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ElectraNet Revenue Proposal 2023-28

REVIEW OF PROPOSED CYBER SECURITY AND CLOUD MIGRATION OPEX STEP CHANGE: PUBLIC VERSION

Report prepared for:

AUSTRALIAN ENERGY REGULATOR

August 2022

Preface

This report has been prepared to assist the Australian Energy Regulator (AER) with its determination of the appropriate revenues to be applied to the prescribed transmission services of ElectraNet from 1st July 2023 to 30th June 2028. 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. This report relies on information provided to EMCa by ElectraNet. 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 by AER staff prior to 1 July 2022 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 ElectraNet's regulatory submission or other documents due to rounding.

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Date saved
13/09/2022 12:01 PM

Version
Final v3

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ABBREVIATIONS

Term	Definition
AER	Australian Energy Regulator
AEMC	Australian Energy market Commission
AEMO	Australian Energy Market Operator
AESCSF	Australian Energy Sector Cyber Security Framework
BST	Base Step Trend
C2M2	Cyber Security Maturity Model
CBA	Cost Benefit Analysis
CPI	Consumer Price Index
capex	Capital Expenditure
DNSP	Distribution Network Service Provider
ENA	Electricity Networks Association
EMCa	Energy Market Consulting associates
IaaS	Infrastructure as a Service
ICT	Information and Communication Technology
IFRS	International Financial Reporting Standards
MIL	Maturity Indicator Level
NER	National Electricity Rules
NNS	Non-network solution / support
NPC	Net Present Cost
NPV	Net Present Value
NSW	New South Wales
opex	Operating expenditure
OT	Operational Technology
SLACI 2021	Security Legislation Amendment (Critical Infrastructure) Bill 2021
SLACIP 2022	Security Legislation Amendment (Critical Infrastructure Protection) Bill 2022
SoNS	Systems of National Significance
RCP	Regulatory Control Period
RP	Revenue Proposal
RIN	Regulatory Information Notice
SCADA	Supervisory Control and Data Acquisition
SME	Subject Matter Experts
SP	Security Profile

Term	Definition
Totex	Total expenditure
XaaS	Anything as a Service

1 INTRODUCTION

1.1 Purpose of this report

1. The purpose of this report is to provide the AER with an expert review of two aspects of the operational expenditure (opex) step change proposed to be included in ElectraNet's revenue proposal (RP) for the next revenue control period (RCP).

2. The assessment contained in this report is intended to assist the AER with its own analysis of the opex step change as an input to its Draft Decision on ElectraNet's revenue requirements.

1.2 Our scope and approach

1.2.1 Scope of requested work

3. The AER is seeking an expert review of the allowance for increased opex costs associated with migration of ElectraNet's information technology systems to the cloud and for new cyber security requirements arising from new critical infrastructure legislation.

4. We have been asked to:

- Provide advice to the AER on whether the forecasting approaches applied for ElectraNet's proposed 'migration to the cloud' and 'cyber security' step changes are likely to result in a prudent and efficient opex forecast, and:
  - if we consider that either or both proposed step changes are not efficient then we are to provide alternative estimates on the expected step change over the next 5 years (2023-28) for ElectraNet
  - in coming to our position, we are required to have regard to the AER's role under clause 6A.6.6 of the National Electricity Rules (NER) and the AER's forecast assessment guideline for transmission
  - we are required to inform AER staff where our assessment identifies issues which may impact other areas of the AER assessment; and
- Set out our advice and findings in a report which must:
  - be in sufficient detail to enable the AER to interpret and apply the NER
  - provide the reasons for the positions and provide any relevant workings to the AER.

5. The AER has provided us relevant material that ElectraNet has provided to the AER in support of its regulatory proposal.

1.2.2 Our approach

6. In undertaking our review, we:

- Completed a desktop review of the information provided to us by the AER, followed by preparing requests for information to ElectraNet;
- Undertook a review meeting with ElectraNet to ensure we correctly understood the methodology and assumptions being applied to the expenditure requirements and justification; and
- Documented our findings in a report.

7. We have not been requested to undertake a compliance assessment of all aspects of the NER and therefore we do not consider matters such as public consultation.

8. The limited nature of our review does not extend to advising directly on related aspects of ElectraNet's RP, such as Information and Communication Technology (ICT) capex, however as required, we have included additional observations in some areas that we trust may assist the AER with its own assessment.

1.2.3 Information sources

9. We have examined relevant documents provided by ElectraNet via the AER in support of the relevant aspects of the proposed opex step changes within our scope of work that the AER has designated for review. ElectraNet provided further information at our meeting and further documents in response to our information requests. These documents are referenced directly where they are relevant to our findings.

10. Except where specifically noted, this report was prepared based on information provided by AER staff prior to 1 July 2022 and any information provided subsequent to this time may not have been taken into account.

1.2.4 Presentation of expenditure amounts

11. Expenditure is presented in this report in $2023 real terms, unless stated otherwise.

1.3 Structure of this report

12. The following sections of our report are as follows:

- In section 2, we present observations on ElectraNet's total ICT expenditure, as context for our assessment of the two opex step change components;

- In section 3, we describe our assessment of ElectraNet's proposed cloud migration step change; and

- In section 4, we describe our assessment of ElectraNet's proposed cyber security step change.

13. In Appendix A, we list the benefits that ElectraNet provided for the Cloud Migration expenditures.

2 TOTAL ICT/OT EXPENDITURE

2.1 Introduction

14. We commenced our assessment with a review of aspects of the total ICT and OT expenditure that are relevant to the step changes within our scope. In doing so, we have sought to ensure that:

- The proposed step changes are additional to expenditure included within the Base Year (which is 2021); and

- There is not duplication between claimed step changes, including what ElectraNet refers to as the 'Technology XaaS Cloud IFRS' opex (which is not within the scope of our review).

2.2 ElectraNet's total ICT/OT expenditure

2.2.1 ICT/OT expenditure trends

15. The graph and tables below show ElectraNet's historical and forecast IT and OT total expenditure ('totex'). Totex is forecast to increase by \$52.4m over the next RCP (FY24 to FY28) compared to the current period (FY19 – FY23). This increase comprises:[1]

- \$9.0m for cloud migration step change (opex);

- \$25.9m for cyber security step change (opex); and

- \$17.5m increase for other components of IT and OT totex.

Figure 2.1: ElectraNet ICT total expenditure – historical and forecast (\$m 2023)
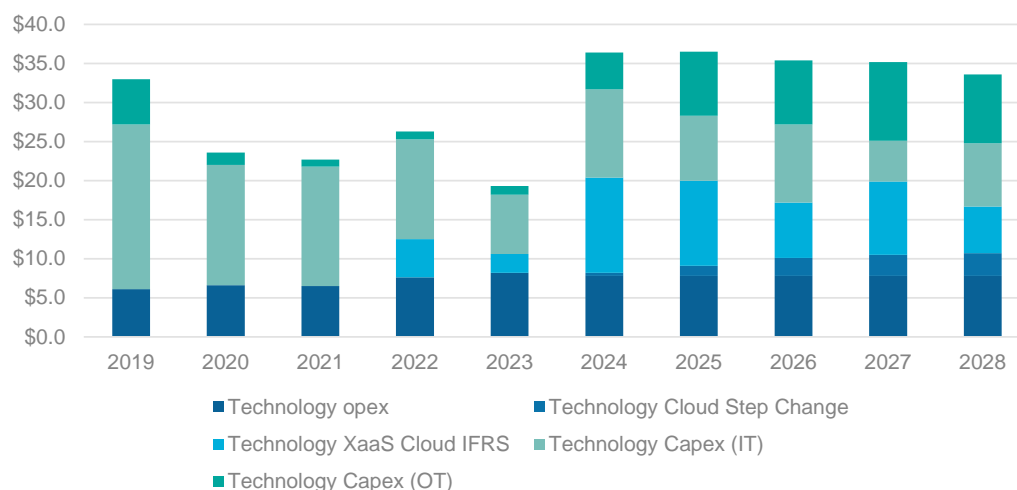
Source: ElectraNet response to IR014 - further response to AER information request #14 – public

2.2.2 ElectraNet's proposed ICT/OT expenditure

16. ElectraNet's current RCP and proposed next RCP ICT and OT expenditure is shown in Table 2.1 and Table 2.2.

17. While ElectraNet has provided the ICT opex forecast data shown in Table 2.2, the opex forecast in its RP is on a base-step-trend (BST) basis. Except for the proposed 'Technology

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[1] ENET008 - ElectraNet - Attachment 6 - Operating Expenditure - (public)_June end, Table 6-10, p23

cloud step change', ElectraNet does not distinguish the ICT/OT opex forecast within the aggregate opex forecast in these tables.

Table 2.1:   IT and OT totex – current RCP ($m, 2023)

	2019	2020	2021	2022	2023	Total
Technology opex	6.1	6.5	6.5	7.6	8.2	**35.0**
Technology XaaS cloud IFRS	-	-	-	4.9	2.4	**7.2**
Technology capex (ICT)	21.1	15.4	15.3	12.8	7.6	**72.1**
Technology capex (OT)	5.8	1.6	0.9	1.0	1.1	**10.4**
Total	**33.1**	**23.5**	**22.7**	**26.2**	**19.2**	**124.7**

Source: ElectraNet response to IR014 - further response to AER information request #14 - public

Table 2.2:   ElectraNet IT and OT totex – next RCP ($m, 2023)

	2024	2025	2026	2027	2028	Total
Technology opex	7.8	7.8	7.8	7.8	7.8	39.1
Technology cloud step change	0.4	1.3	2.3	2.7	2.9	9.6
Technology XaaS cloud IFRS	12.2	10.9	7.1	9.4	6.0	45.5
Technology capex (ICT)	11.3	8.3	10.0	5.2	8.1	42.8
Technology capex (OT)	4.7	8.2	8.2	10.1	8.8	40.1
Total	**36.4**	**36.5**	**35.4**	**35.2**	**33.6**	**177.1**

Source: ElectraNet response to IR014 - further response to AER information request #14 - public

2.3   Our consideration of the proposed step changes in the context of ElectraNet's total ICT/OT expenditure

The Technology XaaS cloud IFRS has the effect of being an opex step change

18.   The information ElectraNet provided in response to an Information Request shown in Figure 2.1, Table 2.1, and Table 2.2, shows that ElectraNet is proposing 'Technology XaaS cloud IFRS' expenditure[2] of $45.5m over the next RCP. This is in addition to the $9.6m for the 'Technology Cloud step change' (which we infer to be the Cloud migration step change, noting the quantum is different to the $9.0m in the RP) and the Cyber security step change.

19.   However, in ElectraNet's opex forecast model, the $45.5m of additional opex is identified as a step change.[3] In response to an Information Request, ElectraNet advised that:[4]

> *'The application of this requirement has been independently reviewed by KPMG and requires a portion of the previously proposed IT capex program to be reported as opex. This is not a cost increase. It is simply a direct transfer of capex costs to opex.'*

20.   Assessing the justification for this 'IFRS' step change is not directly within our scope.

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[2]   IFRS is International Financial Reporting Standards and of relevance required ElectraNet to determine whether cloud-based computing arrangements led to the customer receiving a software asset or a service over the term of the arrangement.

[3]   ENET022 - ElectraNet - Opex Forecast 2024-28 - 31 January 2022, InputIStep changes

[4]   ENET172 - ElectraNet - IR003 - response to AER information request #3 – Confidential, p10

ElectraNet's accounting for the cyber security step change expenditure is not transparent

21. ElectraNet's proposed $25.9m cyber security step change is not shown in the forecast in ElectraNet's IR014 response (per Table 2.2). Recognising that the step change is part of an overall BST opex forecast, whereas the forecast shown in Table 2.2 is by line item, it is difficult to reconcile this information.

22. For example, we infer that the $25.9m cyber security amount cannot be within the Technology opex line item, since this would imply that the remainder of Technology opex is only of the order of $2.5m per year. Equally, it would be inaccurate to classify the proposed cyber security opex as being part of the $45.5m 'IFRS' transfer, since the cyber security expenditure would not previously have been classified as capex. Moreover, ElectraNet has provided us with the project-based build-up for the IFRS expenditure, and on inspection of this list it does not appear to include the proposed cyber security activities.

23. This leaves us with the hypothesis that the proposed cyber security step change is not included in the ICT/OT expenditure forecast that ElectraNet provided as its IR014 response. On this basis, the increase in ICT/OT totex would appear to be a further $5.2m per year greater than is shown in Figure 2.1.

Technology XaaS cloud IFRS does not duplicate or overlap with the Cloud Migration or Cyber Security step changes

24. In response to an Information Request, ElectraNet advised that that the values attributed to the 'migration to the cloud' and 'IFRS' step changes do not include double counting:[5]

> 'The IFRS reallocation begins with the cost of projects that would have been treated as capital expenditure if not for the recent clarification of the way 'X as a service' (XaaS) projects are to be treated… these costs are now treated as operating expenditure in the Revenue Proposal, as required.
>
> In contrast, the 'migration to cloud' step change captures the future software subscription costs associated with hosting certain applications in the cloud. These costs would have been treated as operating expenditure even before the recent clarification so they are not reflected in the 'capex' values to which the IFRS reallocation is applied.'

25. ElectraNet also referred us to advice from KPMG that its allocation of what was formerly classified as capex to opex has been undertaken by applying the relevant IFRS accounting standards to its proposed technology forecasts. KPMG found that ElectraNet's classification method was '*closely aligned with the relevant accounting standards*,' and its application of the classifications was '*consistent with its own.*'[6]

26. Further, we inspected the list of projects in ElectraNet's response, which allowed us to identify those projects that are treated as part of the IFRS step change and those treated as part of the Cloud migration step change. Whilst there are some data discrepancies, these are relatively minor and did not prevent us identifying the projects allocated to each step change and confirming that there is no overlap between these two step change components. Similarly, neither of these two step change components appear to include the activities that comprise the cyber security program.

27. We are therefore satisfied that there is no duplication or overlap between the respective step changes.

Cyber security opex included in Base year appears to be appropriate

28. Information provided by ElectraNet did not reveal the cyber security opex it has incurred and expected to incur in the current RCP. In response to an Information Request, ElectraNet advised the expenditure profile shown in Table 2.3.

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5   ENET229 - ElectraNet - IR016 - response to AER information request 16 – public, pp 5,6

6   ENET031 - KPMG cloud computing memorandum (IFRS report) (public)_redacted

Table 2.3: ElectraNet's cyber security operating expenditure – current RCP ($m nominal)

	FY2019	FY2020	FY2021	FY2022*	FY2023*
Cyber security opex	n/a	0.94	1.37	1.83	2.62

Source: ENET247 - ElectraNet - IR019 - response to AER information request 19 – public; * forecast; n/a - not readily available prior to establishing a cyber security team in FY20

29. ElectraNet has separately advised that:

- It has established a five-person cyber security team; and

- ElectraNet is investing in completing activities and progressing others in FY22 and FY23 to improve its cyber security maturity.

30. We assume that (i) the salaries of the cyber security team underpin the FY21 to FY23 opex, and the increase in FY22 and FY23 is due to improvement activities. On the basis of the information provided, we consider that the Base Year is likely to adequately reflect ElectraNet's cyber security opex spend.

3 REVIEW OF ELECTRANET'S PROPOSED CLOUD MIGRATION STEP CHANGE

The proposed opex step change for cloud migration is essentially a capex to opex trade-off and we have assessed whether it is prudent and efficient to substitute capex for opex as proposed.

From information that ElectraNet provided, a significant portion of identified benefits are tangible opex savings to ElectraNet. These opex savings appear to more than offset the ongoing opex costs associated with the migration of the proposed infrastructure to a cloud-hosting service.

On this basis, we consider that no cloud migration opex step change is required.

3.1 ElectraNet's proposed forecast

31. ElectraNet proposes a $9.0m opex step change to migrate 75% of its IT infrastructure to the cloud (i.e. adopting Infrastructure as a Service, IaaS cloud hosting services). The proposed investment will refurbish computing and storage infrastructure and the virtualisation platform that is hosted on ElectraNet's physical infrastructure.

32. The proposed expenditure profile in the next RCP is shown in Table 3.1.

Table 3.1: ElectraNet's proposed cloud migration step change ($m, 2023)

	2023-24	2024-25	2025-26	2026-27	2027-28	Total
Cloud migration	1.8	1.8	1.8	1.8	1.8	9.0

Source: ENET008 - ElectraNet - Attachment 6 - Operating Expenditure - (public)_June end, Table 6-10

3.2 Our assessment

3.2.1 Basis for our assessment

33. ElectraNet did not provide any supporting information to Attachment 6 of its RP (Operating Expenditure) to support its proposed opex step change. We therefore had to request information from ElectraNet to help us to understand the basis for its proposed opex step change.

34. The key information provided in response to formal Information Requests included:

- A 'proposal' for the Data Centre Refresh project which is a core aspect of the proposed step change; and

- A cost-benefit model, which was superseded by an updated version with detail about the assumed benefits and which provided detailed cost and benefit estimates.

35. We have relied on the modelling undertaken by ElectraNet in demonstrating the costs of its proposed cloud migration expenditure, adjusting input assumptions to test the sensitivity of these models. We have not sought to undertake our own independent modelling of costs or to replicate the work undertaken by ElectraNet and its consultants

3.2.2 Drivers of the cloud migration program

There are three main drivers for the cloud migration program

36. ElectraNet describes the identified need as follows:

'We have identified a requirement to migrate part of our IT infrastructure to the Cloud in order to maintain and enhance operational capabilities moving forward.'[7]

'The current virtualisation environment was deployed in 2017/2018 and it will require refurbishment along with the physical standalone servers which is in line with the hardware refresh cycle and changes in virtualisation technology…The timing is therefore critical to maintain currency and capacity of one of ElectraNet's core pieces of IT Infrastructure.'[8]

37. ElectraNet further advises that moving to a cloud platform will:[9]

'…deliver improvements and avoid or minimise the future cost of using older approaches in this fast changing sector. It also reflects the reality that some services are simply not available on premise any longer.'

38. The core project within the cloud migration program is the Data Centre Refresh. ElectraNet notes that '*this infrastructure is used to host the majority of ElectraNet's corporate and operational server infrastructure.'[10]*

39. On this basis we consider that there are three drivers for the cloud migration program:

    1. Infrastructure approaching its end-of-technical life, including the Data Centre;

    2. On-premise solutions no longer being available for some infrastructure; and

    3. Opportunities to reduce operating costs that would otherwise be incurred.

3.2.3 ElectraNet's options and options analysis

ElectraNet considered three options

40. Other than 'do nothing', ElectraNet considered two actionable options: a Base Case (which is not the same as 'doing nothing') and its preferred cloud migration strategy, referred to as Option 1 (and alternatively Scenario 1), which are summarised as follows:[11]

    1. Do nothing;

    2. Base Case – all recurrent projects are assumed to proceed using:

        a. on-premise methodologies where available (i.e. replacing current infrastructure with on-premise infrastructure)

        b. cloud methodologies only where an on-premise solution is not feasible.

        c. non-recurrent projects which are dependent on core cloud-based capability do not proceed; and

    3. Option 1 - all projects, recurrent and non-recurrent, are assumed to proceed following the proposed cloud strategy.

41. We infer from the description of the Base Case that this is the equivalent to a traditional 'on-premise' BAU infrastructure methodology (i.e. owning and maintaining IT hardware), with

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7   ENET008 - ElectraNet - Attachment 6 - Operating Expenditure - (public)_June end, p22

8   ENET200 - ElectraNet - IR014 - EC.14103 - Data Centre Refresh 2024-2028 Proposal – confidential, p5

9   ENET172 - ElectraNet - IR003 - response to AER information request #3 – Confidential, p5

10 ENET200 - ElectraNet - IR014 - EC.14103 - Data Centre Refresh 2024-2028 Proposal – confidential, p5

11 ENET200 - ElectraNet - IR014 - EC.14103 - Data Centre Refresh 2024-2028 Proposal – confidential, p16

42. migration of hardware ownership to third party hosts only adopted where there is no longer a suitable on-premise solution.

42. Option 1 involves ElectraNet outsourcing ownership and maintenance of selected IT hardware (infrastructure) to third party suppliers.

43. ElectraNet's reasons for rejecting the 'Do nothing' option are that it would (i) increase maintenance costs, (ii) run the failure risks of running unsupported hardware, and (iii) increase the risk of unreliability and outages.[12] Despite this minimal assessment by ElectraNet, given the typical lifecycles of the critical infrastructure in question, doing nothing is unlikely to be a prudent approach.

44. We expected that ElectraNet would also have included consideration of a staged approach to cloud migration, for example by engaging vendors for extended support and/or taking a risk-based approach to staging replacement. However, based on the criticality of the core infrastructure identified in the Data Centre Refresh proposal, we conclude that this is unlikely to be a prudent approach.

22 candidate projects are considered in the options analysis

The 22 projects are listed in Appendix A. ElectraNet describes the multiple interdependencies between the projects as follows:[13]

- 12 projects can only be progressed with cloud solutions because vendors no longer, or soon will no longer, support on-premise solutions;

- If the core Data Centre moves to the cloud or to a hybrid cloud/on-premise solution, the Database Platform and IT Backup and Archiving System need to do the same;
    - together, the Data Centre, Database Platform, and the ICT Backup and Archiving System provide all infrastructure environments for ElectraNet;

- If the Data Centre is moved to cloud hosting, it enables the other 21 other projects to migrate to the cloud:
    - 13 projects are required to maintain critical information technology functionality and could potentially be implemented with a hybrid approach (on-premise/cloud hosting combination);
    - eight projects are non-recurrent and depend on the Data Centre being cloud-based to progress;

- Nine sub-projects depend upon the Cloud Data Repository project proceeding; and

- Two non-recurrent projects depend upon the Enterprise Resource Planning System Refresh project proceeding.

45. These interdependencies and the definition of the Base Case leads to exclusion of six non-recurrent projects which are dependent on cloud capability from consideration in the Base Case.

46. We assess ElectraNet's cost and benefits analysis for the Base Case and Option 1 (cloud migration) in the sub-sections that follow.

3.2.4 Estimated cloud migration program costs

The cloud migration cost for Option 1 is much higher than the Base Case despite the lower capex

47. ElectraNet provided a detailed breakdown of the costs for each project and for each year of the next RCP. The costs are summarised in Table 3.2.

48. Despite the reduction in capex for Option 1 compared to the Base Case, the total implementation cost is higher. With the ongoing opex step change of $8.5m ($2021)

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[12] ENET200 - ElectraNet - IR014 - EC.14103 - Data Centre Refresh 2024-2028 Proposal – confidential, p6

[13] ENET200 - ElectraNet - IR014 - EC.14103 - Data Centre Refresh 2024-2028 Proposal – confidential,

proposed, the total cost over five years of Option 1 is $16.6m (42%, $2021) higher than the Base Case, however the Base Case does not include six cloud-dependent non-recurrent projects.

49. We also note from ElectraNet's cost estimates that the implementation cost for the six Base Case on-premise projects is in each case significantly higher than the Option 1 cost for those projects.[14]

Table 3.2:   Summary of cloud migration program costs ($m, real 2021)

Cost element	Base Case	Option 1
Implementation costs - capex	29.3	22.2
Implementation costs opex	7.6	24.5
Sub-total – implementation costs	**36.9**	**46.7**
Ongoing cloud step change costs for recurrent projects	2.2	8.5
Ongoing cloud opex for non-recurrent projects	0.0	0.5
Sub-total – ongoing opex (5 years)	**2.2**	**9.0**
Total (5 years)	**39.1**	**55.7**

Source: ENET204 – ElectraNet – IR04 – IT cloud NPV analysis-expanded benefits - confidential

ElectraNet is not claiming an opex step change for non-recurrent projects

50. The ongoing opex of $0.5m ($2021) required for non-recurrent projects is not part of the cloud computing opex step change that ElectraNet has proposed.[15]

ElectraNet's cost forecasting methodology is satisfactory

51. In response to Information Requests, ElectraNet provided information which, collectively, gives us reasonable confidence in the cost forecasts for the cloud migration projects. The provided information included:

- A breakdown of the costs for all 22 projects and for on-premise and cloud alternatives (where applicable); and

- A description of the cost forecasting methodologies applied to various components of the project (e.g. database, operating systems, computing, storage, and infrastructure capex cost offsets), which were:[16]

  – developed by an external expert, and

  – *'reviewed and challenged internally and by an independent 'check estimate' process conducted by KPMG';*

52. The estimating accuracy is ±20%, which is reasonable at this stage of the project lifecycle.

53. ElectraNet also advised that its program was profiled, with projects starting at the required times during the forthcoming regulatory period from which the total costs were determined. The expenditure profile is shown in Table 3.3and differs somewhat from ElectraNet's 'annual average' cost shown in Table 3.1.

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14   ENET204 - ElectraNet - IR014 - IT cloud NPV analysis_expanded benefits – confidential, Detailed_ProjectCostings

15   ENET241 - ElectraNet - IR018 - response to AER information request 18 – public, question 3

16   ENET241 - ElectraNet - IR018 - response to AER information request 18 – public, question 3

Table 3.3: ElectraNet's cloud step change expenditure profile based on bottom-up costs ($m, 2021)

	2023-24	2024-25	2025-26	2026-27	2027-28	Total
Cloud step change	0.4	1.2	2.1	2.4	2.4	8.5

Source: ENET204 – ElectraNet – IR014 – IT cloud NPV analysis_expanded benefits - confidential

3.2.5 Claimed cloud migration benefits

ElectraNet has identified significant annual benefits from the candidate projects

54. ElectraNet summarises the sources of benefits arising from its proposed cloud migration program as follows:[17]

- *'Optimisation of data storage (pay for use in the cloud as opposed to paying for excess storage capacity required to cover peak usage periods per current on-premise requirement)*

- *Optimisation of compute [sic] loads (pay for usage, rather than having to resource physical infrastructure year round to cover peak usage)*

- *Ongoing cost of upgrades and patches covered as part of cloud services*

- *Enable use of cloud-based technologies and applications not supported on-premise.'*

55. Table 3.4 summarises the quantified benefits that ElectraNet identified.

Table 3.4: Summary of ElectraNet's benefit analysis ($m, real 2021)

	Base Case	Option 1
Benefits	**29.1**	**57.6**

Source: Source: ENET204 – ElectraNet – IR04 – IT cloud NPV analysis-expanded benefits - confidential

Approximately 60% of annual quantified benefits are tangible

56. ElectraNet's cost-benefit model included only hard-coded benefits. We asked for more detail about the benefits, which ElectraNet provided in an updated model. The table shown in Appendix A maps the costs and approximate average annual benefits from each project. ElectraNet's cost-benefit model shows that:[18]

- Total benefits over the five year study period are $57.6m ($2021);

- Annual benefits increase from $9.4m in FY24 to $14.6m in FY28 ($2021); and

- The average annual benefit is $11.5m ($2021) over the five year study period.[19]

57. Based on our simplified assessment from ElectraNet's cost benefit analysis, the average annual tangible (or cashable) benefits from the preferred cloud migration option are approximately 60% of the total quantified benefits, or $6.9m p.a. ($2021).

3.2.6 Cost-benefit analysis

The cloud migration project has a positive NPV

58. ElectraNet's cost-benefit analysis shows a NPV for the preferred Option 1 of $11.0m ($2021). We have reviewed the model and consider that it is functionally sound and that ElectraNet's determination of quantified benefits is a reasonable approximation.

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[17] ENET172 - ElectraNet - IR003 - response to AER information request #3 - Confidential

[18] ENET204 - ElectraNet - IR014 - IT cloud NPV analysis_expanded benefits – confidential, Summary

[19] This is a more accurate figure that our estimate of $10.5m ($2021) due to simplifying assumptions we made

59. ElectraNet also states that *'… the value is likely to continue on beyond the five year term analysed here.'[20]*

60. Based on the rationale underpinning the estimated benefits, we consider this statement to be reasonable, noting that capex costs will not be incurred from infrastructure transitioned to IaaS in the next RCP.

Sensitivity analysis indicates that the project NPV is likely to be positive

61. ElectraNet's model has the capacity for varying the discount rate, capital costs, and opex costs. ElectraNet has created three scenarios and a weighted outcome as shown in Table 3.5

62. The results indicate that the NPV for the preferred cloud migration option is likely to be positive in the next RCP, supporting the selection of Option 1.

Table 3.5: Sensitivity analysis results ($m, 2021)

Scenario	Description	NPV (5 years)
1	Central case assumptions for key parameters	11.0
2	Unfavourable combination of key parameters[21]	2.5
3	Favourable combination of key parameters	20.9
Weighted average	33% weighting to each scenario	11.5

Source: ENET204 - ElectraNet - IR014 - IT cloud NPV analysis_expanded benefits – confidential

3.2.7   Option selection

Preferred Option 1 with a positive NPV has been selected

63. ElectraNet's preferred cloud migration option has a positive NPV of $11.0m ($2021) with the annual benefits of approximately $11.5m ($2021) more than compensating for the higher total costs of Option 1 (i.e. compared to the Base Case).

64. We concur with ElectraNet's statement that:[22]

'In summary, the economic assessments that underpin the technology program demonstrate that stand-alone non-current [sic] projects deliver a positive net benefit on an individual basis, and that the enabling projects deliver a positive net benefit at program level when taken together with the benefits delivered by the projects they enable.'

Non-quantified benefits further support selection of the cloud migration program

65. ElectraNet has identified the following non-quantified benefits which, when taken into account with the positive NPV, further support the selection of Option 1:

- Improved customer experience – leveraging Cloud technologies to allow data to be queried, visualised, and interrogated, leading to improved service delivery and asset management;

- Enhanced Cyber security enablement – Cloud providers regularly upgrade their services following the latest industry standards and comply with relevant regulations to provide the required security; and

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[20]   ENET172 - ElectraNet - IR003 - response to AER information request #3 – Confidential, p7

[21]   High discount rate (8.95%), Central Inflation rate (2.5%), High capital costs (130%), High opex project costs (130%), Low opex step change opex (70%)

[22]   ENET229 - ElectraNet - IR016 - response to AER information request 16 – public, p5

- Adopt Scalability – Cloud technologies provide agility and flexibility to adapt to the demand of the energy transition.

66. These qualitative benefits are consistent with claimed and realised benefits by other NSPs, and which are supporting the industry trend to migrate to cloud-hosting.

Option 1 is aligned with ElectraNet's Technology Strategy

67. ElectraNet's Data Centre Refresh business case demonstrates adequately that the proposed investment supports its strategic objectives[23] and is aligned with its Technology Strategy.[24] A cloud migration strategy for IT is consistent with the direction of vendors' service roadmaps which are increasingly focussed on XaaS offerings.

68. We note that ElectraNet proposes to retain 100% of its Operational Technology and SCADA environments on-premise.

69. We also observe that:

- The strategic objectives and technology strategies appear to be consistent with responses to industry challenges that we have observed from other NSPs, and

- To a significant extent, a cloud migration strategy is largely driven by vendor roadmaps (i.e. which include withdrawing the option for on-premise solutions).

The benefits are sufficient for ElectraNet to self-fund the cloud migration opex step change

70. We consider that ElectraNet's proposed opex step change does not satisfy the opex criteria. In line with the AER's guideline,[25] unless ElectraNet has explicitly incorporated the identified financial benefits from the ICT capex-opex trade-offs into its expenditure forecast, we consider that ElectraNet can self-fund the ongoing opex costs because:

- The annual average tangible benefits of $6.9m ($2021) are significantly higher than the $1.7m ($2021) annual ongoing cloud migration costs; and

- As ElectraNet states, the benefits are likely to continue on beyond the five year study period.

3.3 Summary of findings and implications for ElectraNet's proposed cloud migration step change

3.3.1 Summary

71. ElectraNet has proposed migrating 75% of its IT infrastructure from an on-premise model to a cloud hosting model – referred to as IaaS. It will incur ongoing service fees (opex) but will no longer incur the capital and maintenance cost associated with owning its own IT infrastructure.

72. The program responds to three drivers:

- Infrastructure approaching its end-of-technical life, including the Data Centre;

- On-premise solutions no longer being available for some infrastructure; and

- Opportunities to reduce operating costs that would otherwise be incurred.

73. ElectraNet considered three options and provided a comparison between its preferred option, which comprises 22 projects each migrating infrastructure to the cloud, with an on-premise 'Base Case'. Of the 22 projects, 14 are classified by ElectraNet as recurrent, with

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23   ENET200 - ElectraNet - IR014 - EC.14103 - Data Centre Refresh 2024-2028 Proposal – confidential, section 2.1

24   ENET200 - ElectraNet - IR014 - EC.14103 - Data Centre Refresh 2024-2028 Proposal – confidential, section 2.2

25   AER, Non-network ICT capex assessment approach, 2019, section 3.4

the balance of eight projects being non-recurrent. All the projects involve an establishment cost (capex and/or opex) and 14 of the projects incur ongoing opex.

74. ElectraNet's NPV analysis indicates that the preferred cloud migration option is superior to the Base Case, with a positive NPV of $11.0m ($2021). It is likely to be positive compared to the Base Case even under a scenario in which most key input parameters are less favourable than in the 'central case' scenario.

3.3.2   Findings

75. We consider ElectraNet's derivations of estimated costs and benefits to be satisfactory. Annual benefits accrue from 12 of the 22 projects proposed with the other projects regarded as 'enablers.' ElectraNet's identified benefits would be much lower without the migration to the cloud enabled by the 'enabling' projects.

76. ElectraNet's estimated tangible benefits of approximately $6.9m p.a. ($2021) far exceed the annual ongoing opex increase of $1.7m p.a. ($2021).

77. We consider that ElectraNet has selected the appropriate option however, the extent of the benefits in our view supports self-funding of the projects.

3.3.3   Impact on forecast opex

78. We consider that the proposed cloud migration step change of $9.0m over the next RCP should not be included in ElectraNet's allowance because ElectraNet information shows this additional cost to be effectively self-funded through tangible benefits.

4 REVIEW OF PROPOSED CYBER SECURITY STEP CHANGE

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ElectraNet plans to achieve cyber security level 'SP-3', which is the highest level of cyber security maturity (or robustness) ▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮. We consider that this is a reasonable target given its starting position and cognisant of the likely deadlines to be established in legislative rule changes.

To achieve SP-3 ElectraNet plans to invest in external and internal capacity to build the necessary 282 practices/anti-patterns. The external resources are positioned to assist existing internal resources ▮▮▮▮▮▮▮▮▮▮▮▮▮▮ to implement 51 identified activities over the 11 AESCSF domains to achieve SP-3. ElectraNet also proposes to triple its current cyber security internal resources both to support the achievement of SP-3 and to sustain it.

We consider that the supporting information that ElectraNet provided does not support the full amount of the step change that ElectraNet has proposed. From assessment of ElectraNet's information, we have assessed a lower amount that represents an efficient cost and which will still allow ElectraNet to achieve its target of SP-3 maturity ▮▮▮▮▮▮▮▮▮▮▮.

4.1 ElectraNet's proposed forecast

79. ElectraNet proposes to invest in establishing the necessary practices and eliminating specific 'anti-patterns' according to AEMO's AESCSF to achieve Security Profile 3 (SP-3) maturity and sustain it.

80. ElectraNet proposes an ICT opex step change of $25.9m across the next RCP to achieve an AESCSF security profile of SP-3. The package is responding to new legislative and likely regulatory obligations to achieve a prescribed and measurable level of cyber security maturity within the next RCP. ElectraNet also proposes $11.9m cyber security capex in the next RCP.

81. The proposed opex expenditure profile in the next RCP is shown in Table 4.1.

Table 4.1: ElectraNet's proposed cyber security step change ($m, real 2023)

	2023-24	2024-25	2025-26	2026-27	2027-28	Total
Cyber security	5.2	5.2	5.2	5.2	5.2	25.9

Source: ENET008 - ElectraNet - Attachment 6 - Operating Expenditure - (public)_June end, Table 6-10

82. ElectraNet has submitted some information with its RP to support its investment, however much more information was requested via the AER to enable our assessment of the likely efficient step change amount.

4.2 Our assessment

4.2.1 New cyber security obligations

ElectraNet ███████████████████████████ and its proposed AESCSF maturity target of SP-3 is appropriate

83. The proposed cyber security expenditure (i.e. capex and opex) is to meet the increased security and resilience requirements in the Security Legislation Amendment (Critical Infrastructure) Bill 2021 (SLACI 2021) ████████████████████████████████████ which commenced on 2 December 2021. There is also a draft Security Legislation Amendment (Critical Infrastructure Protection) Bill 2022 (SLACIP 2022), which was passed by federal parliament on 31 March 2022. Draft sector-specific rules for SLACI 2021 and SLACIP 2022 were published on 31 March 2022.

84. ElectraNet have identified that AEMO has assessed electricity transmission infrastructure to be in the high end of the high criticality level, as shown in Figure 4.1. A target maturity of AESCSF[27] Security Profile 3 (SP-3)[28] is likely to be legislated for the highest criticality NEM participants.

Figure 4.1: AEMO electricity sector criticality bands by market role
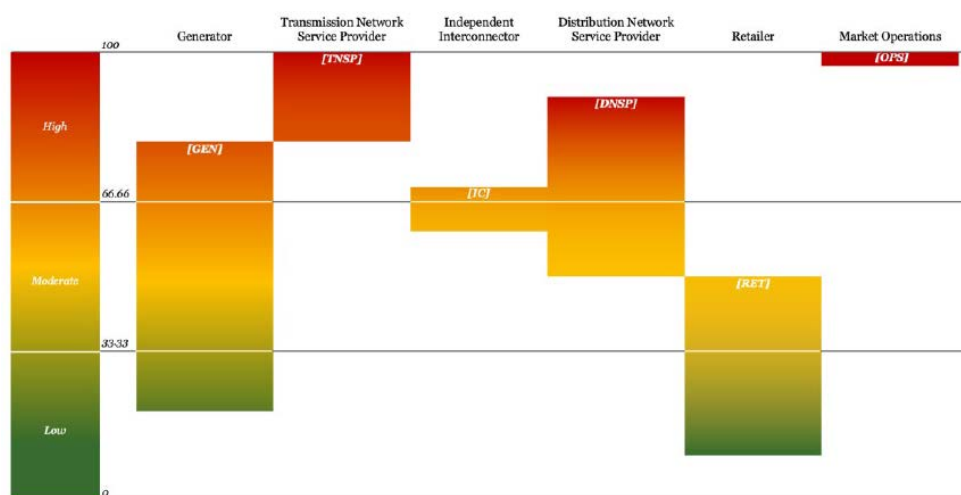
Source: ENet167 - ElectraNet - IR009 - response to AER information request #9 - Confidential

85. ElectraNet states that:[29]

> '… We have included a step change allowance based on our best estimates of the additional cost we will incur in reaching Security Profile 3 under that framework.'

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[26] ██

[27] Australian Electricity Sector Cyber Security Framework which is enable participants to assess, evaluate, prioritise, and improve their cyber security capability and maturity

[28] SP-3 is the highest cyber security maturity state in the AESCSF and requires achievement of 282 specified practices and anti-patterns

[29] ENET008 - ElectraNet - Attachment 6 - Operating Expenditure - (public)_June end, p21

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86. ElectraNet expects its obligations to arise 18 months after the Risk Management Program rules are finalised, which it assumes will be in 2024.

87. From our own understanding of the legislative requirements supplemented by ElectraNet's analysis, we consider that:

██ ███████████████████████████████████████

- It is appropriate for ElectraNet to achieve an AESCSF maturity indication level of SP-3 based on the combination of legislation, appropriate risk management, and the urgent request of the Australian Cyber Security Centre (ACSC) to adopt an enhanced cyber security posture.

4.2.2 ElectraNet's current cyber security maturity and gap analysis

No options were presented

88. ElectraNet did not provide a business case or other document that demonstrates that it considered various options for achieving the SP-3 target by its assumed deadline of the end of the next RCP (June 2028). Our understanding is that the Deloitte report is the result of deliberations between Deloitte and ElectraNet and with reference to other work.[31] However, seeing the options that ElectraNet considered and rejected would have assisted our assessment.

Achieving SP-3 requires SP-1 and SP-2 to be 100% achieved

89. To achieve SP-3, ElectraNet will need to achieve all of the 282 practices and anti-patterns defined in the AESCSF, as shown in Figure 4.2.

90. The Framework leverages the Maturity Indicator Levels (MILs) established within the C2M2.[32] An overview of how the MIL measure is used within Framework is detailed below.

91. There are four MILs, MIL-0 through MIL-3, that apply across 11 Domains in the AESCSF.[33] In addition to the MIL, the AESCSF has three alternate groupings of Practices/anti-patterns referred to as Security Profiles (SPs) as a measure of target state maturity. In the remainder of this document we refer to Security Profiles.

92. The AESCSF advises that '*SPs cannot be applied independently to each Domain. To achieve an SP, Participants must be performing all the Practices, and not exhibiting any of the Anti-Patterns within that SP, and any preceding SPs, across all Domains.*'[34]

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[32] Cybersecuity Capability Maturity Model, a US Department of Energy framework for the electricity sector

[33] MIL-0 through MIL-3 define the maturity progression in the Framework. Each Practice and Anti-Pattern has been assigned a MIL that indicates its maturity relative to other Practices.

[34] AEMO, AESCSF Overview – 2022 Program, p8

Figure 4.2: Target State Maturity and Security Profiles

Security Profile (SP)	Participant criticality	Practices and anti-patterns			Total required to achieve SP
		MIL-1	MIL-2	MIL-3	
Security Profile 1 (SP-1)	Low	57	27	4	88
Security Profile 2 (SP-2)	Medium	0	94	18	200 (112+88 from SP-1)
Security Profile 3 (SP-3)	High	0	0	82	282 (82+200 from SP-2)

Source: AEMO, AESCSF Overview – 2022 Program, p9

ElectraNet's current cyber security maturity level falls well short of the SP-3 target

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Figure 4.3: ElectraNet - Practices implemented and that require uplift against the AESCSF Security Profiles

Uplift Required
Implemented
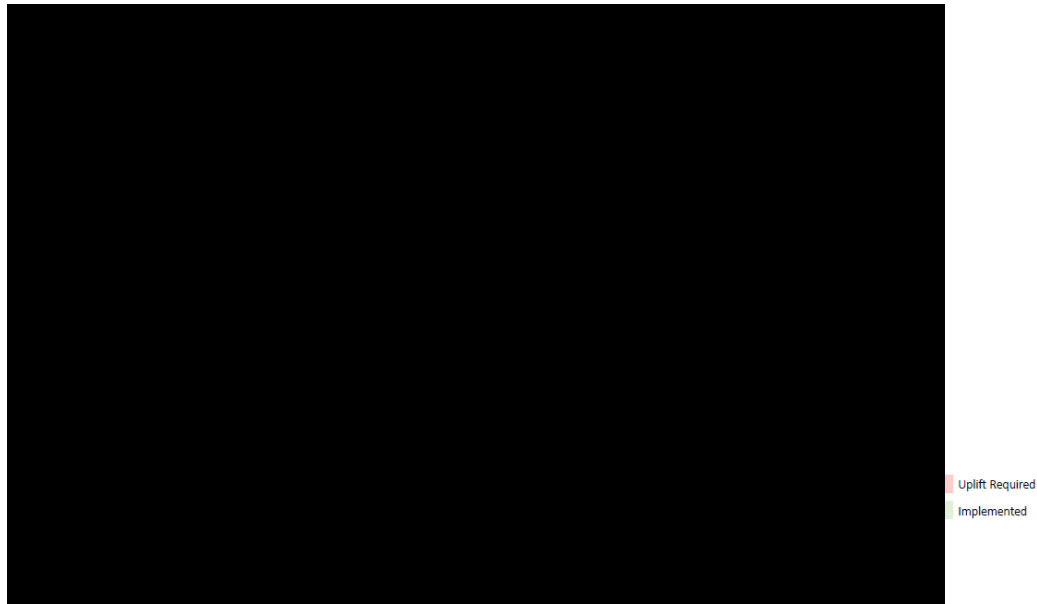
ElectraNet plans to accelerate its maturity, reducing the opex step change

95.   Given the elevated and increasing cyber threat landscape and ████████████████ , we asked ElectraNet whether it had considered accelerating its progress towards achieving

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35   Applying the AEMO AESCSF assessment tool

36   We infer this interpretation from wording of the report, including from the difference between the assessment at the prior date and the assessment in this table, and from the way which the 'data in the table is applied in determining the work required within the next RCP.

37   ████████████████████████████████████

more of the SP-1, SP-2 and SP-3 practices and anti-patterns in the current RCP. ElectraNet responded as follows:[38]

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96.   Thus ElectraNet intends to bring forward a total of $1.6m of expenditure and activities from the next RCP into the current RCP. Of this, $1.3m is designated as opex,[39] effectively reducing the proposed step change by that amount. We consider this to be a prudent measure.

4.2.3   ElectraNet's planned cyber security activities and costing

ElectraNet aims to achieve the Security Profile levels in the next RCP

97.   ██
██

ElectraNet's planned activities and cost estimate are for the 2024-2028 RCP

98.   ElectraNet advises that it commissioned Deloitte to undertake an *'…independent and comprehensive consideration of the specific activities required including people resources, process, and system uplift requirements to achieve the identified AESCSF MIL-3 and SP-3 cyber security capability gap closure.*[41]

99.   Importantly, Deloitte's analysis assumes that in the balance of the current RCP[42] ElectraNet will continue to make progress towards eventually achieving SP-3:[43]

     'Cost estimations have been defined for the FY24-28 regulatory period and have taken into consideration activities that have already been completed, are currently funded and in progress, or are planned to be completed before the start of the next reset period.'

ElectraNet's planned activities in the next RCP appear to be appropriate

100.   The Deloitte report provides a summary ██ ████████████████████ the estimated cost to achieve each SP level, the costs mapped to each domain, and the assumptions underpinning the costs. ElectraNet also provided a spreadsheet which provides more detail regarding the costs attributed to each activity.

101.   Deloitte's report describes 51 activities spread across the 11 AESCSF domains. There is more detail about the activities in the spreadsheet provided.

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ElectraNet's proposed opex step change has been derived from an assessment by 'SP' level and is part of a program that also includes significant capex

102. Deloitte's report includes a summary of the capex and opex estimated to achieve each SP level, and which is shown in Table 4.2. The opex component of this work is $24.4m ($2021).

Source: ENET168 - ElectraNet - IR009 - AESCSF Cyber Security Uplift Gap Analysis – Confidential; rounding errors may lead to total amounts differing slightly from the sum of the parts

103. We observe that, while ElectraNet and Deloitte's analysis has referred to a resource cost build-up, around 40% of the external labour resource and around one quarter of internal labour resource is assumed to be capitalised. EMCa has not been asked to assess the capex component of this work.

104. Table 4.3 is derived from ElectraNet's spreadsheet, which provides the opex requirement by year.

Table 4.3:   ElectraNet's forecast additional cyber security opex over the next RCP ($m real 2021)

SP						
▉	▉	▉	▉	▉	▉	▉
▉	▉	▉	▉	▉	▉	▉
▉	▉	▉	▉	▉	▉	▉
	6.3	6.3	3.6	3.6	4.5	24.4

Source: ENET168 - ElectraNet - IR009 - AESCSF Cyber Security Uplift Gap Analysis – Confidential; rounding errors may lead to total amounts differing slightly from the sum of the parts

105. In determining the cost estimates, Deloitte notes a number of important qualifications to the accuracy of the cost estimate and assumptions underpinning the modelling, including:[44]

- *'The estimated effort (FTE & Days) has been heavily weighted to external labour due to the constraints of current internal resourcing capacity and unknown level of resourcing in future years; and*

- *The estimated effort (FTE and Days) were [sic] calculated based on industry experience and has then had a 50% contingency applied. Final figures are those with the contingency applied.'*

106. While ElectraNet's proposed opex step change sums to the same amount as the annual cost build-up (when converted to $2023), we observe that ElectraNet has proposed a constant annual amount, whereas the built-up forecast varies year by year.[45]

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ElectraNet has double-counted internal and external resourcing in the first 2 years and has misapplied a 5-year costing calculation for the last 3 years

107. As identified above, ElectraNet has based its estimate on a heavy weighting to external resources, and this is evident from Table 4.2 which shows Deloitte allowed $5.4m for external labour as opex (and $3.7m for external labour as capex). Table 4.2 also includes $10.6m ($2021) or $11.3m ($2023) ongoing 'Delivery and Maintenance' opex for building ElectraNet's capability through the addition of eleven new internal roles, supplemented by two (part time) external roles.[46] The proposed new roles are identified in Table 4.4.

Table 4.4:   Existing and proposed cyber security resourcing

Roles	Role title	Location
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███████████	████████████	██████████
	██████████████	██████████

Source: EMCa analysis of ENET203 - CyberCX - IR014 - Cyber Security Target Operating Model and Roadmap v1.1 Final –
confidential (Figure 1), ENET168 - ElectraNet - IR009 - AESCSF Cyber Security Uplift Gap Analysis - Confidential

108. The total cost of the additional new internal roles and external services roles is based on all roles being on-board from day one of the next RCP and for the full five years.[47] The assumed salaries and consulting rates are reasonable.

109. This approach raises two concerns:

- It is inconsistent with Deloitte's rationale for front-loading the cost assessment with external resources, on the basis that ElectraNet will have insufficient internal capacity, and which it estimates to cost $5.4m ($2021); and

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46   ENET168 - ElectraNet - IR009 - AESCSF Cyber Security Uplift Gap Analysis – Confidential; the $0.4m difference is made up of other 'Ongoing delivery and Maintenance opex' for achieving SP-2 but which is not readily discernible from ElectraNet's spreadsheet

47   ENET168 - ElectraNet - IR009 - AESCSF Cyber Security Uplift Gap Analysis – Confidential - CPM domain, cyber security roles; the external roles are on a retainer, and the cost over the next RCP for each of the eleven FTE roles is based on the annual 'salary' times five years

– The new FTE resources are not assumed to start until year 3 (and which would be consistent with the assumption that ElectraNet will not have sufficient internal resources initially), and that

– ElectraNet has overestimated the annual cost, which from its cost build-up should be $2.1m ($2021) p.a. (i.e. $10.6m / 5 years) not $3.5m p.a. (i.e. $10.6m / 3).

110. The calculation provided amounts to double counting by assuming the internal resource cost from year 1, yet also including an allowance for external resources based on assuming that the internal resources are not present.

111. ElectraNet responded to our Information Requests in which we sought clarity regarding this apparent inconsistency, stating that:

'These additional roles are required to be onboarded at the start of the program. The rationale for this being the established skills shortage referred to in question 11 and likely time for new hires to achieve full productivity, which is particularly crucial to enabling accuracy regarding the time and effort assumptions that have been built into the gap analysis and expected costings.' [48]

'…these roles will not be onboarded during the current regulatory period, and therefore there is no inherent duplication in resource costing estimates...there is a need to transition by developing the internal capability required.' [49]

112. However, if this is what ElectraNet intends in practice then this should lead to a significant reduction in the external costs allowed for by Deloitte in its cost estimate in the first two-three years of the next RCP which it included to compensate for the assumed lack of internal capability/capacity.

113. In principle, the inconsistency can be corrected either by reducing the assumed external resources, or by correcting the costing for internal resources. Based on the availability of information, we have chosen the latter option. For the purpose of our assessment, we therefore assume (as Deloitte has, and ElectraNet also indicates in places) that external resourcing is required in the first two years. Correcting the annual cost for the new roles/external services to $2.1m p.a. ($2021) and applying it from year 3 (i.e. FY 2026, as ElectraNet has assumed) reduces the opex estimate by $4.3m ($2021).

The proposed additional resourcing overstates a reasonable requirement

114. We also consider that the additional 11 internal roles (proposed in Deloitte's report and in turn included in ElectraNet's opex step change) which leads to 15 full time people dedicated to cyber security to be excessive. Deloitte refers to a relevant report by another consultant, and which we assume Deloitte and ElectraNet referred to in its resourcing planning. [50] We sought this report from ElectraNet via an Information Request and from our review of it and the Deloitte report, our views are summarised as follows:

• For the proposed six new roles in the cyber security team, there is insufficient evidence to support such an increase, noting that CyberCX recommends three additional cyber security team roles only, not six; [51] and

• Whilst they may be required to help with achieving and maintaining SP-3, for the proposed five new roles in other parts of ElectraNet's business (i.e. outside of ICT) it is unreasonable to allocate 100% of their time to cyber security matters.

115. Overall, we find that:

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[48]   ENET199 - ElectraNet - IR014 - response to AER information request #14 - confidential

[49]   ENET241 - ElectraNet - IR018 - response to AER information request 18 – public, question 1

[50]   ENET203 - CyberCX - IR014 - Cyber Security Target Operating Model and Roadmap v1.1 Final - confidential

[51]   ENET203 - CyberCX - IR014 - Cyber Security Target Operating Model and Roadmap v1.1 Final – confidential, section 3.3: 1 x Cyber security governance analyst and 2 x cyber security analysts

- The proposed additional roles in the cyber security team should be limited to three FTEs (not six), given that ElectraNet already has a cyber security team of five SMEs;
- Only fractions of the full time equivalents for the five roles proposed for other parts of the business should be allocated to cyber security; and
- The external (part time) roles are reasonable inclusions.

116. On this basis we consider that a reasonable level of annual cost for the additional roles is 45% less than the annual cost that ElectraNet has proposed. That is, it would be reduced from an average of $2.1m p.a. ($2021) to $1.2m p.a. ($2021).

117. Given that these personnel are assumed in Deloitte's analysis to start from Year 3 (FY26) and combining this adjustment with correction of the 5-year build-up cost assumption described in the previous subsection, we consider that a reasonable allowance for the additional roles is reduced from $10.6m ($2021) to $3.5m (i.e. $1.16m x 3). This corresponds to a reduction of $7.1m ($2021) or $7.6m ($2023)[52] to the proposed opex step change.

Assumed FTE unit cost estimate is likely to be acceptable given the other simplifying assumptions

118. We were also concerned with the 50% contingency amount applied to the FTE rates discussed above.[53] In response to an Information Request asking ElectraNet to explain what options it has considered to improve the cost estimate accuracy, it responded as follows:

'The Deloitte report represents the best information available on the expected effort and cost required to improve our cyber security. While we acknowledge that there is a level of uncertainty over the required costs, equally we note that the hourly rates upon which the Deloitte report is based are not fully burdened hourly costs and therefore likely to considerably understate the cost to ElectraNet of some aspects of the work involved. On balance, the cost estimate inclusive of contingency is therefore a conservatively low estimate.

Further, the contingency has been applied to estimated effort based on known challenges in Australia's cyber security workforce which include barriers such as the availability of suitably qualified cyber security professionals with the sufficient experience. This is made more difficult by the limited availability of appropriately experienced and qualified cyber security professionals which will be further challenged by an increase across all critical infrastructure industries demanding access to this limited resource pool to achieve regulatory compliance in similar time-periods.'

119. We are satisfied that with this explanation and consider that the cost estimates for the roles are, overall, reasonable.

4.3 Summary of findings and implications for ElectraNet's proposed cyber security step change

4.3.1 Summary of findings

120. We are satisfied that it is prudent for ElectraNet to seek to achieve SP-3 in the next RCP based on external obligations and the appropriate link to the AESCSF. We are also satisfied

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[52] Using the conversion formula in ENET199 – ElectraNet – IR014 – response to AER information request #14 – confidential, p5

[53] We note that the 50% contingency has not been applied to the following roles: Change analyst, Cyber security governance analyst, Patch & vulnerability management analyst, Cyber security analyst, Supplier risk analyst

that the 51 activities proposed are appropriate for closing the gap between its current maturity level and SP-3.

121. Subsequent to the submission of its RP, ElectraNet has advised the AER that it will advance some of its activities from the next RCP to the current RCP, effectively reducing the opex requirement in the next RCP by $1.6m.

122. We consider that despite this reduction, the estimated opex requirement is overstated because of:

- The inconsistency in the assumptions and application of the assumptions in ElectraNet's cost estimate regarding internal and external resources; and

- The excessive additional roles proposed to be added in the next RCP.

4.3.2 Implications on forecast opex

123. We consider that a prudent and efficient step change is of the order of $17.0m rather than the $25.9m that ElectraNet has proposed. We have made this alternative assessment based upon:

- ElectraNet's pro-offered reduction of $1.3m (opex) achieved by advancing activity from the next RCP to the current RCP; and

- A reduction to ElectraNet's proposed number of new roles, which are scheduled to commence from FY2026 and which we estimate will reasonably require $3.7m (over three years) in the next RCP rather than the $11.3m (over five years) assumed by ElectraNet; that is, a reduction of $7.6m.

APPENDIX A – CLOUD MIGRATION QUANTIFIED BENEFITS

Figure A.1: Summary of ElectraNet's claimed cloud migration quantified benefits – preferred Option 1 ($m real, 2021)[54]

Project	Opex step change (5 year total)	Approx. annual benefit	ElectraNet's comments[55]
Enabling project			
EC.14103 - Data Centre Refresh 2024-2028	5.3	0.0	Cloud based solution Enabling project [End-of-life replacement]
Recurrent projects			
EC.15125 - IT Backup and Archiving Systems Refresh	0.4	0.0	Cloud based solution Project must be undertaken as critical to operating as a business, no benefits were identified, alternatives to undertaking project is to implement on premise solution
EC.15073 - Data Warehouse Platform Upgrade 2024-2028	0.6	0.6*	Cloud based solution Software out of support and increasing likelihood of software failure. If the software failed a new system would be required. [non-cash benefit]
EG.15252 - Virtual Application Capability Refresh	0.3	0.0	Cloud based solution
EC.14023 IT Systems Admin and Monitoring Tools Refresh	0.0	0.0	On premise with some upfront opex costs
EC.15145 - Local Area Network Equipment Refresh	0.0	0.0	On premise with some upfront opex costs

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[54]   The total from the referenced source for the opex step change at $9.0m which ElectraNet advises is in $real 2021 is the same as the total cloud migration step change of $9.0m proposed in Attachment 6, Table 6-10 which is in $real 2022-23

[55]   From tables in ENET200 and ENET204

Project	Opex step change (5 year total)	Approx. annual benefit	ElectraNet's comments[55]
EC.15266 - Windows Backoffice Management Systems Refresh	1.2	0.0	Cloud based solution
EC.15079 Database Platform Refresh	0.0	0.0	On premise with some upfront opex costs Project must be undertaken as critical to operating as a business, no benefits were identified, alternatives to undertaking project is to implement on premise solution
EC.15084 - Enterprise Resource Planning System Refresh	0.3	1.9	Cloud based solution If the refresh is not undertaken there is a risk employees would be unable to complete new tasks and update our Enterprise Resource Planning System, additional resources would be required to manage the difficulties in running a system that is not usable. [non-cash benefit]
EG.15459 - Project Portfolio Management Platform Refresh	0.1	1.0*	Cloud based solution Project delivery productivity savings will be realised by providing specialised software. [cashable benefit]
EG.12407 - Visualisation and Analytics Platform Establishment	0.3	0.0	Project enabled by 15052 with no ongoing cloud costs Software out of support and increasing likelihood of software failure. If the software failed a new system would be required.
EC.15051 Asset Cost and Risk Analysis	0.0	0.5*	Project enabled by 15052 with no ongoing cloud costs Software out of support and increasing likelihood of software failure. If the software failed a new system would be required. [non-cash benefit]
EC.15057 Asset Dynamic Ratings System	0.0	0.3*	Project enabled by 15052 with no ongoing cloud costs Implementing Dynamic Line Ratings results in a reduced need to upgrade or replace transmission lines due to more optimised use of existing assets. [non-cash benefit]
EC.15380 Asset Visualisation System	0.0	1.0*	Project enabled by 15052 with no ongoing cloud costs Software out of support and increasing likelihood of software failure. If the software failed ElectraNet would be unable to work efficiently and would need to increase resources whilst the network would be at increased risks due to the lack of access to data including drawings, manuals, etc

Project	Opex step change (5 year total)	Approx. annual benefit	ElectraNet's comments[55]
			[non-cash benefit]
Non-recurrent projects			
EC.14107 Archive and Optimise SAP Data	0.0	0.0	Enabled by project EC.15084 with no ongoing cloud costs Database savings – release 10% of database space ($15k p.a.) [cashable benefit]
EG.14109 - Business Process Rules and Automation Tools Implementation	0.0	0.3	Enabled by project EC.15084 with ongoing cloud costs Limitation of cost growth due to efficiency improvements (Finance, HR, asset management) [cashable benefit]
EG.15052 - Cloud Data Repository	0.0	0.0	Enabled by project EC.14103 with ongoing cloud costs It is enabled by the Data Centre Refresh project and enables 9 dependent or 'downstream' projects
EG.15061 - Asset Performance Analytics Systems	0.0	1.7	Enabled by project EC.15052 with no ongoing cloud costs Benefits from asset lifecycle management and improves the ability to detect and repair asset defects resulting in less asset failures. [cashable benefit]
EG.15379 - Asset Lifecycle Data Quality Management System	0.0	1.2	Enabled by project EC.15052 with ongoing cloud costs Decision making is improved resulting in reduced maintenance outages, savings from likely additional resourcing to manage data quality issues (given more and more data is being collected) and improvements to data security. [cashable benefit]
EC.15381 - Asset Work Scheduling Optimisation System	0.3	0.4	Enabled by project EC.15052 with ongoing cloud costs Outage planning can be completed in a shorter timeframe resulting in savings as better outages can be selected and maintenance can be completed efficiently. [cashable benefit]
EC.15384 Vegetation (LiDAR) Analytics	0.0	0.4	Enabled by project EC.15052 with no ongoing cloud costs Improved data quality ensures that there is less likelihood of compliance failures and saves future additional resources required to review the data manually. [$0.3m cashable benefit]

Project	Opex step change (5 year total)	Approx. annual benefit	ElectraNet's comments[55]
EG.15504 - Digital Asset Modelling (Digital Twin)	0.1	1.5	Enabled by project EC.15052 with ongoing cloud costs 50% of substation of trips (911 trips per year) could be avoided as a result of building a digital representation of the network. [cashable benefit]
Total	**9.0**	**10.5**	1. EMCa's 'approximate annual benefit' is an approximation because for the five projects that ElectraNet determined different annual benefits over the five year program, we have taken the average annual amount 2. Cashable benefits are approx. $6.4m p.a. or approx. 60% of total benefits

Source: ENET204 - ElectraNet - IR014 - IT cloud NPV analysis_expanded benefits – confidential; ENET234 – ElectraNet -IR016 -EC.15052 – Cloud Data Repository – Proposal – confidential, *5 year average; rounding errors lead to a different total than derived from the individual line items