includes $14.9m augex for installation of reactors, though this was not within our review scope.

Regulatory treatment of proposed ICT project opex (propex)

12. As shown in table E.1, Jemena has proposed $38.2m of ICT propex. Its proposal is to take this into account by adding $0.8m to its base opex for its base step trend overall business opex forecast.
13. Jemena proposes that the $0.8m base opex addition has the effect of adding $4.1m in total to its five-year opex forecast, which is the difference between its proposed propex and a figure of $34.1m that is the five-year equivalent of the project opex that Jemena states as being already included within its estimated base opex.
14. We consider Jemena's proposed propex as part of our assessment of its proposed overall expenditure for each project.

Assessment and findings

Assessment of proposed recurrent capex

15. Jemena proposes $34.4m for recurrent capex, which it has calculated using a 'base step trend' approach.

16. While we consider that Jemena's approach of trending from base expenditure is a reasonable approach, we are unable to duplicate the base expenditure value that it has used, and which appears to be driven up by Jemena creating an average that includes estimates for two years that are much higher than its actual recurrent ICT expenditure in the preceding years. Because of this, we consider that Jemena's proposed recurrent ICT capex is overstated.

Assessment of non-recurrent capex projects (excluding CER)

17. We consider that Jemena has provided adequate justification for its proposed capex for ten of the thirteen non-recurrent capex projects that it has proposed.

18. We consider that a Customer Education ICT project that Jemena has proposed, is not justified on the basis that the retail competition-related objective of this project is not within the mandate for a DNSP's regulated expenditure.

19. For the remaining two non-recurrent projects, we consider that Jemena's proposed capex is overstated. For one of these projects (MSI) Jemena's information suggests that the proposed cost should be only partly allocated to Jemena electricity, while for the other (FTA) Jemena's information leads us to the view that allocation to SCS is questionable.

Assessment of proposed CER-related ICT expenditure

20. We consider that Jemena's proposed CER-related ICT expenditure is considerably overstated. While we consider that it is reasonable to assume the need to introduce flexible services, we consider that Jemena has overstated the ICT cost required to introduce flexible exports and has not justified the considerable additional cost that it proposes to then introduce flexible imports, which it plans only by the end of the next period.

21. We also consider that Jemena has not provided justification for proposed capex to develop unspecified network analytics over the period.

Assessment of proposed CER-related augex

22. For the two projects within our scope, we consider that Jemena has significantly overstated the justified level of network augmentation investment required through these projects to address voltage and power quality. (We note that Jemena also proposed further projects within its voltage and power quality program, but which were not within our scope).

Assessment of proposed ongoing opex

23. We have reviewed Jemena's proposed ICT opex on a project by project basis. We consider that it is overstated in aggregate because:

- Some projects are not justified
- Some proposed opex is not additional, because Jemena has not offset increases in ICT opex with business opex benefits that it has claimed in its business cases
- Some proposed opex does not meet criteria for inclusion as a step change because it is required for normal business functions in an evolving business environment and is not required to meet new or enhanced obligations.

Assessment of proposed propex

24. We consider that the forecast for propex on which Jemena has based its proposed addition to base year opex, is overstated for the following reasons:

- One project (Customer education) is not justified
- For one project (FTA), Jemena's information leads us to the view that allocation to SCS needs to be justified

- Jemena has proposed allocated amounts from three 'enterprise' projects that appear to have only an internal enterprise-level business purpose but for which Jemena does not present benefits that would be of relevance to its customers.

Implications for expenditure allowances

25. In deriving an estimate for alternative forecasts, we have taken account of the implications of our findings for capex, ongoing opex and propex, to the extent that they apply for each proposed ICT and CER project. On this basis, we consider that:

- A reasonable alternative forecast for Jemena's aggregate ICT capex (totalling $153.5m and which includes its proposed CER-related ICT capex and cyber security-related capex) would be 25% to 35% lower than Jemena has proposed. The larger part of this adjustment is because of overstatement of the justified level of CER-related ICT capex.
- A reasonable alternative forecast for Jemena's CER-related augex for the two projects that we reviewed (totalling $25.6m), would be 40% to 50% less than Jemena has proposed
- A reasonable alternative forecast for incremental ICT opex would be around 45% to 50% less than the amount of $21.6m that Jemena has proposed
- A reasonable alternative forecast for Jemena's proposed ICT propex would be around 27% less than the amount of $38.2m that Jemena has accounted for in its forecast opex.

1 INTRODUCTION

The AER has asked us to review and provide advice on aspects of Jemena's proposed expenditures over the 2026-31 Regulatory Control Period (next RCP) relating to information communication technology (ICT), cyber security and consumer energy resources (CER). Our review is based on information that Jemena provided and on aspects of the NER relevant to assessment of expenditure allowances.

1.1 Purpose of this report

26. The purpose of this report is to provide the AER with a technical review of aspects of the expenditure that Jemena has proposed in its regulatory proposal (RP) for next RCP.

27. The assessment contained in this report is intended to assist the AER in its own analysis of the proposed expenditures allowance as an input to its Draft Determination on Jemena's revenue requirements for the next RCP.

1.2 Scope of requested work

28. Our scope of work, covered by this report, is as defined by the AER. Relevant aspects of this are as summarised in Figure 1.1.

Figure 1.1: Scope of work covered by this report

Scope of work covered by this report.

The scope of this review, as requested by the AER, covers the following.

- Capex (ex-ante)
  - Recurrent ICT
  - Non – recurrent ICT
  - CER and electrification (augex and ICT)
- Opex step changes
  - ICT opex step changes (other than for CER)
  - CER and electrification opex step changes (ICT and Non-ICT)
- ICT project opex (propex)

29. Other aspect of Jemena's expenditures, including repex, augex, cyber security and opex step changes related to the hazard tree reduction and cyber security, are covered in two separate reports.

1.3 Our review approach

1.3.1 Approach overview

30. In conducting this review, we first reviewed the RP documents that Jemena has submitted to the AER. This includes a range of appendices and attachments to Jemena's RP and certain Excel models which are relevant to our scope.

31. We next collated several information requests. The AER combined these with information request topics from its own review and sent these to Jemena.

32. In conjunction with AER staff, our review team met with Jemena at its offices on 2 – 4 April 2025. Jemena presented to our team on the scoped topics, and we had the opportunity to engage with Jemena to consolidate our understanding of its proposal.

33. Jemena provided the AER with responses to information requests and, where they added relevant information, these responses are referenced within this review.

34. We have subjected the findings presented in this report to our peer review and Quality Assurance processes and we presented summaries of our findings to the AER prior to finalising this report.

1.3.2 Conformance with NER requirements

35. In undertaking our review, we have been cognisant of the relevant aspects of the NER under which the AER is required to make its determination and relevant AER Guidelines.

Capex Objectives and Criteria

36. The most relevant aspects of the NER in this regard are the 'capital expenditure criteria' and the 'capital expenditure objectives.' Specifically, the AER must accept the Network Service Provider's (NSP) capex proposal if it is satisfied that the capex proposal reasonably reflects the capital expenditure criteria, and these in turn reference the capital expenditure objectives.

37. The NER's capital expenditure criteria and capital expenditure objectives are reproduced in Figure 1.2 and Figure 1.3.

Figure 1.2: NER capital expenditure criteria

NER capital expenditure criteria

The *AER* must:

*(1) subject to subparagraph (c)(2), accept the forecast of required capital expenditure of a Distribution Network Service Provider that is included in a building block proposal if the AER is satisfied that the total of the forecast capital expenditure for the regulatory control period reasonably reflects each of the following (**the capital expenditure criteria**):*

(i) the efficient costs of achieving the capital expenditure objectives;

(ii) the costs that a prudent operator would require to achieve the capital expenditure objectives; and

(iii) a realistic expectation of the demand forecast, cost inputs and other relevant inputs required to achieve the capital expenditure objectives

Source: NER 6.5.7(c) Forecast capital expenditure, v230

Figure 1.3: NER capital expenditure objectives

NER capital expenditure objectives

*(a) A building block proposal must include the total forecast capital expenditure for the relevant regulatory control period which the Distribution Network Service Provider considers is required in order to do each of the following **(the capital expenditure objectives)**:*

(2) meet or manage the expected demand for standard control services over that period;

(3) comply with all applicable regulatory obligations or requirements associated with the provision of standard control services;

(4) to the extent that there is no applicable regulatory obligation or requirement in relation to:

(i) the quality, reliability or security of supply of standard control services; or

(ii) the reliability or security of the distribution system through the supply of standard control services,

to the relevant extent:

(iii) maintain the quality, reliability and security of supply of standard control services; and

(iv) maintain the reliability and security of the distribution system through the supply of standard control services;

(5) maintain the safety of the distribution system through the supply of standard control services; and

(6) contribute to achieving emissions reduction targets through the supply of standard control services.

Source: NER 6.5.7(a) Forecast capital expenditure, v230

Opex Objectives and Criteria

38. The most relevant aspects of the NER in this regard are the 'operating expenditure criteria' and the 'operating expenditure objectives.' The NER's opex criteria and opex objectives are reproduced below.

Figure 1.4: NER operating expenditure criteria

NER operating expenditure criteria

*(c) The AER must accept the forecast of required operating expenditure of a Distribution Network Service Provider that is included in a building block proposal if the AER is satisfied that the total of the forecast operating expenditure for the regulatory control period reasonably reflects each of the following (**the operating expenditure criteria**):*

(1) the efficient costs of achieving the operating expenditure objectives;

(2) the costs that a prudent operator would require to achieve the operating expenditure objectives; and

(3) a realistic expectation of the demand forecast, cost inputs and other relevant inputs required to achieve the operating expenditure objectives.

Source: NER 6.5.6(c) Forecast operating expenditure, v230

Figure 1.5: NER operating expenditure objectives

NER operating expenditure objectives

*(a) A building block proposal must include the total forecast operating expenditure for the relevant regulatory control period which the Distribution Network Service Provider considers is required in order to do each of the following (**the operating expenditure objectives**):*

(1) meet or manage the expected demand for standard control services over that period;

(2) comply with all applicable regulatory obligations or requirements associated with the provision of standard control services;

(3) to the extent that there is no applicable regulatory obligation or requirement in relation to:

(i) the quality, reliability or security of supply of standard control services; or

(ii) the reliability or security of the distribution system through the supply of standard control services,

to the relevant extent:

(iii) maintain the quality, reliability and security of supply of standard control services; and

(iv) maintain the reliability and security of the distribution system through the supply of standard control services; and

(4) maintain the safety of the distribution system through the supply of standard control services; and

(5) contribute to achieving emissions reduction targets through the supply of standard control services.

Source: NER 6.5.6(a) Forecast operating expenditure, v230

How we have interpreted the capex and opex criteria and objectives in our assessment

39. We have taken particular note of the following aspects of the capex and opex criteria and objectives:

- Drawing on the wording of the first and second criteria, our findings refer to efficient and prudent expenditure; we interpret this as encompassing the extent to which the need for a project or program or opex item has been prudently established and the extent to which the proposed solution can be considered to be an appropriately justified and efficient means for meeting that need
- The criteria require that the forecast '*reasonably reflects*' the expenditure criteria and in the third criterion, we note the wording of a '*realistic expectation*' (emphasis added); in our review we have sought to allow for a margin as to what is considered reasonable and realistic, and we have formulated negative findings where we consider that a particular aspect is outside of those bounds
- We note the wording '*meet or manage*' in the first objective (emphasis added), encompassing the need for the NSP to show that it has properly considered demand management and non-network options
- We tend towards a strict interpretation of compliance (under the second objective), with the onus on the NSP to evidence specific compliance requirements rather than to infer them, and
- We note the word '*maintain*' in objectives 3 and 4 and, accordingly, we have sought evidence that the NSP has demonstrated that it has properly assessed the proposed

expenditure as being required to reasonably maintain, as opposed to enhancing or diminishing, the aspects referred to in those objectives.

40. The DNSPs subject to our review have applied a Base Step Trend approach in forecasting their aggregate opex requirements. Since our review scope encompasses only proposed expenditure for certain purposes, we have sought to identify where the DNSP has proposed an opex step change that is relevant to a component that we have been asked to review. Where the DNSP has not proposed a relevant opex step change, then we assume that any opex referred to in documentation that the DNSP has provided is effectively absorbed and need not be considered in our assessment.

1.3.3 Technical review

41. Our assessments comprise a technical review. While we are aware of stakeholder inputs on aspects of what Jemena has proposed, our technical assessment framework is based on engineering considerations and economics.

42. We have sought to assess Jemena's expenditure proposal based on Jemena's analysis and Jemena's own assessment of technical requirements and economics and the analysis that it has provided to support its proposal. Our findings are therefore based on this supporting information and, to the extent that Jemena may subsequently provide additional information or a varied proposal, our assessment may differ from the findings presented in the current report.

43. We have been provided with a range of reports, internal documents, responses to information requests and modelling in support of what Jemena has proposed and our assessment takes account of this range of information provided. To the extent that we found discrepancies in this information, our default position is to revert to Jemena's regulatory submission documents as provided on its submission date, as the 'source of record' in respect of what we have assessed.

1.4 This report

1.4.1 Report structure

44. In each Section, we have presented:

- an overview of the proposed expenditure and a summary of Jemena's justification for that expenditure
- our observations on Jemena's application of its governance framework and forecasting methodology to the expenditure category, along with the derived forecasting inputs
- our assessment of individual expenditure categories and/or projects, and
- our findings for each expenditure category and the implications of these findings for the expenditure allowances determined by the AER in its Draft Determination.

45. We also provide Appendix A in which we provide relevant AER Guidelines.

46. We have taken as read the considerable volume of material and analysis that Jemena provided, and we have not sought to replicate this in our report except where we consider it to be directly relevant to our findings.

1.4.2 Information sources

47. We have examined relevant documents that Jemena has published and/or provided to the AER in support of the areas of focus and projects that the AER has designated for review. This included further information at onsite meetings and further documents in response to our information requests. These documents are referenced directly where they are relevant to our findings.

48. Except where specifically noted, this report was prepared based on information provided by AER staff prior to 1 June 2025 and any information provided subsequent to this time may not have been taken into account.

2 OVERVIEW AND CONTEXT FOR JEMENA'S ICT PROPOSAL

Jemena has proposed total ICT expenditure of $213.4m, including capex of $153.5m. This is considerably more than Jemena is spending in the current period or spent in the previous period.

The proposed expenditure comprises capex, project opex (propex) and a number of proposed opex step changes and encompasses a range of projects that Jemena presents to maintain business requirements, meet new requirements and address needs in CER and cyber security.

2.1 What Jemena has proposed

2.1.1 Introducing the categories of expenditure in Jemena's proposal

Jemena proposes expenditure as capex, propex or as proposed opex step changes

49. Jemena's overall ICT proposal comprises a range of expenditure that it has variously classed as capex, project opex (or propex) and 'trailing opex' (or ongoing opex).

50. For project opex, Jemena has proposed a process whereby it has added the difference (on an annualised basis) between its proposed propex and the propex that it states as being within its base year (and which, as we discuss, is its estimate for 2025), as a base year adjustment. We discuss this proposed mechanism, in conjunction with our aggregate assessment of the proposed amount, in section 5.3.

51. Jemena has proposed trailing or ongoing opex as opex step changes. We assess these aspects of its proposed expenditure within the current section and aggregate the impact in section 5.

2.1.2 Overview of Jemena's proposed projects and expenditure

Proposed total expenditure by year and by project

52. In Table 2.1, we summarise the aggregate capex, propex and opex step change amounts that Jemena proposes. In each case, this information is in $2026, consistent with Jemena's proposal. As shown here, Jemena proposes a total expenditure of $213.4m, of which $153.5m is capex.

Table 2.1: Jemena's total ICT expenditure proposal - $m, real 2026

	FY27	FY28	FY29	FY30	FY31	TOTAL
Capex	35.7	29.6	29.2	30.3	28.8	**153.5**
Propex	8.8	10.5	10.0	6.3	2.6	**38.2**
Opex step change	1.5	3.7	5.3	6.0	5.1	**21.6**
Total	**46.0**	**43.7**	**44.5**	**42.7**	**36.5**	**213.4**

Source: Jemena SCS capex model (Att 05-10M), and EMCa analysis aggregating from each CBAM provided for each project

53. In Table 2.2, we list all projects and expenditure items that Jemena has proposed as ICT, showing the proposed aggregate expenditure for each over the regulatory period.

Table 2.2: Jemena's total ICT proposal, by project / line item - $m, real 2026

EMCa projects reviewed	Capex	Opex step change	Propex	Totex
ICT - Recurrent capex				
Recurrent Capex	34.4	-	-	34.4
Subtotal	**34.4**	**-**	**-**	**34.4**
ICT - non-recurrent capex projects (maintain existing services)				
Customer systems	3.0	0.4	0.9	4.3
Outage Taskforce - Phase 3 Digital Switching	12.8	0.5	3.9	17.2
Emergency Backstop Lifecycle	6.9	-	-	6.9
End user computing	3.0	-	-	3.0
GIS lifecycle upgrade	4.1	-	-	4.1
MSI replacement	1.6	-	-	1.6
Network Operations Geospatial enhancements	3.0	0.2	0.4	3.7
Subtotal	**34.4**	**1.1**	**5.2**	**40.7**
ICT - non-recurrent capex projects (new or expanded capability)				
Customer education	4.8	0.8	2.3	7.9
Dynamic Network planning with automation	11.2	0.4	1.8	13.4
FN - 3D Digital Twin	5.8	0.2	-	5.9
Subtotal	**21.8**	**1.3**	**4.1**	**27.2**
ICT - Non recurrent capex projects (new/altered obligations)				
Outage Preparedness and Response	2.2	0.7	0.8	3.7
Reform - MITE - IDX/IDAM/Portal Consolidation	17.5	-	0.4	17.9
Reform - Unlocking CER benefits - Flexible Trading arrangements	4.4	4.3	1.1	9.7
Subtotal	**24.1**	**4.9**	**2.2**	**31.3**
ICT - Opex projects				
Cloud capacity growth	-	2.7	-	2.7
Enterprise content management uplift	-	0.6	4.1	4.7
Data foundations and governance	-	0.3	1.9	2.2
Contract lifecycle management	-	0.8	0.8	1.6
Subtotal	**-**	**4.4**	**6.8**	**11.2**
ICT - Non-recurrent - CER				
CER - Data visibility & analytics	10.7	1.3	0.4	12.3
CER - Grid stability & FS	28.0	3.0	-	31.0
CER - V&PQ	0.1	3.2	-	3.3
Subtotal	**38.8**	**7.5**	**0.4**	**46.7**
ICT - Cyber				
Cyber total	-	2.3	6.0	8.4
Subtotal	**-**	**2.3**	**6.0**	**8.4**
Propex only				
SAP Migration	-	-	12.8	12.8
Network Analytics Program	-	-	0.7	0.7
Subtotal	**-**	**-**	**13.5**	**13.5**
TOTAL ICT	**153.5**	**21.6**	**38.2**	**213.4**

Sources: Jemena SCS capex model (Att 05-10M), and EMCa analysis aggregating from each CBAM provided for each project (Jemena provided data in a similar structure for our onsite meeting, however that data was in unescalated $2024)

Observations on data provided

54. It has taken considerable analytical effort to assemble the information in Table 2.1 and Table 2.2 and the associated tables showing the full picture of proposed annual expenditure for each project (and which are included in our assessment sections). Such information was not provided in this form in Jemena's regulatory proposal, which included expenditure lists in which expenditure was aggregated for the period but not shown year by year or was shown year by year but was aggregated across all projects.

55. Understanding of the information was also complicated by a range of factors such as:

- Some Jemena information listings and project descriptions did not refer to the associated propex or opex for that project, but refer only to the capex, giving no immediate indication of other elements of proposed expenditure
- Propex and opex 'projects' did not appear in Jemena's SCS capex listings of ICT projects (including its capex proposal) because by definition they have no capex
- Much of the information that Jemena provided was in hard copy form and needed to be migrated into workbooks with a loss of precision, and
- There were numerous instances where data provided in hard copy form (such as summary tables 7 and 8 in the Technology Plan and summary tables in Investment Briefs) did not match with data in models.[3] Furthermore, data in the CBA Models was variously described as real $2024, nominal and $2026 but in many cases reconciling this with other information was only possible by assuming the label to be incorrect.

56. Ultimately, we assembled the most complete picture of Jemena's proposed expenditure by linking to input sheets in each of the many CBA models that Jemena provided, one for each project. In some cases, we needed to selectively link to only to certain expenditure rows which would then reconcile to another source and in some cases, we also needed to apply escalators to produce information that could then be reconciled to aggregate hard copy sources. We have established our compiled data such that in aggregate it does reconcile to hard copy values in relevant Jemena submission summary documents, including its Capital Expenditure proposal and its Technology Plan.

57. We also observe that some project names differ between different sources. The names tend to be recognisable; however we make this observation as some differences remain throughout our report.

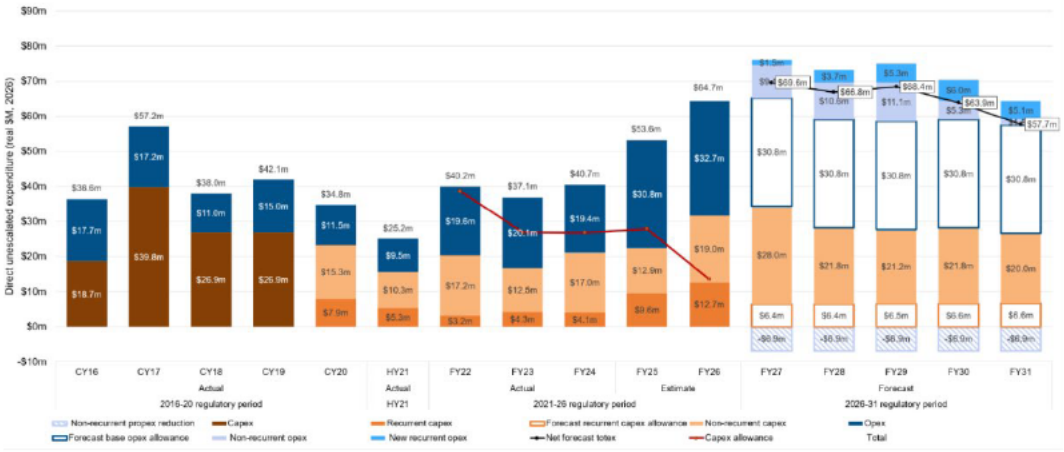
2.2 Background and context

2.2.1 Jemena's ICT trend expenditure and current period expenditure

58. At our onsite meeting, Jemena provided a long-term ICT trend graph, as shown in Figure 2.1. Relative to actual expenditure (which is to FY24), Jemena's graph shows a considerable ramp up in FY25 and FY26 and continuing at a higher level still over the next regulatory period.

[3] An example is for 'ongoing recurrent step opex' for Customer Systems. In Jemena's summary table for this project in its Technology Plan (tables 8 and 9) this is shown as $0.3m. On page 9 of the investment Brief the recurrent step opex is described as $1,754,000. In the CBAM (option 2 row 189) the ongoing opex sums to $1,987,000 and is described as 'nominal'.

Figure 2.1: JEN multi-year view of ICT expenditure – direct unescalated expenditure (real $m, 2026)



Source: Jemena onsite presentation, 28 March 2025 (page 17)

2.2.2 Current period ICT expenditure

59. We asked Jemena to provide the historical ICT information underlying the graph above, in spreadsheet form. Jemena provided a response; however the historical information did not match with the data on the graph, and its forecast information did not match either with the data on the trend graph or with data in its proposal. While noting this, however, we present the information that Jemena provided in Table 2.3, for the current period. This shows ICT totex (excluding cyber security) of $217m in the current period, comprising $107.7m capex and $110m opex.

Table 2.3: Jemena ICT expenditure in current period (excluding cyber security) - $m, real 2026

	FY22	FY23	FY24	FY25 (E)	FY26 (E)	TOTAL
Capex						
Recurrent capex	3.2	4.6	4.3	9.7	13.0	**35.0**
Non recurrent capex	15.8	11.8	16.5	10.9	17.7	**72.8**
Total capex	**19.1**	**16.4**	**20.9**	**20.7**	**30.7**	**107.7**
Opex						
Recurrent opex	18.2	18.3	15.3	21.1	22.1	**94.9**
Non recurrent opex	0.0	-0.5	1.4	6.9	7.4	**15.1**
Total opex	**18.1**	**17.8**	**16.6**	**28.0**	**29.4**	**110.0**
TOTEX	**37.2**	**34.2**	**37.5**	**48.6**	**60.2**	**217.7**

Source: Jemena response to IR EMCa09, Q25[4]

2.3 Structure of our assessment

We structure our assessment to cover Jemena's proposed ICT recurrent expenditure, non-ICT recurrent projects, CER (ICT and augex), Cyber security ICT and ICT Opex

60. Jemena's proposed ICT expenditure is for a range of purposes, and we have structured our assessment to aid understanding of the purpose of the various projects and expenditures that Jemena proposes.

[4] Jemena provided this information including and excluding cyber security. While we present the information here excluding cyber security, in order to provide a more comparable trend, we note that neither this nor the information including cyber security reconciles with the information provided in the onsite graph.

We assess ICT projects (other than CER and cyber) in section 3

61. We assess Jemena's proposed ICT recurrent expenditure and its ICT projects (other than for CER) in section 3. Within this section, we structure the projects and line items drawing on a grouping that Jemena has applied, with two variations:

- We have separately assessed cyber security expenditure, and
- For reconciliation purposes, we have extracted projects that involve opex only from the groupings of capex projects.

62. We therefore structure our assessment of ICT projects, in section 3 as follows:

- ICT recurrent capex
- ICT non-recurrent capex projects, which are further disaggregated into:
  - Maintaining existing services, functionalities, capabilities and/or market benefits
  - New or expanded ICT capability, functions, and services
  - Complying with new / altered regulatory obligations / requirements, and
- ICT opex projects.

We assess CER projects, which comprise both non-network ICT and network (augex), in section 4

63. In section 4 we review Jemena's proposed CER and electrification expenditure. This expenditure falls under three CER initiatives that Jemena has defined in its CER strategy, and which involve a combination of non-network ICT investment and network (augex). We therefore include both elements in our assessment.

64. We provide our assessment and findings on Jemena's proposed cyber security expenditure in ICT Cyber Security Report to AER .

65. As referred to above, in section 5 we collate the implications of our project assessments for Jemena's proposed opex and propex and provide observations on the way in which Jemena has proposed to incorporate its forecast propex into its regulatory requirement.

We have not assessed expenditure categorisation

66. Jemena has not provided project by project information as to how it has categorised project expenditure between capex and 'project opex' / propex. We assume that it has adopted agreed ICT accounting protocols in doing so.

3 REVIEW OF PROPOSED ICT PROJECTS

In this section, we review Jemena's proposed ICT projects, other than those for its CER program which we review in a subsequent section of this report.[5]

Jemena has proposed totex of $144.8m for these ICT projects, comprising $34.4m recurrent ICT capex, $80.3m non-recurrent ICT capex, along with allowances for $18.3m project opex (propex) and for opex step changes totalling $11.8m over the period.

We consider that the majority of Jemena's proposed projects and associated expenditure is justified. We consider that Jemena's proposed "customer education' project is not justified, and neither is its proposed non-recurrent expenditure on 'end user computing' nor three 'opex-only' projects which we consider do not justify an uplift in such expenditure.

We consider that one of the two 'reform' projects (for FTA) is essentially to enhance meter data management capability and that its allocation to SCS is questionable and needs to be justified. While Jemena is required to undertake the proposed 'reform-MITE' project, we consider that its expenditure forecast for this is overestimated.

For a number of projects, Jemena has proposed an opex step change based on anticipated higher ICT costs, however in line with AER's guideline we consider that these step changes are not justified because they will be offset by business opex efficiencies.

3.1 Introduction

3.1.1 Overview

67. In this section, we review Jemena's proposed ICT projects other than CER-related projects, which we review in section 4.

68. The majority of the 'projects' reviewed in this section are capex projects, though for many Jemena has also proposed 'project opex' (propex) and/or an opex step change. For each project, we show the total proposed expenditure as categorised by Jemena.

69. As we showed in Table 2.2 in the previous section, Jemena has also proposed four projects as opex step changes, with no capex, although for three of these it also proposes propex. As projects, we review these too in the current section.

70. In assessing each of the capex projects, our primary focus in this section is on the justification for the project. To the extent that the project is justified, we then consider the proposed capex and proposed opex step change. The opex and propex implications overall are collated for clarity in section 55.

3.1.2 Projects and expenditure reviewed in the current section

71. In the current section, we assess the following expenditure and projects. As we have referred to in the previous section, we have grouped these projects according to drivers that Jemena identifies in its proposal.

[5] Our review in this section also excludes Jemena's proposed cyber security expenditure, which we review in a separate report.

72. The assessed expenditures and projects are as follows:

Figure 3.1: List of projects reviewed in the current section

Recurrent capex

Non-recurrent ICT capex projects (maintaining existing services, functionalities, capability and/or market benefits), being:

- Customer systems
- Digitising network switching
- Emergency backstop lifecycle
- End user computing
- GIS lifecycle upgrade
- MSI replacement
- Network operations geospatial enhancement.

Non-recurrent ICT capex projects (new or expanded ICT capability, functions and services)

- Customer education
- Dynamic network planning with automation
- 3D digital twin.

Non-recurrent ICT capex projects (complying with new/altered regulatory obligations/requirements)

- Outage preparedness and response
- Reform - Market Interface Technology Enhancement (MITE) – IDX/IDAM/Portal consolidation
- Reform – Unlocking CER benefits – Flexible Trading Arrangements.

ICT opex projects

- Cloud capacity growth
- Data foundations and governance
- Enterprise content management re-platforming
- Contract lifecycle management.

73. In Table 3.1 we summarise the expenditure that Jemena has proposed for the ICT projects listed above. (The expenditure for each project can be seen by referring to Table 2.2).

Table 3.1: Summary of proposed expenditure for ICT projects reviewed in this section - $m, real 2026

	Capex	ICT ongoing Opex	ICT Propex	Totex
ICT - Recurrent capex	**34.4**	**-**	**-**	**34.4**
Non-recurrent projects				**-**
Non-recurrent ICT capex projects (maintain existing services)	34.4	1.1	5.2	**40.7**
Non-recurrent ICT capex projects (new or expanded capability)	21.8	1.3	4.1	**27.2**
Non recurrent ICT capex projects (new/altered obligations)	24.1	4.9	2.2	**31.3**
ICT opex projects	-	4.4	6.8	**11.2**
Subtotal: Non-recurrent projects	**80.3**	**11.8**	**18.3**	**110.4**
TOTAL projects	**114.7**	**11.8**	**18.3**	**144.8**

Source: EMCa, from Jemena capex model (Att05-10M), opex model (Att06-03M), relevant CBAM and Jemena response to IR009 Q28

3.1.3 Review information

74. Jemena provided Investment Briefs and a CBA model for each project, and we have relied on these as our primary reference material. As an overview document, we also refer to Jemena's Capital Expenditure proposal, which includes a section on its ICT proposal.[6]

75. We found the information in Jemena's Investment Briefs to provide insufficient and, in some cases, unclear information on each project. Following our onsite meeting, we compiled an information request (designated IR EMCa09). Including CER and cyber security, this had 26 ICT-related questions. Jemena responded progressively to these queries, with the last not provided until mid-May. Nevertheless, we appreciated Jemena's responses to these queries, which provided additional information that we have considered in our assessments.

3.1.4 Project cost allocation

76. We observed that some projects that Jemena proposes are referred to in its Investment Briefs as 'Enterprise' projects. We sought information to confirm that Jemena had appropriately allocated the costs of such projects to Jemena Electricity (JEN).

77. In its response, Jemena listed its proposed projects, advised those that are 'enterprise' projects and how it had allocated its costs. In Figure 3.2, we list those that Jemena identifies as enterprise projects; Jemena advised that all other projects that it has proposed are 100% JEN projects.

[6] Jemena Attachment 5-01, section 8

Figure 3.2: Enterprise ICT projects

Source: Jemena response to IR EMCa09, Q29

78. For enterprise projects, Jemena advised that it has allocated total project costs 35.1% to JEN and, importantly, advised that the proposed costs are *'…JEN only values, not enterprise values.'*

79. We observe that only one enterprise project (end user computing) involves capex; all others involve only opex (either as project opex, ongoing opex or both).

80. We are satisfied with Jemena's explanation and in our assessments, we do not further consider cost allocation.

3.2 Recurrent ICT capex

3.2.1 What Jemena proposes

81. Jemena has forecast its proposed recurrent capex by using a 'base step trend' (BST) approach. Jemena has forecast this by:

- Adopting a base value that is a 5-year average of recurrent ICT capex, utilising three years of actual expenditure as reported in the Annual RIN (FY22-FY24) and its estimated expenditure for FY25 and FY26, and
- Escalating the base amount using the annual real cost escalators that it has applied to all capex projects.

82. From this, Jemena derives a forecast of $34.4 million for next RCP for recurrent ICT capex, as shown in the Table 3.2.

Table 3.2: Jemena proposes recurrent ICT capex - $m, real 2026

	FY27	FY28	FY29	FY30	FY31	Total
Recurrent ICT capex	6.6	6.7	6.9	7.0	7.2	34.4

Source: EMCa table derived from Jemena capex model

3.2.2 Assessment

If applied appropriately, then Jemena's method for forecasting its recurrent capex is reasonable

83. In its guideline,[7] AER endorses use of a base-trend approach in forecasting recurrent capex. AER notes Jemena's suggestion at that time that the base should be a five-year

[7] Non-network ICT capex assessment approach, AER (November 2019)

average of actual expenditure but leaves open consideration of the appropriate averaging period.

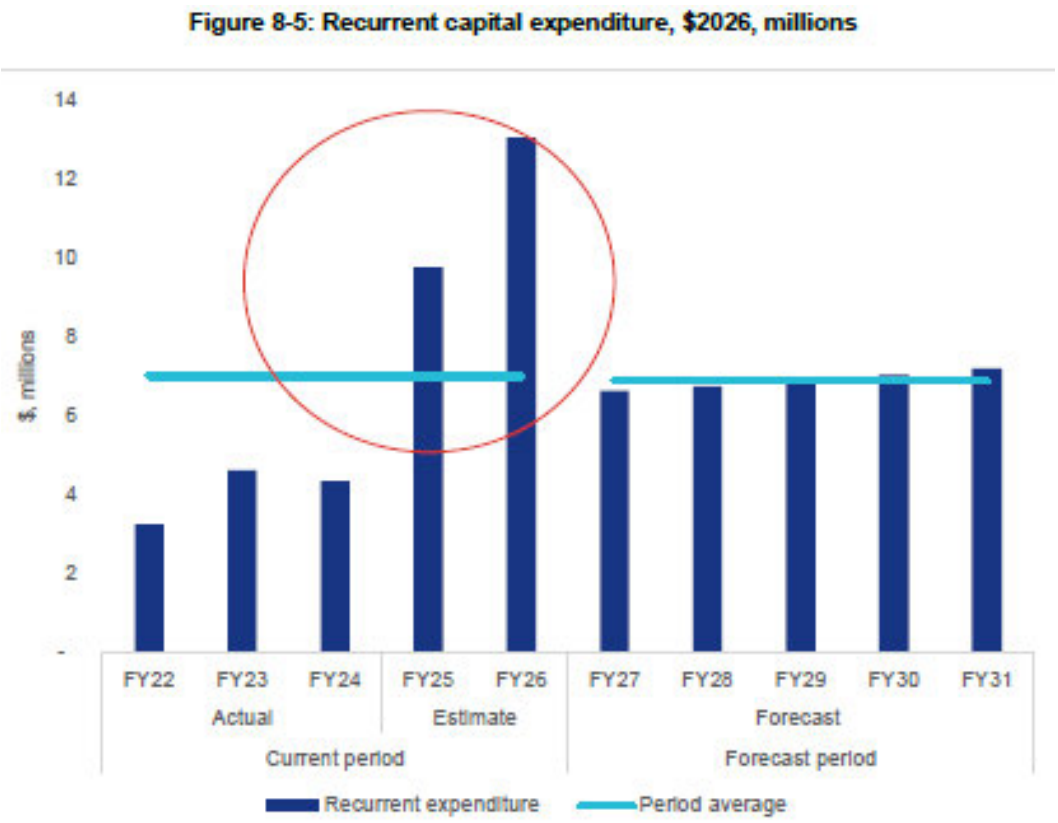
84. This therefore is an accepted method, however we consider below the method by which Jemena has determined its proposed base value.

Jemena's proposed base value is not reasonable

85. Jemena's five-year average is not entirely based on its actual expenditure as it incorporates its forecast expenditure for 2025 and 2026.

86. Figure 3.3 is reproduced from Jemena's capital expenditure proposal and explains how it has derived its five-year base value.

Figure 3.3: Recurrent capital expenditure, $2026, millions



Source: Jemena Attachment 05-01: Capital Expenditure, figure 8-5. (EMCa added red circle)

87. As is evident from this diagram, Jemena's base capex value is heavily driven by its FY25 and FY26 values, both of which are Jemena estimates, not actual expenditure. Moreover, both estimated values are 'outliers' that are more than twice its actual spend in any of the historical years shown. From information Jemena provided, we estimate that the base value that it has adopted, is $6.8m.[8]

88. We consider that it is not reasonable to use a base value for which two of the years are estimates, and especially when those estimates exceed Jemena's actual expenditure by a wide margin.

We have calculated an alternative forecast for recurrent capex, that makes greatest use of actual historical actual expenditure

89. In Table 3.3 we reproduce the relevant expenditure series that Jemena provided. For reasons that AER refers to in its guideline, we consider that it is reasonable to use an average over a reasonable number of years in order to smooth the data and reveal a

[8] Jemena response to IR EMCa09, Q25

reasonable underlying base value. Noting that H21 is a half-year, we have therefore calculated an average for the 4.5 years for which Jemena provides actual expenditure; that is, for the years CY20, H21, FY22, FY23 and FY24. This average is $5.6m.

Table 3.3: Jemena historical recurrent ICT capex (un-escalated) - $m, real 2026

	CY20 act.	HY21 act.	FY22 act.	FY23 act.	FY24 act.	FY25 est.	Average (4.5 years)
Recurrent ICT capex	7.8	5.3	3.2	4.6	4.3	9.7	**5.6**

Source: EMCa table derived from Jemena response to Information Request IR9 Q25

90. In Table 3.4 we provide an alternative recurrent ICT capex forecast for Jemena for the next RCP. We have escalated the base amount using Jemena's escalation factors from its capex model.

Table 3.4: EMCa alternative recurrent ICT capex - $m, real 2026

Recurrent ICT capex	FY27	FY28	FY29	FY30	FY31	Total
Un-escalated	5.6	5.6	5.6	5.6	5.6	**28.1**
Escalation Factors	1.04	1.04	1.06	1.07	1.08	
Escalated	5.8	5.9	5.9	6.0	6.1	**29.7**

Source: EMCa table derived from Jemena response to Information Request IR9 Q25

3.2.3 Finding

91. We consider that Jemena's proposed forecast for recurrent ICT capex is not reasonable, because the base value from which it has forecast is not representative of actual capex that it has been incurring.

92. We have calculated an alternative estimate that utilises Jemena's actual capex as a base and otherwise applies the same base-trend methodology that Jemena has used. Our alternative estimate is $4.7m less in aggregate over the period, that is an average of just under $1m per year less than Jemena has proposed.

3.3 Non-recurrent ICT capex projects (Maintaining services)

3.3.1 Customer systems project

What Jemena proposes

Project objective

93. Jemena proposes expenditure to maintain its customer systems to *'….ensure we continue to meet our operational and regulatory obligations and to meet customer expectations for accessible, timely information.'*[9]

94. Jemena states that this need involves the following systems:

- Streetlight fault reporting tool and poles and wires fault reporting tool
- A self-service customer portal, e.g. for connection requests
- Communications platform (AWS)

[9] JEN – RIN – Support – ICT Investment Brief - Customer systems – 20250212 – Confidential, page 4

- SAP Service Cloud, Customer Data Cloud and Field Service Management
- Telephony integration to SAP Service Cloud
- Jemena Website, and
- Jemena's knowledge management system (Livepro).

Proposed expenditure

95. Jemena proposes the forecast expenditure shown in Table 3.5 for the Customer Systems ICT project.

Table 3.5: Jemena's proposed expenditure for Customer Systems Lifecycle ICT project - $m, real 2026

	2027	2028	2029	2030	2031	TOTAL
Capex	0.6	-	1.0	1.0	0.3	**3.0**
Propex	0.2	-	0.3	0.3	0.1	**0.9**
Opex step change	-	0.1	0.1	0.1	0.1	**0.4**
Total	**0.8**	**0.1**	**1.3**	**1.5**	**0.6**	**4.3**

Source: EMCa, from Jemena capex model (Att05-10M), opex model (Att06-03M), relevant CBAM and Jemena response to IR009 Q28

Assessment

Jemena has satisfactorily demonstrated need

96. Jemena states in its Investment Brief that these systems are between 3 and 5 years old, though at our onsite meeting Jemena stated that some systems date from around 2019 and are therefore around 6 to 7 years old.

97. The systems that Jemena refers to are necessary systems and, especially to the extent that they are customer facing, they are an important element in providing customer service. It is reasonable to expect that such systems undergo refresh as they age to maintain currency and to provide customer experience in line with current customer expectations, in addition to providing for evolving reporting, privacy and cyber security requirements. Such refresh is typically on a 5 to 10 year timeframe, therefore it is inevitable that some such work will be required within the next regulatory period.

Jemena has chosen an appropriate option

98. Jemena considered 3 options:

- Option 1: Do nothing
- Option 2: Maintenance of existing systems (Jemena preferred), and
- Option 3: New capability in anticipation of future needs.

99. Jemena has appropriately dismissed 'doing nothing' as it would lead to a range of increased risks and other unacceptable outcomes including a deterioration in customer service.

100. Jemena's option 3 would principally add a major investment in 2031. Totex over the period would be almost double that of option 2, however Jemena concludes that this would represent an overinvestment that could not be justified.

101. By choosing to maintain existing systems (option 2) we consider that Jemena has chosen the logical option.

Jemena's basis for costing the ICT elements of this project is reasonable

102. Jemena states in its Investment Brief that the proposed work is representative of similar work that it has undertaken in the current regulatory period, and it has used its costs for this

work as a proxy for the costing of its capex requirements in the next period. We consider that this is a reasonable approach.

103. Jemena also proposes an opex step increase of around $100,000 per year over 4 years, for 'digital' expenditure to allow for increased cloud service requirements and which we consider is reasonable.

Jemena has not adequately justified its proposed opex step increase for 'accessible information'

104. Jemena also proposes an additional resource for updating digital content. Jemena includes this in its ICT Investment Brief at a cost of $1.4m ($2024). Rather than include this in its proposed ICT opex step change, Jemena appears to have included this in a separate opex step change proposal for Customer Systems and Education, which we refer to in section 5.2.

105. Jemena does not provide information on costs already in its base year for the role described, or justification as to whether, or why, this requirement has increased such that this additional opex is required. Accordingly, on the basis of the information that Jemena has provided, we consider that it is not reasonable to include this opex step change in its opex allowance.

Finding

106. For its proposed allowances for Customer Systems, we consider that:

- Jemena's proposed capex and propex allowances are reasonable
- Jemena's proposed ICT opex allowance of $0.4m is a reasonable estimate for additional opex, though the amount is small, and
- Jemena's proposed separate (non-ICT) opex step change for Customer Systems and Education is not justified.

3.3.2 Outage Taskforce – Phase 3 Digital Switching project

What Jemena proposes

107. Jemena proposes to digitise management of operational instructions and integrate digital switching processes and a non-verbal communication solution for field staff. The estimated cost in the next RCP is shown in Table 3.6.

Table 3.6: Jemena's proposed expenditure for Phase 3 digital switching ICT project - $m, real 2026

Category	FY27	FY28	FY29	FY30	FY31	Total
Capex	2.4	4.9	3.8	1.6	-	**12.8**
Propex	0.5	1.4	0.8	1.1	-	**3.9**
Opex step change	-	-	-	0.3	0.2	**0.5**
Total	**3.0**	**6.4**	**4.6**	**3.0**	**0.2**	**17.2**

Source: EMCa, from Jemena capex model (Att05-10M), opex model (Att06-03M), relevant CBAM and Jemena response to IR009 Q28

108. Jemena identifies the project as 'maintaining existing services, functionalities, capability and/or market benefit':[10]

> *'…it is essential that JEN continues to prudently invest in removing manual steps where high risk remains and maintains compliance with our safety and reliability obligations.'*

[10] JEN – RIN – Support – ICT Investment Brief - Digitising Network Switching – 20250212 – Confidential, page 6

109. Jemena further advises that the proposed program of works is 100% allocated to Jemena distribution networks.

Assessment

Problem definition and risk assessment

110. At the core of Jemena's proposed project is improvement of its process for network switching:[11]

> *'This initiative will enhance JEN's Network Operations by improving real-time awareness of the dynamic status of the electricity network and the locations of staff working on it, particularly during switching operations and fault management.'*

111. Jemena advises that, despite improvements in the current regulatory period in response to switching safety incidents (and response to a subsequent ESC undertaking), the current switching process remains inefficient and represents a material safety and supply risk.

112. The current approach to network switching involves a resource intensive approach characterised by manual data entry to form paper-based switching instructions and step-by-step phone verification with the control room. The process relies upon an unsupported custom application [redacted] and [redacted] as well as the SCADA system. Jemena advises that:[12]

> *'These methods can cause miscommunication and reduce situational awareness among control room staff and field operators, potentially leading to errors during switching activities.'*

113. Jemena provides background on a recent switching error (August 2024) which occurred despite improvements to date, which caused an unplanned outage and safety risk to field operators.[13]

114. Jemena notes that with the planned increase in the capex program over the next RCP, the number of switching activities will also increase significantly, increasing the potential number of switching errors. Jemena presents a qualitative risk assessment using its corporate risk ratings matrix, in which the current risk rating is assessed to be 'High' (catastrophic consequence, but unlikely), rising to 'Extreme' (Catastrophic but possible) over the next RCP.[14]

115. Lastly, Jemena contends that good industry practice is to 'digitise' high risk network switching activities and doing so will reduce the risk associated with loss of experienced staff through 'attrition.'

116. We consider that Jemena has presented a solid case for evaluating cost-effective enhancements to its switching process.

Jemena considered two options in addition to 'do nothing' with qualitative benefit assessment

117. Jemena considered two alternatives to 'doing nothing' to address the improvement opportunities and compliance risk:

1. Do nothing
2. Single vendor platform requiring totex of $15.6 million ($2024) in the next RCP (Jemena preferred), and
3. Multi-vendor platforms requiring totex of $16.9 million ($2024) in the next RCP.

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11 JEN – RIN – Support – ICT Investment Brief - Digitising Network Switching – 20250212 – Confidential, page 6

12 JEN – RIN – Support – ICT Investment Brief - Digitising Network Switching – 20250212 – Confidential, page 5

13 JEN – RIN – Support – ICT Investment Brief - Digitising Network Switching – 20250212 – Confidential, page 5

14 JEN – RIN – Support – ICT Investment Brief - Digitising Network Switching – 20250212 – Confidential, page 8

118. Jemena recommends Option 2 because it will maintain the risk profile achieved during the current RCP and achieves this at the lowest sustainable cost. We consider that Option 1 is not prudent and Option 3 offers no significant advantages over Option 2 other than diversification from the dependency on the single vendor. In addition to the higher expected cost, Jemena states that '*it adds complexity and risk to control room software architecture and introducing a new product into the current platform requires additional integrations, adds new points of failure and increases costs of maintenance.*'[15]

119. Option 2 is based on establishing (i) digital management of the switching steps and inbuilt safety logic, and (ii) non-verbal communication between field staff and the control room. The new platform will focus on the following capability areas:

- *Improvement in the switching order management and OMS capabilities.*
- *Network model data.*
- *Mobile Application capabilities to enable non-verbal communication to the field.*[16]

Costs are reasonably derived

120. Jemena advises that the Option 2 cost was estimated based on a combination of its own SME input plus specific cost estimations provided by [redacted]
    - Project capex includes development, testing, and new licenses for the [redacted] during implementation
    - Project opex includes change management and training (internal resourcing), and
    - Recurrent step opex is for ongoing maintenance of the new [redacted] platform.

121. Based on the information provided and considering the stage of the project development lifecycle, we consider the estimate to be reasonably based.

Benefits are risk mitigation and realising improvement opportunities

122. Jemena presents unquantified risks and opportunities, as outlined in Table 3.7. As Jemena has categorised this project as a 'maintenance of capabilities' project, it has not sought to quantify the benefits.

Table 3.7: EMCa's qualitative risk and improvements arising from Option 2

Mitigated risks	Cost reduction
Safety and supply outage risk mitigation from: • improved accuracy and detail of real-time information communicated to customers and field crews • prevention of errors through inbuilt digital safety logic • reducing the number of possible impacted customers should there be an error.	*Improvements in efficiency by:* • *Less manual activities* • *Discontinuing the use of [redacted] (less support cost)*
Mitigates dependency on specialised knowledge that could be lost if key employees leave Jemena.[17]	

Source: JEN – RIN – Support – ICT Investment Brief - Digitising Network Switching – 20250212 – Confidential, pages 5, 10

Project timing does not appear to be optimal given the assessed risk

123. Jemena has assessed that the risks arising from switching errors is currently (2024) 'High' and proposes a four-year program of investment in a new OSI platform, commencing in

15 JEN – RIN – Support – ICT Investment Brief - Digitising Network Switching – 20250212 – Confidential, page11

16 JEN – RIN – Support – ICT Investment Brief - Digitising Network Switching – 20250212 – Confidential, page 8

17 OI Writer requires specialist resources

FY27. It is not clear to us, from the information provided, why Jemena would not have started to address this risk in the current period. However, consistent with our scope, we take the fact that it has not been undertaken in the current period as a given and assess it on the basis that Jemena has proposed.

Dependencies on other projects

124. This solution is dependent on new planned devices (for example substations, switches) to exist as an object in the ADMS which is planned to be delivered by the Dynamic Network Planning with Automation Project (see Attachment JEN – RIN – Support - ICT Investment Brief – Dynamic Network Planning with Automation). The proposed solution will enable the information from the design into various ADMS models so that they can be available to be utilised during the digital switching activities on restoration.

Findings

125. The forecast capex of $12.8 million is likely to satisfy the capex criteria, as is the proposed project opex of $3.9m.

126. The proposed opex step change of $0.5m should be absorbed by Jemena given the efficiency savings that are likely to arise from implementing the new system.

3.3.3 Emergency backstop project

What Jemena proposes

Project objective

127. The Victorian Government mandated the Victorian Emergency Backstop Mechanism (VEBM) to be implemented by Victorian DNSPs, such that all new and replacement distributed PV systems can be remotely interrupted or curtailed when directed by AEMO. Jemena has implemented such a system (its LV Distributed Energy Management System, or DERMS) but states that it needs to undertake upgrades over the period '*…to ensure ongoing system availability and reliability required to meet the new regulatory requirements*.'[18]

Background information

128. The VEBM is a compliance requirement arising from two staged Victorian Government Ministerial Orders. Jemena undertook Stage 1 and has commenced work on Stage 2 in the current Regulatory Period and AER approved a cost pass-through application in September 2024 for this work. At our onsite, Jemena advised that its cost for this work was of the order of $16m.[19]

129. The cost pass-through application covered only works within the current regulatory period, therefore Jemena is seeking inclusion of cost for maintenance of the system and for major and minor upgrades that it states will be required in the next Period. Jemena advises that this is a newly-developed system and it therefore expects there to be a higher-than-usual need for version updates as the system operation is settled.

Proposed expenditure

130. Jemena proposes the forecast capex shown in Table 3.8 in the next regulatory period for its Emergency Backstop ICT project. Jemena has not proposed propex or an opex step change for this project.

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18 Investment Brief for Emergency Backstop Mechanism, page 4

19 We assume that this figure was in nominal, or current dollar terms, noting that it submitted a cost of $13.3m in $2021 terms to AER for its cost pass through application. (refer AER determination, September 2024, page 4)

Table 3.8: Jemena's proposed expenditure for Emergency Backstop ICT project - $m, real 2026

	2027	2028	2029	2030	2031	TOTAL
Capex	2.0	0.9	0.9	2.1	0.9	**6.9**
Propex	-	-	-	-	-	**-**
Opex step change	-	-	-	-	-	**-**
Total	**2.0**	**0.9**	**0.9**	**2.1**	**0.9**	**6.9**

Source: EMCa, from Jemena capex model (Att05-10M)

Assessment

The project is required

131. Providing a functioning and reliable LV DERMS is a compliance requirement under the Victorian Ministerial orders.

Jemena has chosen an appropriate option

132. Jemena considered two options:

- Option 1: Maintain current version and manage risk, and
- Option 2 – Proactively manage lifecycle upgrades (Jemena preferred).

133. Given that the Victorian Government has determined that this system is a necessary tool to assist AEMO in managing grid stability as PV penetration continues to increase, we consider that it is reasonable for Jemena to assume a need to manage potential system risks through proactive upgrades.

Jemena's basis for estimating the cost of this project is reasonable

134. Jemena has estimated the costs by proxy using an upgrade of what it describes as a similar OT platform [redacted]

135. As a lead user of this newly-developed system, we explored the potential cost risk that Jemena effectively underwrites costs in bedding down the system, which the vendor is then able to leverage to other customers. Jemena stated in our meeting that it would be alert to such risk in procurement discussions with the vendor as and when the need for upgrades occurs.

136. We consider that the basis for Jemena's cost estimation is reasonable.

Findings

137. For maintenance of the LV DERMS for the Emergency Backstop requirements, we consider that Jemena's proposed capex allowance of $6.9m is reasonable.

3.3.4 End user computing

What Jemena proposes

Objective

138. Under this category of expenditure, Jemena proposes an allowance to undertake lifecycle replacement of field mobility devices and collaboration equipment (e.g. room conferencing and AV equipment).

139. Jemena proposes the forecast capex shown in Table 3.9 for its End User Computing. Jemena has not proposed propex or an opex step change for this requirement.

Table 3.9: Jemena's proposed expenditure for its End User Computing requirements - $m, real 2026

	2027	2028	2029	2030	2031	TOTAL
Capex	2.1	0.1	-	0.1	0.6	3.0
Propex	-	-	-	-	-	-
Opex step change	-	-	-	-	-	-
Total	**2.1**	**0.1**	**-**	**0.1**	**0.6**	**3.0**

Source: EMCa, from Jemena capex model (Att05-10M)

140. Jemena proposes this expenditure for lifecycle replacement of field mobility devices and collaboration equipment.

Assessment

Need for replacement of tablets is reasonable, but Jemena's proposed timing is inconsistent with its stated policy

141. Jemena states that its planned replacement cycle for tablets is every 2 years, however it states that it has not upgraded these since 2019 and 2020. Jemena has made a reasonable general case that it will need to replace much of this equipment in the next regulatory period, by the end of which it will be over 10 years old. However, there is a degree of inconsistency between the apparent age of Jemena's fleet and its claimed replacement need and claimed lifecycle replacement policy, with Jemena deferring replacement to commence in the first year of the next regulatory period.

Jemena's case for a non-recurrent capex allowance for meeting room refresh is not compelling

142. The need that Jemena puts forward for meeting room refresh is less compelling than its claimed need for tablet replacements. Jemena states that '*…many meeting rooms have been updated during this current period…*' but that '*… there are many that have not been updated since 2015.*'[20] Jemena then goes on to explain that the equipment used in the older rooms was of a higher specification which provides a longer service life.

143. Jemena's statement that some meeting room equipment was upgraded within the current period also suggests that this cost is included in current period recurrent capex and, since Jemena is using this as a base from which to forecast its next period capex, this effectively covers whatever further replacements and upgrades Jemena wishes to undertake in the next period.

Jemena does not provide an adequate case to provide a non-recurrent capex allowance for the short lifespan items that it has proposed as 'end user computing'

144. Based on Jemena's descriptions, we consider that it is reasonable to view end user computing as 'recurrent capex'. Whether or not lifecycles are 2 years, as Jemena claims, they are likely to be within 5 years and therefore on average leading to turnover of all or the majority of such equipment within a given regulatory period. Further, if some of this equipment has now significantly exceeded its serviceable life, as Jemena also claims, then it could replace it now before the end of the current period, based on the business need that it describes, rather than adding it as a non-recurrent 'project' for the next period's allowance.

145. We consider that the proposed expenditure does not represent non-recurrent capex and should be replaced within the general allowance that Jemena will have for recurrent capex.

[20] Jemena Investment Brief for End User Computing, page 4

Other information is sparse and does not assist with assessment

146. Jemena's Investment Brief contains only consideration of the options of 'do nothing' or to undertake the proposed replacements.

147. Given the evident need for a degree of replacement of this equipment, doing nothing is not a plausible option and its rejection does nothing to support consideration as to whether Jemena's proposed replacement program is prudent.

148. Jemena provides no useful information on its costing for the proposed replacement program. Its proposed capex comprises single line items both in its Investment Brief document and in its CBAM.

149. Its CBAM also provides no useful information and is simply a vehicle for having entered the single line of proposed capex as above.

Findings

150. We consider that Jemena's proposed non-recurrent ICT capex allowance for End User Computing replacements and upgrades is not reasonable.

3.3.5 GIS lifecycle upgrades

What Jemena proposes

Project objective and proposed capex allowance

151. Jemena proposes to undertake a major upgrade of its GIS '*…to ensure ongoing system availability and reliability*'[21] Jemena proposes the forecast capex shown in Table 3.10 for this project. Jemena does not propose project opex or an opex step change.

Table 3.10: Jemena's proposed expenditure for a GIS Lifecycle Upgrades ICT project - $m, real 2026

	2027	2028	2029	2030	2031	TOTAL
Capex	-	-	1.1	-	2.9	**4.1**
Propex	-	-	-	-	-	**-**
Opex step change	-	-	-	-	-	**-**
Total	**-**	**-**	**1.1**	**-**	**2.9**	**4.1**

Source: EMCa, from Jemena capex model (Att05-10M)

Assessment

The project is required

152. Jemena states that the current version of its GIS is a version that was deployed in 2019, and which is approaching the end of full vendor support. Jemena explains that 'sustaining support' is available but is provided by the vendor on a 'best endeavours' basis and does not include '*….release of patches, bug fixes, documentation updates, corrections nor make the release compatible with dependent operating systems.*' This creates increasing risk to the GIS, particularly as Jemena updates its underlying system environment, including to reduce cyber security risks.

153. GIS plays an important role in the efficient functioning of network management and operational activities, and we consider that it is prudent to maintain the currency of this system.

[21] Jemena Investment Brief for GIS lifecycle upgrade, page 4

Jemena has chosen an appropriate option

154. Jemena considered three options:

- Option 1: Maintain current version and manage the risk
- Option 2: Rearchitect and replace, and
- Option 3: GIS lifecycle upgrade (Jemena preferred).

155. As above, we consider it would not be prudent to retain the current version, and we therefore dismiss Option 1.

156. Jemena states that Option 2 would require '…*a materially larger investment, significant business process changes to implement and an overall increase in risk…*' and it '*…would effectively require overhauling the current asset and GIS systems….including changes to integrated systems and processes.*' [22] Jemena estimates that this option would cost in excess of $7m.

157. Jemena does not indicate that it has any material issues with its current GIS, other than its lack of currency. We consider that Jemena provides a reasonable qualitative assessment of the risks and complexities in moving to a new system, which is also a more expensive option and is not driven by need.

158. We therefore consider that Jemena has reasonably demonstrated that its preferred option of upgrading its current systems (i.e. Option 3) is prudent.

Jemena's basis for estimating the cost of this project is reasonable

159. Jemena has a 'known' product pathway, involving an upgrade to a current version of [redacted] and migrating two components to another product that will improve cyber security. Jemena states that it has estimated the cost based on experience with similar projects and taking into consideration the impacted systems.

160. We consider that Jemena provides reasonable evidence that it has based its proposed cost on a defined upgrade pathway and we consider that an experienced-based cost is a reasonable approach in this instance.

Findings

161. We consider that Jemena's proposed non-recurrent ICT capex allowance of $4.1m for the GIS upgrade is reasonable.

3.3.6 Market Systems Interface (MSI) replacement

What Jemena proposes

Project objective

162. Jemena proposes to replace its Market Systems Interface (MSI) platform. This system manages certain critical processes including life support and remote de-energisation / re-energisation and a range of functions relating to metering-related service orders, meter site information synchronisation and Jemena's role in B2B transaction related to customer switching.

163. Jemena explains that the current system is a 'custom built' system that manages these functions for Jemena's electricity and gas businesses.

Proposed capex

164. Jemena proposes the forecast capex shown in Table 3.11 for this project. As can be seen here, Jemena proposes to undertake this project only in 2030 and 2031.

[22] As above, page 6

Table 3.11: Jemena's proposed expenditure for an MSI Replacement ICT project - $m, real 2026

	2027	2028	2029	2030	2031	TOTAL
Capex	-	-	-	0.8	0.8	1.6
Propex	-	-	-	-	-	-
Opex step change	-	-	-	-	-	-
Total	**-**	**-**	**-**	**0.8**	**0.8**	**1.6**

Source: EMCa, from Jemena capex model (Att05-10M)

Assessment

The project is required

165. Jemena states that the existing system is now over 10 years old, was custom-built and runs in part on an unsupported platform, and which will become fully unsupported by 2030. Jemena states that the operating systems for its production and test environments are also now out of date. This situation is resulting in interoperability issues, reducing reliability of the system and reducing ability to address security vulnerabilities. Jemena states that there is a risk that issues with the system that are not readily recoverable could lead to long delays in processing market transactions affecting its customers.

166. We consider that Jemena provides adequate evidence of a need that warrants some form of replacement or upgrade.

Jemena has chosen an appropriate option

167. Jemena considers three options:

- Option 1: Continue to operate the current MSI platform
- Option 2: Upgrade MSI to the latest version of Java, and
- Option 3: Replace the MSI platform (Jemena preferred).

168. As above, we consider it would not be prudent to only maintain the current version, and we therefore dismiss Option 1.

169. Jemena's assessment is that upgrading to the latest version of [redacted] (i.e. Option 2) would be complex, costly and problematic. It cites the fact that the open-source software currently used has now ceased development, therefore requiring an alternate framework and a third-party vendor, together with additional [redacted].

170. Jemena has not costed Option 2, but in considering the complexities above, it considers that it would be more costly than Option 3.

171. We consider that Jemena provides reasonable justification for selecting Option 3, that is, to replace the MSI platform with a commercial product that applies '*…modern application architecture and technologies that are secure, modular, configurable and scalable…*'[23]

Jemena's basis for estimating the cost of this project is reasonable

172. Jemena has based its cost assessment on a similar product. In its Investment Brief Jemena states that:[24]

> *The Market System Integration (MSI) platform is a custom-built enterprise business application that manages and automates business rules, validations and acknowledgement for Jemena's electricity and gas market transactions.*

[23] JEN – RIN – Support – ICT IB - MSI replacement – 20250212 – Confidential, page 8

[24] JEN – RIN – Support – ICT IB - MSI replacement – 20250212 – Confidential, page 4

173. In response to our information request, Jemena provided information that it has allocated 100% of the cost for this project to its electricity business.[25] In this same response, we observe that systems that Jemena describes as servicing customers other than JEN are allocated 35.1% to JEN. We consider that Jemena's proposed cost should be allocated accordingly.

Findings

174. We consider that Jemena provides reasonable justification for undertaking the proposed replacement, but in view of the information that the MSI services both electricity and gas customers, we consider that its proposed allowance is overstated.

175. We consider that a reasonable alternative allowance is to allow 35.1% of the amount that Jemena has proposed, consistent with other allocations that Jemena applies to other ICT projects, as shown in its response to our IR. This means that an alternative allowance would be $0.55m, which is $1.0m less than Jemena has proposed.

3.3.7 Network Operations Geospatial Enhancements

What Jemena proposes

176. Jemena proposes enhancements to Mobile Enterprise (ME), GIS-ADMS integration, and its spatial data warehouse in the next RCP. Its proposed expenditure, which comprises capex, project opex and a proposed opex step change, is summarised in Table 3.12.

Table 3.12: Jemena's proposed expenditure for Geospatial Enhancements project - $m, real 2026

Category	FY27	FY28	FY29	FY30	FY31	Total
Capex	1.9	1.1	-	-	-	**3.0**
Propex	0.3	0.2	-	-	-	**0.4**
Opex step change	0.0	0.1	0.1	0.0	0.1	**0.2**
Total	**2.2**	**1.4**	**0.1**	**0.0**	**0.1**	**3.7**

Source: EMCa, from Jemena capex model (Att05-10M), opex model (Att06-03M), relevant CBAM and Jemena response to IR009 Q28

Jemena identifies the project as 'maintaining existing services, functionalities, capability and/or market benefit.'[26]

'The initiative aims to deliver ongoing essential enhancements to the JEN GIS suite of applications by focusing on maintaining the asset data and supporting processes that these spatial systems underpin. This will improve asset data capture, analysis, accessibility, reporting and sharing of information required to continue to promote efficient, safe, and reliable service delivery for our customers.' Jemena further advises that the proposed program of works is 100% allocated to Jemena distribution networks.

Assessment

Problem definition and risk assessment

177. Jemena advises that its 'geospatial ecosystem' needs to remain as an effective, critical data source for multiple business systems and processes and needs to continue to evolve its

[25] Jemena response to EMCa IR009, Q29

[26] JEN EMCa AER workshop 280325 - ICT and Cyber, slide 56

geospatial structures, data, and integration capabilities to ensure it can continue to meet operational and strategic demands.[27]

178. The risks are identified in a number of places in the Investment Brief and, in our view, would be more accurately categorised as a combination of risks and improvement opportunities, as we have summarised in Table 3.13.

Table 3.13: EMCa's interpretation of Jemena's needs and risk assessment

Identified risks	Identified foregone improvement opportunities
Switching incidents from inaccurate or incomplete data	*Reduced need for manual data entry or corrections*
Imposes delivery risk on network augmentation projects	*Not able to optimise growth to meet increasing rates of electrification in the most prudent and efficient manner*
Potentially increase the risk of outages	*Reducing customer outage duration – reactive response through real-time situational awareness*
Not fully enabling data capture requirements per service line height risk	*Reducing customer outage duration – proactive response through enhanced visibility into asset and network data*
Analysis, data availability, and GIS-ADMS interface limitations	*Meet emerging regulatory requirements*
Poor quality, out-of-date data being posted to Jemena portals and internal business processes	

Source: JEN – RIN – Support – ICT Investment Brief - Network Operations Geospatial enhancements – 20250131 – Public, pages 5-9

179. Jemena has not quantified the risks or improvement opportunities, instead relying upon qualitative statements not supported with evidence. The Investment Brief does not include a qualitative analysis of its risk using the corporate risk matrix – that is, there is no discussion about the starting, untreated, and treated/target risk for the initiative.

180. Further, as they are described in the Investment Brief, there appears to be the potential for overlap of at least some of the improvement opportunities with benefits claimed for other projects, including in the following:

- GIS major upgrade
- Data visibility and Analytics
- Digital Twin, and
- Dynamic network planning with automation.

181. Jemena has proactively referred to related projects, but only (i) in the context of the other projects' dependency on this project (Data Visibility and Analytics and 3D Digital Twin projects, and (ii) to explain why there are no additional costs for lifecycle GIS upgrades in this business case.

Jemena considered only two options with qualitative benefit assessment

182. Jemena reports consideration of only one alternative to 'doing nothing' to address the improvement opportunities and compliance risk:

1. Do nothing, and
2. Implement enhancements to ME, GIS-ADMS integration and Spatial Data Warehouse (Jemena preferred).

[27] JEN – RIN – Support – ICT Investment Brief - Network Operations Geospatial enhancements – 20250131 – Public, pages 5-9

183. Jemena recommends Option 2 because '…*it reflects good industry practice given the benefits outlined…[and] it provides the lowest sustainable cost*.'[28]

184. We note the following key focus areas for the project for enhancing Jemena's geospatial systems 'operational and strategic demands' are:[29]

- **Network data alignment** which will enable more informed decision-making and scenario modelling
- **Spatial Data Warehouse** enhancements to support evolving operational, regulatory, and reporting needs…enabling network models, digital twins, and data extracts…
- **Mobile Enterprise (ME) Asset Data Capture** enhancements to enable new data collection requirements to be introduced to field operations, and to capture asset information efficiently and accurately (in the field), and
- **GIS prioritised enhancements to the GIS ecosystem** which is not specific but appears to be a provisional allowance for currently unknown requirements in the next RCP in response to '…*changes in regulatory, safety, operational and efficiency requirements.'*

185. As the business case only includes one alternative to the 'do nothing' option, we asked Jemena to explain how it determined that the proposed scope is the prudent approach in the absence of explicit presentation of alternatives (e.g. options covering a greater or lesser scope of work in the next RCP) and given the uncertainties regarding the nature and timing of 'emerging' regulatory and other industry changes.

186. Jemena's response was that it identified five GIS enhancements but only included three in its Investment Brief that it considered to be 'must haves'.[30] The other two items (Communication data, and zone substation equipment) are deemed to be 'preferable, not mandatory'. Jemena also provided an updated CBA with more detailed information.

187. We are satisfied with the response.

Costs are reasonably derived

188. Jemena advises that the costs were estimated based on its experience from previous work on the systems. Capex is required because the systems are on-premises. The non-recurrent opex is for change management (using internal resources) - field staff using ME, office staff using the GIS toolset, and control room staff. The recurrent step opex cost is for additional licences, with costs based on the existing subscription licencing model.

Benefits are risk mitigation and realising improvement opportunities

189. Essentially the benefits of Option 2 are the opposite of the counterfactual, in which the risks and opportunities outlined in Table 3.13 are mitigated (risks) and realised (opportunities). As Jemena has categorised this project as a 'maintenance of capabilities' project, it has not sought to quantify the benefits.

We consider that at least some of the proposed expenditure relates to building new or expanded ICT capability or functions.

190. We are concerned that at least a portion of the proposed expenditure may be directed to improving (or as Jemena says regularly in the Investment Brief), enhancements – building new or expanded ICT capability and/or functions.

191. We advised Jemena of our concern about its project classification and invited it to present a cost-benefit analysis. Key aspects of Jemena's response are:[31]

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28 JEN – RIN – Support – ICT Investment Brief - Network Operations Geospatial enhancements – 20250131 – Public, page 9

29 JEN – RIN – Support – ICT Investment Brief - Network Operations Geospatial enhancements – 20250131 – Public, pages 7, 8

30 Jemena response to IR009, question 35

31 Jemena response to IR009, question 34

*'…the key benefit is that the GIS system **would cease to operate** if it is not kept current. [emphasis added]*

'These enhancements are better described as maintenance activities required to maintain the GIS ecosystem and as such, no benefits have been defined. A non-functional GIS system would cause significant and long-term failure, which would far exceed the proposed cost multiple times over to maintain this system.'

'It is important to note that modern GISs, require enhancement over time to maintain relevance. They must evolve to integrate with new technologies, data sources, and functionalities to meet the dynamic demands of our network operations.'

'For the JEN geospatial ecosystem to remain an effective, critical data source for multiple business systems and processes as described above, JEN must continue evolving its geospatial structures, data, and integration capabilities. Key enhancements are required within this ecosystem to ensure JEN can continue meeting operational and strategic demands.'

192. We revisited Jemena's Investment Brief and information provided in the on-site briefing slides and there is no mention of the risk that without the proposed investment, the GIS system would cease to operate. From what we have read and from our understanding of geospatial ecosystems, this appears to be an unsupported claim.

193. Moreover, recurrent opex is required for additional licences, which again strongly suggests additional capability is being introduced.

194. Nonetheless:

- We are persuaded that the major purpose of the investment is to 'maintain current capabilities' and to enable network models and the 3D digital twin, among other things
- We consider that if Jemena sought to quantify the benefits (both risk reduction and efficiency and other improvements), the net economic benefit would likely be positive, despite our concerns regarding the potential for benefit double-counting, and
- The opex costs should be self-funded from efficiency gains.

Findings

195. The forecast capex of $3.0 million ($2026) is likely to satisfy the capital expenditure criteria, as is Jemena's proposed project opex of $0.4m.

196. Given the proposed efficiency improvements that will arise from the project, we consider that Jemena should absorb the proposed opex step change, which totals only $0.2m over the period.

3.4 Non-recurrent ICT capex projects (New capability)

3.4.1 Customer education project

What Jemena proposes

Project objective

197. Jemena states that its objective is to deliver an integrated customer education program that:

- *builds energy literacy,*
- *builds customers capability to prepare for the energy transition,*
- *enhances customer experience and the accessibility of information for everyone and to*

- *supports customers to take on a more active role in energy generation and management.*[32]

Options considered

198. Jemena identifies four options. It selects Option 3: Education and Empowerment and rejects the alternatives of Option 1: Do nothing, Option 2: Essential Education and Option 4: Education and Empowerment PLUS.

199. The initiatives in the option that it proposes include providing information to customers, streamlining processes and '*increasing the customer experience*'.[33]

Proposed expenditure

200. Jemena's proposed program expenditure comprises a proposed ICT investment involving capex, propex and an opex step change, as shown in Table 3.14.

Table 3.14: Jemena's proposed expenditure for Customer Education ICT project - $m, real 2026

	2027	2028	2029	2030	2031	TOTAL
Capex	0.9	-	2.4	1.2	0.3	**4.8**
Propex	0.3	-	1.1	0.7	0.2	**2.3**
Opex step change	-	0.2	0.2	0.2	0.2	**0.8**
Total	**1.2**	**0.2**	**3.7**	**2.0**	**0.7**	**7.9**

Source: EMCa, from Jemena capex model (Att05-10M), opex model (Att06-03M), relevant CBAM and Jemena response to IR009 Q28

201. In addition to this ICT expenditure, Jemena also proposes an associated opex step change for 'Customer Systems and Education' of $4.3m (in $2026).[34] As we show in section 5.2.1, a component of this (shown as $2.7m in $2024 terms in Jemena's project model)[35] relates to services that Jemena proposes to provide leveraging off the proposed customer education ICT investment.

Claimed benefits and NPV

202. In its Investment Brief Jemena presents a CBA that claims a marginally positive NPV of $0.3m,[36] and this value is evident in the public version of its CBA Model.

203. We sought information that would explain how Jemena had derived the claimed benefits, and which were hard coded in the model provided with its submission. Jemena responded with an updated (confidential) version of its model, which demonstrated the assumptions that it had made and had intact formulas such that the NPV could be traced from the input costs and benefit assumptions.[37]

204. In its updated version of its CBAM, Jemena presents a somewhat higher NPV for this project than was shown in its Investment Brief and accompanying version of its model, now $3.3m. On reviewing its model, we observe higher claimed benefits but with the same estimated cost. Since its original model did not show the derivation of its claimed benefits, it is not possible to identify why this is the case.

205. In Table 3.15 we summarise the benefit assumptions that Jemena has now provided in its updated version of its CBAM, and which result in the claimed NPV of $3.3m.

32 IT Investment Brief – Customer Education, page 3

33 Investment Brief, page 7

34 Jemena Att 06-03M opex model, Input|Step changes sheet

35 Jemena Customer Education CBAM, Input|Cost&Benefit sheet, Opex, Option 3, row 'Customer Comms – Customer Education & Decarbonisation'

36 Investment Brief for Customer Education project, page 13

37 Jemena response to EMCa IR009, Q27b and 27c

Table 3.15: Jemena's updated assessment of benefits of proposed program - $m, real 2024

Benefit category	Description	Metric	Metric value assumption	Total benefit ($m Undiscounted)
Satisfaction	Value to customers from improvements to processes / automation for Solar & EV connections	Customer Satisfaction Score	0.5	0.8
Satisfaction	Value to customers from improvements to processes / automation for customers replacing their solar connections	Customer Satisfaction Score	0.5	0.8
Savings	Value to EG Installers from reduced effort (time savings that can be passed on to customers as reduced project costs)	Hours	2	3.4
Savings	Value of Customer Education campaigns through savings as a result of increased energy literacy	Customer savings	$77.55	9.0
TOTAL Benefits (per Jemena assessment)				14.0

Source: EMCa, from Jemena CBAM for Customer Education project provided in response to IR009, Q27b and 27c, sheet Benefit Quants

206. As is shown in the table, the majority of the claimed benefits arise from what Jemena describes as the Value of Customer Education, and which we consider in our assessment below.

Assessment

Electricity retail market education does not justify a DNSP regulated investment

207. For the main source of claimed benefits, Jemena refers to a Victoria University report in which the authors determined that customer education could assist customers to reduce their retail power bills. However, we consider that assisting consumers in navigating the retail electricity market is not a role that justifies a DNSP making a regulated investment.

Stress testing of benefit assumptions would more likely result in a negative NPV

208. We have further considered the assessment of benefits and make the following observations:

- Jemena's estimate of the Value of Customer Education relies on a series of assumptions regarding the 'Money Left on the Table' (MLT) through customers making imperfect choices in the retail electricity market. While acknowledging the source of this value, we would suggest that the extent to which a customer education campaign would close this gap is highly uncertain. In all sectors of the economy, many (and perhaps most) retail customers make every day purchasing decisions that do not necessarily reflect the lowest possible cost even for like-for-like goods and services.
- The time savings value for EG installers appears plausible but is not (and most likely could not be) empirically verified.
- The values associated with improved customer satisfaction contribute only a small portion of the aggregate benefit and would not in themselves justify the proposed investment.

209. While Jemena has undertaken a sensitivity analysis with 10% lower benefits, we consider that benefits could plausibly be only a fraction of those that Jemena has assumed and a reduction of only a little over 30% in the assumed benefits would result in a negative NPV. We have already noted above that Jemena's own NPV estimate for this project was only marginally positive in its Investment Brief.

There is no need for Jemena to undertake this investment

210. While Jemena considered four options, the three that involved some form of intervention rely on benefit assumptions that originate from the same source as above, and our assessment therefore equally applies to all three options that would see Jemena 'intervene' to assist customers in the electricity retail market. This therefore leaves 'do nothing' as the favoured option.

211. We further considered whether Jemena could be in breach of any obligation by not making this investment. We consider that it would not.

Findings

212. We consider that Jemena's proposal for Customer Education systems and associated initiatives is not justified. Accordingly, we consider that:

- The proposed capex of $4.8m and proposed project opex of $2.3m are not justified
- The proposed ICT opex step change of $0.8m is not justified, and
- The element of the proposed opex step change of $4.3m for 'Customer systems and education' that is associated with the Customer Education project, is not justified.

3.4.2 Dynamic Network Planning with Automation project

What Jemena proposes

213. Jemena proposes to digitise the process of managing network drawings by removing the manual keying of as-designed and as-built paper and electronic drawings into the Jemena Geospatial Information System (GIS). As shown in Table 3.16, the proposed totex is $13.4 million over the course of the next RCP, comprising $11.2 million capex, $1.8 million propex, and an opex step change of $0.4 million.

Table 3.16: Jemena's proposed expenditure for Dynamic Network Planning project - $m, real 2026

Category	FY27	FY28	FY29	FY30	FY31	Total
Capex	0.2	1.4	3.2	3.6	2.7	**11.2**
Propex	-	0.1	0.6	0.6	0.6	**1.8**
Opex step change	-	0.1	0.1	0.1	0.1	**0.4**
Total	**0.2**	**1.5**	**3.9**	**4.3**	**3.4**	**13.4**

Source: EMCa, from Jemena capex model (Att05-10M), opex model (Att06-03M), relevant CBAM and Jemena response to IR009 Q28

214. Jemena advises that the proposed program of works is 100% allocated to Jemena distribution networks.

Assessment

Problem definition and risk assessment

215. The risks identified by Jemena are:[38]

- Difficultly in ensuring quality control leads to inaccuracies in GIS data because (i) the manual processes can result in error despite manual quality control, and (ii) [redacted] and the GIS have different data structures and file formats, increasing the chance of data loss or misalignment

[38] JEN – RIN – Support – ICT Investment Brief - Dynamic Network planning with automation – 20250212 – Confidential, page 6

- Inefficiencies cause delays in availability of network design information and as-built construction drawings, in turn impacting outage management, and
- Increased operational costs to keep pace with the growing volume of augmentation projects.

216. Jemena did not provide a risk analysis using its (qualitative) risk rating matrix. However, on the basis of the issues/risks presented by Jemena there is a solid case for looking at cost-effective alternatives to the manual processes to at least mitigate, if not eliminate, the risks.

Jemena presents three options in its IT Investment Brief

217. Jemena considered 3 alternatives to address the identified needs:

1. Do nothing
2. Implement automation using a [redacted] solution (Jemena preferred) with a totex of $12.0 million (including $0.4 million recurrent step-opex, $2024), and
3. Implement automation using a bespoke internally built solution with a totex of $12.7 million (with no recurrent step-opex).

218. Options 2 and 3 introduce new or expanded ICT capability and/or functions, and in accordance with the AER guideline discussed in section A.1, Jemena needs to demonstrate not only that the proposed scope of work is likely to address the issues but also demonstrate that the project has a positive NPV.

219. Option 3 is similar to the preferred Option 2 but as Jemena points out with Option 3 (i) Jemena would not benefit from the vendor's investment in product development, (ii) the reduction in recurrent step opex from licencing will be negated by internal support costs required to maintain the solution, and (iii) the NPV is -$0.5 million, which is $0.6 million lower than Option 2's NPV.

Cost estimates are reasonably based

220. We consider that Jemena's cost estimates are likely to be reasonably based, primarily because:[39]

- Jemena undertook a pilot project (successfully) which has resulted in the selection of the preferred product and vendor, and
- As a suitable [redacted] solution has been selected, cost estimates should be readily determined to an adequate level of accuracy (for this stage of the project life-cycle):
  - implementation effort and costs have been estimated from Jemena's experience (including the pilot) and from the third party
  - the capex component includes costs for development, testing, and new licenses for the automation product
  - opex costs are for change management, including training, and
  - the recurrent step opex cost is for licensing fees which should be readily obtained from vendors.

Jemena's cost benefit analysis leads to a marginally positive NPV but it is probably understated

221. Jemena has identified and quantified three sources of benefits totalling $10.7 million over the 15-year study period, as summarised in Table 3.17. Based on the information in the Investment Brief, we consider that the benefits summarised in the table have been reasonably derived.

222. Jemena includes a single sensitivity analysis in its CBA model, although it is not referred to in its Investment Brief, by varying the net economic benefit by -10%, reducing the NPV to -

[39] JEN – RIN – Support – ICT Investment Brief - Dynamic Network planning with automation – 20250212 – Confidential, page 5

$1.0 million. Equally, if costs were to increase above the forecast, the project might not be strictly considered to be prudent as proposed. However, we note that the NPV could be reasonably expected to be somewhat higher from including additional quantifiable benefits:

- Continued growth in currently identified benefit streams beyond the current plateau from FY31 onwards, and
- The avoided costs associated with data quality issues and data availability issues outlined by Jemena in its risk analysis such as impacting outage planning and network operational instruction errors.

Table 3.17: Summary of Jemena's benefit analysis ($m, 15-year study period)

Benefit source	Aggregate benefits ($real 2024)	PV ($nominal 2024)	Assumptions
Avoided extra FTEs to manually transcribe	9.78		*Assume similar FTE growth rates as in current RCP* *+3 FTE by FY27 avoided* *+1 FTE by FY31 avoided*
Avoided duplication of effort to remove errors	2.10		*+1FTE avoided*
Avoided cost of drawing management	2.55		*+1 FTE avoided*
Total	**14.43**	**+10.7**	

Source: Derived from JEN – RIN - Support - ICT Invt Brief - Dynamic Net Planning with Aut - CBA model - 20250131 - Public

Links to other projects

223. This solution is a dependency for Jemena's proposed Digitising Network Switching (see section 3.3.2) because availability of information on new assets (e.g. substations, switches) as an object in the ADMS model enable digital switching activities on restoration.

Findings

224. A [redacted] strategy for deploying automated [redacted] drawing management is a sensible means of reducing inefficiency and error. The benefits are largely associated with elimination of inefficient use of labour. The NPV is marginal, but it is likely that the project is a prudent approach.

225. The capex is reasonably estimated and is justified.

226. However, additional incremental opex would not be justified as we consider that the proposed amount, totalling $0.4m over the period, should be readily covered by realisation of the cost savings and cost avoidance that Jemena refers to.

3.4.3 3D Digital twin project

What Jemena proposes

227. Jemena proposes to introduce and embed use of Light Detection and Ranging (LiDAR), high-resolution aerial photography and a 3D 'digital twin' network model, commencing the project towards the end of the next RCP and continuing it into the following RCP. Jemena proposes the expenditure shown in Table 3.18.

Table 3.18: Jemena's proposed expenditure for 3D Digital Twin project - $m, real 2026

Category	FY27	FY28	FY29	FY30	FY31	Total
Capex	-	-	-	1.3	4.4	**5.8**
Propex	-	-	-	-	-	**-**
Opex step change	-	-	-	0.1	0.1	**0.2**
Total	**-**	**-**	**-**	**1.4**	**4.5**	**5.9**

Source: EMCa, from Jemena capex model (Att05-10M), opex model (Att06-03M), relevant CBAM and Jemena response to IR009 Q28

228. Jemena advises that the expenditure '*…will help us to achieve operational efficiencies and improved customer outcomes in the areas of vegetation management, bushfire risk management, asset maintenance, network planning for augmentation and replacement, network resilience and work delivery*.'[40]

229. Jemena further advises that the proposed program of works is 100% allocated to Jemena distribution networks.

Assessment

Problem definition and risk assessment

230. Jemena identifies four drivers for the investment in the LiDAR/3D Digital Twin project:

- Using LiDAR is considered to be good industry practice (GIP) – Jemena provides sufficient information, including qualitative benefits and updates on the implementation of LiDAR and/or digital twin projects at other DNSPs, to support this claim
- Compliance obligations – the project will support compliance with the NEO, NER, Electricity Safety Act, and Electricity Safety (Bushfire Mitigation) Regulations by delivering enhanced detection of vegetation and conductor clearance breaches, and other faults
- Operational improvements derived from various sources, and
- Enhanced network resilience from better assessment of long-term climate impacts.

231. We consider the quantitative benefits Jemena derives as part of our assessment that follows.

232. Aside from foregone benefits, Jemena only identifies one risk[41] – that it may not be able to meet its compliance obligations (i.e. if the project does not proceed). In the Investment Brief, Jemena does not report application of its (qualitative) risk matrix to determine the inherent and residual risk ratings.

233. Nonetheless, based on (i) GIP, and (ii) the potential operational benefits, we consider that there is a solid basis for evaluating whether a LiDAR/3D Digital Twin project is prudent based on a cost-benefit analysis, and we consider this further in our assessment.

Jemena presents four options in its IT Investment Brief

234. Jemena considered three alternatives to 'doing nothing' to address the improvement opportunities and compliance risk:

1. Do nothing

[40] JEN - RIN - Support - Digital Twin Investment Brief - 20250131 - Public, page 4

[41] Jemena does identify project risks and the risk of not meeting customer expectations, but our focus in on network operational risks

2. Establish LiDAR and network digitisation program with annual LiDAR surveys in HBRA[42] and initial LiDAR survey in LBRA,[43] requiring totex of $5.6 million ($2024) in the next RCP and generating $1.7 million NPV (Jemena preferred)
3. Establish LiDAR and network digitisation program with annual surveys in HBRA and rolling 5-year survey of LBRA, requiring totex of $3.4 million ($2024) in the next RCP and generating $1.1 million NPV, and
4. Establish LiDAR and network digitisation program with annual LiDAR surveys in HBRA and 3-yearly LiDAR survey in LBRA, requiring totex of $3.7 million ($2024) in the next RCP and generating -$1.5 million NPV.

235. Jemena recommends Option 2, which has the highest capex ($5.4 million, $2024) and opex ($0.2 million, $2024) of the four options, but also the highest NPV.

236. Option 1 is the counterfactual for Jemena's comparative assessment of Options 2-4. Options 2 to 4 each release operational improvements, but with differing timing for capital investment and benefits realisation from LBRA surveying. Jemena '*does not support delaying the full survey of LBRA given the unpredictability of extreme weather events.*' [44]

237. The key to assessing whether Option 2 is prudent is assessment of the costs and benefits, noting that Jemena advises that it has scheduled the program to commence in 2030 (and extend into the following RCP) to manage affordability concerns.

Jemena's capex forecast is reasonable

238. Jemena has based its capex estimate on a bottom-up build, drawing on its experience from a pilot project,[45] and consultant's advice. A breakdown of the annual costs into four elements is provided in the CBA model:[46]

- Planning and project design
- LiDAR (capture, classification, photographic equipment) – representing 63% of the totex
- Photographic surveys
- Software, analytics, and data storage, and
- Jemena staff costs.

239. We are satisfied that Jemena's cost is reasonably based.

Jemena's cost benefit analysis leads to a marginally positive NPV but it is probably understated

240. Jemena has identified and quantified six sources of benefits (summarised in Table 3.19) totalling $27.3 million over the 10-year study period. Based on the information in the Investment Brief, we consider that the benefits summarised in the table have been reasonably derived.

241. Jemena includes a single sensitivity analysis in its CBA model, although it is not referred to in its Investment Brief, varying the net economic benefit by -10%, reducing the NPV to -$0.2 million. Equally, if costs were to increase above the forecast, the project might not be strictly considered to be prudent as proposed. However, we consider that the NPV could be reasonably expected to be somewhat higher from including additional quantifiable benefits identified by Jemena (but which it has not sought to quantify):[47]

- Improved safety for above ground asset inspections

42 High Bushfire Risk Area

43 Low Bushfire Risk Area

44 JEN - RIN - Support - Digital Twin Investment Brief - 20250131 - Public, page 12

45 April 2022 involving LiDAR capture and analysis of 7,084 main spans via aerial capture and ground-based vehicle capture

46 JEN – RIN – Support – Network Assets Digital Twin Program – CBAM – 20250131 – Public, Input/Costs&Benefits

47 JEN - RIN - Support - Digital Twin Investment Brief - 20250131 - Public, pages 8-9

- Help with assessment and management of long-term climate and other risks
- Help with improved communications with customers (connections, developers, etc)
- Safety-in-design improvement
- Long-term reduction in number and duration of customer outages, and
- Automatic correction of errors in GIS.

Table 3.19: Summary of Jemena's benefit analysis ($m, 15-year study period)

Benefit source	Assumptions
Enhanced vegetation management	*Efficiency gain of 0.5 FTE*
Efficiency savings - asset inspection, maintenance planning and project scoping	*30% reduction in on-site scoping activity effort* *20% reduction for maintenance planning* *30% reduction in preliminary project scoping* *15% reduction in design effort* *25% reduction in survey effort for new projects*
Efficiency savings - network assets and operations	*+1.0-1.5 FTE avoided*
Improved capital work delivery	*0.5% efficiency gain within 5 years rising to 2% over next 5 years*
Unlock latent thermal capacity in overhead conductors	*5% reduction in network augmentation costs within 5 years of program start*

Source: JEN - RIN - Support - Digital Twin Investment Brief - 20250131 – Public, page 8

Links to other projects

242. This project relies upon the SNAP[48] investment discussed in the Data Visibility and Analytics project (section 4.3).

Findings

243. We consider that Jemena's proposed capex is reasonable. We form this view because:

- Jemena's CBA shows a positive NPV, and its 'Option 2' has the highest NPV
- Jemena's benefits assessment is reasonable (and perhaps understated),
- Jemena's proposed estimated costs are reasonable, and
- The project is likely to satisfy the NER because of the extant bushfire risk even in LBRA.

244. We consider that the small proposed opex step change of $0.2 million can be adequately met from identified savings and is therefore not justified.

3.5 Non-recurrent ICT capex projects (New requirements)

3.5.1 Outage preparedness and response project

What Jemena proposes

Project objective

245. Jemena proposes a project to improve its communications with its customers in relation to outages.

[48] Comprising Stream Processing Engine, Data Hub, Network Model, and Analytics Development Environment

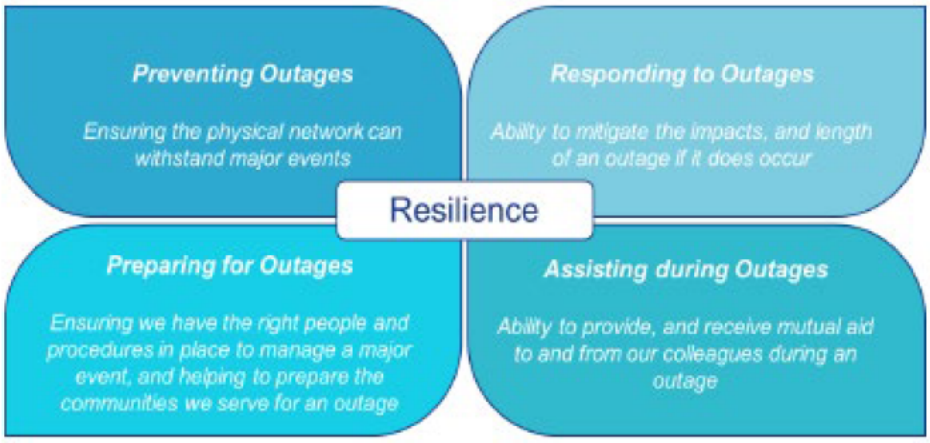
246. In its Investment Brief, Jemena provides the diagram that we show in Figure 3.4, to explain its approach to providing resilience across its network. Its accompanying statement is as follows:

> *This investment brief responds to the tenet of Preparing for Outages through ensuring we have the right systems in place to communicate with customers before and during an outage. An initiative to address the Responding to Outages and Assisting during Outages tenets is provided for in 'JEN -RIN Support – Outage Preparedness and Response'*

247. We find the wording of this statement confusing, as the investment brief itself is titled 'Outage Preparedness and Response', whereas these sentences seem to imply that responding and assisting are covered by a separate project. However, we infer that the intended meaning of the second sentence is to define what the current project is intended to achieve.

248. This objective can also be inferred from the diagram in Figure 3.4. That is, that the intended objectives are to address the lower left and the two right-hand quadrants in the diagram, i.e. preparing for, responding to and assisting during outages. We assess this further below.

Figure 3.4: Jemena's key resilience tenets



Source: Jemena Investment Brief: Outage preparedness and response, figure 1

Proposed expenditure

249. Jemena proposes the forecast expenditure shown in Table 3.20 for this project. While Jemena presents the ICT opex step change within its proposed aggregate ICT opex step change line item in its opex model, we note that the non-ICT opex step change totalling $4.5m is associated with this project and is shown as a separate line item in Jemena's opex model.

250. We also note that, while these are the costs that Jemena has proposed (for example in its capex and opex models, each of which reconciles to its regulatory proposal document), they differ from, and are less than, those in its Investment Brief.

Table 3.20: Jemena's proposed expenditure for an Outage Preparedness and Response project - $m, real 2026

	2027	2028	2029	2030	2031	TOTAL
Capex	1.9	0.3	-	-	-	**2.2**
Propex	0.6	0.2	-	-	-	**0.8**
Opex step change (ICT)	-	0.2	0.2	0.2	0.2	**0.7**
Total (ICT)	**2.5**	**0.7**	**0.2**	**0.2**	**0.2**	**3.7**

Source: EMCa, from Jemena capex model (Att05-10M), opex model (Att06-03M), relevant CBAM and Jemena response to IR009 Q28

Assessment

The articulated need is reasonable

251. There is a reasonable basic premise that Jemena needs to provide adequate communication with its customers to prepare them for (planned) outages and to provide them with timely, accurate and appropriately targeted information as the outage progresses.

252. Jemena describes the need for this project in terms of replacement and enhancement with three points, from which we have extracted the following core explanations:[49]

- '*…to continue to meet the regulatory obligations in the EDCoP and potential new obligations arising from the Victorian Government's…Rule Change Request'*.
- '*To respond to an increasing frequency and intensity of extreme weather events which will lead to increased outages and a higher number of customers impacted for longer durations of time'*
- *'To respond to customer expectations regarding notifications of outages, including more accurate and timely information, and providing more proactive communication…*'

253. Jemena also refers to an objective of providing greater support to life support customers.

254. Jemena anchors its need to the views of its People's Panel that it is '*….important for JEN to invest in non-network infrastructure with a focus on using better technology to better predict, manage, and respond to significant outages, and minimise impacts to customers.*'[50]

255. On a 'first principles' basis, we consider that it is reasonable for Jemena to continue to invest to ensure that it meets obligations. As a secondary consideration, the need may well be increasing in part due to climate-induced weather events and their impact but also in part due to an increase in customers' expectations that they are adequately and efficiently informed on service matters. Moreover, that the needs of life support customers are appropriately and reliably met.

Enhancing systems and practices to meet prospective enhanced obligations is reasonable in this instance

256. Jemena states that it meets current obligations in the EDCoP.[51] However, Jemena also refers to expected enhancements to current obligations arising from sources such as:

- A 2024 Victorian Government Expert Panel Network Outage Review, which in summary recommended that DNSPs' should substantially strengthen customer contact processes and build greater responsiveness.
- A Rule Change Request from the Victorian Minister to recognise distribution network resilience in the NER, and
- A Rule Change Request for Protection of Life Support Customers, and which the Victorian Government has provided in principle support.

257. While Jemena acknowledges that these enhancements are not yet formalised obligations, we consider that the improvements referred to will increasingly be considered to reflect good industry practice and as meeting customers' expectations.

258. We therefore consider that it is reasonable for Jemena to enhance its systems for this purpose.

The need to maintain currency is reasonable

259. Jemena states that its current systems were implemented primarily in 2019/20, that it managed to prudently avoid upgrades to these systems in 2021-2026 through prudent asset

49 Jemena Investment Brief, pages 4 and 5

50 Jemena Investment Brief, page 6

51 Jemena Investment Brief, page 7. Jemena provides evidence of this in Appendix A of its Investment Brief.

management, but that '*…some of these systems have recently started experiencing service degradation…*'[52]

260. We consider it reasonable to accept that systems that are now of the order of five years old, will require upgrades within the next 5 years.

Jemena has chosen an appropriate option

261. Jemena considers three options:

- Option 1: "Do nothing'. (Jemena would maintain the existing systems)
- Option 2: Concurrent lifecycle upgrades and enhancement of outage notification systems (Jemena preferred)
- Option 3: Staggered lifecycle upgrades and enhancement of outage notification systems.

262. We consider it reasonable that Jemena has dismissed option 1. While arguably Jemena could address enhanced obligations if and as they arise, we consider that the primary issues mitigating against this option are degradation of service from the ageing systems and inability to meet enhanced government and customer expectations.

263. While Option 3 would defer some expenditure (relative to option 2) from 2027 to 2029, in aggregate Jemena considers that it would be more costly at $2.3m capex (in $2024) compared with $1.95m (in $2024) for Option 2. This is because Option 3 would decouple lifecycle upgrades from the enhancements and a consequent need to re-mobilise a team for this.

264. We consider that it is reasonable to prefer Option 2, which harnesses some efficiency from combining upgrades and enhancements and also delivers those enhancements earlier.

Jemena's basis for estimating the cost of this project is reasonable

265. Jemena has estimated the required capex for this project on a proxy basis, extrapolating it from the cost of two recent similar projects. We consider that this is a reasonable basis.

266. Jemena has assumed a need for an additional ICT resource. This will support improved service and improved reliability by providing for more skilled 24/7. We consider that this is a reasonable adjunct to provision of the enhanced systems.

Findings

267. We consider that Jemena's proposed non-recurrent ICT capex allowance of $2.2m, associated project opex of $0.8m and the associated need for additional ICT opex for Outage Preparedness and Response, are reasonable.

3.5.2 Market Interface Technology Enhancement (MITE)

What Jemena proposes

Project objectives

268. Each DNSP in the NEM is being required to undertake a series of initiatives aimed at enhancing their market interface. Market interfaces include interfaces to metering data, NMI information, market settlement and transfers and various B2B arrangements.

269. The specific required enhancements are to implement Identity Access Management (IDAM), an Industry Data Exchange (IDX) and Portal Consolidation. The enhancements represent a new regulatory obligation associated with Jemena's role in the NEM.

270. The enhanced interfaces will help to facilitate increased and more secure customer interactions that will be required to enable flexible demand services and increased DER.

[52] Jemena Investment Brief, page 9

Proposed capex

271. Jemena's Investment Brief presents a total capex estimate of $21m, in real $2024, with phasing as shown in Table 3.21.

Table 3.21: Jemena's estimate of total cost for Market Interface Technology Enhancement (MITE) project - $m, real 2024

	Current Regulatory Period		Next Regulatory Period		
	RY25	RY26	RY27	RY28	TOTAL
Capex	1.6	2.7	7.9	7.9	20.1
Non recurrent opex		0.6	0.2	0.2	0.9
Total	**1.6**	**3.3**	**8.0**	**8.1**	**21.0**

Source: Jemena Investment Brief (MITE): page 8

272. Noting that the project was assumed to commence in the current regulatory period, Jemena's capex proposal for the next period (now in escalated $2026 terms) is shown in Table 3.21. Jemena does not propose any requirement for a step change for ongoing opex.

Table 3.22: Jemena's proposed expenditure for a Market Interface Technology Enhancement (MITE) ICT project - $m, real 2026

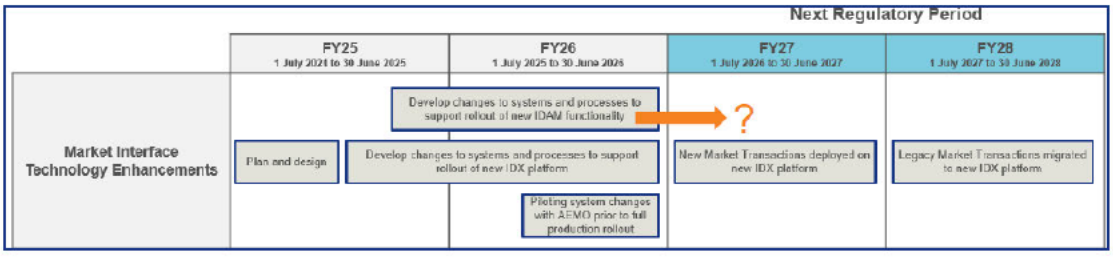
	2027	2028	2029	2030	2031	TOTAL
Capex	8.7	8.8	-	-	-	**17.5**
Propex	0.2	0.2	-	-	-	**0.4**
Opex step change	-	-	-	-	-	**-**
Total	**8.9**	**9.0**	**-**	**-**	**-**	**17.9**

Source: EMCa, from Jemena capex model (Att05-10M), opex model (Att06-03M), relevant CBAM and Jemena response to IR009 Q28

Progress update

273. At our onsite meeting Jemena presented an indicative project implementation timeline as shown in Figure 3.5.

Figure 3.5: Jemena's assumed project implementation timeline



Source: Jemena onsite presentation, ICT (28 March), page 33

274. Jemena further advised that it had recently been informed that AEMO's MITE procedural changes that had been due in March 2025 would now be provided in November/December 2025 and that a revised timetable for IDAM will be provided in June 2025. While these delays can now be essentially taken as given, Jemena confirmed that the capex that it has proposed for the next regulatory period is based on the Figure 3.5 timetable.

Assessment

This project is required and Jemena's selected option is reasonable

275. Jemena is required to undertake this project.

276. While in its Investment Brief Jemena refers to consideration of not complying with the change (Option 1), this is not a realistic option. Jemena also dismisses an option of undertaking tactical workarounds on the basis that this too would result in non-compliance.

277. We consider that the option of proactively undertaking the required work (Jemena's option 2) is the only realistic option, noting the project's external dependency on Jemena (and other DNSPs') receiving specifications for the necessary changes from AEMO.

Jemena's cost estimate is overstated

278. Jemena states that it has costed the project on the basis of a proxy estimate, derived from the costs of the recent 5-minute settlement project, and which Jemena considers to be similar in complexity, duration and scope.

279. We have separately compared Jemena's cost estimate with cost estimates for the equivalent projects that are proposed by the other four Victorian DNSPs in their regulatory submissions, and which compare as shown in Table 3.23.

280. On a per-customer basis, Jemena's proposed capex is considerably higher than the average for the Victorian DNSPs, and its proposed cost is around 70% higher than for the similar-sized CitiPower (though CitiPower could effectively benefit from this being part of a wider initiative across its related businesses Powercor and United Energy). While such comparisons do not allow definitive cost benchmarking, we consider that the information indicates that Jemena's capex estimate is overstated.

Table 3.23: Comparison of proposed capex for MITEs - $m, real 2026

Project	CP	PAL	UE	JEN	ASD	TOTAL / AVERAGE
Market interface technology enhancements (MITE)	10.3	24.0	35.8	17.5	20.2	107.9
Customer number (000)	351	937	718	384	823	3,213
$/customer	**29.3**	**25.6**	**49.9**	**45.7**	**24.6**	**33.6**

Source: Capex models provided by each DNSP as part of their regulatory submissions

281. Jemena also proposes propex of $0.4m for this project. Given the overstatement of capex, we consider that Jemena's proposed propex for this is not justified.

Findings

282. We consider that Jemena's proposed capex of $17.5m and associated project opex of $0.4m, are overstated.

3.5.3 Flexible Trading Arrangements

What Jemena proposes

Project objective

283. This project is required to implement system and process changes to meet new obligations arising from the Flexible Trading Arrangements rule change. In brief, the changes require DNSPs to provide functionality that will support:

- Provision for a new metering type for technology with inbuilt metering capability (such as street lights and EV chargers), and associated changes to market settlement and billing

- Multiple energy providers at large customer premises, and
- Separation and provision for flexible management of CER as distinct from passive energy use, at small customer premises.

Background and project status

284. The first of the new provisions is to take effect from 31 May 2026, and the second and third from 1 November 2026. Jemena has therefore commenced work on this project, although as at the time of our onsite meeting (in March 2025) Jemena advised that it was awaiting firm specifications from AEMO, which it expected by June 2025.

Proposed expenditure

285. Jemena's Investment Brief estimates capex of $22m (in $2024) to be incurred within the current regulatory period, spread between RY25 and RY26, with a further $4m ($2024) to be incurred in the next period (RY27). At our onsite, Jemena was still estimating these amounts for the respective regulatory periods but advised that the $22m for the current period would be incurred entirely in RY26.

286. In $2026 terms, Jemena proposes the forecast expenditure shown in Table 3.24.

Table 3.24: Jemena's proposed expenditure for a Market Reform Flexible Trading Arrangements (FTA) ICT project - $m, real 2026

	2027	2028	2029	2030	2031	TOTAL
Capex	4.4	-	-	-	-	**4.4**
Propex	1.1	-	-	-	-	**1.1**
Opex step change	-	1.1	1.1	1.1	1.0	**4.3**
Total	**5.5**	**1.1**	**1.1**	**1.1**	**1.0**	**9.7**

Source: EMCa, from Jemena capex model (Att05-10M), opex model (Att06-03M), relevant CBAM and Jemena response to IR009 Q28

Assessment

This project is required and Jemena's selected option is reasonable

287. As with the Market Reform MITE project, Jemena is required to undertake this project.

288. While in its Investment Brief Jemena refers to consideration of not complying with the change (Option 1), this is not a realistic option. Jemena also dismisses an option of undertaking tactical workarounds on the basis that this too would result in non-compliance.

289. We consider that the option of proactively undertaking the required work (Jemena's option 2) is the only realistic option, noting the project external dependency of Jemena (and other DNSPs') receiving specifications for the necessary changes from AEMO.

Jemena's basis for estimating the cost of this project is reasonable though uncertain pending specification advice

290. As with its estimate for MITE, Jemena states that it has costed the project on the basis of a proxy estimate, derived from the costs of the recent 5-minute settlement project, and which Jemena considers to be similar in complexity, duration and scope.

291. At our onsite meeting, Jemena advised that it could not yet estimate a firm cost for the project until it received firm specifications from AEMO, after which it would update its cost estimate and submit this to AER in its Revised Proposal. We expect that it will not be until then that Jemena can more firmly schedule the timing of this project and that, relative to its current budgets, there could be a significant shift of expenditure from the current regulatory period into the next period if implementation of the required provisions is delayed.

292. At this stage, given that Jemena will submit a revised cost estimate, we consider that the current capex estimate for the next regulatory period would represent a reasonable 'placeholder', as Jemena has referred to it.

293. Jemena advises that its proposed opex allowance is similarly a placeholder and is intended to allow for additional licencing and support costs. Our provisional view is that this seems high for what we understand to be largely changes to existing systems and their integration, however this will be better known once DNSPs receive specifications and are able to define the specific changes and additional systems and data management requirements. In the meantime, as for capex, we consider the proposed amount is a reasonable placeholder value.

Allocation of this cost to SCS is questionable

294. As we introduced for this project, its objective is to address the need to be able to manage data from new meter types and new metering arrangements. This does not appear to fall within the realm of SCS but rather has the appearance of being largely related to Jemena's provision of a metering ACS. We also observe that one of Jemena's peers, AusNet, has classified its project of this type as ACS, and has not sought to recover it through its SCS regulatory proposal and that the business cases provided by CitiPower, Powercor and United Energy for their projects of this type indicate significant functionality relating to meter data management, and only part in the 'network' domain.[53]

295. Given that we understand that in any case Jemena intends to revert to AER with updated information in its Revised Regulatory Proposal, we consider that there is a need to either reconsider or, otherwise justify, Jemena's proposed inclusion in its SCS proposal.

Findings

296. We consider that Jemena is required to undertake this project, that it has selected an appropriate option and that its proposed capex of $4.4m, project opex of $1.1m and ongoing opex step change requirement totalling $4.3m are reasonable estimates at this stage. Jemena should be able to refine these estimates once further specification information is available from AEMO.

297. However, from the information that Jemena has provided, we consider that the allocation of this expenditure to SCS requires further justification.

3.6 ICT Opex projects

Overview

298. Jemena has proposed four ICT opex step changes that are not associated with an ICT capex project:

- Cloud capacity growth
- Enterprise content management uplift
- Data foundations and governance, and
- Contract lifecycle management.

3.6.2 Cloud capacity growth

What Jemena proposes

299. Jemena anticipates that growth in cloud computing storage will require additional recurrent opex and proposes an opex step change of just over $0.5m per year ($2026) or $2.6m in total over the period.

[53] Like Jemena, however, these three entities have proposed their FTA projects as SCS

300. Jemena does not propose any project opex requirement for this.

Table 3.25: Jemena's proposed expenditure for cloud capacity growth - $m, real 2026

	FY27	FY28	FY29	FY30	FY31	TOTAL
Propex	-	-	-	-	-	-
Opex step change	0.5	0.5	0.5	0.6	0.5	2.7
Total	**0.5**	**0.5**	**0.5**	**0.6**	**0.5**	**2.7**

Source: EMCa, from Jemena opex model (Att06-03M), relevant CBAM and Jemena response to IR009 Q28

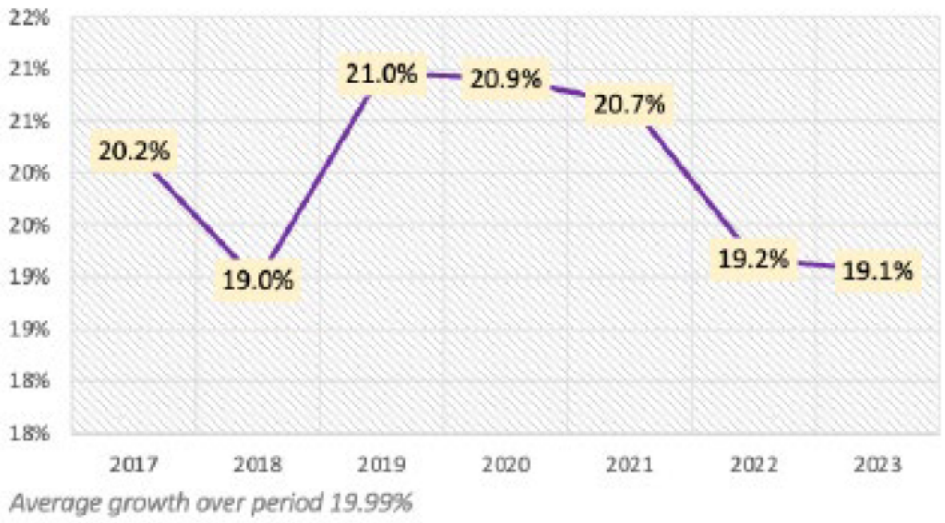
Assessment

Capacity growth rate assumptions are reasonable

301. Jemena states that it considers that a shift toward cloud computing facilitates efficient ICT capacity growth management. Recognising this, Jemena executed a Cloud Adoption program in 2021 and migrated over 100 applications to [redacted] cloud.

302. In its business case Jemena provides evidence of storage growth averaging around 20% per year, as shown in Figure 3.6. However, in estimating its requirements for the next regulatory period, Jemena has adopted a slightly more conservative growth rate of 15% per year and we consider this to be a reasonable assumption.

Figure 3.6: Jemena's year on year storage growth (%)



Source: Jemena Investment Brief for Cloud Capacity Growth (figure 1)

303. Jemena provides evidence of future growth rates for enterprises generally in statements from parties such as [redacted] These project enterprise storage requirements to grow by amounts that are variously stated as 20%-30% per year after initial migration, 42% per year and tripling between 2024 and 2028. While these are non-specific quotations, Jemena notes that its own estimate of 15% per year is well within these ranges.

Jemena provides evidence that it has separately considered cloud requirements for new projects, and they are not duplicated in the proposed capacity growth forecast

304. Jemena also states that its cloud computing requirements estimate excludes growth requirements resulting from new projects, such as we have assessed in sections 3.4 and 3.5. Jemena states that the cloud-related costs associated with those projects are allowed

for in the ongoing opex estimates for each such project, where applicable. We are satisfied that this represents a reasonable effort aimed at not double counting such requirements.

Jemena's forecast provides reasonable indication of recognising the future continuing drivers for increased capacity and efficient management

305. Jemena refers in its Investment Brief to increasing obligations arising from rule changes. We tend to discount this point as these changes are more likely to be covered through new or enhanced systems and, as Jemena has noted, its storage requirements for these are accounted for within the project cost estimates.

306. However, Jemena also refers to increasing obligations with regard to data security and privacy and a range of increased reporting requirements and these will tend to drive generalised capacity growth. Jemena also refers to the increasingly data-driven approach for decision-making, and we see evidence of this in our assessment of asset management and operational practices in Jemena and other DNSPs.

307. Jemena describes a tiered process for managing different storage by reference to backup requirements and which is indicative of a prudent and efficient approach to the utilisation of storage.

Jemena did not consider alternative viable options, but we consider that its chosen path is nevertheless reasonable for cost estimation purposes

308. While Jemena defines an alternative option of relying solely on existing capacity, this is clearly not a viable option. The only viable option that Jemena presents, therefore is to invest in cloud capacity growth.

309. We consider that in its options analysis it would have been preferrable for Jemena to have identified and considered different options as to ***how*** it invests in such capacity growth. However, we consider that continuing to maintain its cloud storage requirements through what it refers to as a 'pay for use' basis, likely represents a reasonable position for current estimation purposes.

310. While Jemena does not provide information on the structure of its cloud storage costs, cloud storage is a commodity and we would expect Jemena to have a good understanding of market costs for this service.

Findings

311. We consider that Jemena's proposed opex step change allowance for cloud capacity growth is reasonable.

3.6.3 Enterprise content management, data foundations and governance and contract lifecycle management

What Jemena proposes

312. Jemena proposes three further ICT opex projects, which have no capex component:

- Enterprise content management uplift
- Data foundations and governance, and
- Contract lifecycle management.

313. As can be seen in Table 3.26, Jemena proposes ongoing opex of the order of $100,000 to $200,000 in most years for each of these projects, with an amount of $300,000 in the final year for Enterprise Content Management Uplift.

314. In response to our Information Request, Jemena confirmed that all three projects are 'enterprise' projects and advised that in each case 35.1% of their costs would be allocated to JEN.

Table 3.26: Opex projects - $m, real 2026

Proposed step changes	2027	2028	2029	2030	2031	TOTAL
Enterprise content management uplift						
Propex	-	0.6	0.7	1.9	0.8	4.1
Opex step change	-	-	0.1	0.2	0.3	0.6
Total	**-**	**0.6**	**0.8**	**2.1**	**1.1**	**4.7**
Data foundations and governance						
Propex	1.0	0.4	0.2	0.1	0.1	1.9
Opex step change	-	0.1	0.1	0.1	0.1	0.3
Total	**1.0**	**0.5**	**0.2**	**0.2**	**0.2**	**2.2**
Contract lifecycle management						
Propex	0.3	0.6	-	-	-	0.8
Opex step change	0.2	0.2	0.2	0.1	0.1	0.8
Total	**0.4**	**0.7**	**0.2**	**0.1**	**0.1**	**1.6**

Source: EMCa, from Jemena opex model (Att06-03M), relevant CBAM and Jemena response to IR009 Q28

Jemena's statements of needs

315. Jemena provides Investment Briefs for each of these three step changes and we summarise the main elements of these briefs as follows.

Enterprise content management uplift

316. Jemena states that the proposed uplift is required to '*…maintain compliance with regulatory obligations, while delivering efficiency and safety outcomes for customers and other stakeholders through better access, security, organisation and management of operational and investment content.*'[54]

317. Jemena describes its content management ecosystem but states that it has capability limitations. Jemena proposes to *'consolidate and modernise the disparate content management platforms*.' Jemena's proposal for this is relative immature and is essentially that over 2026 to 2031 it will *'…consider which platforms need to be retained and integrated …* ' and '*…if the remaining platforms are better placed to meet business and customer requirements running on Group managed infrastructure or as a SaaS platform'*.

318. This is an enterprise-wide initiative and Jemena states that its costs '*…have been allocated in accordance with the Jemena Group cost allocation methodology*.' We infer from this that, since the Investment Brief is for JEN, the costs provided in it are therefore just the proportionate allocation of enterprise costs.

319. In its Investment Brief and accompanying CBA model, Jemena does not quantify any benefits and consequently in its CBA model it presents the project as having an NPV of negative $3.8m.

Data foundations and governance

320. Jemena states that the proposed uplift is to *'…uplift [JEN's] data foundations and governance capabilities, delivering maximum value for JEN's data to ensure compliance with various industry-specific regulations and standards related to the security of our data.*'[55]

321. Jemena describes this project as closely related to its Data Visibility and Analytics program, which includes implementing a Strategic Network Analytics Platform (SNAP), enhancing smart metering infrastructure to deliver near-real time (5 minutes) power quality data and

54 Investment Brief for Enterprise Content Management Uplift, page 4

55 Investment Brief for Data Foundations and Governance, page 4

implementing a program of network analytics. Jemena states that it currently does not have a toolset for managing governance of this data.

322. Jemena also refers to a number of legal and regulatory obligations relevant to its management of data and the relevance of good industry practice in managing the increasing data intensity of its network management and operations.

323. A reading of Jemena's Investment Brief could suggest that it is yet to commit to the initiative for which it proposes expenditure allowance.[56] As with the Enterprise content management project above, Jemena states that this is an enterprise-wide initiative and that its costs '*…have been allocated in accordance with the Jemena Group cost allocation methodology*.'[57] We infer from this that, since the Investment Brief is for JEN, the costs provided in it are therefore just the proportionate allocation of enterprise costs.

324. In its Investment Brief and accompanying CBA model, Jemena does not quantify any benefits and consequently in its CBA model it presents the project as having an NPV of negative $1.9m.

Contract lifecycle

325. Jemena states that the proposed uplift is to enable it to *'effectively manage third-party contractors and ensure regulatory compliance…' including with regard to '…modern slavery [and] mandatory climate-related financial disclosures.'* '[58]

326. Jemena states that it currently manages third party contracts and suppliers manually and expects an increase in the volume and complexity of its contract management workload. Jemena refers to an audit which found approximately $300,000 of financial loss to Jemena over an 18 month period, and productivity costs in addition (though these were not quantified).[59]

327. Jemena has tested the market with an EOI and has assessed its options and associated costs from this process. As with the two projects referred to above, Jemena states that this is an enterprise-wide project.

328. In its CBA model, Jemena calculates an NPV of negative $1.8m for this project. However, as we note in our assessment below, there appears to be a significant modelling error with the PV of benefits calculated at just $1,609.

Assessment

Evidence of a management need does not justify a regulatory opex step increase

329. In each of Jemena's Investment Briefs, there is reasonable evidence of some need to evolve or improve an aspect of its business management. However, in each case, we consider that this essentially reflects a need to keep pace with the evolution of good business practice (and which is acknowledged in part of Jemena's Investment Brief) and with generic changes in the business environment in Australia. We consider that these changes are best characterised as part of the general evolution of such requirements, that all businesses have faced and will continue to face to varying extents. The changes that Jemena refers do not go beyond these general expectations.

Lack of evidence of shared cost allocation

330. While Jemena refers to these projects as 'enterprise' projects and states that only a proportion of their costs have been allocated to JEN, the accompanying CBA models appear inconsistent with this. Specifically, while there is provision in the models to allocate costs according to a sharing percentage, the model inputs as provided are set to allocate costs 100% to JEN and the Investment Briefs do not evidence of an allocation, beyond a

56 Its Investment Brief includes the wording '*should the initiative proceed…*' on page 7

57 Investment Brief, page 11

58 Investment Brief for Contract Lifecycle, page 4

59 From information in Investment Brief, page 4

statement that such allocation has been made. This may be a modelling error together with an omission in the Investment brief, but it does leave us with a lack of transparency on the claimed allocation.

Modelling error in benefits calculation for Contract Lifecycle Management

331. Jemena's Contract Lifecycle Management CBA model allows, in its inputs, benefits from a reduction of 2 FTEs, at a value of $376,000 per year (real $2024) over the regulatory period. However, in transferring costs and benefits to its calculation sheet, the costs, which are specified in $000 are treated as whole dollars, while the benefits remain treated as $000. As a result, the costs and benefits differ by an unintended factor of one thousand. If correctly specified, the Net Present Cost of $1.3 million (rather than 1.3 billion) would compare with Net Present Benefits from business opex savings of $1.6m. Jemena's project analysis would then show a positive NPV, suggesting that in NPV terms the opex savings would offset its investment in improving this system.

332. This same modelling error in cost calculations also applies to the other two models, though in these cases no benefits are specified and the erroneous designation of calculation and output amounts as in effect '$ billions' can be overlooked, noting that the amounts are correctly represented as '$ millions' in the Investment Brief documents.

Findings

333. We consider that the project opex and opex step changes that Jemena has proposed for an Enterprise content management uplift, improvements to its Data foundations and governance and for Contract lifecycle management, are not justified.

334. A reasonable alternative forecast would therefore exclude these three components in considering reasonable alternative estimates for its project opex and its opex step changes.

3.7 Findings and implications

3.7.1 Summary of our findings

335. In this section, we have individually assessed each of the ICT projects that Jemena has proposed. In summary, our findings are as follows.

Recurrent ICT capex

336. We consider that Jemena's proposed recurrent ICT capex overstates its requirement, because Jemena has based its forecast on base expenditure information that does not reflect its actual expenditure

Non-recurrent ICT projects that meet the criteria

337. We consider that the following projects are justified and that Jemena's forecast expenditure is reasonable:

- Customer systems ($4.3m totex)
- Emergency backstop lifecycle ($6.9m totex)
- GIS lifecycle update ($4.1m totex)
- Dynamic network planning with automation ($13.4m totex)
- Outage preparedness and response ($3.7m totex)
- Cloud capacity growth ($2.7m additional opex)

Non-recurrent ICT projects not meeting the criteria

338. We consider that Jemena has not justified the inclusion of the following projects in its distribution SCS proposal:

- Jemena's proposed Customer Education project ($7.9m totex) is not justified as it is not within the mandate for a DNSP to undertake a regulatory investment in an attempt to rectify perceived competition deficiencies in the retail electricity market.
- Jemena's proposed FTA project ($9.7m totex) likely is justified, but much of the expenditure may be better attributed to ACS and therefore may not be appropriately included in Jemena's SCS proposal.[60]
- Jemena's proposed opex projects for enterprise content management uplift, data foundations and governance and contract lifecycle management (with combined opex of $8.5m over the period) do not warrant a propex or opex step change as their benefits should be internalised.

Non-recurrent ICT projects for which part of the expenditure meets the criteria

339. For the following projects, we consider that Jemena has provided sufficient justification of project need, but that some element of its proposed expenditure is not reasonable and does not meet the relevant criteria:

- Outage Task Force – Phase 3 Digital Switching ($17.2m totex)
  - While Jemena's proposal for the next period seems to imply an unexplained pause between phases 2 and 3, we consider that its proposed capex would be reasonable, assuming that the expenditure is not brought forward to maintain project momentum in the current period.
  - However, we consider that the proposed opex step change (totalling $0.5m) is not required and should be readily offset by realisable opex savings.
- Reform – MITE ($17.9m totex)
  - Proposed cost is overstated
- MSI replacement ($1.6m capex)
  - Only 35% of the proposed capex should be allocated to JEN
- Network operations geospatial enhancements ($3.7m totex)
  - The proposed opex step change (totalling $0.2m) is not required and should be readily offset by realisable opex savings.
- Dynamic planning with automation ($13.4m totex)
  - The proposed opex step change (totalling $0.4m) is not required and should be readily offset by realisable opex savings.
- 3D Digital twin ($5.9m totex)
  - The proposed opex step change (totalling $0.2m) is not required and should be readily offset by realisable opex savings.

3.7.2 Implications for proposed capex and opex step change allowances

For ICT recurrent capex, a reasonable alternative forecast is 14% less than Jemena has proposed

340. As we show in section 3.2, we consider that Jemena's proposed recurrent capex totalling $34.4m is overstated. We consider that a reasonable alternative forecast for recurrent capex is $29.7m, which is 14% less than Jemena has proposed

[60] Our mandate did not include consideration of ACS expenditure. We provide this observation based on technical information on the purpose of the system but this does not encompass overarching SCS/ACS regulatory and pricing considerations.

For non-recurrent ICT projects, such as we have assessed in the current section, a reasonable alternative capex forecast is 21% less than Jemena has proposed[61]

341. In Table 3.27 we show the sum of the capex, propex and opex step changes that Jemena has proposed for the 20 non-recurrent projects reviewed in this section.

Table 3.27: Jemena's proposed expenditure for ICT non-recurrent projects reviewed in this section - $m, real 2026

	FY27	FY28	FY29	FY30	FY31	TOTAL
Capex	25.2	17.7	12.4	11.8	13.1	**80.3**
Propex	4.5	3.6	3.6	4.7	1.9	**18.3**
Opex step change	0.7	2.5	2.6	3.1	3.0	**11.8**
Total	**30.5**	**23.8**	**18.6**	**19.5**	**18.0**	**110.4**

Source: EMCa, from Jemena capex model (Att05-10M), opex model (Att06-03M), relevant CBAM and Jemena response to IR009 Q28

342. In Table 3.28 we present an alternative forecast that incorporates the adjustments that we refer to in our findings above. In this table, we also show the differences relative to Jemena's proposal. As the table shows, the largest percentage difference is for proposed opex, though in dollar terms this is the smallest, while the alternative capex forecast is 21% ($16.8m) less than Jemena has proposed.

Table 3.28: EMCa proposed alternative forecast and difference relative to Jemena's proposed expenditure - $m, real 2026

							Difference	
	FY27	FY28	FY29	FY30	FY31	TOTAL	*$m*	*%*
Capex	16.6	15.2	10.0	10.0	11.7	63.4	*-16.8*	*-21%*
Propex	1.9	1.8	1.7	2.0	0.7	8.1	-10.2	*-56%*
Opex step change	0.5	1.1	1.0	1.1	1.0	4.8	-7.0	-59%
Total	**19.1**	**18.1**	**12.7**	**13.1**	**13.4**	**76.4**	**-34.0**	**-31%**

Source: EMCa analysis

[61] The projects assessed in the current section exclude Jemena's proposed expenditure on cyber security and CER and two 'enterprise' projects for which Jemena has proposed only an allocation of propex. We refer to the following sections for remaining assessments.

4 REVIEW OF PROPOSED CER-RELATED EXPENDITURE

Jemena proposes expenditure of $95.4m for CER-related expenditure. This comprises augex of $45.7m and ICT capex of $38.8m, with the remainder being for proposed opex step changes and $0.4m propex.

Jemena proposes this expenditure under three strategic programs:

- Data visibility and analytics
- Grid stability and flexible services, and
- Voltage and power quality.

Jemena proposes $10.7m and an associated opex step change, for the data visibility and analytics program. This significantly overstates the level of expenditure that is justified.

Jemena proposes $7.5m capex for UFLS to address grid stability. This is justified.

Jemena proposes $25.9m capex and some associated opex to develop and deploy flexible exports and flexible imports late in the regulatory period. Its economic evaluation demonstrates poor economic value from its proposed program. A flexible services development is justified, but at lower cost than Jemena has proposed.

Of the $45.7m augex that Jemena proposes for voltage and PQ, we have been asked to review $25.6m which is for distribution substation augmentation and for a VVC rollout. We consider that Jemena has significantly overstated reasonable requirements on both accounts.

4.1 Introduction

343. In this section, we provide our assessment of Jemena's proposed CER related expenditure. We have organised this review according to the three CER strategic programs that Jemena defines.

344. Jemena's CER-related expenditure proposal comprises capex, propex, some ICT-related opex step changes (and which are included in Jemena's proposed overall ICT opex step change) and three non-ICT opex step changes, that are separately identified in Jemena's opex model.

345. Consistent with Jemena's terminology, and for convenience, we refer to this program and associated expenditure as 'CER', but in reality, it addresses a wider range of needs arising from the 'energy transition' and including the consequences of increased electrification.

4.2 What Jemena proposes

4.2.1 Jemena's CER integration strategy, programs and timeline

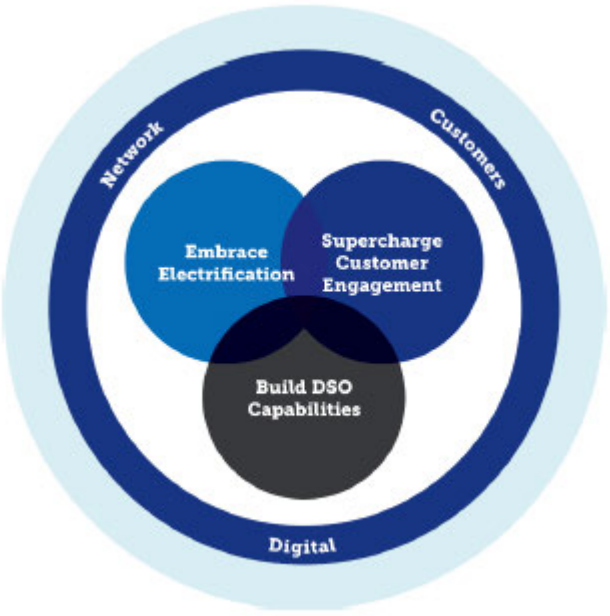
Jemena's CER strategy

346. Jemena provides a document that describes its overarching strategy for integrating CER.[62] [63] Jemena describes its strategy as focusing on four opportunities, which we summarise as follows:[64]

- **Optimise performance**: applying digital technologies including *'…leveraging AMI, condition monitoring, data analytics and other machine learning and automation technologies.*'
- **Modernise the grid:** to enable uptake of CER, including flexible services using Dynamic Operating Envelopes (DOE) to '*…reduce CER curtailment, improve CER exports and improve voltage, supply quality and system security compliance*.'
- **Seed the market:** to stimulate growth in the efficient use of CER, including data visibility for customers, enhanced tariffs and use of common communications protocols to support aggregation by market service providers.
- **Build organisation capability**: Jemena sees a need to build new capabilities across systems, processes and people, in order to undertake the activities referred to above.

347. Jemena also refers to an additional opportunity to 'embrace electrification'.

Figure 4.1: Drivers of JEN's CER integration strategy



Source: Jemena attachment 03-01, figure 1-1

Jemena's programs to implement its strategy

348. To implement its strategy, Jemena defines three programs of work:

- Grid stability and flexible services

62 Jemena Consumer Energy Resources – Integration Strategy, Attachment 3-01.

63 We observe that Jemena's strategy encompasses electrification and is therefore addressing the wider energy transition. As shorthand, in the current document, we will refer to CER as Jemena has, as including its electrification initiatives.

64 Attachment 3-01, page vi

- Voltage and power quality management, and
- Data visibility and analytics.

349. Jemena's regulatory submission presents a range of projects and associated expenditure forecasts consistent with these three work programs. We provide Jemena's descriptions of each of these three programs prior to each of our assessments.

350. In Figure 4.2 we reproduce in full Jemena's descriptions of the benefits from these work programs.

Figure 4.2: Jemena's description of the benefits of its CER programs and how it has valued them

CER enablement

Improved export capability and reduced CER curtailment, justified using the Australian Energy Regulator's (AER) Customer Export Curtailment Value (CECV) methodology.

Reliability of supply

Maintained reliability of supply, by managing and adapting to the changes in electricity demand from CER uptake and usage of the network, the electrification of the gas and transport sectors, and the change in new and existing customers' requirements for electricity, justified using the AER's Values of Customer Reliability (VCR) methodology.

Regulatory compliance

Improved appliance safety and reduced consumption by maintaining voltages within regulatory limits and satisfying system security through enabling grid stability by AEMO and power quality regulatory requirements using a least-cost approach to achieving our compliance obligations.

Source: Jemena Attachment 03-01, page 18

Jemena's CER program timeline

351. At our onsite meeting, Jemena provide a graphic that we reproduce below, showing the timeline of its initiatives over the next regulatory period. We take this to be an update of a similar timeline graphic in Jemena's CER strategy document,[65] noting that there are some slight changes to timelines.

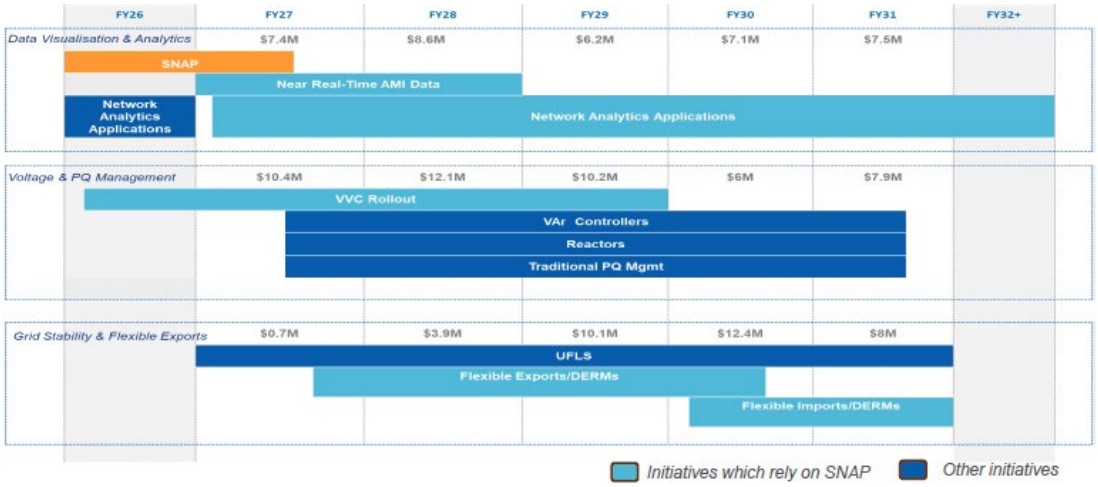
352. Significant additional information on the graphic in Jemena's strategy document shows that its SNAP and Network Analytics Applications initiatives have been running since at least the beginning of FY23. We return to consider the relevance of this in our assessment of Jemena's Data Visibility and Analytics program.

353. From the diagram in Jemena's strategy document (though not shown in the update above) we observe that Jemena had a VVC trial over FY23 and FY24, and that at that time it had planned to commence a VVC rollout in the beginning of FY25, but its update diagram shows this commencing at the beginning of FY26. We also observe Jemena's program to deploy Var controllers and reactors, commencing after the VVC rollout but then continuing in parallel. While Jemena's proposed program of Var controllers and reactors is not within the scope that AER has asked us to review, we nevertheless refer to the interaction between these initiatives in our assessment of its proposed VVC program.

354. The timeline indicates deployment of flexible exports in mid FY30 and flexible imports at the end of FY31, and we consider this in our assessment of its proposed expenditure on flexible services.

[65] Jemena Attachment 03-01, page 22

Figure 4.3: Jemena's timeline for its CER programs



Source: JEN – EMCa workshop, Friday 28 March, page 26. (Detail on this graphic is small in the original)

Observations on Jemena's CER strategy, programs and timeline

355. We consider that Jemena presents a CER strategy in which its three programs are logically defined to address the changes to network requirements resulting from the energy transition. This includes changes resulting from the increasing capacity of CER, from electrification in homes and transport and in facilitating the opportunity for increased customer management of these resources and for the network and market players (such as aggregators) to provide non-network solutions that assist with such management.

356. In the assessments that follow, we consider the justifications that Jemena provides for each of the programs, in the context of this strategy.

4.2.2 Proposed CER expenditure

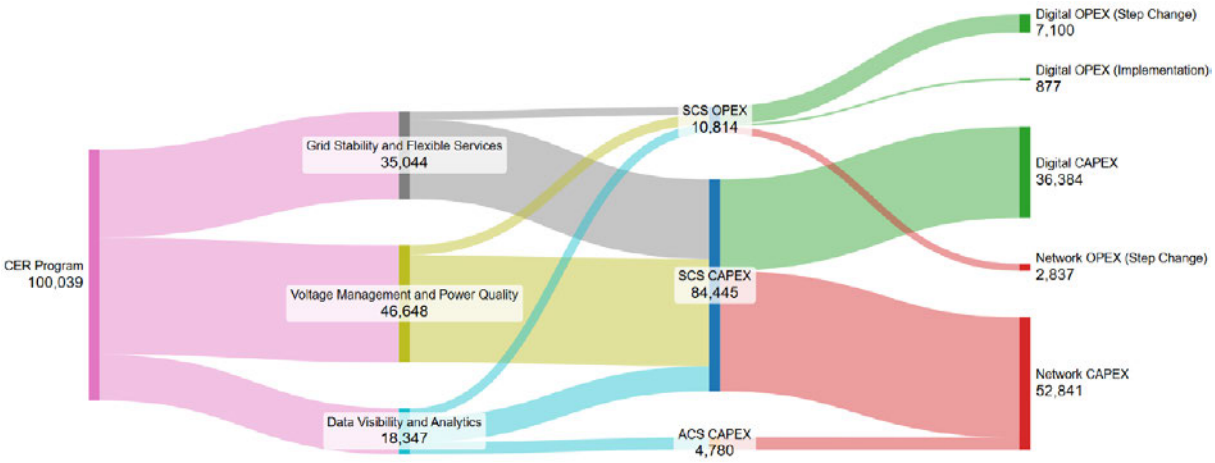
357. As we show in Table 4.1, Jemena has proposed expenditure totalling $95.4 million on addressing CER requirements. The expenditure involves three programs, with expenditure as shown in:

- Data visibility and analytics program
- Grid stability and flexible services program, and
- Voltage and power quality program.

358. The overall CER programs comprise both augex and ICT projects. In some cases, the program also includes some non-ICT opex which Jemena includes as part of its proposed step changes. The augex projects are entirely capex, while the ICT projects comprise combinations of capex, propex and opex step changes.

359. At our onsite meeting, Jemena provided the graphic shown in Figure 4.4 to summarise its CER programs and their respective expenditures, comprising ICT capex and augex and ICT and other opex. While we were not able in each instance to reconcile the amounts shown in this graphic, it is nevertheless helpful in understanding the various expenditure components and how they inter-relate.

Figure 4.4: Jemena illustration of its CER program network and digital (ICT) expenditures - $m, escalated $2024)



Source: Jemena onsite presentation 28 March 2025, page 27

360. In Table 4.1 we show our understanding of the CER expenditure that Jemena has proposed. We have needed to collate this from a range of sources, but we have tended to focus on those sources that represent components of Jemena's aggregate regulatory submission expenditure, with expenditures in those sources represented in escalated $2026 terms (consistent with Jemena's overall regulatory submission). This includes:

- Identifiable ICT (digital) and augex projects in Jemena's SCS capex model
- Jemena's proposed CER-specific opex step changes in Jemena's opex model
- Identifiable CER opex step changes within Jemena's proposed ICT services opex step change, within Jemena's ICT CBA models, and
- Propex information from Jemena's 'support' CBA models for each of the three programs (where relevant).

361. In Table 4.1, for completeness we show two CER augex projects that are not within the scope of our review, being Jemena's proposal to install a number of reactors and also its UFLS project. In our assessment we refer to these projects, to the extent that there is an inter-relationship with projects that AER has asked us to review; however, this does not constitute a review of these projects.

362. As is shown in the table, in total CER proposes $95.4m of SCS expenditure, with this approximately evenly split between augex and ICT. Consistent with indications in Jemena's diagram shown as Figure 4.4, its proposal comprises a combination of network and ICT capex, ICT and network (non-ICT) opex step changes and a small project opex (propex) component.

Table 4.1: Jemena's proposed CER expenditure - $m, real 2026

	Capex	ICT opex step change	Propex	Non-ICT Opex	Totex
CER Augex					
Voltage and Power Quality program:					
Distribution substation augmentation - supply quality	7.9	-	-	-	7.9
VVC Roll-Out	17.7	-	-	-	17.7
EMCa projects reviewed	25.6	-	-	-	25.6
Projects not in EMCa review scope (reactors)	*14.9*	-	-	-	*14.9*
Subtotal - Voltage and Power Quality	***40.5***	-	-	-	***40.5***
Grid stability and Flexible Services program					
Projects not in EMCa review scope (UFLS)	*5.2*	-	-		*5.2*
Subtotal: Grid stability and flexible services	***5.2***	-	-	-	***5.2***
Subtotal: CER Augex	**45.7**	-	-	-	**45.7**
CER ICT and non-ICT					
Data Visibility and Analytics program					
FN - Network Analytics Program	9.1	-	-	-	9.1
FN - Strategic Network Analytics Platform (SNAP) - Data Hub	1.5	1.3	0.4	-	3.2
Non-ICT	-	-	-	1.5	1.5
Subtotal - Data visibility and analytics	***10.7***	***1.3***	***0.4***	***1.5***	***13.8***
Voltage and Power Quality program					
FN - VVC (Volt Var Control) rollout	0.1	3.2	-	-	3.3
Non-ICT	-	-	-	1.1	1.1
Subtotal: - ICT Voltage and Power Quality	***0.1***	***3.2***	-	***1.1***	***4.4***
Grid Stability and flexible services program					
FN - Flexible exports	15.2	3.0		-	18.2
FN - Flexible imports	10.8	-	-	-	10.8
FN - Foundational Distributed UFLS (Underfrequency Load Shedding) Capabilities	2.1	-	-	-	2.1
Non-ICT	-	-	-	0.5	0.5
Subtotal - Grid stability and flexible services	***28.0***	***3.0***	-	***0.5***	***31.5***
Subtotal: CER ICT and other	**38.8**	**7.5**	**0.4**	**3.0**	**49.7**
TOTAL CER	**84.5**	**7.5**	**0.4**	**3.0**	**95.4**

Source: EMCa, from Jemena capex model (Att05-10M), opex model (Att06-03M), relevant CBAM and Jemena response to IR009 Q28

363. In Table 4.2, we summarise Jemena's proposed capex for each of the three CER programs, distinguishing between Augex and ICT projects. In our assessments for each program, we provide further disaggregation of this capex information and also show the associated opex components of Jemena's proposal.

Table 4.2: Proposed CER capex - $m, real 2026

	26-27	27-28	28-29	29-30	30-31	TOTAL
Data Visibility and Analytics						
ICT	3.32	1.81	1.83	1.85	1.87	10.67
Subtotal	**3.32**	**1.81**	**1.83**	**1.85**	**1.87**	**10.67**
Grid Stability and Flexible Services						
Augex*	0.30	0.68	1.32	1.89	1.03	5.21
ICT	0.37	3.36	8.09	9.60	6.62	28.04
Subtotal	**0.67**	**4.04**	**9.41**	**11.48**	**7.65**	**33.25**
Voltage and Power Quality						
Augex*	9.04	10.76	9.03	4.96	6.68	40.47
ICT	0.13	0.00	0.00	0.00	0.00	0.13
Subtotal	**9.17**	**10.76**	**9.03**	**4.96**	**6.68**	**40.60**
Total ICT	**13.16**	**16.61**	**20.26**	**18.29**	**16.20**	**84.53**

*Source: EMCa, from Jemena capex model (Att05-10M) *As noted in Table 4.1, Grid Stability and Flexible Services augex ($5.2m) and $14.9m of Voltage and power quality augex, are not within the scope of our review.*

4.3 Data Visibility and Analytics program

4.3.1 Overview

Description of program

364. Jemena defines the objectives of this program as being to:

- *Increase Jemena's ability to use network data and analytics to drive operations and planning improvements*
- *Position JEN to manage the energy transition and uncertainties…by having a flexible and adaptable data and analytics capability, and*
- *Build foundation data and analytics capabilities once and then use it to support future network analytics initiatives and avoid duplication of capabilities.*[66]

365. By way of an overview, Jemena describes the program as shown in Figure 4.5.

[66] Jemena Future Networks Investment Brief – Data visibility and analytics, page 4

Figure 4.5: Jemena's overview of its Data Visibility and Analytics program

Data, Visibility and Analytics Program

The need for further digitalisation of network operations functions using network analytics applications. The program includes a network analytics applications program of work, and two application enablers: a Strategic Network Analytics Platform (SNAP) and near real-time AMI data.

Network analytics application examples include: simulate new and moved connections, connection approvals, detection of wrong connections, near real-time power quality data for field crews, detect and predict network faults, and regulatory data collection obligations.

Source: Jemena Attachment 03-01, page 21

366. Jemena describes its program as having the following three components:

- *Implementing a Strategic Network Analytics Platform (SNAP) to replace the current digital analytics solution which is reaching end-of life. SNAP is an optimal solution because it will also support our other Future Network initiatives.*
- *Enhancing the smart metering infrastructure to deliver near real-time (5 minutes) smart meter power quality data to enable further operational and safety improvements such as near real-time power quality investigations and predictive fault detection.*
- *Implementing a program of network analytics application to improve operational efficiency and effectiveness, improve safety, and respond to emerging customer and regulatory needs over the next 10 years and beyond.*[67]

Proposed expenditure

367. The proposed expenditure for this program totals $13.8m, with the majority of this ($9.1m) being for ongoing capex associated with network analytics.

[67] As above, page 4

Table 4.3: Proposed expenditure for Data Visibility and Analytics - $m, real 2026

	FY27	FY28	FY29	FY30	FY31	TOTAL
ICT Capex						
FN - Network Analytics Program	1.8	1.8	1.8	1.8	1.9	**9.1**
FN - Strategic Network Analytics Platform (SNAP) - Data Hub	1.5	-	-	-	-	**1.5**
Subtotal: ICT capex	**3.3**	**1.8**	**1.8**	**1.8**	**1.9**	**10.7**
ICT Propex						
SNAP data hub	0.4	-	-	-	-	**0.4**
ICT Opex step change						
FN - Strategic Network Analytics Platform (SNAP) - Data Hub	-	0.3	0.3	0.3	0.3	**1.3**
Non-ICT opex step change						
CER Integration - Data Visibility and analytics	-	0.4	0.4	0.4	0.4	**1.5**
TOTEX for Data Visibility and Analytics	**3.7**	**2.5**	**2.5**	**2.6**	**2.6**	**13.8**

Source: EMCa, from Jemena capex model (Att05-10M), opex model (Att06-03M), relevant CBAM and Jemena response to IR009 Q28

Business case options

368. In its business case, Jemena presents its assessment of three options, as follows:

- Option 1: Do nothing
- Option 2: Project-by-project data analytics, and
- Option 3: SNAP, Near real-time smart meter data and network analytics program (preferred)

4.3.2 Assessment

Cost benefit modelling issues and our request for clarifications

369. In its business case, Jemena provides year-by-year expenditure information for the three options, which we sum to $36.8m, $29.5m and $18.3m respectively for the three options. However, we were unable to reconcile this information with information in the models that it supplied, and which appeared to contain some fundamental errors:

- Data had been transcribed into years that were shifted by one year, meaning that it did not reconcile within the period
- Costs included SCS and ACS components, which was not immediately apparent (as all were labelled as SCS in its CBA model and they were not distinguished in the business case).[68]

370. Our assessment was also hampered by factors such as:

- Lack of detail on cost 'line items' (which were hard coded and identifiable only as acronyms)
- Lack of detail on assumed benefit, which comprised a single value (in FY2027) referred to as 'cost at asset failure'.

371. We were also confused by Jemena's business case showing an NPV of negative $29.8m for 'option 1', whereas in its modelling it showed an NPV of zero (as it had been treated as the

[68] It is for this reason, and notwithstanding that it is in $2024, that the cost of $18.3m for Option 3 in Jemena's business case differs from the $13.8m that it has proposed (which Jemena advised in response to our IR009, Q47)

zero-cost zero-benefit counterfactual) and by its presentation in modelling of a negative cost for option 3 and which we assumed to be the benefit of this option relative to Option 1, through cost avoidance. In presenting both the negative NPV of option 1 and the benefit of avoiding option 1 for option 3 in its business case, it appeared that Jemena had double counted the relative net benefit of option 3.

372. Given numerous areas of confusion and apparent error in its modelling and presentation of its CBA for this project, we sought clarifications through an information request.[69]

Jemena's response to our IR clarified some matters but also presented a completely different CBA

373. Jemena's response confirmed that there were modelling errors in its originally-provided CBA, and a confusing specification of costs and benefits in defining the factual and counterfactual options. Accordingly, in its response, Jemena provided an updated version of its CBA.

374. As we show in Table 4.4, the line items in Jemena's updated analysis are completely different from those originally provided, although the NPV of net economic benefits that it claims is not dissimilar.

Table 4.4: Comparison of Jemena's CBA results between its original and its updated CBA - $m, real 2024

	Original CBA	Updated CBA
NPV of Net Economic Benefits ($000)	**32.8**	**29.3**
NPV of Total Economic Benefits ($000)	**(4.1)**	**68.5**
Avoided cost at asset failure	(4.1)	-
Improved energy reliability	-	-
Reduced energy losses	-	-
Other Economic Benefits	-	68.5
NPV of Incremental Total Costs ($000)	**(36.9)**	**39.1**
Total Incremental Net Capex	16.6	25.5
Total Incremental Opex - One-off	1.3	4.5
Total Incremental Opex - Ongoing	(54.9)	9.1

Source: EMCa, from sheet 'Output|Tables in Jemena CBA models (original and updated)

Despite its update and clarifications, we remain concerned with certain aspects of Jemena's CBA assessment

375. We remain concerned with certain aspects of Jemena's updated CBA assessment, for reasons such as the following:

- The PV of costs and benefits, and therefore of the NPV, are calculated from costs and benefits beginning in FY24. Noting that Jemena's SNAP and network analytics projects are in flight, this can be considered as an assessment of the whole project, but nevertheless we note that it includes costs for all options that are now sunk (or will be by the beginning of the regulatory period)
- The costs for 'Real Time AMI data' are still represented in the CBA model as SCS, although Jemena has now clarified that these are ACS[70]
- Another 'benefit' included in Jemena's option 3 analysis is described as avoidance of a cost of project-by-project analysis, that is defined as a cost in Jemena's assessment of

69 EMCa IR009, Q42 to Q47

70 Jemena response to IR009, Q47

Option 2. Whereas Option 3 and Option 2 should both be defined by reference to the single counterfactual, which Jemena represents as Option 1

- Jemena includes three 'new' benefits in its updated model, being three 'cost avoidance' line items, respectively for VVC, DERMS and Digital Twin. Jemena does not provide the basis for these benefits, which it assumes as annual benefits out to FY47, and
- Jemena model shows no expenditure for option 1 in any years, despite FY24 and FY25 now being 'historical' in which case the same sunk costs will have been incurred regardless of the future option.

376. However, our main concern lies with Jemena's updated assessment of the benefits, for which its analysis is now transparent, as we discuss below.

The main benefits that Jemena attributes to its Data Visibility and Analytics program in its updated CBA, are not valid

377. In its presentation at our onsite meeting, Jemena provided its assessment that there would be benefits of:

- $3m per year from identifying broken neutral supplies
- $1.2m per year from identifying meter tampering, and
- $0.8m per year from avoided power quality investigations.

378. While quantified for the purpose of its presentation, we understood that these benefits had not been included in its original CBA. We therefore sought information on them through our information request. In its response,[71] Jemena stated that it had now included the following in its updated CBA (for option 3):

- The avoided cost of needing to conduct Neutral Supply Tests (NSTs) and operational activities (Power Quality and meter tampering investigations). Jemena has included in its model a benefit value of $4.96m commencing in FY26 and diminishing gradually over the following 20 years.
- Cost avoidance for VVC, DERMS and Digital Twin, being the avoided costs of needing to build and operate different analytics platforms for each project. In its modelling, Jemena ramps these costs up from FY29 to a value of $1.5m per year from FY32, and thereafter to FY47.

379. We have concerns especially with the claimed benefit from '*NST and operational activities*' cost avoidance, which in PV terms represents $56m of the claimed benefits of the project.[72] Our understanding is that Jemena, along with the other Victorian DNSPs, has had the capability to utilise AMI for NSTs, meter tampering and PQ investigations for many years and there is no indication in Jemena's business case that it would lose the ability to do so without the proposed investment and would, for example, need to revert to undertaking manual NSTs on a 10-year cycle, as it claims. We consider that these are not valid benefits attributable to the proposed project.

380. The validity or otherwise of the proposed benefits relating to VVC, DERMS and Digital Twin is less clear. Noting that each of these is an ICT project that is defined in Jemena's regulatory submission, it is not clear whether the costs proposed for those projects include allowance for separate analytical platforms such as Jemena refers to. If this is the case, then the costs for these projects should be reduced should the Data Visibility and Analytics project proceed. Alternatively, if not allowed for, the costs for those projects would increase. Regardless which is the case, it is reasonable to assume that there would be a *difference* in the analytical platform cost, in which case (assuming Jemena's estimate for that cost) this is a reasonable benefit to include.

381. While Jemena's updated model shows a benefits PV of $68.5m, we consider that the significant components referred to above are either mis-specified or are not valid benefits

71 Jemena response to IR009, Q45

72 Sheet 'Benefits calcs' in Jemena's updated model, cell I63.

attributable to the proposed option. As a result, we consider that Jemena's CBA does not demonstrate that this project has a positive economic value, relative to the counterfactual.

Jemena's model confirms the extent of sunk expenditure on SNAP and Network Analytics Applications

382. Jemena's CBA model shows the extent to which it has already invested in SNAP and in its Network Analytics applications. We have reproduced this expenditure (for option 3) in Table 4.5.

383. It is evident that the SNAP expenditure of $1.43m ($2024) in FY27 (and which is equivalent to the $1.5m in $2026 in Table 4.3) represents the final such expenditure in a project that will be largely completed by the beginning of that year.

384. Jemena's model shows only $0.58m ($2024) for its Network Analytics Program in that year, compared with $1.8m (in $2026) for its regulatory proposal, as shown in Table 4.3. Noting its CBA model expenditure of $1.68m ($2024) commencing the following year, we expect that this likely results from a further transcription error misaligning the years, though it is unclear whether this is an error in its CBA model or in its regulatory submission.

Table 4.5: Relevant historical and current expenditure on SNAP and Network Analytics Program - $m, 2024

	FY24	FY25	FY26	FY27	FY28
Strategic Network Analytics Platform (SNAP) BC 1	1.18	-	-	-	-
Strategic Network Analytics Platform (SNAP) BC 2	4.05	2.81	-	-	-
Strategic Network Analytics Platform (SNAP) BC 3	-	1.47	2.86	1.43	-
Subtotal: Capex for SNAP	**5.23**	**4.28**	**2.86**	**1.43**	**-**
Network Analytics Program (NAP)	**0.35**	**0.35**	**0.58**	**0.58**	**1.68**

Source: EMCa, from Jemena updated model for Data Visibility and Analytics Program (sheet Input|Costs&Benefits)

Jemena provides insufficient information to justify its proposal to continue investing $1.8m per year capex ($9.1m in total) for a Network Analytics Program

385. The majority of Jemena' proposed expenditure is for its proposed capex investment in a Network Analytics Program. Jemena provides minimal information on analytics functionality that it does not already have, and which is anticipated through this investment. In its business case, Jemena states that this is:

> *'A network analytics program of works that leverages SNAP, near real-time smart meter power quality data and developing new analytics applications (tools and processes) to deliver the following benefits:*
>
> *– evolving regulatory compliance,*
>
> *– operational and safety improvements; and*
>
> *– CER enablement.'*[73]

386. In response to our Information Request, Jemena replies that the proposed cost is *'…the delivery costs for the new analytics applications and algorithms in the Network Analytics Program.'*

387. We have not been able to discern any more specific information and, to the extent that this appears to be the primary investment that Jemena seeks to justify through its CBA, we consider that it is not justified.

[73] Jemena business case, page 9

Proposed opex step change requirement is overstated

388. As part of its response to our IR, Jemena states that an ongoing opex step change is required to support '…4 additional resources…, cloud and licensing costs…'. Jemena states that its base year opex (which it states as 2026) is zero.

389. In its opex model, Jemena uses its estimated opex for 2025 as its base year, but its most recent 'actual' expenditure available is for FY24. We have compared Jemena's opex as shown in its CBA for this year (i.e. 2024) with the ongoing opex shown in this same model. As shown in Table 4.6, we find that Jemena's ongoing opex in each of the years FY24 to FY26 was non-zero, and that its most recent actual expenditure (i.e. in FY24) was $565,000. This information does not support an opex step change of $0.7m that Jemena has proposed, starting in FY28 (refer to Table 4.3).[74]

Table 4.6: Ongoing opex as shown in Jemena's CBA - $k, real 2024

	FY24	FY25	FY26	FY27	FY28	FY29
SNAP opex – BC1 ongoing + NAP Opex	**565**	**315**	**185**	**185**	**125**	**125**
SNAP opex – BC2 ongoing						350
SNAP opex – BC3 ongoing						325
Ongoing opex	**565**					**800**

Source: EMCa, from Jemena's updated CBA model, sheet Input|Costs&Benefits, cells in rows 68, 70 and 72

390. While a different base year value (such as an actual cost for FY25) may subsequently be adopted, based on the most recent actual cost, Jemena's proposed opex requirement appears to be similar to amounts already being incurred.

4.3.3 Findings and implications

Jemena's proposed remaining investment in SNAP is justified, but it has not justified its proposed ongoing capex investment in Network Analytics

391. We consider that Jemena's remaining investment in SNAP, comprising $1.5m capex and $0.4m propex,is justified for the completion of this development. Completion of this hub appears to represent a significant milestone which we expect to provide the future-proofed benefits that achieve the objectives that Jemena states for this program.

392. While a need for ongoing opex to operate and maintain the SNAP data hub is reasonable, the amount that Jemena proposes is not dissimilar to the most recent actual opex, as shown in its CBA model, and does not appear to be additional.

393. We consider that Jemena has not justified its proposed continuing substantial capex investments for a Network Analytics Program. We consider that Jemena has not demonstrated that the use cases on which it has based its benefits assessment require such investment and consequently has not demonstrated that the proposed investment would have a positive economic value.

Implications for proposed capex and opex

394. Based on our findings, we consider that:

- $1.5m capex is justified, which is $9.2m less than Jemena has proposed
- $0.4m propex that Jemena has proposed, is justified
- Jemena's proposed opex step changes totalling $2.8m are not justified.

[74] We note that opex shown in Jemena's CBA model for FY25 and FY26 was similarly of the order of $600,000

4.4 Grid stability and Flexible Services program

4.4.1 Overview

Description of program

395. Jemena's Grid Stability and Flexible Services program involves an UFLS program involving augex and an ICT capex investment, and a program to develop and deploy flexible services.

396. Jemena's description of this program is shown in Figure 4.6

Figure 4.6: : Jemena's overview of its Grid Stability and Flexible Services program

Grid Stability and Flexible Services Program

The need for JEN to develop a Distributed Solar PV (DPV) Backstop Capability and a Distributed Under-Frequency Load Shedding (Distributed UFLS) Scheme as two distinct grid stability applications to strategically respond to the challenges and opportunities associated with increasing numbers of CER, and their associated influences on power system security and network operating limits.

The applications developed from this strategy are supported by a new and staged Distributed Energy Resource Management System (LV-DERMS) platform to achieve near real-time optimised control of CER active power operating envelopes to keep the grid stable and to deliver flexible export and import distribution services using Dynamic Operating Envelopes (DOEs), facilitated by a CSIP-Aus utility server.

Source: Jemena Attachment 03-01, page 21

397. For assessment purposes, we consider the Grid Stability and the Flexible Services components of this program separately:

- In section 4.4.2 we describe and assess the proposed UFLS program that targets maintenance of grid stability
- In section 4.4.3 we describe and assess Jemena's proposed program to develop and deploy flexible services, covering both exports and imports.

4.4.2 Grid stability

What JEN has proposed

398. JEN proposes expenditure of $7.3 million to implement a distributed under-voltage load shedding scheme (distributed UFLS)[75] as shown in Table 4.7. No opex is involved.

399. This initiative is a subset of JEN's 'Grid Stability and Flexibility Service Program' business case, which in turn is a subset of its CER Integration Strategy. We assess the proposed digital capex and Flexible Services program in section 4.4.3.

[75] A scheme that disconnects load to mitigate power system collapse from a sudden drop in system frequency (triggered by a loss-of-generation event)

Table 4.7: Grid stability (UFLS) proposed expenditure - $m, real 2026

	FY27	FY28	FY29	FY30	FY31	TOTAL
Augex						
UFLS*	0.3	0.7	1.3	1.9	1.0	**5.2**
ICT Capex						
FN - Foundational Distributed UFLS Capabilities	0.4	0.8	0.5	0.3	0.2	**2.1**
TOTEX for Grid stability	**0.7**	**1.4**	**1.8**	**2.2**	**1.2**	**7.3**

*Source: JEN SCS capex model * not reviewed from an expenditure perspective (out of scope)*

Our assessment

The identified need is compelling – Jemena needs to meet AEMO's requirements in the context of inherent grid stability risks from higher CER penetration levels [76]

400. Drawing from advice from AEMO that forecasted that net minimum demand in Victoria would fall below its minimum acceptable operating threshold by late 2024, JEN summarises two challenges to maintaining power system security:

- A supply-demand imbalance due to an oversupply of 'distributed PV' (DPV)[77] that could not be curtailed or interrupted leading to collapse of the power system for certain credible single contingency events, and
- UFLS becoming ineffective due to reverse power flows from DPV.

401. In addition to the risk of power system collapse, Jemena identifies four other drivers of its distributed UFLS scheme (and the related emergency backstop and Flexible Services initiative – the latter of which we assess in section 4.4.3):

- Non-compliance risk - Jemena may be unable to comply with AEMO directives under the NER regarding standards for minimum levels of load under the control of the UFLS scheme; this in turn would have non-compliance and enforcement consequences
- Customer appliance damage – if Jemena needed to increase voltage levels above 258v to trip DPV inverters as a last resort in an emergency, there is risk to appliance damage and safety implications from over-heating
- Load shedding – Jemena would need to trip feeders experiencing reverse power flows, reducing reliability, and
- Increased costs – costs arising from insurance claims and penalties under JEN's STPIS may not be recoverable if it is in breach of the NER.

402. The foundational DPV Backstop is a committed project and the two stages will be deployed in the current RCP and are not discussed further in this assessment. With respect to its proposed distribution UFLS scheme, JEN refers to clause 4.3.1(k) of the NER from which:[78]

> *'AEMO has power system security responsibilities including to ensure that appropriate levels of contingency capacity reserves and reactive power reserves are available to arrest the impacts of significant multiple contingency events (including underfrequency load events) which affect up to 60 per cent of the total power system load…AEMO requires NSPs including JEN to ensure that 60 per cent of underlying load is under the control of UFLS schemes.'*

[76] JEN – RIN – Support – Grid Stability and Flexible Services Program – 20250131 – Public, pages 14-16

[77] JEN has already seen strong growth in DPV installations which JEN says is likely to continue plus other emerging, potentially more active CER technology (including customer and community storage and EVs), present further challenges

[78] JEN – RIN – Support – Grid Stability and Flexible Services Program – 20250131 – Public, page 38

403. We are satisfied that there is a compelling need for Jemena to install the distributed UFLS scheme. We therefore turn our focus to how Jemena proposes to implement the scheme, by when and at what cost.

Traditional UFLS schemes may not operate as intended with the uptake of DPV

404. With the uptake of DPV, there is an increasing risk of the load shed blocks (or stages) being net negative (i.e. sources of generation) because of reverse power flows through feeders. Jemena reasonably concludes that shedding such blocks *could risk a state-wide collapse of the power system from under-frequency.*

405. Jemena goes on to say that:[79]

> *AEMO requires DNSPs to implement a distributed, granular UFLS control scheme that involves the automatic disconnection of dynamic load blocks through the ability to apply settings remotely (i.e., frequency and trip time), monitor, arm and disarm of UFLS, disconnect (in 0.2-0.5s response time), and restore load within the distribution network.*

406. Jemena proposes initially establishing a 'foundational' distributed UFLS capability by establishing more granular load blocks at zone substation and feeder levels using a dedicated under-frequency relay at each zone substation.

407. Jemena further proposes that if there is insufficient demand from the foundational capability to meet AEMO's '60% requirement', it will curtail DPV using modified dynamic operating envelopes (DOE) normally required for flexible service applications. This will have the effect of increasing the amount of underlying load available to the UFLS scheme.

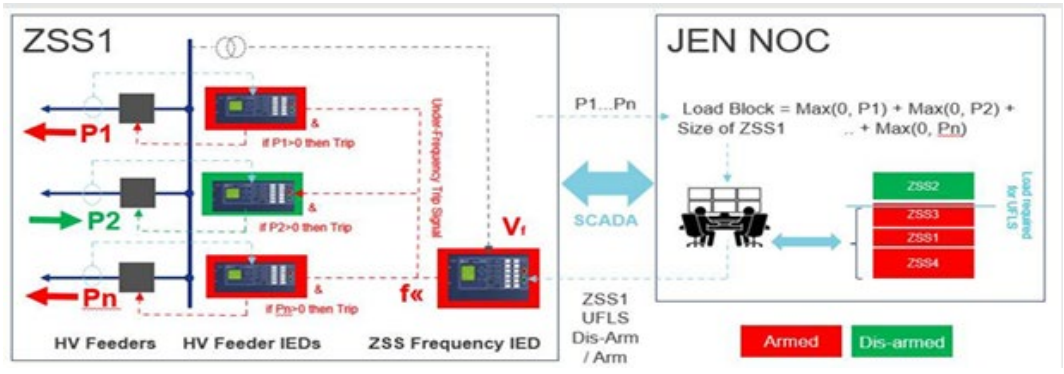
408. As a last resort (or as an alternative to the modified DOE), the backstop mechanism could be used.

409. This approach is prudent in our view and forms the basis for Jemena's cost estimate.

JEN's bottom-up cost estimate is reasonable

410. Our focus is on the Digital capex component of the distributed UFLS capability. As shown in Figure 4.7, trip signals will be sent to dedicated under-frequency relays from Jemena's Network Operations Centre via SCADA. All armed distribution feeders will be tripped based on AEMO-defined under-frequency threshold and time delay settings.

Figure 4.7: Representation of proposed Foundational distributed UFLS scheme



Source: JEN – RIN – Support – Grid Stability and Flexible Services Program – 20250131 – Public, Figure 9.6

79 JEN – RIN – Support – Grid Stability and Flexible Services Program – 20250131 – Public, page 38

411. Jemena has developed a bottom-up cost estimate for each of the seven terminal station (for digital and network capex, and network opex) in its CBA model.[80] Digital capex costs are broken down into two sub-components:[81]

- Internal software: $1.17 million (direct cost $2024), representing over half of the digital capex cost, and
- Contract labour: $0.70 million (direct cost $2024) and the equivalent effort (days) for which the average is 92 days per terminal station.

412. The estimate appears to be preliminary however based on our understanding of the work involved, we are satisfied that the digital capex estimate is reasonably based.

Findings on grid stability

413. We consider that the proposed Digital capex is reasonable.

4.4.3 Flexible exports and imports

What JEN has proposed

414. Jemena plans to introduce a flexible exports service from 2030, and a flexible imports service from 2031. Jemena states that '*…network [export] limitations associated with* DPV *[Distributed* PV*) are material in its service area now…'* and that it '*…expects network limitations associated with EVs to become material in its service area from 2028 to 2031*'. [82]

415. Jemena advises that the DPV backstop capability,[83] which was mandated from 1 October 2024, will provide the foundational capability to support flexible exports.[84] Jemena also refers to an interdependency with its VVC, noting that deploying VVC will defer the need for flexible exports. Jemena states that it is proposing to implement flexible services over a three-year period (2026-29) by which time *'…the technology would be more mature and adoption across the NEM would likely open up more competition and availability of the Utility Server and LV DERMS products.'*[85]

Proposed expenditure

416. As shown in Table 4.8, Jemena proposes capex of $25.9m and an ICT opex step change of $3.0m. Jemena also proposes a non-ICT opex step change to manage its flexible services offering, totalling $0.5m.

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80 BLTS, BTS, KTS, SMTS, TSTS, TTS, and WMTS ; we understand this as a reference point for the zone substations within the supply area served by the terminal stations because the distributed UFLS scheme is to be implemented to trip HV feeders

81 JEN - RIN - Support - Grid Stability and Flexible Services Program - CBA Model - Flexible Services - 20250131 – Public, Distributed UFLS Estimate

82 Jemena Investment Brief for Grid Stability and Flexible Services, page 7

83 Sometimes referred to as the Victorian Emergency Backstop Mechanism or VEBM

84 Jemena Investment Brief, page 7

85 Jemena Investment Brief, page 27

Table 4.8: Proposed expenditure for CER Flexible Exports and Flexible Imports - $m, real 2026

	FY27	FY28	FY29	FY30	FY31	TOTAL
ICT capex						
FN - Flexible exports	-	2.6	7.6	5.0	-	**15.2**
FN - Flexible imports	-	-	-	4.3	6.5	**10.8**
Subtotal: ICT capex	**-**	**2.6**	**7.6**	**9.3**	**6.5**	**25.9**
ICT Opex step change						
CER Integration - Flexible Exports	-	-	1.1	1.4	0.5	**3.0**
Non-ICT Opex step change						
CER Integration - Grid stability and flexible services	-	-	0.1	0.2	0.2	**0.5**
TOTEX for CER flexible exports and imports	**-**	**2.6**	**8.8**	**10.9**	**7.1**	**29.4**

Source: EMCa, from Jemena capex model (Att05-10M), opex model (Att06-03M), relevant CBAM and Jemena response to IR009 Q28

Jemena's description of benefits from flexible services

417. Jemena refers to the following benefits from flexible services:[86]

- Reducing the risk of network overload by reducing the magnitude of EV charging at times of maximum demand
- Reducing operational expenditure, by reducing the need for JEN to apply intentional over voltages to customers to trip off CER, limiting expenditure on complaints management and equipment damage claims
- Deferring the need for network investment in DER enablement, and
- Accommodating more CER exports (relative to fixed export limits) and consequently also reduced emissions

418. In its modelling, Jemena states that it accounts for the following benefits:

- From flexible exports:
  - DER enablement, allowing for reduced curtailment of exports (valued using AER's CECV methodology)
  - reduced emissions (arising from reduced export curtailment, as above, valued using AER's VER methodology)[87], and
- From flexible imports
  - reduced incidence of load shedding due to risk of network overload (valuing energy at risk using AER's VCR value).

Options considered

419. Jemena considers five options in its Investment Brief, as follows:

- Option 1: Do nothing
- Option 2: Grid Stability and Flexible Services by 2028-29 without Augex Deferral
- Option 3: Grid Stability and Flexible Services by 2028-29 with Augex Deferral
- Option 4: Grid Stability and Flexible Services by 2030-31 with Augex Deferral (preferred option)

86 We do not repeat here benefits that are attributable to Grid Stability

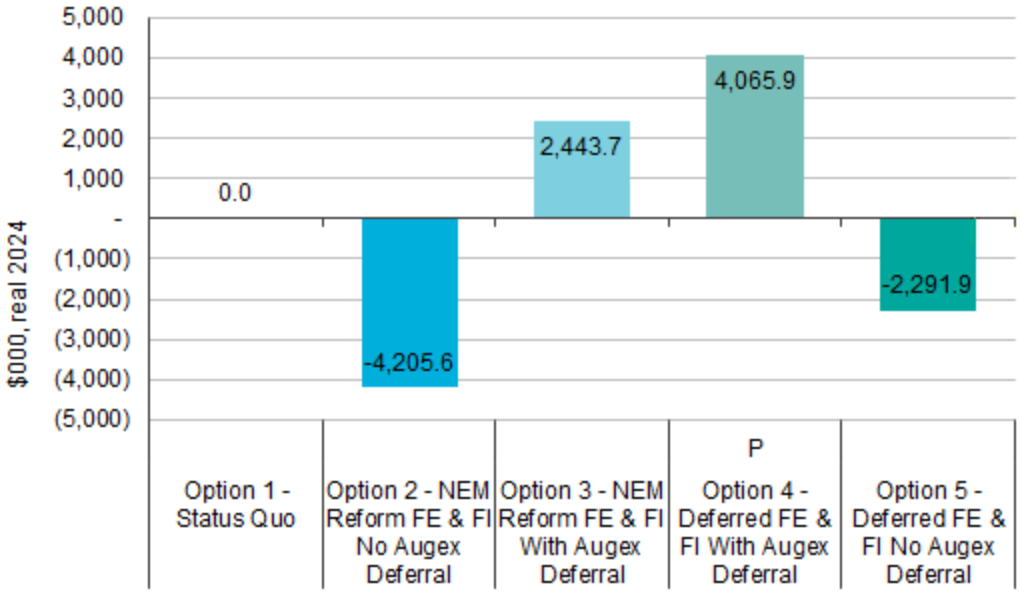
87 In response to our Information Request (IR20, Q50b) Jemena states that it calculates this in accordance with AER's guideline and provides the relevant formula. However, in its CBA model, the input values (in $000) are hard coded.

- Option 5: Grid Stability and Flexible Services by 2030-31 without Augex Deferral

420. Jemena states that its preferred option '…*reduces the Distribution Substation and LV Augmentation Program by approximately 20%.*'

421. Jemena estimates that its proposed flexible services program has an NPV of $4.1m. As shown in Figure 4.8, its preferred option has the highest NPV.

Figure 4.8: Jemena's NPV estimates for each flexible services option - $000, 2024



Source: EMCa, from Jemena CBA model – Flexible services

Assessment

The principles by which Jemena has estimated benefits appear reasonable, though its calculations are not fully transparent

422. In its modelling, we observe that Jemena has defined annual benefits from CECV, VER and VCR, as stated. These values are hard coded in its modelling, but Jemena's description as to how it has calculated these amounts accords with what we would expect.

423. In the remainder of our assessment, we take these parameters as given and focus our assessment on Jemena's CBA outcomes and comparisons of costs and benefits with those estimated by the other Victorian DNSPs.

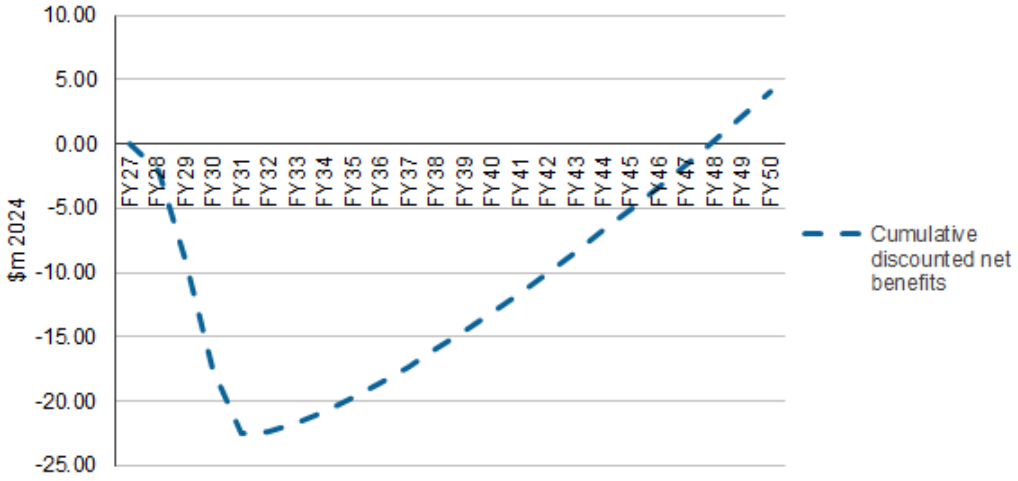
Jemena's CBA is unfavourable when we consider costs not included and the long analysis period

424. While Jemena's CBA period is to 2050, it has allowed ongoing opex but has not provided any allowance for ICT refresh over this period. We consider it unrealistic that the ICT systems that it proposes to develop in 2027-30 will not require any refresh expenditure over the subsequent 2 years.

425. Noting that Jemena's NPV is based on a relatively long assessment (to 2050) yet has a relatively small NPV relative to its proposed capex of $29.4m, we also investigated how the net present value was 'earned' over time.

426. In Figure 4.9 we show the NPV on a cumulative basis. As can be seen there, it is negative until 2048 and achieves the value of +$4.1m only as a result of assumed benefits in 2048. 2049 and 2050. While the end result is positive (on Jemena's assumptions) it is not a robust result, given the uncertainties associated with introducing a new service five years from now and operating it for a further 20 years. We observe, for example, that the equivalent analyses that CitiPower, Powercor and United Energy have done are to 2040.

Figure 4.9: Cumulative discounted net benefits of proposed flexible services program - $m, real 2024



Source: EMCa, from Jemena CBA model – Flexible services

Jemena has chosen a 'deferral' option, but closer examination of its CBA shows that 'optimal' timing would be to defer by a further 2 years, in which case it would be implemented in the subsequent regulatory period

427. As shown in Figure 4.8, the NPV of Jemena's option 4 is higher than for option 3. Option 4 is the same as option 3 but deferred by two years (i.e. to 2030) showing that Jemena's 'deferral' improves the NPV. We investigated timing further and we find that the optimal timing to deploy flexible services, based on Jemena's analysis, would be 2032.[88] In other words, the NPV would be higher still if Jemena deferred implementation by a further 2 years.

428. While this is a direct result from analysis of Jemena's CBA information, we tend to 'take this into account' in our findings rather than assuming that a modelling result alone provides a definitive conclusion on our assessment.

As a comparison, Jemena and CitiPower have similar customer numbers yet CitiPower proposes a lower cost and estimates higher benefits, resulting in a positive NPV to 2040

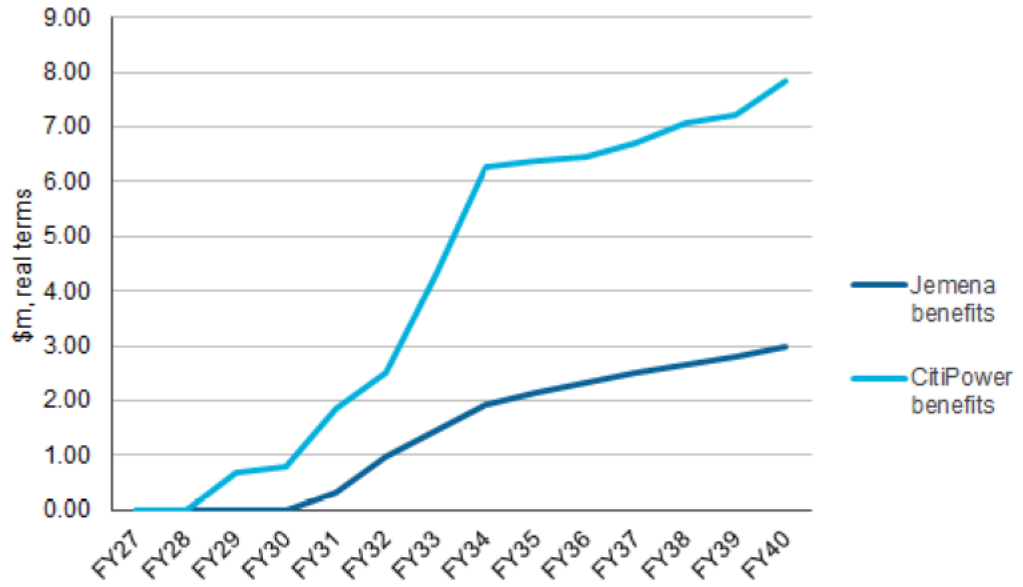
429. In Figure 4.10 we show a comparison between CitiPower's assessment of benefits from flexible services, and Jemena's.

430. While CitiPower and Jemena are similar in size, [89] there are inevitably differences in Jemena's network relative to CitiPower's, and we would expect there to be intrinsic reasons why the assessments of benefits differ. Also, Jemena proposes to introduce flexible services around two years later than CitiPower, and which accounts for the lag that is evident on the graph. Nevertheless, the difference in the rate at which benefits are assumed to accrue is stark.

88 Using the optimal timing test based on the year in which the benefits first exceed the annuitised cost.

89 Jemena has around 384,000, compared with CitiPower 350,000 (based on 2024 RIN data).

Figure 4.10: Comparison between CitiPower and Jemena's estimated benefits from Flexible Services - $m real terms[90]



Source: EMCa analysis, from CitiPower and Jemena CBA models for flexible services

431. We also observe that CitiPower's proposed capex is $18m, while Jemena proposes close to $30m.

432. We do not mean to suggest through this comparison that CitiPower's assessment (of costs and benefits) is necessarily valid for Jemena. However, the differences in proposed costs and estimated benefits combine to explain why CitiPower estimates that flexible services have a positive NPV (of $25m), analysed over the period to 2040, while Jemena's analysis shows a negative NPV over that period.

Net benefits from flexible exports compared with flexible imports

433. Since the two services are to be introduced separately, we sought to understand whether the economics of flexible exports and flexible imports differed significantly.

434. In response to our information request, Jemena provided two separate CBA models – one for flexible exports and one for flexible imports.[91] We show the summary information from Jemena's models in Table 4.9. Noting that in its analysis, Jemena attributes all ongoing opex to 'flexible exports', therefore the flexible imports result needs to be read as incremental as it would not represent a stand-alone implementation. Nevertheless, the result shows that in Jemena's analysis, the majority of benefits and the major contributor to the NPV, arise from flexible exports.

Table 4.9: Jemena's PV of costs, benefits and NPV of flexible exports and flexible imports - $m, 2024

	PV cost	PV benefit	NPV
Flexible exports	-22.7	26.0	3.3
Flexible imports (incremental basis)	-8.2	8.9	0.7
Flexible services (exports and imports)	**-30.8**	**34.9**	**4.1**

Source: EMCa, from Jemena CBA models, including Jemena response to IR009, Q50c

90 CitiPower's benefits estimate is in $2026 real terms, whereas Jemena's benefits estimate is in $2024 terms. In both cases, this is as specified by the relevant business. We consider that the different $ basis is not material to the conclusions that we draw.

91 Jemena response to IR009, Q50c

Jemena's proposed capex is high relative to other DNSPs, particularly for flexible imports

435. As is the case with the four other Victorian DNSPs, Jemena proposes to develop its ICT capability by leveraging off the LV-DERMS that it has already developed, and to develop flexible imports ICT capability following flexible exports. However, as we show in Table 4.10, its proposed capex is higher than the other DNSPs, and especially so when we consider its smaller customer base.

436. While its proposed cost for flexible exports is higher than for all other DNSPs except Powercor, its proposed cost for flexible imports stands out to such an extent that we tend to question whether it has perhaps been costed as a 'stand-alone' development as compared with leveraging off ICT development for flexible exports.

Table 4.10: Comparison of proposed capex for Flexible Services - $m, real 2026

	Customers (000)	Flexible exports	Flexible imports	Flexible services integration	Total
Jemena	**384**	**15.2**	**10.8**		**25.9**
CitiPower	351	7.9	1.2		**9.1**
AusNet	823	5.5	5.5	10.0	**21.0**
Powercor	718	18.4	2.9		**21.3**
United Energy	937	11.3	1.8		**13.0**

Source: EMCa from Jemena, CitiPower, Powercor and United energy CBA models for flexible services; AusNet from ICT NPV model, sheet for 'DSO' selecting capex rows labelled Flexible Exports full rollout, Flexible demand Orchestration and Flexible Services Integration. EMCa conversion to $2026 (where not specified already in those terms)

Jemena's proposed ICT opex for flexible services appear reasonable from a technical perspective

437. As we show in Table 4.8, Jemena proposes ICT opex step changes totalling $3.0m and non-ICT opex step changes totalling $0.5m over the period.

438. In its business case, Jemena states that its estimate for the ICT component is to cover ongoing licensing. Jemena states that this is '*based on the recently implemented LV-DERMS platform for the emergency backstop*', which Jemena considers a reasonable proxy as '*the technology stack is the same*'.[92] As a new service, opex for flexible exports would not have been incurred in Jemena's base year and its estimate of the additional opex required appears reasonable.

439. Jemena does not, in its business case, describe the basis for the non-ICT opex that it proposes. We sought further information on the basis for its proposed opex in our information request[93] and Jemena refers to requiring '*…one new Product and Sales Specialist*'. We consider that it is reasonable to expect that Jemena will require such a resource and that, since it did not provide this service at the time, this cost would not have been incurred in its base year. At around $180,000 per (full) year, the amount that Jemena proposes seems a reasonable estimate of this requirement.

Findings on flexible services

440. We consider that Jemena's proposed capex for Flexible Services is overstated and that it has not demonstrated that the level of expenditure that it proposes would represent an economic investment.

441. We did not expect that a business case for flexible services to be deployed in the next regulatory period, would be marginal. Nevertheless, we find that Jemena's does not present

92 Jemena Grid Stability and Flexible Services business case, page 15

93 IR20, Q49

a reasonable case that the level of expenditure that it proposes would be prudent and efficient. We reach this conclusion based on the following factors:

- Jemena's proposed capex to introduce flexible exports and flexible imports is the highest of the Victorian DNSPs, even though it is the second smallest in customer numbers
- Jemena's CBA as presented is marginally positive, but only because of assumed benefits to 2050 which we consider to be most uncertain in the outer years and because it ignores the reasonable need for at least some additional capex before 2050, i.e. beyond the initial development. We consider that a more reasonable interpretation of Jemena's CBA is that it would result in a negative NPV.
- Jemena's case for flexible imports is particularly weak, based on proposed capex that we consider to be significantly overstated and occurring at the end of the regulatory period, with the business case predicated on assumed benefits well beyond the next period. We consider that this component of Jemena's proposal is not justified.

442. While Jemena's information suggests that the economics of flexible services would be improved if it was deferred beyond the next regulatory period, on balance we consider that an allowance to develop flexible exports within the next regulatory period is reasonable. However, we consider that this is only the case if (1) Jemena can develop and implement flexible exports at a lower cost than it has proposed, and (2) it can demonstrate that its proposed augex includes the benefit of the '*20% reduced distribution substation and LV augex*' that Jemena refers to, but which it states is not included in its CBA.

443. On the basis that an allowance is made for Jemena to develop flexible exports, we consider that its proposed ICT opex is a reasonable estimate of the additional expenditure that it will require. However, we consider that Jemena has not justified its proposed non-ICT opex step change.

4.5 Voltage and Power Quality program

4.5.1 Overview

Description of program

444. Jemena's Voltage and Power Quality program is primarily an augex program, involving rollout of VVC, reactors and Var support and some investment to support LV network hosting capacity. Some ICT expenditure is proposed to support this program

445. Jemena's description of this program is shown in Figure 4.11.

Figure 4.11: Jemena's overview of its Voltage and Power Quality program

Voltage and Power Quality Management Program

The need for a voltage and power quality management program to strategically respond to the challenges and opportunities associated with increasing CER penetration and the associated influences on network voltage and power quality.

The applications developed from this strategy are supported by a new and staged Dynamic Voltage Management (DVM) system platform to achieve near real-time optimised control of network voltage and reactive power flow to maintain compliant voltages and reduce CER curtailment, using enhanced Volt-VAr control (VVC) integrated with JEN's Advanced Metering Infrastructure (AMI) assets.

Source: Jemena Attachment 03-01, page 22

Proposed expenditure

446. Jemena proposes expenditure totalling $44.9m over the period. The majority of this ($40.5m) is proposed augex, of which we have been asked to review two components totalling $25.6m.

447. Jemena proposes a minimal ICT capex spend of $0.1m, but a larger ICT opex uplift totalling $3.2m over the period. This amount is included in Jemena's aggregate ICT opex step change (refer to Table 4.11). Further to this, Jemena proposes a non-ICT opex step change totalling $1.1m, which we include in our CER step changes summary.

Table 4.11: Proposed expenditure for Voltage and Power Quality program - $m, real 2026

	FY27	FY28	FY29	FY30	FY31	TOTAL
Augex (in scope)						
Distribution substation augmentation - supply quality	1.3	1.6	1.6	1.7	1.7	**7.9**
VVC Roll-Out	6.7	6.7	4.2	-	-	**17.7**
Subtotal: Distribution substation augmentation and VVC	**8.1**	**8.3**	**5.9**	**1.7**	**1.7**	**25.6**
Augex (not in scope)						
Reactors and Var	0.9	2.3	3.0	3.2	4.9	**14.3**
Future Grid - Hosting Capacity (LV Network)	0.1	0.1	0.1	0.1	0.1	**0.6**
Subtotal: Other augex (not in scope)	**1.0**	**2.5**	**3.2**	**3.3**	**5.0**	**14.9**
Total augex	**9.0**	**10.8**	**9.0**	**5.0**	**6.7**	**40.5**
ICT Capex						
FN - VVC (Volt Var Control) rollout	0.1	-	-	-	-	**0.1**
ICT Opex step change						
CER - VVC rollout	0.7	0.7	0.6	0.6	0.6	**3.2**
Non-ICT Opex step change						
CER Integration - Voltage and PQ management	0.2	0.2	0.2	0.2	0.2	**1.1**
Total ICT	**1.1**	**0.9**	**0.8**	**0.8**	**0.8**	**4.4**
TOTEX	**10.1**	**11.6**	**9.9**	**5.8**	**7.5**	**44.9**

Source: EMCa, from Jemena capex model (Att05-10M), opex model (Att06-03M), relevant CBAM and Jemena response to IR009 Q28

4.5.2 Assessment of distribution substation augmentation and VVC rollout

What Jemena has proposed

Project objectives[94]

448. The objective of JEN's proposed investment is to:

- *Ensure voltage and power quality compliance for our customers across the distribution network*
- *Reduce both the safety risk and the elevated energy consumption of customer appliances that are exposed to high network operating voltages*

[94] JEN – RIN – Support – Voltage and PQ Management Program – 20250131 – Confidential, page 8

- *Reduce the amount of voltage-induced DER curtailment of customer inverters that are exposed to high network operating voltages*
- *Enable greater levels of customer DER exporting, by alleviating over-voltage limitations within the network*
- *Enable greater levels of customer imports and reduce the risk of customer appliances from damage, by alleviating under-voltage limitations within the network.*

Jemena's strategy[95]

449. Jemena is seeking to improve its current voltage non-compliance performance through a combination of DVM at 27 substations plus implementing proactive and reactive network solutions. Jemena has commenced its DVM roll-out in the current RCP by undertaking trials at two substations and with DVM at zone substation PLN to be implemented prior to the next RCP. It proposes complementing the 'centralised' DVM program with:

- A proactive 'distributed' program of network augmentation targeting worst-served customers and areas of the network that contribute to deteriorating the performance of the centralised DVM system, and
- A recurrent reactive program to address customer complaints (i.e. that are not addressed by the DVM or proactive program) that it has been running for many years.

450. The timing of the work is designed *to provide the highest net present benefit, consider risk, performance, cost, timing and uncertainty - based on the emerging network need.*

Project cost

Table 4.12: Proposed augex for Voltage and Power Quality program - $m, real 2026

	FY27	FY28	FY29	FY30	FY31	TOTAL
Augex (in scope)						
Distribution substation augmentation - supply quality	1.3	1.6	1.6	1.7	1.7	**7.9**
VVC Roll-Out	6.7	6.7	4.2	-	-	**17.7**
Subtotal: Distribution substation augmentation and VVC	**8.1**	**8.3**	**5.9**	**1.7**	**1.7**	**25.6**
Augex (not in scope)						
Reactors and Var	0.9	2.3	3.0	3.2	4.9	**14.3**
Future Grid - Hosting Capacity (LV Network)	0.1	0.1	0.1	0.1	0.1	**0.6**
Subtotal: Other augex (not in scope)	**1.0**	**2.5**	**3.2**	**3.3**	**5.0**	**14.9**
Total Augex	**9.0**	**10.8**	**9.0**	**5.0**	**6.7**	**40.5**

Source: EMCa, from Jemena SCS capex model

451. Jemena proposes a three-tiered program of work designed primarily to reduce steady-state voltage excursions beyond statutory limits across its network

Assessment

452. The cornerstone of Jemena's proposed program is its economic analysis based on benefits extracted from improving its overall voltage and PQ performance,

453. Jemena is currently 'functionally compliant' with its statutory steady-state voltage performance obligations (per EDCOP[96]). We first discuss the EDCOP obligations and then

95 JEN – RIN – Support – Voltage and PQ Management Program – 20250131 – Confidential, pages 8-9

96 Essential Services Commission, Electricity Distribution Code of Practice, version 2, 2023

Jemena's identified need and options analysis, with close consideration of its derivation of economic benefits.

Variations in nominal voltage are permitted up to a functional limit when measured across all the DNSP's customers

454. Victorian DNSPs are required to comply with the EDCOP, which in Part 3, Clause 20 incudes tables defining standard nominal voltages and allowable voltage variations. A note to Table 2 in this Part of the EDCOP states that:

> *When examining network-wide compliance, functional compliance is met if the limits in Table 2 of AS 61000.3.100 (up to 1% of measurements below 216 V and up to 1% of measurements above 253 V) are maintained across at least 95% of a distributor's customers.*

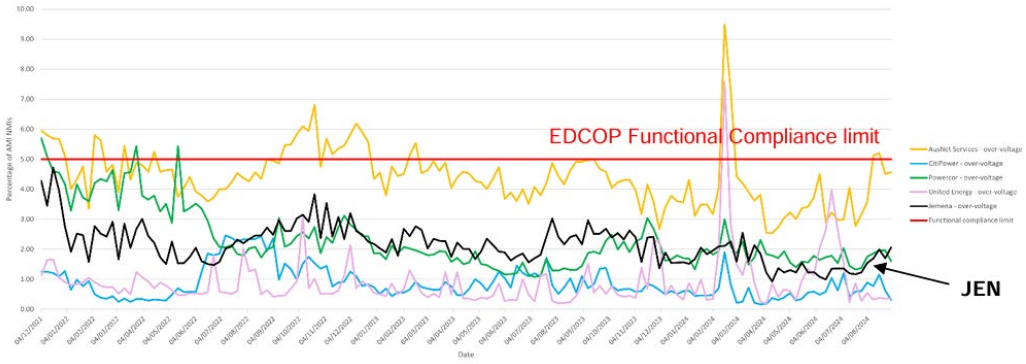
Jemena is compliant with its statutory over- and under-voltage performance obligations[97]

455. Jemena advises that up to 3.9% of its customers experience non-compliant over-voltages (and 3.6% experience non-compliant under-voltages). As shown in Figure 4.12:

- This may have been the case in late 2022 (over-voltage) but the most recent 12 months performance averages around 2% overvoltage, and
- Jemena's over-voltage performance over the period 2022 -2024 has been well within the statutory 5% limit and Jemena has not provided any updated information to confirm that its performance has deteriorated markedly since.

456. JEN's under-voltage performance is similarly well within the limit (as shown separately in its business case).

Figure 4.12: Steady-state overvoltage compliance by DNSP



Source: JEN – RIN – Support – Voltage and PQ Management Program – 20250131 – Confidential, Figure 2.1

457. In its business case, Jemena presents a graph showing the actual network-wide LV voltage distribution across its AMI meters for two extreme network operating conditions – maximum demand in January 2023 and minimum demand in December 2023 to illustrate the breadth over- and under-voltage excursions. The percentage of customers experiencing under-voltage was 0.4% and over-voltage was 2.4% at these two times, respectively. As Jemena notes, this represents the worst-case instantaneous operating conditions at the two extremes of network operation. These results remain well inside the limit but do demonstrate that there is a wide voltage spread between the minimum and maximum that is difficult for HV (zone substation) tap change voltage regulation alone to manage.

97 JEN – RIN – Support – Voltage and PQ Management Program – 20250131 – Confidential, pages 15-17

Jemena is likely to be challenged throughout the next RCP to *maintain* its overall voltage performance

458. JEN points out that (i) the forecast uptake of distributed solar PV[98] and other forms of DER, with (ii) the growth in HV underground cable length within residential and other development, it will become increasingly difficult to manage voltage rise at customer connection points. Three of its zone substations operate at their lowest tap during peak demand, and 10 others are expected to be operating at the 3rd bottom taps or worse under these conditions,[99] restricting the voltage regulation capacity – these worst-affected substations are also those with the highest PV penetration and with underground cable.

459. JEN's position and observations are consistent with the claims by other DNSPs, particularly those with high CER penetration, and we consider that it is a reasonable conclusion. We note that JEN's solar PV penetration was (in 2024) a relatively low 16% and thus we would expect over-voltage issues to be localised (i.e. not widespread) but there is considerable room over the next decade for higher roof top PV penetration.

460. However, we expect that for new subdivisions, JEN can and should design its distribution network cognisant of the two-way power flows given the likely penetration over DER, mitigating voltage regulation issues by design and reducing the need for more expensive retro-fitting of devices and controls. This should assist with voltage management.

JEN's evidence of voltage management challenges also shows that the issues are not acute at many substations

461. JEN provides graphs of the following in its business case:

- Voltage and quality of supply complaints mapped against (increasing) PV installed capacity
- Installed PV capacity by ZSS
- Actual and forecast underground cable charging by ZSS
- Available and forecast minimum demand OLTC tap positions remaining – by ZSS
- Increased annual energy consumption due to overvoltages by ZSS, and
- JEN's PV system annual curtailment due to overvoltage by ZSS.

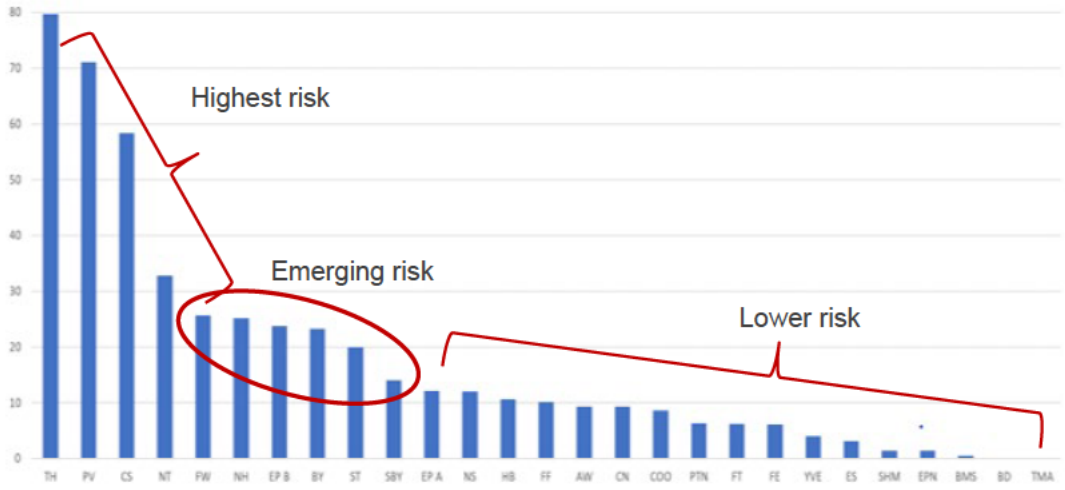
462. As JEN points out, each of these graphs confirm that there are risks to voltage regulation, however in our view, there are two crucial matters arising from JEN's analysis:

1. Collectively, the graphs confirm that there are material over-voltage regulation risks arising from four to five ZSS now, material risks emerging over the next five or so years at about another eight-ten ZSS, and a lower risk at the remaining 10+ substations. Figure 4.13 shows a defacto over-voltage measurement for JEN's network (at the ZSS level and as measured in 2023) showing 17 substations with relatively low overvoltages.

98 JEN – RIN – Support – Voltage and PQ Management Program – 20250131 – Confidential, Figures 2.4, 2.5

99 JEN – RIN – Support – Voltage and PQ Management Program – 20250131 – Confidential, Figure 2.8

Figure 4.13: JEN's increased annual energy consumption due to over-voltages (MWh pa) by ZSS (2023)



Source: JEN – RIN – Support – Voltage and PQ Management Program – 20250131 – Confidential, Figure 2.10

2. JEN's contention is that *'[w]hile [it] is functionally compliant with the EDCOP, a residual level of non-compliance remains, requiring a proactive investment program to address this network compliance need.'*[100] However:
   - there is no such obligation from a regulatory perspective for JEN to improve its compliance level, and
   - it appears that JEN recognises this in attempting to derive a positive net benefit for its proposed improvement program.

463. In summary, whilst we consider that it is likely that it will be increasingly difficult to *maintain* its voltage performance over the next decade, (i) JEN has no obligation to improve it, and (ii) its voltage management challenges are not uniform across its network.

JEN considered four options in addition to 'doing nothing'

464. Table 4.13 shows the cost of the five alternatives to the 'do nothing case' to address the identified need and take advantage of the opportunities to improve compliance performance in accordance with its objectives.

100 JEN – RIN – Support – Voltage and PQ Management Program – 20250131 – Confidential, page 27

Table 4.13: Options - Voltage & PQ management program ($m, 2024)

Option	Initiative	Capex	Opex	Total	NPV
1. Do nothing (counterfactual)	Nil	0.0	0.0	0.0	0.0
2. Centralised DVM program + reactive PQ	DVM rollout	18.5			
	Digital capex	0.1			
	Reactive PQ program	16.7			
	Digital opex		3.0		
	Network opex		1.0		
	Total	**35.2**	**4.0**	**39.2**	**-3.0**
3. Distributed voltage and PQ management	Proactive PQ program	41.1			
	Reactive PQ program	8.3			
	Opex		0.0		
	Total	**49.4**	**0.0**	**49.4**	**2.0**
4. Centralised DVM & distributed voltage and PQ management (recommended)	DVM rollout	18.5			
	Digital capex	0.1			
	Proactive PQ program	15.7			
	Reactive PQ program	8.3			
	Digital opex		3.0		
	Network opex		1.0		
	Total	**42.6**	**4.0**	**46.6**	**2.2**
5. Non-network voltage & Power quality management	Not technically feasible to realise benefits for the short-medium term				

Source: JEN – RIN – Support – Voltage and PQ Management Program – 20250131 – Confidential, Tables 8, 10, 11, 12

465. JEN's analysis is that centralised DVM (Option 2) and distributed voltage management (Option 3) on their own can only realise part of the total available benefits at the least cost, so it has blended the two programs (plus the common reactive PQ program) to maximise the overall benefits via its preferred Option 4. To achieve the $2.2 million NPV it has:[101]

- Optimised the sequence and timing of initiatives to ensure that costs are incurred when the need arises, accounting for dependencies
- Captured benefit from voltage compliance using the *value of increased consumption from customer appliances being exposed to poor power quality and a safety disproportionality factor to achieve AFAP*[102]), and
- Captured benefit from DER enablement, using the CECV methodology to value the otherwise curtailed exports from PV installations.

466. The centralised DVM is proposed to provide real-time voltage control capability for the LV network. By contrast, JEN currently uses on-load tap changer transformers at its zone substations and at some in-line HV regulator sites (i.e. HV regulation). DVM is a proven technology and is deployed by most DNSPs. In our experience, DVM demonstrably improves voltage management and DER hosting capacity and reduces the need for 'reactive' PQ investment.

467. Targeted distribution network augmentation may be required at some substations *at some time in the future* in areas where the available tapping range at ZSS transformers is inadequate to respond to the voltage spread.

468. JEN has still included a reactive voltage and PQ program to respond to and rectify customer complaints that arise despite the DVM and proactive distribution augmentation. Options 3 and 4 include $8.3 million for this purpose, which we understand to be its average level of

101 JEN – RIN – Support – Voltage and PQ Management Program – 20250131 – Confidential, pages 28, 41

102 JEN – RIN – Support – Voltage and PQ Management Program – 20250131 – Confidential, page 27

historical expenditure.[103] JEN has doubled the reactive program cost for Option 2 to $16.7 million. No explicit justification for this is evident from the business case or the CBA model.

Cost estimates are likely to be reasonable however the justification for opex step changes is not compelling

469. Given that (i) the proposed network augmentation work is relatively routine, JEN should have relevant and recent cost benchmarks, and (ii) it is running DVM trials at two substations,[104] we have no material concerns regarding the reasonableness of inputs to its bottom-up build that JEN used to estimate the components of cost: network capex and opex and 'digital' capex and opex according to its designated scope.

470. It appears from the cost breakdown of Option 2, that the opex cost is to support the DVM roll-out. JEN's 'network' and 'digital' opex are both classified by JEN as step changes. The network opex step-change is for one additional FTE in 'operations' ($200k p.a.) and the digital step-change is for one additional FTE in operations, additional cloud costs, and licensing costs (average of $0.6m p.a.).

471. However, what is not clear is the need for step changes given that JEN states that *'[m]uch of the foundational cost for establishing DVM has been incurred as part of the current trial in the current regulatory period'* and follows this statement by identifying the additional costs to deploy the technology following the trial and which does not include any mention of additional opex.[105] Whilst it is logical that 'new' opex is required for cloud costs and licensing costs for the DVM capability,[106] we assume without better information to the contrary, that the additional costs are already included in the Base Year.

472. Further, as we note above, with the proposed DVM program, there should be reduced need for reactive work on the network which typically involves some opex (such as for phase balancing or changing distribution transformer manual taps).

Benefits estimates appear to be overstated leading to a negative NPV for all options

473. JEN identifies two sources of benefits:[107]

- DER enablement – as over-voltages can cause PV inverters to reduce export partially or entirely, JEN has derived the benefit of avoided curtailment using the AER's CECV methodology. It assumes that the benefit will increase over the course of the next RCP due to the growth in solar installations and underground cable length, and
- Regulatory compliance – JEN values the cost to customers of it not providing compliant voltages by (i) valuing the increased consumption of customer compliances due to over-voltage, and (ii) multiplying that value by a safety disproportionality factor of 6 to account for the associated safety risk of those appliances overheating and catching on fire.

474. With respect to the DER enablement benefits, we see no accounting for the benefit of other CER projects on PV hosting capacity, such as its Flexible Services program (which we assess in section 4.4.3.). The Flexible Services program is scheduled to commence in 2030-31, so our focus is on the likely benefits that JEN ascribes to initiatives in both initiatives to check for duplication.

475. With respect to the application of the safety factor, JEN states that it '…*adopts the "As Far As Practicable" (AFAP) principle to safety which usually applies a disproportionality factor ranging between 1 and 6 that is commensurate with the safety risk, in this case being the operation of customer appliances beyond their technical design limits.*[108] JEN has not provided sufficient evidence to justify why a disproportionality factor of 6, which is generally applied in cases where at least one fatality may occur, should be applied in this case. To our

103 JEN – RIN – Support – Voltage and PQ Management Program – 20250131 – Confidential, page 19

104 Airport West (AW) and Coburg South (CS)

105 JEN – RIN – Support – Voltage and PQ Management Program – 20250131 – Confidential, page 31

106 JEN - EMCa initial proposal workshop – 20250328, slide 36

107 JEN – RIN – Support – Voltage and PQ Management Program – 20250131 – Confidential, page 28

108 JEN – RIN – Support – Voltage and PQ Management Program – 20250131 – Confidential, page 23

knowledge the likelihood of a fatality arising from over-voltage of an appliance is very rare (we are not aware of any such events), therefore at least a likelihood factor should also be applied if JEN considers application of a safety factor of any more than one is a valid approach.

476. Even with JEN's assumed benefit derivation methodology, the NPV for its preferred Option 4 is relatively low with a Present Value Ratio of 1.07. This means that any unfavourable variance will render the NPV negative, noting that JEN has assumed the benefits derived from investments in the next RCP will increase until 2033 and persist at the level through to 2047 for both benefit streams (i.e. the end of the 20-year study period). In our view, these are optimistic assumptions given the uncertainties even through to the end of the next RCP.

477. Further, we consider that, a disproportionality factor of one is appropriate, which obviates the need for a 'likelihood factor' and reduces the 'compliance' benefit and the NPVs, as shown in Table 4.14.

Table 4.14: NPV variation with no safety factor contribution - $m 2024

	Safety factor = 6			Safety factor = 1		
	Option 2	Option 3	Option 4	Option 2	Option 3	Option 4
Total cost	42.4	49.4	49.8	42.4	49.4	49.8
Present value cost*	19.7	31.6	31.4	19.7	31.6	31.4
Present value benefit	16.6	33.6	33.6	1.6	18.5	18.5
Net Present Value	**-3.0**	**2.0**	**2.2**	**-17.9**	**-21.4**	**-12.9**

Source: JEN – RIN – Support – Voltage and PQ Management Program – CBAM – 20250131 – Public, 'Summary'
** JEN excludes the cost of the reactive program from the PV cost 'because it is a recurrent expenditure response to customer complaints (Option 1 is a zero cost / zero benefits option)*

478. The strongly negative NPV suggests that JEN should instead focus on investments to *maintain voltage compliance* rather than improve compliance performance. In our view a variation on Option 2 is likely to represent the prudent approach:

- Implementing DVM at substations as required – based on the information available we consider this is likely to be at 15 – 17 substations through to 2031 (i.e. 15 rather than 24 in the next RCP as proposed by JEN), and
- Continuing with a 'reactive' response to voltage complaints which are likely to still arise, which because of the beneficial impact of the DVM program should reduce the overall PQ program cost to materially less than the recent historical expenditure of $8.3 million.

479. Prorating the cost per DVM installation, the DVM program cost for the next RCP should be reduced to between $11.5 million to $13.1 million and the reactive program reduced by one-third to $5.6 million).

Findings on proposed augex

480. Improving compliance based on JEN's economic analysis as presented is not justified. Removing the safety disproportionality factor results in a significantly negative NPV for Options 2-4.

481. Instead, we consider that JEN should follow a *maintain compliance* strategy and invest accordingly.

482. Adopting DVM is still a prudent initiative because it should proactively help maintain voltage compliance more cost efficiently than network augmentation. Customer complaints are likely to continue to arise but at a diminished level if the DVM roll-out is properly targeted and rolled-out. It is reasonable to assume that JEN will design its distribution networks for new subdivisions accounting for likely DER penetration and electrification.

4.5.3 Assessment of ICT support expenditure and non-ICT opex step change

483. Jemena also proposes $4.4m ICT expenditure to support this program, as shown in Table 4.15.

Table 4.15: Proposed ICT and opex step changes for Voltage and Power Quality program - $m, real 2026

	FY27	FY28	FY29	FY30	FY31	TOTAL
ICT Capex						
FN - VVC (Volt Var Control) rollout	0.1	-	-	-	-	**0.1**
ICT Opex step change						
CER - VVC rollout	0.7	0.7	0.6	0.6	0.6	**3.2**
Non-ICT Opex step change						
CER Integration - Voltage and PQ management	0.2	0.2	0.2	0.2	0.2	**1.1**
Total ICT	**1.1**	**0.9**	**0.8**	**0.8**	**0.8**	**4.4**

Source: EMCa, from Jemena capex model (Att05-10M), opex model (Att06-03M), relevant CBAM and Jemena response to IR009 Q28

484. Consistent with our findings in section 4.5.2 that Jemena's proposed capex is overstated, we consider that its proposed ICT opex step change is similarly overstated and would scale back consistent with the smaller augex program that we consider would be reasonable. As we note in that section, increased proactive opex (including ICT opex) is likely to be offset to an extent by a reduction in reactive network opex.

485. In its business case, Jemena describes the non-ICT opex step change as being '*…for additional human resource support*'. We consider that this is not a reasonable basis for an additional opex allowance.

4.6 Findings and implications

4.6.1 Summary of our findings

486. We consider that Jemena has defined a reasonable strategy to address needs arising from CER and electrification over the next period. However, we consider that not all initiatives that it has proposed are justified, and that some that are justified are overstated.

487. We summarise our findings on the three CER and electrification programs that Jemena defines as follows.

Data visibility and analytics expenditure is overstated

488. Jemena's proposed remaining capex and propex to complete its data visibility platform (SNAP) is justified. However, we consider that it has overstated the benefit and accordingly, not justified, the level of capex and additional opex expenditure that it proposes for associated 'network analytics' over the period, and has overstated a justified level of opex step change

Grid stability program is justified, but flexible services investment is overstated

489. Jemena's proposed grid stability program is justified, as is its proposed expenditure

490. Jemena's proposed level of expenditure for flexible services is not justified. We consider that its proposed flexible imports capex is not justified. We consider that a capex investment to provide flexible exports is justified, but that the level of expenditure that Jemena has proposed is overstated. We consider that its proposed need for incremental opex to deploy

flexible services, is reasonable, noting that this is to be a new service that will mitigate the need for additional augex.

A voltage and power quality program is justified but the proposed expenditure is significantly overstated

491. Jemena has significantly overstated the benefits of its proposed augex for a proactive voltage and power quality program, and consequently the level of the program that it has proposed is significantly overstated.

492. Jemena's proposed ICT for voltage and power quality is justified on the basis that we are supportive of Jemena progressively implementing its proposed VVC/DVM system in the next RCP.

4.6.2 Implications for proposed capex and opex step change allowances

Basis for alternative CER augex forecast

493. As we show in Table 4.1, Jemena has proposed $25.6m CER-related augex, in two programs. We find that:

- Jemena's proposed capex for distribution substation augmentation is justified, but that
- Jemena's proposed capex for VVC rollout is overstated.

494. On this basis, we consider that a reasonable capex allowance for Jemena's proposed CER-related augex (within our scope) would be 40% to 50% less than Jemena has proposed.

Basis for alternative ICT capex

495. As we show in Table 4.1, Jemena has proposed CER-related ICT capex of $38.8m.

496. Taking account of ICT projects that we consider are either not justified or for which we consider that the proposed expenditure is overstated, we consider that a reasonable alternative capex allowance for CER-related ICT would be 60% to 70% less than Jemena has proposed.

Basis for alternative opex allowance

497. We summarise our findings on adjustments to Jemena's proposed opex, in section 5.

5 ASSESSMENT OF PROPOSED ICT OPEX STEP CHANGES, PROPEX AND BASE YEAR ADJUSTMENTS

In this section we consider Jemena's proposed opex step changes and its proposed base year adjustments for IFRS and for project opex.

We consider that Jemena's proposed ICT opex step change and its proposed non-ICT CER-related opex step changes, are both overstated. Our findings on this flow from our project assessments in sections 3 and 4. Relating to these assessments, we also consider that Jemena's proposed Customer Communications non-ICT opex step change is not justified.

We consider that Jemena has adequately justified its proposed IFRS base year adjustment. However, we consider that the further base year adjustment that Jemena proposes based on its forecast for 'propex', is not justified.

To the extent that we consider that its forecasts are overstated, we propose alternative forecasts that we consider would reasonably meet the opex criteria.

5.1 Proposed ICT opex step changes

5.1.1 What Jemena proposes

498. With respect to the scope of expenditure assessed in this report, Jemena has proposed ICT opex step changes totalling $21.6m over the period, as shown in Table 5.1[109]

499. We reviewed opex step changes proposed for Jemena's proposed non-recurrent ICT projects in section 3 and proposed CER-related opex in section 4. To reconcile this to the opex step change amounts that Jemena presents, we present our summary assessments for these in the current section (in sections 5.1.2, 5.2.1 and 5.2.2 respectively).

500. For completeness, we present the following table which reconciles the components of Jemena's proposed ICT-related opex step changes into the categories referred to above.

501. Jemena did not provide a year-by-year tabular build-up of its proposed ICT opex step change, such as we show in this table. We have therefore created this information by extracting it from the Investment Brief CBA models that Jemena provided. We find in these models, however, that data is sometimes described as being 'nominal' and sometimes as 'real $2024'. However, in each case, Jemena appears to have treated it as real $2024 and we have assumed this in converting the information that it provided, to real $2026 in Table 5.1.

502. We also infer, from the fact that in many cases the amounts are numerically constant over the five years, that they may have been intended as $real rather than nominal, though this is not clear. Nevertheless, we have aggregated this information such that it reconciles (in total over the period) with the ICT opex step change of $21.6m in $2026 terms, in Jemena's opex model.

[109] As discussed in section 1.2, in the current report we review proposed expenditure for ICT (excluding cyber security) and for CER. Our ICT cyber security assessment is provided in a separate report.

Table 5.1: Jemena's proposed opex step changes for ICT projects - $m, real 2026[110]

Step change	2026	2027	2028	2029	2030	Total
ICT opex for non-recurrent capex projects						
Customer education - recurrent opex	0.0	0.2	0.2	0.2	0.2	**0.8**
Customer systems - recurrent opex	0.0	0.1	0.1	0.1	0.1	**0.4**
Dynamic Network planning with automation	0.0	0.1	0.1	0.1	0.1	**0.4**
FN - 3D Digital Twin	0.0	0.0	0.0	0.1	0.1	**0.2**
Network Operations Geospatial enhancements	0.0	0.1	0.1	0.0	0.1	**0.2**
Outage Preparedness and Response	0.0	0.2	0.2	0.2	0.2	**0.7**
Outage Taskforce - Phase 3 Digital Switching	0.0	0.0	0.0	0.3	0.2	**0.5**
Reform - Unlocking CER benefits - Flexible Trading arrangements	0.0	1.1	1.1	1.1	1.0	**4.2**
Subtotal	**0.0**	**1.7**	**1.7**	**2.0**	**1.9**	**7.3**
ICT opex projects						
Cloud capacity growth	0.5	0.5	0.5	0.5	0.5	**2.7**
Enterprise content management uplift	0.0	0.0	0.1	0.2	0.3	**0.6**
Data foundations and governance	0.0	0.1	0.1	0.1	0.1	**0.4**
Contract lifecycle management	0.2	0.2	0.1	0.1	0.1	**0.8**
Subtotal	**0.7**	**0.8**	**0.9**	**1.0**	**1.0**	**4.5**
Opex for Cyber projects						
Cyber total	**0.0**	**0.2**	**0.6**	**0.6**	**0.8**	**2.3**
ICT opex for CER projects						
CER Integration - Flexible Exports	0.0	0.0	1.1	1.4	0.5	**3.0**
FN - Strategic Network Analytics Platform (SNAP) - Data Hub	0.0	0.3	0.3	0.3	0.3	**1.3**
CER - VVC rollout	0.7	0.7	0.6	0.6	0.6	**3.2**
Subtotal	**0.7**	**0.9**	**2.1**	**2.3**	**1.4**	**7.5**
Total ICT opex step changes	**1.4**	**3.7**	**5.3**	**6.1**	**5.1**	**21.6**

Source: EMCa, derived from annual ongoing step change opex as presented in Jemena CBA Models for relevant projects, converted to $2026. [111]

5.1.2 Assessment

503. For the projects shown in Table 5.1, we have reported the findings of our assessments in the sections as follows:

- ICT opex step changes for non-recurrent capex projects, and ICT opex projects (other than for CER ICT projects) are assessed in section 3
- ICT opex step changes for CER are assessed in section 4

110 This table shows proposed opex step changes only where Jemena has proposed an amount. Jemena has not proposed an opex step change for the Emergency Backstop, End user computing, GIS lifecycle upgrade, MSI replacement or Reform/MITE projects.

111 The total proposed opex step change of $21.6m reconciles to Jemena's opex model and with Table 8 in its Opex Step change submission. Amounts for individual projects differ in some cases and we expect that this is due to rounding.

504. Opex step changes for ICT cyber security are assessed in a separate report, however for completeness we report the quantitative results of our findings here.

505. For these projects, we collate in Table 5.2 the adjustments to Jemena's proposed ICT opex step changes, from our assessments in these previous sections.

Table 5.2: Alternative forecast for opex step change - $m, real 2026

ICT opex for non-recurrent capex projects	2026	2027	2028	2029	2030	TOTAL
Proposed opex step change	**1.5**	**3.7**	**5.3**	**6.0**	**5.1**	**21.6**
less adjustments						
ICT projects (reviewed in section 3)						
Outage Taskforce - Phase 3 Digital Switching	0.0	0.0	0.0	-0.3	-0.2	**-0.5**
Network Operations Geospatial enhancements	0.0	-0.1	-0.1	0.0	-0.1	**-0.2**
Dynamic Network planning with automation	0.0	-0.1	-0.1	-0.1	-0.1	**-0.4**
Customer education - recurrent opex	0.0	-0.2	-0.2	-0.2	-0.2	**-0.8**
3D Digital twin	0.0	0.0	0.0	-0.1	-0.1	**-0.2**
Reform - FTA	0.0	-0.9	-0.8	-0.8	-0.7	**-3.2**
Enterprise content management uplift	0.0	0.0	-0.1	-0.2	-0.3	**-0.6**
Data foundations and governance	0.0	-0.1	-0.1	-0.1	-0.1	**-0.3**
Contract lifecycle management	-0.2	-0.2	-0.2	-0.1	-0.1	**-0.8**
Subtotal - ICT project adjustments	-0.2	-1.4	-1.5	-1.9	-1.9	**-7.0**
Cyber security expenditure (reviewed in separate report)						
Cyber security adjustments	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
CER ICT projects (reviewed in section 4)						
Flexible exports	0.0	0.0	0.0	0.0	0.0	**0.0**
SNAP - Data hub	0.0	-0.3	-0.3	-0.3	-0.3	**-1.3**
CER - VVC rollout	-0.5	-0.4	-0.4	-0.4	-0.4	**-2.1**
Subtotal: All ICT Adjustments	**-0.7**	**-2.1**	**-2.3**	**-2.7**	**-2.6**	**-10.4**
Total Alternative forecast for ICT incremental opex	**0.8**	**1.5**	**3.0**	**3.3**	**2.5**	**11.2**

Source: EMCa

5.2 Proposed non-ICT opex step changes linked to ICT initiatives

5.2.1 Customer systems and education opex step change

Jemena's proposal

506. Jemena has proposed an opex step change for an increase in 'customer communications'. In Jemena's CBA models and investment briefs, this is identified as being associated with two ICT projects:

- Customer Education,

- Customer Systems Lifecycle.

507. Jemena does not refer to these elements of its proposed opex step change as 'digital' and, in reconciling its proposed expenditure, we find that they are not included in its proposed ICT aggregate opex step change in its opex model. Rather these elements of its ICT Investment Briefs are presented as a separate opex step changes in its opex model.

508. From our review of Jemena's models, we find that these are combined in a proposed 'Customer systems and education' opex step change, as shown in Table 5.3.

Table 5.3: Jemena proposed opex for non-ICT step changes resulting from proposed ICT projects - $m, real 2026

Proposed step changes	2027	2028	2029	2030	2031	TOTAL
Customer systems and education	0.9	0.8	0.9	0.9	0.8	**4.3**

Source: Jemena Att6-03M (opex model), sheet Input|Step changes

Assessment and Findings

509. Consistent with our assessments in section 3, we consider that Jemena's proposed opex step change for Customer systems and education is not justified (see section 3.3.1).

5.2.2 CER program non-ICT step changes

Jemena's proposal

510. Jemena proposes CER-related non-ICT opex step changes of $3.0m aa shown in Table 5.4. (Jemena also proposes CER-related ICT opex of $7.5m, which we listed in Table 5.1).

Table 5.4: Jemena proposed non-ICT opex step changes for CER program - $m, real 2026

Step change	2027	2028	2029	2030	2031	TOTAL
CER Integration - Grid stability and flexible services	-	-	0.1	0.2	0.2	**0.5**
CER Integration - Voltage and PQ management	0.2	0.2	0.2	0.2	0.2	**1.1**
CER Integration - Data Visibility and analytics	-	0.4	0.4	0.4	0.4	**1.5**
TOTAL: CER (non-ICT)	**0.3**	**0.6**	**0.7**	**0.8**	**0.8**	**3.0**

Source: Jemena opex model

Assessment and findings

511. Consistent with our assessment in section 4.3, we consider that:

- Jemena's proposed opex step change of $1.5m for Data Visibility and Analytics is not justified
- Jemena's proposed opex step change of $1.1m for Voltage and PQ management is not justified
- Jemena's proposed opex of $0.5m for Grid Stability and Flexible Services is a reasonable estimate of non-ICT opex to provide flexible export services and would be additional to previous expenditure.

5.3 Proposed base year adjustments

5.3.1 IFRS adjustment

What Jemena proposes

Jemena proposes a base year IFRS adjustment of $1.8m

512. Jemena has proposed a base year adjustment of $1.8m to allow for the reallocation of SaaS implementation costs from capex to opex.

513. While changes to IFRS guidance on treatment of SaaS implementation cost date from April 2021, Jemena notes that *'…the AER provided guidance suggesting DNSPs to continue applying the old accounting treatment (i.e. capitalising SaaS implementation costs) for the current regulatory period and apply the new accounting treatment from the next regulatory period.*' Jemena also states that '*(w)e have adjusted our operating expenditure and capital expenditure accordingly.*'[112]

Assessment

An IFRS adjustment for the next period is consistent with AER's guidance note to not apply 2021 IFRS changes in ICT accounting guidance in the current period

514. Our interpretation of this is that the ICT opex that Jemena has reported for regulatory purposes has been suppressed (and its capex augmented) relative to its IFRS-based financial accounting for ICT expenditure in the current period. As Jemena's reporting of AER's guidance states, for the next regulatory period its regulatory reporting will be consistent with IFRS. Therefore, to the extent that Jemena's opex forecast relies on its base year regulatory opex, it is reasonable to add back the base year difference represented by the difference between IFRS accounting and its regulatory accounting under the accounting method that AER had asked it to apply in the current period.

Jemena provides insufficient information to verify its calculation but does provide a reasonable explanation of its basis and method

515. Jemena provides no insight into its calculation of the proposed amount. We observe that its proposed adjustment of $1.8m is approximately 10% of its 2024 recurrent opex.

516. In Table 5.5 we show information that Jemena provided on its historical ICT recurrent opex, including the estimate for ICT opex in 2025 that we assume is part of the 2025 total opex that Jemena has used for its base year value in its overall opex BST forecast. This shows that Jemena's ongoing opex jumped significantly after 2021 and has averaged 69% higher since that time.

Table 5.5: Jemena' historical recurrent ICT opex (including cyber) - $m, real 2026

	FY16	FY17	FY18	FY19	FY20	Average
Ongoing opex	13.8	14.9	8.0	11.5	11.5	***11.9***
		FY22	**FY23**	**FY24**	**FY25**	**Average**
Ongoing opex		19.6	20.1	17.3	23.5	***20.1***
					Increase	*69%*

Source: EMCa, from Jemena response to IR EMCa09 Q25

517. The increase led us to consider the possibility that AER's guidance on accounting in the current period may not have been followed; in other words, whether perhaps the IFRS guidance has already been applied in Jemena's historical expenditure since 2021, and

112 Jemena Operating Expenditure proposal, Attachment 06-01

which could account for the increased opex. However, given Jemena's clear statements on its ICT accounting, we tend to err towards taking Jemena's statements at face value and assuming that IFRS has not been applied for regulatory purposes in the current-period opex information provided. This would suggest that the increase likely results from the move to cloud-based services, rather than from current-period application of IFRS.

518. If we also accept that Jemena's assessment of the difference between IFRS accounting and its regulatory accounting is as claimed, then the proposed IFRS adjustment is valid. However, noting that Jemena intends to use updated (and therefore actual) values for its FY25 expenditure in its Revised Regulatory Proposal, we consider that its ICT accounting (and any adjustments it proposes based on this) should be further considered at that time.

Finding

Jemena's proposed IFRS adjustment is reasonable based on information it provides for the draft determination

519. We consider that an IFRS base year opex adjustment is reasonable. Based on Jemena's description as to how it has calculated it, the amount appears reasonable at this stage, but an appropriate adjustment consistent with any update to Jemena's base year actual opex would need to be confirmed at that time.

5.3.2 Base year propex adjustment[113]

What Jemena proposes

Jemena proposes to allow for its proposed level of propex, through a base year adjustment

520. In its opex model, Jemena proposes an adjustment that adds $0.81m to its base year opex, for 'project opex'.[114]

521. We sought an explanation from Jemena of its calculation of this this amount, as this was unclear from its regulatory submission documents. In its response, Jemena referred to information a range of regulatory submission documents, including 'propex' referred to in its Technology Plan, its Operating Expenditure proposal (attachment 06-01) and its Operating Expenditure Step Change proposal (Attachment 06-04).[115]

522. The key to Jemena's explanation is that, in its response to our information request, it states that it takes the following step:

> *Add a base year adjustment calculated as the annual average forecast project non-recurrent opex over 2026-31 net of the non-recurrent opex in the base year.*

523. To illustrate its calculation, Jemena provided the information shown in Figure 5.1.

Figure 5.1: Jemena's information on derivation of its base year adjustment[116]

Net step change	$ base	Timing	RY27	RY28	RY29	RY30	RY31	TOTAL
Non-recurrent opex	Real 2026	as at 30 Jun	$ 9,354,101	$ 10,553,792	$ 11,133,956	$ 5,323,913	$ 1,758,655	$ 38,124,417
Recurrent - step opex	Real 2026	as at 30 Jun	$ 1,453,209	$ 3,655,373	$ 5,313,288	$ 6,041,222	$ 5,142,448	$ 21,605,540
Base year - non recurrent opex	Real 2026	as at 30 Jun	$ (6,815,809)	$ (6,815,809)	$ (6,815,809)	$ (6,815,809)	$ (6,815,809)	$ (34,079,046)
Net step change opex	Real 2026	as at 30 Jun	$ 3,991,501	$ 7,393,355	$ 9,631,435	$ 4,549,326	$ 85,293	$ 25,650,910

Source: Jemena response to IR EMCa09, Q28

113 Jemena uses the terms Project Opex, Propex and Non-recurrent Opex interchangeably. We take them to have the same meaning.

114 JEN – Att 06-03M SCS opex model – 20250131, sheet *Input|Reported opex*, cell N64

115 Jemena response to IR EMCa09, Q28

116 We recognise that this table is a poor quality copy, however this is reproduced as provided by Jemena in its response

Assessment

Jemena information on this adjustment was sparse but information provided in response to our information requests assisted with understanding

524. We found the information in Figure 5.1 also to be unclear, because (a) it does not show the resulting adjustment of $0.81m that we sought to explain and (b) it conflates this adjustment with the recurrent opex step changes, summing to $21.6m, which is a clear line item in Jemena's opex model, and then produces a result labelled 'net step change opex' which is not a result that features in Jemena's opex model.

525. However, assisted by this information, we then referred back to Jemena's Operating Expenditure proposal, in particular table 6-3 in this proposal, which provides the necessary link between the sum of non-recurrent project opex and the $0.81m base year adjustment.

Jemena did not provide a calculation of its aggregate propex forecast, which we therefore needed to create from source information

526. We sought to verify Jemena's calculations, to ensure correct understanding of these as part of our assessment.

527. Jemena did not provide a summary table of year-by-year project opex, by project. It was therefore necessary for us to collate this information by summing the relevant information from each of the CBA models that Jemena had provided. We also needed to account for allocations to JEN of project opex for two projects (SAP migration and Network Analytics program) for which Jemena had not proposed either capex or an opex step change, and which were therefore not within the scope of our assessment.

528. As we show in Table 5.6, by combining the information above, we were able to verify the summation to $38.2m propex over the period, and the constituent project values. A comparison of the annual grand totals in this table with Jemena's information shown in Figure 5.1, shows different annual amounts, however we consider this a second-order matter in our assessment.

Table 5.6: Jemena's proposed project opex (propex) by project - $m, real 2026[117]

	2026	2027	2028	2029	2030	TOTAL
ICT propex for non-recurrent capex projects						
Customer education - recurrent opex	0.3	-	1.1	0.7	0.2	2.3
Customer systems - recurrent opex	0.2	-	0.3	0.3	0.1	0.9
Dynamic Network planning with automation	-	0.1	0.6	0.6	0.6	1.8
Network Operations Geospatial enhancements	0.3	0.2	-	-	-	0.4
Outage Preparedness and Response	0.6	0.2	-	-	-	0.8
Outage Taskforce - Phase 3 Digital Switching	0.5	1.4	0.8	1.1	-	3.9
Reform - MITE - IDX/IDAM/Portal Consolidation	0.2	0.2	-	-	-	0.4
Reform - Unlocking CER benefits - Flexible Trading arrangements	1.1	-	-	-	-	1.1
Subtotal ICT capex projects	**3.2**	**2.0**	**2.7**	**2.7**	**0.9**	**11.6**
Propex ICT opex projects						
Enterprise content management uplift	-	0.6	0.7	1.9	0.8	4.1
Data foundations and governance	1.0	0.4	0.2	0.1	0.1	1.9
Contract lifecycle management	0.3	0.6	-	-	-	0.8
Subtotal ICT opex projects	**1.3**	**1.6**	**0.9**	**2.0**	**1.0**	**6.8**
Propex for Cyber security projects						
Cyber security total	**0.9**	**1.7**	**1.3**	**1.5**	**0.6**	**6.0**
ICT opex for CER projects						
FN - Strategic Network Analytics Platform (SNAP) - Data Hub	0.4	-	-	-	-	0.4
Subtotal CER	**0.4**	**-**	**-**	**-**	**-**	**0.4**
TOTAL JEN ICT Propex	**5.7**	**5.4**	**4.9**	**6.2**	**2.4**	**24.7**
Enterprise projects (no capex or opex step change)						
SAP Migration	3.0	4.9	4.9	0.0	0.0	12.8
Network Analytics Program	0.1	0.1	0.1	0.1	0.1	0.7
TOTAL	**8.8**	**10.5**	**10.0**	**6.3**	**2.6**	**38.2**

Source: EMCa, from summation of information in relevant CBAMs and Jemena response to IR009 Q28

529. With the base year deduction of $6.8m that Jemena refers to, we can derive the proposed base year adjustment, and which is consistent with calculation shown in table 6-3 of its Operating Expenditure proposal. That is:

$38.21m / 5 = $7.64m

less $6.82m = $0.82m[118]

[117] The projects shown in this table are only those with non-zero propex

[118] The figure in Jemena's opex model is $0.8096 (to 4 significant figures). The difference will be due to rounding.

Jemena's information on its base year propex differs from the value it has used in calculating its proposed base year adjustment

530. We sought to verify the base year project opex amount of $6.8m that Jemena has deducted in calculating its proposed base year adjustment. Jemena states that this is the project opex in the base year used for its overall opex BST forecast, which is 2024/5.

531. In response to our information request, Jemena provided a historical and forecast series showing recurrent and non-recurrent capex and recurrent and non-recurrent opex. We were able to verify that the forecast non-recurrent opex in this information summed to $38.1m. However, the historical information Jemena provided for 2025 is $7.3m. We examined its information for the years either side of this in case there was some error in attributing the years, but as we show in Table 5.7 neither figure is $6.8m.

Table 5.7: Jemena 'base year' information on non-recurrent ICT opex - $m, real $2026

	FY24 (A)	FY25 (E)	FY26 (E)
Non-recurrent opex	2.1	7.3	7.4

Source: Jemena response to IR EMCa09, Q25

Alternative forecast for Project Opex (propex)

Our alternative forecast for propex is less than the amount that Jemena has used for its proposed base year adjustment

532. For the projects shown in Table 5.8 we have reported the findings of our assessments in the sections as follows:

- ICT propex for non-recurrent capex projects, and ICT propex-only amounts are assessed in section 3
- ICT propex for the one CER-related project (SNAP data hub) is assessed in section 4.

533. We assess Jemena's proposed cyber security related propex in a separate report.

534. For these projects, we collate in Table 5.8 the adjustments to Jemena's proposed Project Opex (propex or non-recurrent opex), from our assessments in these previous sections.

Table 5.8: Alternative forecast for Project Opex (propex) - $m, real 2024

ICT Project Opex	2026	2027	2028	2029	2030	TOTAL
Proposed Project Opex forecast	**8.8**	**10.5**	**10.0**	**6.3**	**2.6**	**38.2**
less adjustments						
ICT projects (reviewed in section 3)						
Customer education - recurrent opex	- 0.3	-	- 1.1	- 0.7	- 0.2	- 2.3
Reform - FTA	- 0.8	-	-	-	-	- 0.8
Reform - MITE - IDX/IDAM/Portal Consolidation	-0.2	-0.2	-	-	-	-0.4
Enterprise content management uplift	-	- 0.6	- 0.7	- 1.9	- 0.8	- 4.1
Data foundations and governance	- 1.0	- 0.4	- 0.2	- 0.1	- 0.1	- 1.9
Contract lifecycle management	- 0.3	- 0.6	-	-	-	- 0.8
Subtotal - ICT projects	**-2.6**	**-1.8**	**-1.9**	**-2.7**	**-1.2**	**-10.2**
Cyber security expenditure (reviewed in separate report)						
Cyber security	-	-	-	-	-	-
CER projects (reviewed in section 4)						
SNAP - Data hub	-	-	-	-	-	-
Subtotal - CER projects	-	-	-	-	-	-
Subtotal: All ICT Adjustments	**-2.6**	**-1.8**	**-1.9**	**-2.7**	**-1.2**	**-10.2**
Total Adjusted Project Opex forecast	**6.2**	**8.7**	**8.1**	**3.7**	**1.4**	**28.0**

Source: EMCa

Regulatory treatment of propex

Jemena appears to have applied a non-standard method in seeking to account for propex in its forecast

535. While Jemena's means of allowing for propex in its opex forecast through an average annual allowance is not an approach that we have previously encountered, we have not been asked to review the approach itself, which we understand AER will consider.

536. We make the observation that, if Jemena's regulatory treatment of propex was to be retained, and the alternative forecast above adopted, then the base year adjustment would be negative. This is because the proposed opex of $27.6m is less than the base year non-recurrent opex multiplied over five years, of $34.1m (as was shown in Figure 5.1).

537. We would expect this calculation to change, not only because Jemena's historical data provides a different amount for base year non-recurrent opex, but also because this will no doubt be updated. There are also alternative regulatory treatments available for including an allowance for propex, but if based on the alternative forecast, these will provide a lower allowance than Jemena has proposed.

Findings

Jemena's proposed base year adjustment for non-recurrent opex (propex) is overstated

538. We consider that the base year adjustment amount that Jemena has proposed is not reasonable as it is based on a forecast propex requirement that we consider to be overstated. Jemena's calculation also utilises a base year propex value that differs from actual expenditure information that Jemena provided to us.

539. Regardless of the regulatory approach adopted, we have constructed an alternative forecast for propex that could be used in this calculation.

5.4 Findings and implications

Jemena's proposed allowances for opex step changes and base year adjustments, are overstated

540. We consider that Jemena's proposed ICT opex step change totalling $21.6m over the period is overstated because (a) some projects that it relates to are not justified or are not reasonably considered as SCS and (b) for some proposed ICT step changes Jemena has not offset them by opex efficiencies that it claims will arise from the ICT investments. We consider that a reasonable alternative forecast would consider additional opex totalling $11.2m over the priod.

541. We consider that Jemena's proposed (non-ICT) step change for customer communications totalling $4.3m is not justified, because part of it arises from a customer education program that we consider is not justified and because it has not taken into account customer communications efficiencies that Jemena expects to arise from its customer systems enhancements.

542. We consider that Jemena's proposed base year adjustment for project opex (propex) is not justified, and that its forecast propex requirement of $38.2m is overstated because some projects are not justified (or in one case, should not be considered wholly as SCS). In considering a regulatory allowance to include propex, we consider that a reasonable alternative forecast for propex would total around $28.0m.

APPENDIX A – RELEVANT AER GUIDELINES FOR ASSESSMENT OF ICT EXPENDITURE

A.1 AER Guidelines for non-network ICT assessment

A.1.1 Assessment of non-network ICT capex

543. The scope of our assessment includes ex ante assessment of non-network ICT.

544. The AER's 2019 non-network ICT capex assessment approach guideline ('ICT assessment guideline') is relevant to Jemena's ICT expenditure proposal.

545. The AER requires DNSPs to allocate their non-recurrent ICT expenditures into the three subcategories for which it applies different assessment approaches, as described below:[119]

Maintaining existing services, functionalities, capability and/or market benefits

546. The AER states that:

> *Given that these expenditures are related to maintaining existing service, we note that it will not always be the case that the investment will have a positive NPV. As such, it is reasonable to choose the least negative NPV option from a range of feasible options including the counterfactual.' [120] We consider that such investments should be justified on the basis of a business case, where the business case considers possible multiple timing and scope options of the investments (to demonstrate prudency) and options for alternative systems and service providers (to demonstrate efficiency). The assessment methodology would also give regard to the past expenditure in this subcategory.[121]*

Complying with new / altered regulatory obligations / requirements

547. The AER states that:

> *It is likely that for such investments, the costs will exceed the measurable benefits and as such, the least cost option will likely be reasonably acceptable in regard to the NER expenditure criteria. Therefore the assessment of these expenditures is similar to subcategory one. Should there be options to achieve compliance through the use of external service provides [sic], the costs and merits of these should be compared."[122]*

New or expanded ICT capability, functions and services

548. The AER states that:

> *We consider that these expenditures require justification through demonstrating benefits exceed costs (positive NPV). We will make our assessment therefore through assessing the cost-benefit analysis. Where benefits exceed costs consideration should also be given to self-funding of the investment.*
>
> *For each subcategory of non-recurrent expenditure, we note that there may be cases where the highest NPV option is not chosen. In these cases, where either the chosen option achieves benefits that are qualitative or intangible, we would expect evidence to*

119 In cases where programs/projects cover multiple categories of expenditure, the distributor is expected to apportion costs from individual components across multiple categories to reflect the nature of the work undertaken.

120 The only exception will be where the business can demonstrate that any unquantified/intangible benefits of an option can support the decision to not choose the highest NPV option.

121 AER, Non-network ICT capex assessment approach, November 2019. Page 11.

122 AER, Non-network ICT capex assessment approach, November 2019. Page 11.

support the qualitative assumptions. We consider the evidence provided must be commensurate with the cost difference between the chosen and highest NPV option.

We also note that where non-recurrent projects either lead to or become recurrent expenditures in the future, this needs to be identified in the supporting business case and accounted for in any financial analysis undertaken to support the investment.[123]

A.1.2 Assessment of opex step changes

549. Our scope includes assessment of Jemena's proposed cyber security opex step changes. Section 2.2 of the AER's Expenditure Forecast Assessment Guideline for Electricity Distribution outlines its general approach for assessing opex step changes and which we have followed. In summary:

- The AER separately assesses the prudency and efficiency of forecast cost increases or decreases from new regulatory obligations and capex/opex trade-offs;
- For capex/opex trade-off step changes, the emphasis is on establishing whether it is prudent and efficient to substitute opex for capex; and
- For step changes arising from new regulatory obligations, the emphasis is on:
  - whether there is a binding change in regulatory obligations that affects the efficient forecast opex and when the change occurred, and
  - what options were considered and whether the selected option is an efficient option.[124]

123 AER, Non-network ICT capex assessment approach, November 2019. Page 12.

124 AER, Expenditure Forecast Assessment Guideline for Electricity Distribution. Page 11.