

# Draft Decision

**Energex Electricity**

**Distribution Determination**

**2025 to 2030**

**(1 July 2025 to 30 June 2030)**

**Attachment 5**  
**Capital Expenditure**

**September 2024**

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## Contents

<b>5</b>	<b>Capital expenditure</b> .....	<b>1</b>
5.1	Draft decision.....	3
5.2	Energex’s proposal .....	3
5.3	Reasons for draft decision .....	5
<b>A</b>	<b>Reasons for decision on key capex categories</b> .....	<b>13</b>
A.1	Augmentation Expenditure (augex).....	13
A.2	Connections.....	21
A.3	ICT .....	25
A.4	Resilience .....	29
A.5	CER.....	33
A.6	Fleet .....	35
A.7	Property .....	37
A.8	Capitalised overheads .....	39
	<b>Shortened forms</b> .....	<b>41</b>

## 5 Capital expenditure

Capital expenditure (capex) refers to the money required to build, maintain or improve the physical assets needed to provide standard control services (SCS).<sup>1</sup> Generally, these assets have long lives, and a distributor will recover capex from customers over several regulatory control periods. A distributor’s capex forecast contributes to the return of and return on capital building blocks that form part of its total revenue requirement.

Under the regulatory framework, a distributor must include a total forecast capex that it considers is required to meet or manage expected demand, comply with all applicable regulatory obligations, to maintain the safety, reliability, quality, and security of its network and contribute to achieving targets for reducing Australia’s greenhouse gas emissions (the capex objectives).<sup>2</sup>

We must decide whether or not we are satisfied that this forecast reasonably reflects prudent and efficient costs and a realistic expectation of future demand, cost inputs, and other relevant inputs (the capex criteria).<sup>3</sup> We must make our decision in a manner that will, or is likely to, deliver efficient outcomes in terms of the price, quality, safety, reliability and security of supply, and contribute to achieving targets for reducing Australia’s greenhouse gas emissions, for the benefit of consumers in the long term (as required under the National Electricity Objective (NEO)).<sup>4</sup>

The *AER’s capital expenditure assessment outline* explains our and distributors’ obligations regarding capex under the National Electricity Law and Rules (NEL and NER) in more detail.<sup>5</sup> It also describes the techniques we use to assess a distributor’s capex proposal against the capex criteria and objectives. Where relevant we also assess capex associated with emissions reduction proposals taking into account our Guidance on amended *National Electricity Objectives*.<sup>6</sup>

### Total capex framework

We analyse and assess capex drivers, programs, and projects to inform our view on a total capex forecast. However, we do not determine forecasts for individual capex drivers or determine which programs or projects a distributor should or should not undertake. This is consistent with our ex-ante incentive-based regulatory framework.

Once the ex-ante capex forecast is established, there is an incentive for distributors to provide services at the lowest possible cost, because the actual costs of providing services will determine their returns in the short term. If distributors reduce their costs, the savings are shared with consumers in future regulatory control periods. This incentive-based framework

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<sup>1</sup> These are services that form the basic charge for use of the distribution system.

<sup>2</sup> NER, cl. 6.5.7(a).

<sup>3</sup> NER, cl. 6.5.7(c).

<sup>4</sup> NEL, ss. 7, 16(1)(a).

<sup>5</sup> AER, *Capex assessment outline for electricity distribution determinations*, February 2020.

<sup>6</sup> AER, *Guidance on amended National Electricity Objectives*, September 2023.

provides distributors with the flexibility to prioritise their capex program given their circumstances and due to changes in information and technology.

Distributors may need to undertake programs or projects that they did not anticipate during the revenue determination. Distributors also may not need to complete some of the programs or projects proposed if circumstances change, these are decisions for the distributor to make. We consider a prudent and efficient distributor would consider the changing environment throughout the regulatory control period and make decisions accordingly.

Importantly, our decision on total capex does not limit a distributor's actual spending. We set the forecast at a level where the distributor has a reasonable opportunity to recover its efficient costs.

### Assessment approach

We provide guidance on our assessment approach in several documents, including the following which are of relevance to this decision:

- AER's Expenditure Forecast Assessment Guidelines<sup>7</sup>
- *Regulatory Investment Test for Distribution and Transmission (RIT-D and RIT-T) Guidelines*<sup>8</sup>
- AER's *Asset Replacement Industry Note*<sup>9</sup>
- *AER's Information and Communication Technologies (ICT) Guidance Note*.<sup>10</sup>

We also had regard to the guiding principles in the AER's *Better Resets Handbook – Towards consumer centric proposals* which encourages networks to develop high quality, well-justified proposals that genuinely reflect consumers' preferences.<sup>11</sup>

Our draft decision has been based on the information before us at this time, which includes:

- the distributor's regulatory proposal and accompanying documents and models
- the distributor's responses to our information requests
- stakeholder comments in response to our Issues Paper
- technical review and advice from our consultant's reports. We engaged EMCa in March 2024 to assist us in reviewing certain aspects of Ergon Energy and Energex's capex proposals; these being Ergon Energy's overspend in repex and forecast repex, aspects of Ergon Energy and Energex's forecast augex, Ergon Energy and Energex's forecast for cyber security. EMCa's report is released with our draft decision.

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<sup>7</sup> AER, *Expenditure Forecast Assessment Guideline for Distribution*, August 2022. The legal requirements of the AER under the NEL and the NER in assessing capex are outlined in section 2.1.

<sup>8</sup> AER, *RIT-T and RIT-D application guidelines (minor amendments) 2017*, September 2017.

<sup>9</sup> AER, *Industry practice application note for asset replacement planning*, January 2019.

<sup>10</sup> AER, *AER publishes guidance on non-network ICT capital expenditure assessment approach*, November 2019.

<sup>11</sup> AER, *Better Resets Handbook – Towards consumer-centric network proposals*, December 2021.

## 5.1 Draft decision

Our draft decision is to not accept Energex’s proposed total forecast capex of \$3,341.1 million (\$2024–25) for the 2025–30 period because we are not satisfied that it reasonably reflects the capex criteria (in particular, we are not satisfied that it reasonably reflects the prudent and efficient costs to meet the capex objectives).

Our substitute forecast is \$2,801.0 million which is 16.2% below Energex’s forecast. We consider this forecast will provide for a prudent and efficient service provider in Energex’s circumstances to meet the capex objectives.

We encourage Energex to respond to the issues we have raised in our draft decision and welcome further supporting information in its revised regulatory proposal.

Table 5.1 outlines our substitute estimate of forecast capex and compares this to Energex’s proposed forecast capex.

**Table 5.1 AER’s draft decision on Energex’s total net capex forecast for 2025–30 (\$ million, \$2024–25)**

	2025–26	2026–27	2027–28	2028–29	2029–30	Total
Energex’s proposal <sup>a</sup>	678.8	701.4	657.8	650.9	652.2	3341.1
AER’s draft decision	558.4	583.6	561.4	562.0	535.6	2801.0
<b>Difference (\$)</b>	<b>-120.4</b>	<b>-117.8</b>	<b>-96.4</b>	<b>-88.9</b>	<b>-116.6</b>	<b>-540.1</b>
<b>Difference (%)</b>	<b>-17.7%</b>	<b>-16.8%</b>	<b>-14.7%</b>	<b>-13.7%</b>	<b>-17.9%</b>	<b>-16.2%</b>

Source: Energex and AER analysis. Numbers may not sum due to rounding.

Note: (a) Energex’s proposal differs from its proposal documents as it submitted an updated capex model on 28 June 2024. It originally proposed net capex of \$3,408.3.

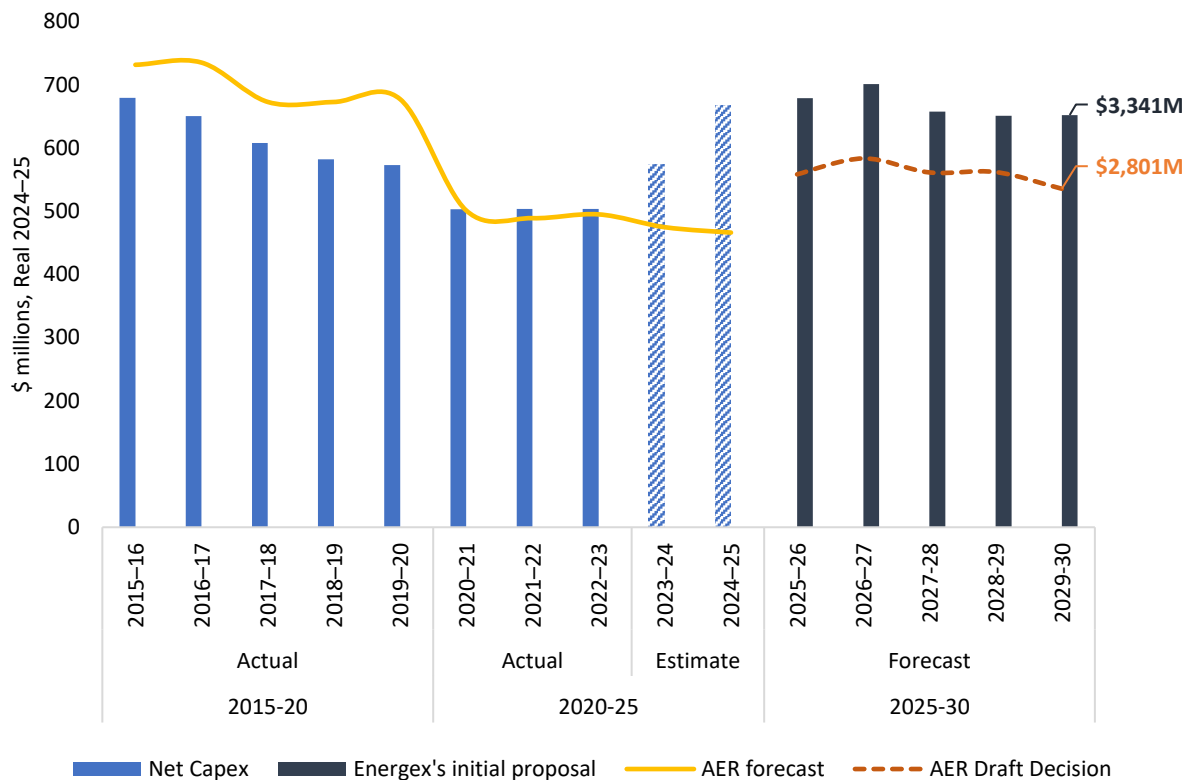
## 5.2 Energex’s proposal

Energex’s forecast includes \$3,341.1 million (\$2024–25) capex over the 2025–30 period. This is \$67.2 million lower than its initial proposal as Energex submitted an updated capex model on 28 June 2024 with some amendments to its forecast.<sup>12</sup>

Figure 5.1 outlines Energex’s historical capex trend, its proposed forecast for the 2025–30 period, and our draft decision. Consistent with our usual practice, the chart presents a time-series of Energex’s net capex.

<sup>12</sup> Energex, *Amendments to Energex’s 2025–30 Regulatory proposal SCS Capex model*, June 2024.

**Figure 5.1 Energex’s historical and forecast capex (\$ million, \$2024–25)**



Source: Energex and AER analysis.

Note: Capex is net of asset disposals and capital contributions.

As can be seen in Figure 5.1, Energex had a steady decrease in actual capex until 2022–23. Energex estimated a higher level of capex in the last two estimate years of the 2020–25 period relative to the first three years of the 2020–25 period. Energex forecasts this higher level of capex to continue in the 2025–30 period.

Table 5.2 provides a breakdown of Energex’s capex proposal. In the forecast period, the largest three contributors of Energex’s total capex forecast are repex, augex and capitalised overheads, amounting to 68.2% of the total capex. The main drivers of Energex’s total capex forecast are to replace or refurbish ageing assets, maintain reliability and respond to the growing network demand.

Energex’s largest forecast capex category, repex, which contributes to 27.3% of its total capex, which is 7.1% higher than the actual current and estimated repex in the 2020–25 period. This is driven by Energex bringing forward its Olympic-related investments.

Energex forecasts a 61.9% increase in augex (compared to the actual and estimated repex in the 2020–25 period). This is largely driven by increased augex to meet Energex’s demand related regulatory obligations to comply with its Safety Net Targets.

As capitalised overheads is related to the level of direct network capex, Energex’s forecast 27.1% increase in capitalised overheads (compared to the actual and estimated expenditure in the 2020–25 period) is driven by forecast increases in capex such as repex and augex.

Energex also forecasts a 39% reduction (compared to the actual and estimated expenditure in the 2020–25 period) forecast for information communication and technology (ICT).

Energex undertook a major ICT transformation in the 2020–25 period which increased its capex on non-recurrent ICT.

Similar to the other distribution businesses, Energex has proposed investment in new and emerging areas of capex; notably, in consumer energy resources (CER), climate resilience and cyber security.

**Table 5.2 Energex’s capex category forecast compared with actual/estimated capex in 2020–25 (\$ million, \$2024–25)**

Capex category	Energex’s 2020–25 capex	Energex’s 2025–30 forecast <sup>a</sup>	Change from 2020–25 (%)	Contribution to increase in net capex	Proportion of total capex (%)
Repex	852.9	913.2	7.1%	10.2%	27.3%
Resilience	N/A	50.0	N/A	N/A	1.5%
Augex	326.7	528.9	61.9%	34.3%	15.8%
Connections	291.2	321.0	10.2%	5.1%	9.6%
Fleet	135.9	198.5	46.1%	10.6%	5.9%
Property	116.2	151.9	30.7%	6.1%	4.5%
Cyber security	N/A	48.1	N/A	N/A	1.4%
ICT	396.8	242.1	-39.0%	-26.3%	7.2%
CER integration	N/A	54.1	N/A	N/A	1.6%
Other non-network	19.1	25.2	32.2%	1.0%	0.8%
Capitalised overheads	659.4	838.1	27.1%	30.4%	25.1%
<b>Total capex (excluding capcons)</b>	<b>2798.2</b>	<b>3371.2</b>	<b>20.5%</b>		
less asset disposals	-45.8	-30.1	-34.3%		
<b>Net capex</b>	<b>2752.4</b>	<b>3341.1</b>	<b>21.4%</b>		

Source: Energex and AER analysis. Numbers may not sum due to rounding.

Note: (a) Energex’s proposal differs from its proposal documents as it submitted an updated capex model on 28 June 2024. It originally proposed net capex of \$3,408.3.

### 5.3 Reasons for draft decision

We reviewed Energex’s capex drivers, programs and projects to inform our view on a total capex forecast that reasonably reflects the capex criteria. We conducted top-down analysis such as examining trends and forecast costs compared with historical capex, and inter-relationships between cost categories. To complement this, we conducted a bottom-up analysis of Energex’s major programs and projects.

Our capex assessment focused primarily on the material capex categories that either represented a significant uplift in expenditure, had stakeholder interest, or are new and evolving areas such as CER and resilience. Capex that was relatively small and forecast using established modelling approaches and inputs in line with our expectations, meant that



we did not need to undertake a more detailed analysis of the individual programs and projects. Our draft decision is reflective of this approach.

Further, in considering the scope of our review we had regard to how Energex has performed against the Better Resets Handbook expectations for capex.<sup>13</sup> Our assessment against each expectation is set out in Table 5.3. As can be seen, Energex did not satisfy any of the Better Resets Handbook expectations for capex. We have therefore undertaken a close bottom-up review in most capex categories.

**Table 5.3 Energex’s performance against the capex expectations**

Capex expectations	AER Position
1. Top-down testing of the total capex forecast and at the category level	<p>Energex has not satisfied this expectation because:</p> <ul style="list-style-type: none"> <li>• Energex’s total capex forecast is 21.4% above 2020–25 period spend.</li> <li>• While there is not a major step up in repex relative to current period spend, repex is the largest recurrent expenditure.</li> <li>• There are step ups in most other capex categories such as augex, fleet and property.</li> </ul>
2. Evidence of prudent and efficient decision-making on key projects and programs	<p>Energex has not satisfied this expectation because:</p> <ul style="list-style-type: none"> <li>• We found information gaps and a lack of justification of the prudence and efficiency in several capex categories.</li> </ul>
3. Evidence of alignment with asset and risk management standards	<p>Energex has not satisfied this expectation because:</p> <ul style="list-style-type: none"> <li>• While there have been improvements Energex’s asset management practices, we found a number of incidences where it did not align with good industry standards.</li> </ul>
4. Genuine consumer engagement on capex proposals	<p>Energex has not satisfied this expectation because:</p> <ul style="list-style-type: none"> <li>• Submissions received about Energex’s engagement on its capex proposal have been critical that there was little evidence that Energy Queensland had considered consumer feedback in its proposals.</li> <li>• RRG notes that engagement breadth and depth were limited small parts of capex (some ICT, property, EVs, DER enablement). The RRG concluded that the engagement fell well short of what was expected under the AER’s Better Resets Handbook and what RRG members had observed in other recent electricity distribution resets. The RRG has indicated that there is little benefit in further engagement.</li> </ul>

Overall, we are not satisfied that Energex’s forecast of \$3,341.1 million is prudent and efficient based on the information provided. We found Energex has not provided sufficient information in support of its forecast in augex, resilience, fleet, property, ICT and capitalised overheads.

Our alternative forecast is \$2,801.0 million, which represents a reduction of 16.2% compared to Energex’s forecast. Based on the evidence before us, we consider our substitute forecast is reasonable and sufficient for Energex to maintain the safety, reliability and security of

<sup>13</sup> AER, *Better Resets Handbook – Towards Consumer Centric Network*, December 2021, pp. 19–23.

electricity supply to its network and contribute to achieving emissions reduction targets. To provide guidance for future processes, we have noted information gaps and areas for improvement for forecasting and supporting information. In Energex’s case, we encourage it to have regard to our findings in developing its revised proposal.

The section below outlines findings from our top-down and bottom-up review.

### **Top-down perspective**

Our top-down testing of Energex’s forecast capex informed the scope of our bottom-up review. We observe the following about Energex’s forecast capex at the top-down level:

- Energex’s modelled repex forecast (which comprises 27.3% of the total forecast capex and a step up of 7.1% in the forecast repex relative the current period) was in line with the repex model threshold
- There is a material step-up of approximately 20% or greater across several capex categories due to increased demand growth and uplift in unit rates
- There are significant information gaps, material data discrepancies, lack of evidence to support input and assumptions
- There is a lack of customer engagement on capex
- Energex’s proposal does not appear to address affordability, which was identified as the main priority by customers.

While there is step up of 7.1% in the forecast repex relative to the current period, this is driven primarily by bringing forward Olympic-related investments. We acknowledge that there may be merit in bringing forward these investments. Once the Olympic-related investments are excluded, the step up is 2.4%.

However, based on our findings of material step-ups in in several of the capex categories, we undertook a bottom-up review of most of the capex categories.

Further, we found a lack of supporting material to demonstrate prudence and efficiency in some of the capex categories. Significant information gaps, material data discrepancies, lack of evidence to support input and assumptions.

We also found that Energex have not adequately consulted with its customers on capex. In particular, it does not appear to have considered affordability, which was identified as the main priority by its customers. Energex submits that:<sup>14</sup>

Our Regulatory Proposal has been informed by a comprehensive engagement program, using a variety of engagement channels and techniques, and is an outcome of the valuable insights and preferences provided by our customers and stakeholders

However, the RRG and CCP30 observed the lack of engagement on Energex’s capex proposal, with the RRG indicating that it saw little value in further engagement given the very limited scope of engagement to date.

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<sup>14</sup> Energex, *2025–30 Regulatory Proposal*, January 2024, p. 41.

Further, we are also not satisfied that that Energex have adequately considered affordability, which was identified as main priority by its customers. Energex states that:<sup>15</sup>

In response to customer feedback, we have sought to strike the right balance between investing in the network to provide clean, reliable and smart electricity and efficiently delivering electricity services in the most affordable way.

However, the CCP30 observes that:<sup>16</sup>

There is little evidence of how EQL was prepared to consider consumer feedback into the proposal, particularly on the major issue of affordability in the current economic climate.

### Bottom-up review

Our bottom-up review revealed a lack of sufficient information to support the prudence and efficiency of Energex’s forecast across several capex categories. While we have made alternative forecasts for these parts of Energex’s proposal, we encourage Energex to provide further information to support its capex forecast in its revised proposal.

Table 5.4 sets out our draft decision for Energex by capex category.

**Table 5.4 AER’s draft decision by capex category (\$ million, \$2024–25)**

Capex category	Energex’s proposal <sup>a</sup>	Forecast assessed <sup>b</sup>	AER’s draft decision	Difference (\$)	Difference (%)
Repex	920.9	913.2	913.2	0.0	0.0%
Resilience	N/A	50.0	25.1	-24.9	-49.8%
Augex	595.3	528.9	324.0	-204.9	-38.7%
Connections	321.0	321.0	321.0	0.0	0.0%
Fleet	198.5	198.5	168.6	-29.9	-15.1%
Property	151.9	151.9	143.7	-8.2	-5.4%
Cyber security	N/A	48.1	48.1	0.0	0.0%
ICT	266.0	242.1	195.4	-46.6	-19.3%
CER integration	54.1	54.1	54.1	0.0	0.0%
Other non-network	25.2	25.2	25.2	0.0	0.0%
Capitalised overheads	838.1	838.1	615.7	-222.5	-26.5%
<b>Total capex (excluding capcons)</b>	<b>3371.2</b>	<b>3371.2</b>	<b>2834.1</b>	<b>-537.0</b>	<b>-15.9%</b>
less asset disposals	-30.1	-30.1	-30.1	0.0	
Modelling adjustments			-3.0	-3.0	
<b>Net capex</b>	<b>3341.1</b>	<b>3341.1</b>	<b>2801.0</b>	<b>-540.1</b>	<b>-16.2%</b>

Source: Energex and AER analysis. Numbers may not sum due to rounding.

Note: (a) Energex’s proposal differs from its proposal documents as it submitted an updated capex model on 28 June 2024. It originally proposed net capex of \$3,408.3.

(b) Our forecast assessed recategorised capex from Energex’s proposal to align with how we assessed each category. We recategorised \$7.7 million of repex, \$16.4 million of augex, and \$24.0 million of ICT to cyber security. We also recategorised \$50.0 million of augex to resilience.

<sup>15</sup> Energex, *2025–30 Regulatory Proposal Overview*, January 2024, p. 41.

<sup>16</sup> CCP30, *Advice to the AER regarding the Energex and Ergon Energy (Energy Queensland) regulatory proposal 2025–30 – Response to Proposal and Issues Paper*, May 2024, p. 4.

Table 5.5 summarises, and Appendix A provides further details on, our reasons for not accepting Energex’s forecast, by capex driver. Our findings on each capex driver are part of our broader analysis and should not be considered in isolation. We do not approve an amount of forecast expenditure for each individual capex driver or project/program. However, we use our findings on the different capex drivers to assess a regulated business’ proposal as a whole and arrive at an alternative estimate for total capex where necessary. Our decision on total capex does not limit a regulated business’ actual spending.

**Table 5.5 Summary of our findings and reasons, by capex driver**

Driver	Findings and reasons
<b>Repex</b>	<p>Our draft decision includes Energex’s repex forecast of \$913.2 million as part of our total capex forecast. While the forecast is 7.1% above actual and estimated expenditure for the current period, this increase is driven by investments being brought forward into the 2025–30 period due to the potential impact of the 2032 Brisbane Olympic Games. Without these investments, Energex’s proposed repex forecast would only be 2.4% above current period spending levels.</p> <p>Energex’s repex model forecast is also in line with our repex model threshold which suggests that overall its forecast modelled repex performs comparatively well against other DNSPs.</p> <p>Overall, we are satisfied with Energex’s repex forecast and consider there is merit in bringing forward certain investments impacted by the Olympic Games.</p>
<b>Connections</b>	<p>Our draft decision includes Energex’s updated net connections capex forecast of \$321.0 million in our total capex forecast. Energex’s forecast is 10.2% higher than the actual and estimated expenditure for the current period. This is primarily driven by higher migration rates and increased development supporting the 2032 Olympic and Paralympic Games. Having regard to trend analysis and Queensland Government data (i.e. population growth), we are satisfied with Energex’s proposal.</p> <p>We have provided feedback on Energex’s connections forecasting methodology in the event that Energex updates its revised proposal connections forecast.</p> <p>This is further discussed in Appendix A.2.</p>
<b>Cyber security</b>	<p>Our draft decision includes Energex’s cyber security forecast of \$48.1 million as part of our total capex forecast. Overall, we found that the information provided adequately supported the proposed expenditure. We consider that Energex has appraised the cyber security landscape and has a good understanding of its compliance obligations under the <i>Security of Critical Infrastructure (SOCi) Act</i><sup>17</sup> and how to meet them. Energex has selected the appropriate preferred option based on the risk-costs and its cost forecasting methodology and cost forecast for its preferred option is reasonable.</p> <p>We found some issues with its analysis that we encourage Energex to consider in future processes. In particular, EMCa found the CBA in support of the cyber security capex contained errors, there was overestimated and underestimated cost impacts and a lack of detail in some parts of the analysis.</p>
<b>CER integration</b>	<p>Our draft decision includes Energex’s capex forecast of \$54.1 million to integrate consumer energy resources (CER) in our total capex forecast.</p> <p>We consider that Energex’s CER strategy is generally sound and measured. In particular, we consider that maximising existing hosting capacity by prioritising dynamic connection investments over increasing hosting capacity is a prudent approach. We also found that stakeholders supported Energex undertaking more investments to integrate CER in its network.</p>

<sup>17</sup> The SOCi Act designates electricity assets as critical infrastructure and mandates compliance obligations within the framework under the Act.

Driver	Findings and reasons
	<p>We found that Energex’s business case and supporting analysis is somewhat flawed as it overstates the level of “business as usual” investment needed to maintain the export service, absent its proposed investments. However, in support of its proposed investments, we found that Energex understated the likely emissions reductions benefits by applying values lower than the now published interim values of emissions reduction.</p> <p>We also consider that greater network visibility is necessary so that Energex can better identify export constraints and existing service levels and prioritise its investments. This is further discussed in Appendix A.5.</p>
<b>Other non-network</b>	<p>Our draft decision includes Energex’s other non-network forecast of \$25.2 million in our total capex forecast. This is \$6.1 million (32.2%) higher than its actual and estimated expenditure for the 2020–25 period.</p> <p>Energex submitted that the drivers for the uplift in other non-network is additional field employees and fleet. It demonstrated to us that its forecast is based on historical expenditure with adjustments for its forecast changes in field employees and fleet numbers. We are satisfied that Energex’s forecasts method is reasonable and its forecast for other non-network is reflective of the efficient costs of a prudent operator.</p>
<b>Asset disposals</b>	<p>Our draft decision includes Energex’s updated asset disposals forecast of \$30.1 million in our total capex forecast. Energex’s proposal initially included \$14.0 million for asset disposals for fleet and property. We identified discrepancies with the information provided and Energex updated its forecast to \$30.1 million.<sup>18</sup> This involved correcting an error in fleet disposals from \$3.4 million to \$19.5 million.</p>
<b>Augex</b>	<p>Our draft decision does not include Energex’s augex forecast of \$528.9 million as part of our total capex forecast. Instead, we have included a substitute estimate of \$324.0 million in augex, which is \$204.9 million (or 38.7%) lower than Energex’s proposal.</p> <p>Energex submitted thirteen projects as necessary to meet a regulatory obligation (specifically, to meet the requirements of the Safety Net Targets in its Distribution Authority). Our main concern relates to ten of these projects, where we consider that there is no regulatory obligation requiring this expenditure, and no cost benefit analysis was provided to show a net customer benefit.</p> <p>For its grid communications, protection and control sub-category expenditure, we found the forecast to be overstated. Our main concerns relate to an overall lack of overarching strategy, minimal options analysis, and deliverability concerns.</p> <p>For projects relating to its clearance to ground and clearance to structure program, we found that Energex has proposed a step up of 48% in unit rates relative to historical rates. Our main concern was the lack of sufficient evidence to justify this forecast higher unit rate. This is further discussed in Appendix A.1.</p>
<b>Information and communications technology (ICT)</b>	<p>Our draft decision does not include Energex’s ICT forecast of \$242.1 million as part of our total capex forecast, and instead we have included a substitute estimate of \$195.4 million, which is \$46.6 million (or 19.3%) lower than Energex’s proposal.</p> <p>We assessed Energex’s proposed 6 non-cyber major investments and consider the business cases do not provide sufficient information to support its preferred options. We consider its ‘maintain’ base case option to be a prudent and efficient investment and therefore included a substitute estimate based on this option.</p> <p>This is further discussed in Appendix A.3.</p>
<b>Resilience</b>	<p>Our draft decision does not include Energex’s forecast of \$50.0 million for resilience as part of our total capex forecast, and instead we have included a substitute estimate of \$25.1 (49.8% lower than Energex’s proposal).</p>

<sup>18</sup> Energex, *Response to information request 020*, May 2024.

Driver	Findings and reasons
	<p>In coming to this position, we note that Energex did not provide much of the evidence expected in resilience-related proposals that the AER set out in its guidance note on network resilience. We encourage Energex to provide this further information in its revised proposal. Overall, we found that Energex’s proposed bushfire and flood programs are reasonable.</p> <p>However, we have concerns about the prudence and efficiency of its mobile generation program and substation program, and therefore not accepted these components of its resilience expenditure.</p> <p>This is further discussed in Appendix A.4.</p>
<b>Fleet</b>	<p>Our draft decision does not include Energex’s fleet forecast of \$198.5 million as part of our total capex forecast. Instead, we have included a substitute estimate of \$168.6 million in fleet capex, which is \$29.9 million (or 15.1%) lower than Energex’s proposal.</p> <p>Energex submits that the primarily driven by higher unit rates, addressing shortfalls in current period replacements, changes to replacement strategies and an FTE uplift.</p> <p>We found that Energex did not provide sufficient evidence to support a 46% step up in its forecast relative to the current period. In particular we found Energex had not provided sufficient evidence for its proposed changes to the replacement strategies of elevated work platforms (EWP) and crane borers. In addition, we have made adjustments to the FTE uplift based on capex reductions to other categories within its forecast.</p> <p>These issues are discussed further in Appendix A.6.</p>
<b>Property</b>	<p>Our draft decision does not include Energex’s property forecast of \$151.9 million as part of our total capex forecast. Instead, we have included a substitute estimate of \$143.7 million, which is \$8.2 million (or 5.4%) lower than Energex’s proposal.</p> <p>Aside from the Rocklea training facility redevelopment, we consider Energex’s forecast reasonably reflects the efficient costs of a prudent operator. As part of its business case for the Rocklea training facility redevelopment, Energex included benefits that we do not consider are benefits to consumers of standard control services. Once adjusting for this in Energex’s model, the preferred investment is the lower cost base case option, which we included in our substitute estimate.</p> <p>This is further discussed in Appendix A.7.</p>
<b>Capitalised overheads</b>	<p>Our draft decision does not include Energex’s capitalised overheads forecast of \$838.1 million as part of our total capex forecast. Instead, we have included a substitute estimate of \$615.7 (26.5% lower than Energex’s proposal).</p> <p>We do not consider that the methodology that Energex has used to calculate its capitalised overheads is reasonable. In its place, we have included the AER’s standard methodology.</p> <p>Our alternative forecast also accounts for our alternative estimate of total direct capex.</p> <p>Further information can be found in Appendix A.8.</p>
<b>Modelling adjustments</b>	<p>Our draft decision includes our standard modelling adjustments for updated inputs for inflation and labour real cost escalation. Updated inflation decreases our alternative estimate by \$9.4 million while updating labour real costs escalation increases our alternative estimate by \$6.4 million. The net impact of these adjustments decreases our alternative estimate by \$3.0 million.</p>
<b>Ex-post review</b>	<p>We are required to provide a statement on whether the roll forward of the regulatory asset base (RAB) from the previous period contributes to the achievement of the capex incentive objective.<sup>19</sup> The capex incentive objective is to ensure that, where the RAB is subject to adjustment in accordance with the NER, only expenditure that reasonably reflects the capex criteria is included in any increase in value of the RAB.<sup>20</sup></p>

<sup>19</sup> NER, cl. 6.12.2(b).

<sup>20</sup> NER, cl. 6.4A(a).

Driver	Findings and reasons
	<p>Where, during the review period,<sup>21</sup> a distributor’s capex exceeds its allowance (and therefore the overspending requirement is satisfied),<sup>22</sup> we may reduce the RAB by the amount of capex that we are satisfied does not reasonably reflect the capex criteria.<sup>23</sup></p> <p>We have reviewed Energex’s capex performance for the 2018–19 to 2022–23 regulatory years. Energex incurred total capex below its regulatory forecast for the ex-post review period. On this basis, the overspending requirement for an efficiency review of past capex is not satisfied.</p>

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<sup>21</sup> NER, cl. S6.2.2A(a1).

<sup>22</sup> NER, cl. S6.2.2A(b).

<sup>23</sup> AER, *Capital Expenditure Incentive Guideline*, November 2013, p. 17; and NER, cl. S6.2.2A(f).



# A Reasons for decision on key capex categories

This appendix sets out our assessment of key capex categories and programs/projects within Energex’s total capex forecast and the reasons for our decision. This appendix includes:

- Augex (A.1)
- Connections (A.2)
- ICT (A.3)
- Resilience (A.4)
- CER integration (A.5)
- Fleet (A.6)
- Property (A.7)
- Capitalised overheads (A.8)

## A.1 Augmentation Expenditure (augex)

### A.1.1 AER’s draft decision

We do not accept that Energex’s augex forecast of \$528.9 million would form part of a total capex forecast that reasonably reflects the capex criteria. Our draft decision includes \$324.0 million in augex, which is \$204.9 million (or 38.7%) lower than Energex’s proposal.

### A.1.2 Energex’s proposal

Energex’s original proposal included augex of \$610.3 million<sup>24</sup>. Energex later provided an updated capex model that included revised augex of \$595.3 million.<sup>25</sup> This represents 17.8% of the total updated forecast net capex.

We consider \$66.4 million of the proposed augex is cyber security or resilience expenditure, and we have assessed these as such.

For the purpose of our assessment, we have assessed the remaining \$528.9 million as augex and referred to this amount for the remainder of this section. This includes proposed expenditure relating to sub transmission and distribution growth of \$376.8 million, grid communications protection and control of \$65.9 million, clearance of \$58.4 million and reliability of \$27.8 million.

The proposed augex of \$528.9 million is \$214.5 million (or 68.2%) higher than Energex’s actual and estimated augex for the current period of \$314.4 million. Our 2020–25 augex forecast for Energex was \$357.5 million. On a like for like basis, Energex is estimated to have underspent by \$43.1 million (12.1%).

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<sup>24</sup> Energex, *2025–30 Regulatory Proposal*, January 2024, p. 99.

<sup>25</sup> Energex, *Response to information request 040 – Question 1*, June 2024.



Energex submitted that the key drivers for the uplift in augex are strong demand growth, compliance obligations, and network control and monitoring initiatives.<sup>26</sup>

### A.1.3 Reasons for decision

When assessing Energex’s proposal for augex, we had regard to major project business cases, key assumptions, identification of need, historical comparison, options and cost-benefit analysis, and further supporting information provided by Energex. EMCa also reviewed the prudence and efficiency of the proposed expenditure for clearance, grid communications, protection and control, as well as Energex’s overall governance and methodology.<sup>27</sup>

The table below shows a comparison of proposed augex between the 2020–25 and the 2025–30 regulatory periods. Energex has not submitted consistent categories between the two periods so this breakdown is based on AER analysis of Energex’s proposed projects.

**Table A.1 Current and forecast period augex by sub-category (\$ million, \$2024–25)**

Sub- categories	2020–25	2025–30	2025–30 \$ change	2025–30 % change
Sub-Transmission Growth	60.6	232.5	171.9	283.6%
Distribution Growth	107.0	144.3	37.3	34.9%
Grid Communications, Protection and Control	63.7	65.9	2.2	3.4%
Clearance	49.3	58.4	9.1	18.5%
Reliability	33.8	27.8	-6.0	-17.8%
<b>AER assessed augex</b>	<b>314.4</b>	<b>528.9</b>	<b>214.5</b>	<b>68.2%</b>
<b>Cyber security</b>	<b>0.0</b>	<b>16.4</b>	<b>16.4</b>	<b>0.0%</b>
<b>Resilience</b>	<b>12.8</b>	<b>50.0</b>	<b>37.2</b>	<b>290.6%</b>
<b>Grand Total</b>	<b>327.2</b>	<b>595.3</b>	<b>268.1</b>	<b>82.0%</b>

Source: Energex, Response to information request 040 – Question 1, 28 June 2024.

Note: AER assessed augex reflects our classification. Cyber security and resilience expenditure has been assessed separately.

The largest increase is 283.6% in the Sub-transmission Growth category. This is driven by a material increase in proposed demand driven projects and particularly regulatory obligation projects to comply with Safety Net obligations.<sup>28</sup> There are also increases in the grid communications, protection and control category (3.4%), distribution growth category (34.9%) and the clearance category (18.5%). The reliability category has decreased by 17.8% from last period.

<sup>26</sup> Energex, *2025–30 Regulatory Proposal Overview*, January 2024, p. 100.

<sup>27</sup> EMCa, *Energex 2025/26 to 2029/30 Regulatory Proposal – Review of Aspects of Ex Ante Augex*, September 2024.

<sup>28</sup> Department of Energy and Climate Queensland, *Energex Distribution Authority*, July 2023, Sch. 3.

We have focussed our assessment on the four augex categories that have increased in the forecast period.

From our bottom-up review of Energex’s major augmentation project business cases we consider that, aside from the projects driven by safety net regulatory obligations, the projects in the sub-transmission growth and distribution growth categories are prudent and efficient investments. Energex assessed investment options using reasonable assumptions and provided options analysis.

Energex’s reliability category is made up of its worst performing feeder program. We consider that this program is a prudent and efficient investment. The business case sufficiently described the need for investment with reasonable assumptions. We also note that this program is at a similar cost to historical levels.

### Safety Net Obligations

Energex has submitted thirteen projects (totalling \$192.0 million) which it has identified as necessary to meet a regulatory obligation (specifically, to meet the requirements of the Safety Net Targets in its Distribution Authority). The Safety Net Targets are a requirement to bring load not supplied down to certain levels within certain timeframes after certain events. Table A.2 shows Energex’s Safety Net targets as set out in Schedule 3 of Energex’s Distribution Authority.<sup>29</sup>

**Table A.2 Energex Safety Net Targets**

Feeder Type	Targets
CBD	<ul style="list-style-type: none"> <li>Any interruption in customer supply resulting from an N-1 event at the sub-transmission level is restored within 1 minute</li> </ul>
Urban - Following an N-1 event	<ul style="list-style-type: none"> <li>no greater than 40 MVA (16,000 customers) is without supply for more than 30 minutes;</li> <li>no greater than 12 MVA (5,000 customers) is without supply for more than 3 hours; and</li> <li>no greater than 4 MVA (1,600 customers) is without supply for more than 8 hours.</li> </ul>
Short Rural- Following an N-1 event	<ul style="list-style-type: none"> <li>no greater than 40 MVA (16,000 customers) is without supply for more than 30 minutes;</li> <li>no greater than 15 MVA (6,000 customers) is without supply for more than 4 hours; and</li> <li>no greater than 10 MVA (4,000 customers) is without supply for more than 12 hours.</li> </ul>

Source: Department of Energy and Climate Queensland July 2023 – Schedule 3.

As shown in Table A.2 there is a requirement for load not supplied that is above 4MVA for urban and above 10MVA for rural to be reduced within set timeframes. That is, following an urban N-1 event, Schedule 3 requires that:

<sup>29</sup> Department of Energy and Climate Queensland, *Energex Distribution Authority*, July 2023, Sch. 3.

- within 30 minutes, ensure that the maximum load unsupplied is 40 MVA (16,000 customers)
- within 3 hours, ensure that the maximum load unsupplied is 12 MVA (5,000 customers)
- within 8 hours, ensure that the maximum load unsupplied is 4 MVA (1,600 customers).

Beyond this, we consider that Schedule 3 allows 4MVA of load to be unsupplied for more than 8 hours, and there is no timeframe in Schedule 3 within which Energex needs to move from unsupplied load of 4MVA to restoring full supply. However, other obligations in Energex’s distribution authority would likely apply. This includes Energex planning and developing its supply network in accordance with good electricity industry practice.<sup>30</sup> We expect that Energex would follow good industry practice and take all reasonable steps to reduce outages seen by customers and restore supply as quickly as practicable (such as rotation of customers off supply, temporary and permanent repairs carried out under emergency conditions, etc). More broadly, to meet the capex and opex objectives in the NER, expenditure may be required so that supply is eventually fully restored. The AER assesses such expenditure to determine if it is prudent and efficient, in the long term interests of consumers.

Energex has adopted an approach of fully restoring supply in urban and rural areas. Specifically, Energex’s adopted approach is that load not supplied must be fully restored within 8 hours in urban areas and 12 hours in rural areas. As set out above, these are the timeframes within which we consider Schedule 3 requires Energex to reduce unsupplied load to a maximum of 4MVA for urban areas and 10MVA for rural areas. We do not consider that Schedule 3 requires supply to be fully restored within these timeframes.

As such, we consider Energex has been more conservative with its application of the Safety Net targets than what is set out in the Distribution Authority. We also consider Energex’s application is contrary to the intent of the Safety Net targets.

We had similar concerns in the last regulatory period with Energex’s application of the Safety Net targets. We did not consider that Energex would be non-compliant with most targets in the event of a credible contingency. We recommended that the wording of Ergon Energy’s Safety Net targets be adopted following the next review of Energex’s targets. However, no changes have been made to Energex’s Safety Net targets since the previous period. This issue has become a larger concern due to the larger number of augmentation projects involved compared to the last regulatory period.

### ***Implications of Energex’s application***

In order to meet the requirement Energex has imposed, of restoring all load not supplied within 8 hours urban (12 hours rural), Energex is proposing to make investments across its network.

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<sup>30</sup> Department of Energy and Climate Queensland, *Energex Distribution Authority*, July 2023, cl. 8.

Of the \$192.0 million Energex has proposed for safety net obligations, \$172.6 million is for projects to restore load not supplied which is less than 4MVA urban and 10MVA rural. Most of these projects fall under Energex’s sub transmission and distribution growth categories and involve substations and feeders. This results in a larger augex than if Energex had only ensured loads of greater than 4MVA urban (10MVA rural) meet the corresponding restoration times.

The implication of this is that Energex is proposing expenditure in order to restore supply fully based on its adopted approach without assessing the benefits of doing so.

### ***Development of the Safety Net targets***

We have examined the history behind the development of the Safety Net targets for Energex and we have found that the Safety Net target was intended to be a move towards an economic application of addressing unsupplied loads. Energex’s application results in a move back towards an approach that addresses any load at risk through network investment irrespective of the economic benefit of the investment.

In response to our information request<sup>31</sup> on the intent and purpose of the Safety Net targets, Energex provided a Distribution Authority Safety Net interpretation letter to Department of Energy and Climate (DEC) provided to the DEC in 2014.

The 2014 correspondence noted that in 2012 and 2013, an Independent Review Panel (IRP) and the Independent Panel On Electricity Sector Reform recommended that Energex and Ergon Energy “replace prescriptive security and reliability standards that drive network over-investment with a more economically derived, outcomes-based approach that better reflects customer expectations and values.”

Energex then worked with government to establish a more balanced and efficient customer outcome standard which was accepted by government and resulted in the Safety Net targets being added to the Distribution Authority.

We consider Energex’s application of the Safety Net targets is inconsistent with the intent described above for a more economically derived, outcomes-based approach that better reflects customer expectations and values.

Energex’s approach does meet the minimum requirements of the Safety Net targets; however, because its approach appears to exceed these requirements, it does not appear to address the intent of a more economic framework. We consider that Energex’s position results in expenditure in excess of what is required to meet the Safety Net targets and is therefore not expenditure that is required to meet a regulatory obligation. We have therefore assessed all expenditure for load unsupplied that is less than 4MVA urban (10MVA rural) under the requirements of the NER to determine if it is otherwise a prudent and efficient investment to achieve the capex objectives.

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<sup>31</sup> Energex, *Response to information request 035*, June 2024.

### **Assessment of alternative**

Energex must plan and develop its supply network in accordance with good electricity industry practice, having regard to the value that end users of electricity place on the quality and reliability of electricity services.<sup>32</sup> We then assess the expenditure required to implement good electricity industry practice, in accordance with the capex and opex objectives in the NER<sup>33</sup>.

Ten of the thirteen projects proposed by Energex as being required under Safety Net Targets are for projects where the load not supplied is less than 4MVA urban and 10MVA rural, totalling \$172.6 million.

We consider that there is no regulatory obligation requiring this expenditure. We have therefore assessed this expenditure to determine if there is a positive NPV for these projects in the absence of a regulatory requirement.

Energex has not provided a cost benefit analysis for these projects or any alternative justification for this expenditure. We have issued multiple information requests to Energex requesting the cost benefit calculations but Energex has not provided the information.

As we are unable to fully assess whether these projects are prudent and efficient without additional information, such as cost benefit analyses, we have not allowed any expenditure in our forecast for the ten proposed projects totalling \$172.6 million. We invite Energex to provide cost benefit analysis and further justification for these projects in its revised proposal. See table A.3 below for full details of the projects.

**Table A.3 Reductions to safety net augex (\$ million, \$2024–25)**

Project	Project cost	Approved cost
New Bells Creek Zone Substation	71.1	0.0
New Ripley North Zone Substation	19.1	0.0
New Morayfield East Zone Substation	17.9	0.0
New Pimpama Zone Substation	14.0	14.0
New Jimboomba West Zone Substation	13.3	0.0
Upgrade 110kV Feeder from Abermain Bulk Supply to Lockrose Bulk Supply	12.6	0.0
New Feeder from Jimboomba Zone Substation to Beaudesert Bulk Supply	11.9	0.0
Establishing a new 110/33kV Transformer at Jimboomba Bulk Supply	9.6	0.0
New 33kV Feeder from Nudgee Bulk Supply to	7.2	0.0

<sup>32</sup> Department of Energy and Climate Queensland, *Energex Distribution Authority*, July 2023, cl. 8.

<sup>33</sup> NER, Ch 6.

<b>Nundah Zone Substation</b>		
Upgrade 33kV Feeder Capacity for F341 from Gympie to Tin Can Bay	6.6	0.0
<b>New Petrie Zone Substation</b>		
Upgrade Transformer Capacity at Mudgeeraba West Zone Substation	4.5	4.5
	2.9	0
<b>New 33kV Feeder from Pimpama East Zone Substation to Stapleton Zone Substation</b>		
	0.7	0.7

Source: AER Analysis

### **Grid communications, protections and controls**

Energex originally proposed \$72.7 million for augmentation projects relating to grid communications, protection and control. Energex’s updated capex model reduced this category to \$65.9 million.<sup>34</sup> Energex’s proposal for this category is an increase of \$2.2 million (3.4%) from the current period estimate of \$63.7 million. Energex also refers to this subcategory as grid technology, or as SCADA, protection and control.

This category includes several subcategories intended to improve reliability and visibility of the network. Protection projects are driven by safety, compliance, reliability and impacts attributable to DER. Grid Control projects are intended to improve visibility over the network, while Grid Communications automates processes to improve reliability. Lastly, Operational Technology and Intelligence Grid Enhancements are targeted improvements to Energex’s technological systems that will increase Energex’s ability to maintain its network and identify potential issues.

Our position, informed by EMCa’s review, is to reduce grid communications, protection, and controls augex by \$3.9 million. EMCa’s report raises concerns of a lack of overarching strategy, options analysis and concerns regarding the deliverability of Energex’s grid communication, protection and control forecast.<sup>35</sup> The specific reductions we have made to the Energex grid communications, protection and control forecast are due to unconvincing net benefits and deliverability concerns.

#### ***Unconvincing net benefits***

We consider that the \$2.6 million OTE Zetron Continuous Improvement project is not adequately justified. This project is in addition to the \$4.0 million repex proposed for the Zetron replacement project. The business case for the augex OTE Zetron Continuous Improvement project does not provide net present value (NPV) outputs or explain how the benefits have been valued. The AER considers that is unlikely that the project would provide

<sup>34</sup> Energex, *Response to information request 040 – Question 1*, June 2024.

<sup>35</sup> EMCa, *Energex 2025/26 to 2029/30 Regulatory Proposal – Review of Aspects of Ex Ante Augex*, September 2024, pp. 4-10.

a positive NPV outcome.<sup>36</sup> We invite Energex to provide the net present value outputs in its revised proposal.

### ***Deliverability concerns***

We have removed \$1.3 million for 5 projects from the “DC and Bus Overcurrent Protection Duplication” program forecast, each worth \$0.27 million. These are the smallest 5 of the 29 projects in the “DC and Bus Overcurrent Protection Duplication” program, all of which are scheduled in the final 3 years of the period. We consider that the scale of the program is beyond Energex’s capacity. EMCa shared this view, citing that Energex has delivered four similar projects annually in the current period, and considers that it can double this volume to 8 per year during the next period.<sup>37</sup> The 29 projects in this program scheduled to run in the last 3 years of the period is then higher than Energex has indicated it will be capable of delivering. Applying this rate to the final three years of the period, a maximum of 24 projects is feasible.

### **Clearance**

Energex proposed \$58.5 million for augmentation projects relating to its clearance to ground and clearance to structure program<sup>38</sup> made up of \$44.8 million for clearance to ground and \$13.6 million for clearance to structure.<sup>39</sup> We consider our concerns are similar across these two programs and so have assessed these programs together. Energex’s proposal for this program is an increase of \$9.2 million (18.7%) from the current period estimate of \$49.3 million.

We found that a step up of 48% in unit rates relative to historical rates was the main driver for its higher forecast. We consider that Energex has not provided sufficient evidence to justify this forecast higher unit rate. We therefore included \$30 million of capex based on applying Energex’s historical costs, which is \$29 million (or 48%) lower than Energex’s proposed clearance program costs of \$59 million. We invite Energex to provide any further evidence to justify this forecast higher unit rates in its revised proposal.

### ***Unit rates***

Based on Energex’s submitted expenditure and volume information, we performed an implied unit rate comparison between the 2020–25 period and 2025–30 period.

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<sup>36</sup> EMCa, *Energex 2025/26 to 2029/30 Regulatory Proposal – Review of Aspects of Ex Ante Augex*, September 2024, pp. 32–33.

<sup>37</sup> EMCa, *Energex 2025/26 to 2029/30 Regulatory Proposal – Review of Aspects of Ex Ante Augex*, September 2024, pp. 22–26.

<sup>38</sup> Energex, *2025–30 Regulatory Proposal Overview*, January 2024, p. 103.

<sup>39</sup> Energex, *Response to information request 040 – Question 1*, June 2024.

**Table A.4 Energex’s unit rate comparison between 2020–25 and 2025–30 periods**

CTG/CTS Program	2020–25	2025–30	% Change
Total Capex (\$ million, 2024–25)	49	59	19%
Number of Defects	4,994	3,995	-20%
Implied Unit Rate per Defect (\$, 2024–25)	9,870	14,646	48%

Source: AER analysis

As can be seen in Table A.4, Energex’s proposed unit rate in the 2025–30 period is 48% higher compared to the 2020–25 period. While the Energex unit rate of \$14,646 per defect is similar to those proposed by Ergon Energy which includes other bundled assets (i.e. poles), Energex did not provide sufficient information for the material increase in the unit rates based on its historical performance.

EMCa made similar observations and further noted that it would expect the solutions implemented by Energex in the current period to reduce in cost over time as the higher risk and more complex defects are resolved, such that new poles are not required as often to address defects.<sup>40</sup>

As a further top-down check, we have compared the number of low priority defects between Energex and Ergon Energy and found them comparable at 51% and 48% respectively from the total defects identified in the latest LIDAR inspection cycle (i.e. cycle 7).

## A.2 Connections

### A.2.1 AER’s draft decision

We are satisfied that Energex’s updated net connections capex forecast of \$321.0 million and capital contributions (type 1)<sup>41</sup> of \$19.6 million would form part of a total capex forecast that reasonably reflects the capex criteria. We have included these amounts in our substitute estimate of total capex.

We have made our draft decision based on Energex’s updated net connections capex forecast of \$321.0 million, which is 11% lower than its initial net connections capex forecast of \$362.1 million submitted in its 2025–2030 regulatory proposal. The reduction accounts for Energex’s connections modelling error.

### A.2.2 Energex’s proposal

Energex initially proposed \$362.1 million for net connections capex. However, in recognising its modelling error, Energex revised its net connections forecast to \$321.0 million.<sup>42</sup> Energex’s updated net connections capex forecast represents a 10.2% increase in

<sup>40</sup> EMCa, *Energex 2025/26 to 2029/30 Regulatory Proposal – Review of Aspects of Ex Ante Augex*, September 2024, pp. 13-20.

<sup>41</sup> Contributions from customers can be via direct funding (Type 1 contributions) or in contributed or gifted assets (Type 2 contributions). Only Type 1 capital contribution has been considered in making this decision.

<sup>42</sup> Energex, *Response to information request 040 – Energex Revised Capex Model*, July 2024.



expenditure compared to current period actual/estimates of \$291.2 million. Energex stated it may further correct for its modelling error in its revised proposal.<sup>43</sup>

Energex also proposed \$19.6 million in capital contributions (type 1), which is 19% lower than the current period of \$24.1 million.<sup>44</sup>

Energex's connections forecast is based on an econometric forecast modelling approach for residential and commercial connections.<sup>45</sup> Energex engaged FTI Consulting to support its modelling approach.

Energex's econometric model factors in historical trends, demographic forecasts, expected growth in commercial activities, and the relationship between population growth and historic connection volumes, in developing its forecasts for connection volumes and unit rates. Specifically, the econometric model considers:<sup>46</sup>

- a linear population growth rate using birth rates, mortality rates,<sup>47</sup> and net migration rates data<sup>48</sup>
- a regression analysis approach to establish a relationship between historic household growth and gross residential connections using data from 2009 to 2021
- a historical relationship between connection volumes and connection expenditure across residential and commercial & industrial customers<sup>49</sup>
- expected price point index (PPI) and wage point index (WPI) escalations in the 2025–30 regulatory period.

### A.2.3 Reasons for decision

We have taken a holistic approach in assessing Energex's connections forecast against the capex criteria, including:

- trend analysis of Energex's past connections expenditure; and
- a bottom-up assessment of Energex's forecasting methodology and underlying assumptions.

We have also had regard to Energex's information request responses and the Consumer Challenge Panel 30 (CCP30) submission.

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<sup>43</sup> Energex, *Response to information request 014 – connections*, May 2024; Energex, *Response to information request 044 – connection Question 1*, July 2024.

<sup>44</sup> Energex, *Response to information request 14 – connections*, May 2024.

<sup>45</sup> Energex, *2025-2030 Regulatory Proposal Overview*, January 2024, pp. 111-114.

<sup>46</sup> FTI Consulting, *Energy Queensland – connections volume and Connex forecasts for 2025–30*, November 2023, pp. 20-37.

<sup>47</sup> FTI apply ABS birth rates and mortality rates to estimate the number of births and deaths over the period from 2016-2021.

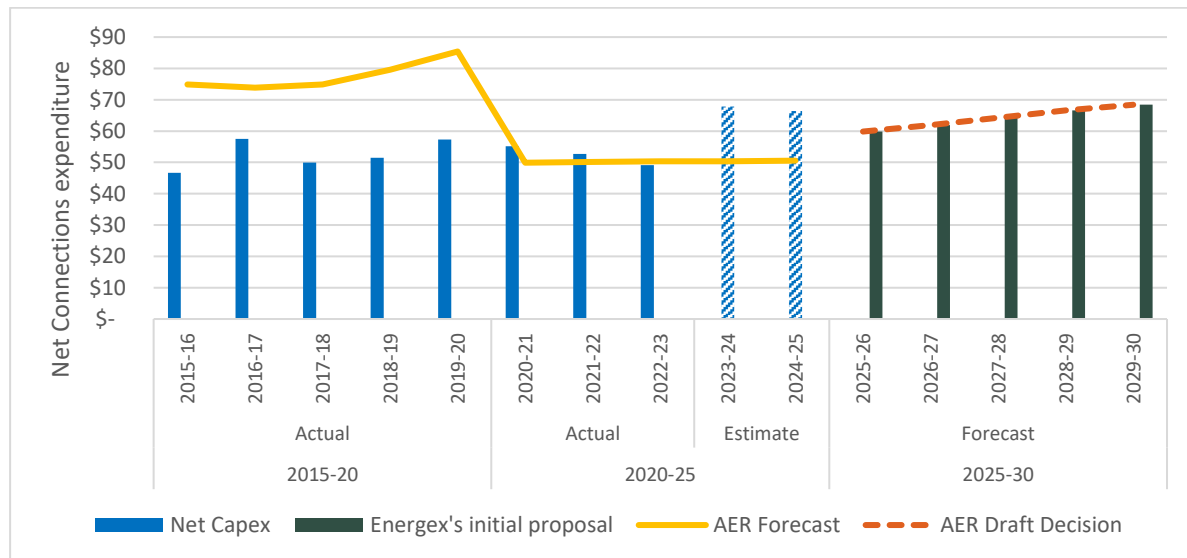
<sup>48</sup> The overseas migration rate is calculated using 2021 census survey question where individuals lived 5 years ago. The interstate migrate rate is calculated by comparing different between modelled population and actual population in year 2021.

<sup>49</sup> The model uses an Ordinary Least Squares (OLS) regression to establish a relationship between residential and commercial customers.

### A.2.3.1 Trend Analysis

Energex’s historical net connection trend has informed our overall position on connections capex. We are broadly satisfied that Energex’s forecast is likely reasonable as the step up in the net connections capex reflects the expected connections growth Figure A.1 shows the historical actual/estimate and forecast trend of Energex’s net connections expenditure between 2015–16 to 2029–30.

**Figure A.1 Energex's net connections capex (\$ million, \$2024–25)**



Source: Energex and AER analysis.

Energex’s actual net connection expenditure is relatively stable before 2022-23 period but there is a material step up in the 2023-24 period. Energex estimates an average 55.4% increase over the AER’s forecast for the remaining two years of the current regulatory period. The increased connections expenditure noted in the 2023-24 and 2024-25 period is expected continue in the forecast period. Overall, Energex’s forecast is 10.2% higher than the current period’s actual/estimate figures.

Energex’s step up in the estimate and forecast period is attributed to an increase in connection volumes due to the higher migration rates and increased development supporting the 2032 Olympic and Paralympic Games.<sup>50</sup> We had regard to independent data from QGSO that broadly supports Energex’s figures.<sup>51</sup> We consider Energex increased connections forecast likely reasonable to meet the demand.

In addition, we had regard to Energex’s unit rates. We found that Energex’s average unit rate for SCS connections in the forecast period is approximately 10.8% lower than the current period. This finding supports CPP30’s submission noting that the increasing volume forecasts may improve connection efficiency and lower the unit rate of connections.<sup>52</sup>

<sup>50</sup> Energex, *Response to information request 014 response - Question 2*, May 2024.

<sup>51</sup> Queensland Government Statistics Office, *Population projects 2023 edition update, Projected population by age group and sex, Queensland and regions (table)*, Accessed 2 July 2024.

<sup>52</sup> CCP30, *Advice to the AER regarding the Energex and Ergon Energy regulatory proposals 2025–30*, May 2024, pp. 20–25.

We also reviewed the capital contributions formula. Energex’s capital contributions methodology is consistent with the current period and there are no material changes to the capital contributions policy.

We note Energex may revise its connection forecast. If Energex’s revised net connections forecast in its revised proposal is higher than our draft decision, we expect Energex to consider our concerns noted in our bottom-up analysis.

Overall, based on the trend analysis, we are satisfied with Energex’s updated net connections capex and capital contributions forecasts.<sup>53</sup> We have included the amounts in our substitute estimate of total capex.

### **A.2.3.2 Bottom-Up Analysis**

While Energex’s updated connections capex passed our top-down assessment, we have concerns regarding the application of its econometric model to forecast connections.

We acknowledge Energex has considered our findings in the 2020–25 regulatory decision. In Energex’s 2020–25 distribution draft determination, we noted that Energex did not provide evidence supporting its customer connection volumes.<sup>54</sup> Therefore, in response Energex has developed an econometric model providing evidence to forecast connections.<sup>55</sup>

We have examined Energex’s econometric model and its underlying assumptions in developing its forecast connection volumes and unit rate. To do this, we first assessed whether the modelling inputs were derived using publicly available data where possible and intermediary calculation steps were transparent.<sup>56</sup> Then, we assessed whether Energex’s method to calculate the volume and unit rate for each connection category in its model was prudent and efficient. We also had regard to whether it had undertaken sufficient scrutiny in validating its model.

We have a number of concerns with Energex’s econometric model approach, including:

- linear extrapolation of population and connection volumes rather than using a dynamic growth rate approach adapted by Queensland Government Statistics Office (QGSO)
- lack of transparency and inconsistency in use of modelling parameters, such as adjusting ratio between simple and complex commercial connections without explanation
- indexation of unit rates using PPI and WPI parameters
- inconsistency between its econometric model forecast and the expenditure stated in its 2025–30 regulatory proposal or the SCS capex model.

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<sup>53</sup> We note that we are accepting Energex’s corrected connections forecast in our draft decision. But we have concern with the forecast model. This has been discussed in the bottom-up analysis section.

<sup>54</sup> Energex, *2025–30 Regulatory Proposal Overview*, January 2024, pp 111; AER, *Energex distribution determination 2020–25: Draft decision – Attachment 5: Capital Expenditure*, October 2019, pp. 5-25 – 5-27.

<sup>55</sup> Energex, *2025–30 Regulatory Proposal Overview*, January 2024, pp 111; AER, *Energex distribution determination 2020–25: Draft decision – Attachment 5: Capital Expenditure*, October 2019, pp. 5-25 – 5-27.

<sup>56</sup> For instance, we compared Energex’s population growth model with Queensland Government Statistics Office (QGSO) forecasts.

We have undertaken a sensitivity analysis to consider the impacts of its modelling approach noted above. Our analysis indicates that our adjustments to the listed parameters has both positive and negative impacts to the forecasted volumes and unit rates. We consider that suitable connections forecast model may:

- use a dynamic population growth rate such as the publicly available QGSO data, which would accurately calculate connection volumes and response to the varying growth profile over the period
- use parameters that do not require post modelling adjustments to ensure the model is transparent and can be easily reconciled if any parameters alter
- use fixed unit rates rather than including WPI and PPI inflators as the escalations are provided for in the SCS capex model across all projects consistently
- act as an input to the SCS capex model as the figure presented in the connections does not align with the capex model.

While we are satisfied with Energex’s proposed connections capex, we do not accept its modelling approach. Despite requesting further information clarifying Energex’s modelling approach, we were unable to rely on its econometric modelling in making our decision for forecast connections capex. This is because the net connections capex presented in Energex’s proposal is not consistent with its econometric model. Therefore, we have formed our view on prudence and efficiency of Energex’s forecast connections capex based on the trend analysis discussed in section A2.3.1.

If Energex increases its net connections forecast in its revised proposal, we may require further evidence in making our final decision. We encourage Energex to further develop its modelling approach in future.

## **A.3 ICT**

### **A.3.1 AER’s draft decision**

We do not accept that Energex’s ICT capex forecast of \$242.1 million would form part of a total capex forecast that reasonably reflects the capex criteria. Our draft decision includes \$195.4 million in our substitute estimate of total capex, which is \$46.6 million (19.3%) lower than Energex’s proposal.

### **A.3.2 Energex’s proposal**

Energy Queensland provides shared business and non-network ICT services to both Ergon Energy and Energex. For its 2025–30 forecast, Energy Queensland developed a combined non-network ICT program and allocated expenditure to each DNSP via its Cost Allocation Method.

Energex proposed \$266.0 million for its total ICT program, which includes \$24.0 million in ICT cyber security capex. In this section, we have only assessed the \$242.1 million in non-cyber security ICT capex.

Energex submitted that the reduction in forecast capex from the 2020–25 period is due to the completion of its non-recurrent major ICT transformation and that its forecast ICT totex per user is returning to previous benchmark levels.<sup>57</sup>

Energex expects to overspend by \$220.6 million (125.2%) in the 2020–25 period. It submitted that the main driver for the overspend in the 2020–25 period was due to challenges it faced delivering its major ICT transformation.<sup>58</sup> While some of these challenges were out of Energex’s control, it noted that it underestimated the complexities of a large-scale transformation.<sup>59</sup>

Energex’s combined non-network ICT program includes 7 major investment programs and a minor works program. This includes \$24.0 million for its ICT cyber security investment program. Our assessment from here only refers to the 6 non-cyber capex investments of the ICT program, unless otherwise stated. Table A.5 shows Energex’s proposed capex forecast at a program level.

**Table A.5 Energex non-network ICT capex forecast (\$ million, \$2024-25)**

Program	Capex
Customer	60.5
Integrated grid planning	17.4
Asset and works management	32.8
Digital core	32.9
Data & Intelligence	21.4
Digital foundations	58.1
Minor works	19.0
<b>Total</b>	<b>242.1</b>

Source: Energex’s proposal

### A.3.3 Reasons for decision

We have reviewed the information Energex provided in support of its ICT capex forecast, including the business cases and cost-benefit models. Where required, we have sought further information from Energex through information requests.

While Energex’s forecast for the 2025–30 period is lower than actual/estimated ICT capex in the 2020–25 period, we have placed less weight on this observation when viewed in the context of its 2020–25 period overspend of \$220.6 million and its decision to exclude it from

<sup>57</sup> Energex, *Att. 5.8.01 – Non-network ICT Plan*, January 2024, p. 20.

<sup>58</sup> Ergon Energy, *Att. 5.3.11 – Capex ex post justification – Non-network ICT*, January 2024, p. 2. The response to this information request relates to both Ergon Energy and Energex.

<sup>59</sup> Ergon Energy, *Att. 5.3.11 – Capex ex post justification – Non-network ICT*, January 2024, p. 14. The response to this information request relates to both Ergon Energy and Energex.

the RAB. As table A.6 shows, Energex’s forecast for the 2025–30 period is still \$89.9 million higher than our final decision for the 2020–25 period.

**Table A.6 Energex’s ICT capex forecast compared with the AER allowance and actual/estimated capex for the 2020–25 period (\$ million, \$2024–25)**

AER forecast 2020–25	Actual/estimate 2020–25	Overspend	2025–30 forecast
176.2	396.8	220.6	266.0

Source: Energex’s proposal

Note: For a like-for-like comparison, this table includes ICT cyber security capex.

While Energex proposed a decrease in its non-recurrent capex, it proposed an increase in recurrent capex. Energex submitted that learnings from its major ICT transformation resulted in a change in its approach to ICT business cases for the 2025–30 period.<sup>60</sup> It stated that dealing with the transformation and consolidation of legacy applications becomes exponentially more challenging the longer it is left.<sup>61</sup> Its new approach, termed ‘Evergreening’, plans for more frequent recurrent upgrades to applications and technologies.

All major investment business cases comprise recurrent and non-recurrent expenditure. We have therefore relied on our bottom-up assessment of the individual major investments to test whether Energex’s recurrent and non-recurrent expenditure is prudent and efficient.

### A.3.3.1 Bottom-up review of major investments

We do not consider Energex has provided sufficient information to justify that its ICT capex forecast reasonably reflects the capex criteria. In particular, the major investment business cases do not provide adequate evidence to support its preferred options.

The 6 major investment business cases all present 3 options with the following themes consistent across each business case.<sup>62</sup> Energex’s preferred option is option 2 for all 6 business cases.

- Option 1 – Base case. Maintain business capabilities with only minor improvements in efficiency outcomes.
- Option 2 – Builds on and enhances the base case by adapting and scaling it to keep pace with the expected industry transition.
- Option 3 – Builds on option 1 and 2 by developing capabilities in advance of the industry transition.

We found systemic issues across all six of Energex’s major investment business cases. These include:

- *Preferring options with the lower ranked NPVs* - Energex preferred option 2 for all 6 major investments despite 3 of the cost benefit analyses showing the lower cost option 1 had the highest ranked NPV. Energex noted in its business cases that option 3 was

<sup>60</sup> Energex, *Att. 5.8.01 – Non-network ICT Plan*, January 2024, p. 7.

<sup>61</sup> Energex, *Att. 5.8.01 – Non-network ICT Plan*, January 2024, p. 7.

<sup>62</sup> Energex, *Att. 5.8.01 – Non-network ICT Plan*, January 2024, p. 27.

discounted due to the higher cost without realising higher benefits (than option 2). However, it does not use the same logic when preferring option 2 over option 1 under the same circumstances. We consider Energex’s inconsistent approach to options analysis is likely biasing higher cost options.

- *No quantified benefits or quantified benefits with little detail* - Some of the business cases describe qualitative benefits but do not quantify them. The qualitative benefits lack detail and do not explain any qualitative risks such as compliance or loss of vendor support. We asked Energex to provide further information on any risk costs associated with its major investment initiatives. For example, where Energex proposed version upgrades to its ICT systems, we would expect it to detail the risks (qualitative or quantitative) associated with not undertaking the upgrades to show there is an identified need. Energex did not provide greater detail and instead referred to the high-level qualitative risks in its business cases.<sup>63</sup>
- *Insufficient detail on the costs* - The cost initiatives in the NPV models are too high level to understand the scope of works. Where cost initiatives lacked detail, we asked Energex to provide further information on the scope of works.<sup>64</sup> In response, Energex did not provide further detail and instead pointed to the same descriptions in the models that we noted lacked detail.<sup>65</sup> We consider there is insufficient detail in Energex’s major investment business cases to determine the efficiency of costs.

We also had regard to stakeholder comments about Energex’s ICT program. The RRG noted it has concerns about Energex’s ICT governance process given its 2020–25 period major transformation was allowed to continue to 2023 despite significant cost overruns. It is unsure of Energex’s ability to deliver its proposed 2025–30 suite of projects on time and on budget.<sup>66</sup>

CCP30 highlighted that its forecast is still higher than the AER’s 2020–25 forecast and noted its concerns about Energex’s ability to continue to manage large ICT projects given its experience in the 2020–25 period.<sup>67</sup> It also recommended that the AER consider how its major ICT transformation has benefited customers.

In its ICT plan, Energex noted the following:<sup>68</sup>

The Option 1 - Base Case (Keep the Lights On) is the ongoing requirement that a prudent and efficient DNSP would do to achieve the NER capex and opex objectives in 2030, based on ongoing predictable conservative growth.

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<sup>63</sup> Energex, *Response to information request 016 - Non-network ICT capex – Confidential*, May 2024, p. 4.

<sup>64</sup> Energex, *Response to information request 016 - Non-network ICT capex – Confidential*, May 2024.

<sup>65</sup> Energex, *Response to information request 016 - Non-network ICT capex – Confidential*, May 2024.

<sup>66</sup> RRG, *Submission on Ergon and Energex electricity distribution regulatory proposals 2025–30 and the Australian Energy Regulator’s Issues Paper*, May 2024, p. 25.

<sup>67</sup> CCP30, *Advice to the AER regarding the Energex and Ergon Energy regulatory proposals 2025–30*, May 2024, p. 19.

<sup>68</sup> Energex, *Att. 5.8.01 – Non-network ICT Plan*, January 2024, p. 27.



Given our findings, we consider this ‘maintain’ option to be more appropriate and therefore include an alternative forecast of \$195.4 million that is associated with Energex’s option 1 for all 6 major investments.<sup>69</sup>

Energex noted there are interdependencies between its proposed cyber security option and its non-cyber ICT major investments.<sup>70</sup> Given Energex has not provided sufficient detail on the scope of works in its non-cyber NPV models, it is not clear to what extent option 1 would allow (or not allow) for the full deliverability of its proposed cyber security program.

## A.4 Resilience

### A.4.1 AER’s draft decision

We do not accept that Energex's resilience capex forecast of \$50.0 million would form part of a total capex forecast that reasonably reflects the capex criteria. We have included \$25.1 million capex for resilience in our alternative estimate of total capex, which is \$24.9 million (49.8%) lower than Energex's proposal.

### A.4.2 Energex’s proposal

Energex proposed \$50.0 million for resilience capex, comprised of the following programs:

- Bushfire and Flood Program (\$25.1 million)<sup>71</sup> - This program relates to a range of network solutions to address heightened risk of bushfire and floods. These solutions include pole wrapping and covered conductor in high bushfire risk areas as well as asset relocations and additional switching points in high flood risk areas.
- Mobile Substations Program (\$8.7 million)<sup>72</sup> - This program relates to additional mobile substation support during unplanned outages to meet its safety net targets. These mobile substations are 10MVA units with HV and LV switchgear mounted on a trailer.
- Mobile Generation Program (\$16.2 million)<sup>73</sup> - This program relates to additional mobile generators and associated plant to increase capabilities of its network to further support planned and unplanned works, hot-weather events, contingency planning and disaster recovery response.

We have reviewed the information Energex provided in support of its resilience capex forecast, including the business cases and information request responses.

Energex has not satisfied us that the entirety of the expenditure it has proposed for these programs is prudent and efficient. Our alternative forecast is based on our assessment of Energex’s resilience proposal, discussed below.

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<sup>69</sup> This does not include \$29.4 million for ICT cyber security, which we assessed separately.

<sup>70</sup> Energex, *Att. 5.8.04 – Business Case Cyber Security*, January 2024, p. 26.

<sup>71</sup> Energex, *Att. 5.5.10 – Business Case Bushfire and Flood Resilience – Public*, January 2024, p.4.

<sup>72</sup> Energex, *Business Case Mobile Substation*, January 2024, p.3.

<sup>73</sup> Energex, *Att. 5.5.11 – Business Case New Mobile Generation – Public*, January 2024, p.6.



### A.4.3 Reasons for the decision

We have reviewed the information Energex provided in support of its resilience capex forecast, including the business cases and information requests responses.

Based on the information before us, we consider that there is insufficient evidence to support Energex's total forecast for resilience-related expenditure. We have accepted some expenditure where we could see merit in the program even though the justification for the expenditure was not entirely solid. We acknowledge that resilience is still an emerging area of expenditure where forecasting is challenging.

In coming to our position, we note that Energex has not provided the evidence expected to support resilience-related funding as noted in the AER's network resilience guidance note.<sup>74</sup> As noted in our guidance note, the AER expects NSPs to demonstrate, within reason, that:

- there is a causal relationship between the proposed resilience expenditure and the expected increase in the extreme weather events
- the proposed expenditure is required to maintain service levels and is based on the option that likely achieves the greatest net benefit of the feasible options considered
- consumers have been fully informed of different resilience expenditure options, including the implications stemming from these options, and that they are supportive of the proposed expenditure.

On the first point, we note that Energex provide information in its business cases which sets out some of the current difficulties it faces with the impact from extreme weather events. Energex also provided some information about the general future climate in the Queensland region referring to the Bureau of Meteorology's State of the Climate 2022 report, and the IPCC's Sixth Assessment Report.

However, as noted in the guidance note, we were not provided with sufficient quantitative evidence of a causal linkage between the likelihood of future extreme weather events on the Energex network and the likely impact that it has on Energex's assets, in terms of likelihood of the consequences and cost of consequences on the network. As noted in the guidance note, we would also expect evidence of how its proposed resilience-related expenditure will limit the cost of damage from extreme weather events and why ex-ante expenditure is more efficient than ex-post expenditure.<sup>75</sup>

On the second point above, we expect proposals for resilience-related expenditure to demonstrate there is or likely to be an increase in network risk, the benefit of the resilience-related funding (for instance, further avoiding or reducing the frequency or duration of outages) outweighs the costs of the investment, and the preferred funding option provides more net benefit against other feasible options.<sup>76</sup> We note that Energex provided some business cases to show the net benefit of its investment. But the prudence and efficiency of that investment was not established, as there was no evidence of causal linkage between the

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<sup>74</sup> AER, *Network Resilience a note on key issues*, April 2022, p.11.

<sup>75</sup> AER, *Network Resilience a note on key issues*, April 2022, p.11.

<sup>76</sup> AER, *Network Resilience a note on key issues*, April 2022, p.12.

likelihood of the future extreme weather event on the Energex network and the likely impact of the network (and therefore how the investment would address this impact).

On the third point above, we also expect businesses to engage with its consumers on how its ex-ante funding proposal will ensure any risk to manage extreme weather events are allocated efficiently between consumers and businesses. Also, businesses should provide evidence that it worked collaboratively with affected communities and other responsible entities to understand the communities' genuine needs to plan and prepare for, as well as recover from a natural disaster. We also expect businesses to consult with the wider consumer base on their preferences for bearing resilience-related costs to address localised impacts.<sup>77</sup>

We encourage Energex to include this evidence as part of its revised proposal on resilience.

We discuss our specific findings on the proposed programs below.

### **Bushfire and Flood Program**

We have accepted forecast capex associated with Energex's bushfire and flood program. We note that Energex has assessed the parts of the network likely to be impacted through its analysis of its high-risk feeders.<sup>78</sup>

While there are areas for improvement in Energex's economic justification for this program, we see merit in the proposed solutions and the level of expenditure reasonable for the type of risks it is proposing to mitigate. We had regard to the similarity of these solutions to those we accepted in our decision on Endeavour Energy's resilience proposal for the 2024-29 regulatory control period.<sup>79</sup>

### **Mobile Substations**

Based on the information before us, we are not satisfied that there is a resilience benefit in Energex procuring additional mobile substation support or a compliance obligation for Energex (See Section A.1 Augex) to do so. We note that it would appear that the primary driver for this program is the compliance of Energex's Distribution Authority condition rather than resilience.<sup>80</sup>

Under its Distribution Authority conditions, Energex has safety net targets in which it must restore power following an N-1 event (a credible outage on an element of the network). As a baseline target, Energex must have no greater than 4 MVA without supply for more than 8 hours for urban areas and no greater than 10 MVA without supply for more than 12 hours in short rural areas. Additional safety net augex may be required beyond this point in order to meet the higher tiers of Energex's safety net target.

We consider that Energex only has a few single transformer substations and therefore has more flexibility and redundancy options to manage its demand risks. We invite Energex to

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<sup>77</sup> AER, *Network Resilience a note on key issues*, April 2022, p.12-13.

<sup>78</sup> Energex, *Att. 5.5.11 – Business Case New Mobile Generation – public*, January 2024, p. 25.

<sup>79</sup> AER, *Draft Decision Attachment 5 – Capital expenditure – Endeavour Energy – 2024-29 Distribution revenue proposal*, September 2023, pp. 15-18.

<sup>80</sup> Energex, *Response to information request 038 - Business Case Mobile Substation*, September 2024, p. 20.

provide further information in support of its position in its revised proposal, including evidence of the resilience outcome from this program consistent with our guidance note on resilience.

### **Mobile Generation**

Due to similarities between this program and the mobile substation program, we sought further information on the differences and interactions between these programs.

Energex noted that the mobile substation program is focused on supporting zone substations during power outages impacting thousands of customers, while the mobile generation program relates to a distribution feeder focused solution. Additionally, mobile generators are used for localised events in HV and LV networks and, typically, secure supply to a few hundred customers.<sup>81</sup>

Energex also stated that the main justification for mobile generation is to address distribution feeder planned outages and meet minimum service standard (MSS) performance. Its mobile generation problem statement identifies the lack of timely support across the network to both planned works and unplanned outages. Within this problem statement, there are two main related compliance obligations, its MSS and its Safety Net targets.<sup>82</sup>

We were not provided with sufficient supporting information of the resilience benefits of this program and so we assessed Energex’s proposal based on its stated compliance obligations.

The MSS is concerned with the reliability of the network and considers both planned and unplanned outages. In assessing the prudence of the investment, we examined Energex’s SAIDI and SAIFI trends as well as its capex over time. We found that its capex and SAIDI is relatively stable and that there is an improvement to its SAIFI over the past 5 years. Given these reliability and capex trends, we do not consider the investment is prudent based on addressing MSS concerns.

With respect to Safety Net targets, it is evident this program is a component of Energex’s safety net calculations. As such, we consider this investment to be a matter of determining the amount of additional generation required between this program and the safety net program contained in augex. While it may be the case that Energex requires additional mobile generation to satisfy its Safety Net targets, we were not presented with sufficient information to determine how the proposed mobile generators, or Energex’s existing stock of mobile generators, fits into the calculations.

Given the lack of information, we have not included an alternative forecast for this program. We encourage Energex to provide further information in its revised proposal including calculations to demonstrate the linkages of this investment with its safety net augex proposal. We also invite Energex to explain the benefits of this program from a resilience perspective in line with our guidance note.

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<sup>81</sup> Energex, *Response information request 038 - Energex Augex*, p. 3.

<sup>82</sup> Energex, *Response information request 038 - Energex Augex*, p. 3.

## A.5 CER

### A.5.1 AER’s draft decision

We accept that Energex’s capex forecast of \$54.1 million to integrate consumer energy resources (CER) reasonably reflects the capex criteria and have included this amount in our alternative estimate of total capex.

### A.5.2 Energex’s proposal

Energex proposed the following activities in its DER integration strategy:<sup>83</sup>

- The continued implementation of dynamic operating envelopes and its Low Voltage Distributed Energy Resource Management System
- Establishing visibility on transformers exhibiting high export penetration, installing low voltage monitors to measure power quality, and expanding the telemetry hub
- Increasing hosting capacity to establish a basic export level of 1.5kW per customer.
- Investments in network protection systems.<sup>84</sup>

In addition to its proposed investments, Energex plans to implement demand management measures through two-way pricing (export tariffs) and “solar soak” hot water and other load control capability.

In its business case, Energex presented its base case scenario as a counterfactual where it is required to upgrade distribution transformers as they reach capacity. This results in a present value cost of \$651 million over a 25-year forecast period and provides the basis for the majority of the estimated customer benefits (that is, the proposed investments will avoid these future costs). However, Energex did not demonstrate that its base case scenario, in which customers are able to export 100% of their capacity, represents the current level of export service experienced by its customers.

Energex’s business case considered a range of potential investments and found that the implementation of dynamic connections provides the highest NPV. However, it argued that this option alone does not offer choice to customers that want to export their full capacity. Energex assumed that 50% of customers will choose a dynamic connection and receive between 1.5kW and 10kW of export capacity (per phase), whereas the remaining 50% of customers will pay export tariffs and (generally) maintain an export capacity of 5kW. Therefore, Energex assumed that 10% of the expenditure associated with its counterfactual scenario will be necessary to increase hosting capacity and ensure that the basic export limit is maintained at 1.5kW.

Energex also proposed an opex step change to acquire near real time smart meter data, which it claimed is necessary to implement advanced dynamic connections, which provide greater benefits than basic dynamic connections. However, the primary benefits of the

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<sup>83</sup> DER refers to distributed energy resources. We use the term consumer energy resources (CER), noting that these resources are largely owned or leased by residential or small business customers.

<sup>84</sup> Energex, *Att. 5.6.01 – DER Integration Strategy*, January 2024.

proposed opex step change relate to safety and reliability and are quantified in a separate business case. We discuss our assessment of this opex step change in Attachment 6.

### A.5.3 Reasons for the decision

We reviewed Energex’s DER integration strategy as well as its supporting NPV analysis, which it provided in response to our information request. Our assessment was informed by both our CER strategy and DER integration expenditure guidance note.<sup>85, 86</sup> Key to our assessment was understanding whether Energex reasonably estimated customer benefits in its NPV analysis. We also considered stakeholder submissions on Energex’s proposal.

#### Estimation of benefits

Energex estimated the following types of benefits:

- Avoided network investment. As noted above, these represent the majority of customer benefits and are overstated because Energex assumed that customers currently experience zero export curtailment. In reality, the benefits associated with avoided network investment are likely to be far lower.
- Avoided export curtailment. To value these benefits, Energex applied the AER’s customer export curtailment values to average yearly 30-minute load curves from a selection of its most representative feeders. We consider these benefits were estimated reasonably.
- Reductions in carbon emissions. We found that Energex applied appropriate emissions intensity factors, as forecast by AEMO. However, it significantly underestimated these benefits by applying a lower carbon value than the interim values of emissions reduction, which were published after it submitted its revenue proposal.<sup>87</sup> Energex assumed a starting carbon value of \$35 per tonne and increased it by \$1 each year over the modelling period. This is much lower than the published interim values of emissions reduction, which start at \$75 in 2025 and reach over \$300 in 2045.

#### Stakeholder submissions

Most stakeholder submissions commented on the proposed export tariffs and the basic export level, rather than the nature of Energex’s proposed investments. Origin Energy noted that a significant proportion of customers are likely to exceed the basic export limit and incur additional costs.<sup>88</sup> Other stakeholders expressed dissatisfaction with the proposed level of spending on CER integration, with some suggesting that Energex should be forecasting greater levels of capex to help accelerate the energy transition.<sup>89</sup>

#### Conclusion

We consider that Energex’s capex forecast reasonably reflects the capex criteria because:

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<sup>85</sup> AER, [Consumer energy resources strategy](#), April 2023.

<sup>86</sup> AER, [Distributed energy resources integration expenditure guidance note](#), June 2022.

<sup>87</sup> AER, [Valuing emissions reduction – AER guidance and explanatory statement](#), May 2024.

<sup>88</sup> Origin Energy, [Submission – 2025–30 Electricity Determination – Energex, Ergon & SA Power Networks](#), May 2024.

<sup>89</sup> Master Electricians Australia, [Submission – 2025–30 Electricity Determination – Energex](#), May 2024.

- its overall strategy is sound, and maximising existing capacity by prioritising dynamic connection investments over increasing hosting capacity is prudent
- emissions reduction benefits will be much greater than Energex quantified, which supports the case for the proposed investments;
- greater network visibility is necessary so that Energex can better identify export constraints and existing service levels and prioritise its investments
- stakeholders supported Energex undertaking more investments to integrate CER in its network.

We consider that Energex’s NPV analysis is flawed as it overstates the level of “business as usual” investment needed to maintain the export service, absent its proposed investments. This has the effect of overstating avoided network investment benefits.

## A.6 Fleet

### A.6.1 AER’s draft decision

We do not accept that Energex's fleet capex forecast of \$198.5 million would form part of a total capex forecast that reasonably reflects the capex criteria. We have included \$168.6 million capex for fleet in our alternative estimate of total capex, which is \$29.9 million (15.1%) lower than Energex's proposal.

### A.6.2 Energex’s proposal

Energex proposed \$198.5 million for fleet capex with \$17.5 million of associated disposals. Energex’s total fleet capex is \$62.6 million (46.1%) higher than the current period spend of \$135.9 million. It submitted that the uplift in expenditure across periods is driven by the following:<sup>90</sup>

- Higher unit rates - Energex forecast significant increases in unit rates across major fleet vehicle categories such as heavy commercial vehicles HCVs (52%), crane borers (36%) and elevated work platforms (EWP) (23%).<sup>91</sup>
- Addressing shortfalls in 2020–25 period fleet replacements - A review of a longer historical series shows that the first three years of Energex’s 2020–25 period fleet expenditure is below that of the preceding period. It cites supply constraints as the main driver behind this decrease. As a result, it highlighted the requirement for heightened spending to address this shortfall in the final two years of the 2020–25 period, continuing into the 2025–30 period.<sup>92</sup>
- Full Time Equivalent (FTE) uplift - Energex proposed fleet capex to support programmes of work resulting from a wider uplift to other capex categories. Its proposed uplift is \$16.3 million.

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<sup>90</sup> Energex, *Att. 5.9.08 – Non-network Fleet Plan 2025–30 – Confidential*, January 2024, p.5.

<sup>91</sup> Energex, *Att. 5.9.08 – Non-network Fleet Plan 2025–30 – Confidential*, January 2024, p.20.

<sup>92</sup> Energex, *Att. 5.9.08 – Non-network Fleet Plan 2025–30 – Confidential*, January 2024, p.21.



- Changes to the replacement strategy for elevated work platforms (EWP) (>14m) and crane borers - Energex is proposing to reduce and align the rebuild rates for EWPs and crane borers.<sup>93</sup> This will result in the earlier replacement of more vehicles, incurring greater cost than the base case.

### A.6.3 Reasons for the decision

We have reviewed the information Energex provided in support of its fleet capex forecast, including the business cases, cost-benefit models and information requests responses.

Energex has not satisfied us that the proposed program for fleet is prudent and efficient. While we consider that some uplift in fleet expenditure is reasonable, Energex has not satisfied us that the magnitude of the proposed uplift is reasonable. Our alternative forecast is based on our assessment of Energex’s fleet program, discussed below.

#### Higher unit rates

Energex undertook a review of unit rates in preparing its fleet forecast. It observed a significant increase in unit rates over the current regulatory control period.<sup>94</sup>

We performed benchmarking analysis of Energex’s proposed increased unit rates, relative to the recent decisions of other DNSPs. We found the forecast falls within an acceptable range. We therefore consider it reasonable that an uplift in fleet expenditure is required.

#### Addressing shortfalls in 2020–25 period fleet replacements

We consider the justification for heightened fleet volume requirements resulting from 2020–25 period supply shortages to be reasonable. This supports the case for an uplift in fleet capex, relative to the 2020–25 period.

However, the majority of Energex’s fleet proposal did not have supporting cost benefit analysis (CBA) models.<sup>95</sup> In particular, it did not provide sufficient evidence to explain how its preferred investment has been tested against other options to demonstrate prudence and efficiency of its forecast, especially for the largest components of its fleet program. As such, we do not consider that Energex has justified the magnitude of the uplift that it has proposed. Below, we review programs contained within the fleet capex proposal that have not included in our alternative forecast.

#### *Changes to the replacement strategy*

Energex has not substantiated the benefits of its proposed changes to the replacement strategy for EWPs and crane borers.<sup>96</sup> It stated the benefits of the program are due to

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<sup>93</sup> Currently, 90% of EWPs are rebuilt at 10 years to extend their service lives to 15 years. The remaining 10% are replaced as new at 10 years. For crane borers, 97% are rebuilt at 10 years to extend their service lives to 20 years across both networks.

<sup>94</sup> Energex, *Att. 5.9.08 – Non-network fleet plan 2025–30 – Confidential*, January 2024, p. 20.

<sup>95</sup> Energex, *Response to information request 007 – Fleet*, April 2024, p. 2.

<sup>96</sup> Currently, 70% of EWPs are rebuilt at 10 years to extend their service lives to 15 years. The remaining 30% are replaced as new at 10 years. For crane borers, 97% are rebuilt at 10 years to extend their service lives to 20 years across both networks.



reductions in unscheduled downtime for younger assets, relative to older assets.<sup>97</sup> Energex provided an estimate of an average avoided days out of service per asset.<sup>98</sup> However, it provided no evidence or modelling in support of these figures. As this forms the basis of the benefits calculated in the NPV model, we do not consider that Energex’s conclusion that its preferred option has the lowest negative NPV is justified.

### *FTE uplift*

We issued an information request on regarding the relationship between fleet expenditure and the increased employee numbers resulting from the uplift in the wider capex proposal. Energex provided a model that demonstrated that additional employees cause an increase to the fleet capex forecast (and the converse is also true).<sup>99</sup> As a result of reductions to other areas of capex, we have reduced the FTE uplift driven fleet expenditure accordingly.

To derive our alternative forecast, we have we removed the changes to the replacement strategies (\$14.1 million) and the FTE uplift (\$16.3 million) from the fleet capex forecast. The removal of the FTE uplift was calculated using the model that Energex provided (described above) and is based upon the wider reductions to the total network capex forecast. We have accepted the remainder of Energex’s proposal. We consider that our alternative forecast accounts for an appropriate uplift in fleet expenditure to address the supply issues of the current period, described above. This uplift also accounts for increased unit rates and volumes.

## **A.7 Property**

### **A.7.1 AER’s draft decision**

We do not accept that Energex’s property capex forecast of \$151.9 million would form part of a total capex forecast that reasonably reflects the capex criteria. Our draft decision includes \$143.7 million in property capex, which is a \$8.2 million (or 5.4%) lower than Energex’s proposal.

### **A.7.2 Energex’s proposal**

Energex proposed a property capex forecast of \$151.9 million, which represents 4.5% of total forecast capex. This includes capitalised leases of \$13.9 million, which is a new category for the 2025–30 period.<sup>100</sup> Excluding capitalised leases, Energex’s proposal is \$138.0 million in property capex, which is 18.8% higher than its actuals/estimates for the 2020–25 period.

Energex submitted that the key drivers for the uplift in property capex are several major one-off projects to address capacity constraints and condition-based assessments.<sup>101</sup>

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<sup>97</sup> Energex, *Att. 5.9.07A – Business Case Non-Network Fleet – EWP Replacement – Confidential*, January 2024, p.11.

<sup>98</sup> Energex, *Att. 5.9.07A – Business Case Non-Network Fleet – EWP Replacement – Confidential*, January 2024, p.11.

<sup>99</sup> Energex, *Response to information request 041*, June 2024, p. 1.

<sup>100</sup> Leases that were previously treated as opex are now capitalised due to a change in accounting standards.

<sup>101</sup> Energex, *Att. 5.9.01 – Non-network capex Property Plan 2025–30*, January 2024, p. 31.

### A.7.3 Reasons for the decision

When assessing Energex’s proposal for property capex, we had regard to major project business cases, cost-benefit models, and further supporting information provided by Energex. The RRG noted that it supports an AER focus on areas of capex with a proposed material increase from Energex’s actuals/estimates in the 2020–25 period (including property).<sup>102</sup>

Energex submitted that its general property programs (minor, base and security) forecasts are based on historical expenditure.<sup>103</sup> Energex provided its historical expenditure for these programs and demonstrated that it used an average of its most recent 8 years of actual expenditure to calculate its 2025–30 forecast.<sup>104</sup> Our analysis shows that its forecast for this program is significantly lower than our final decision for the 2020–25 period. On this basis, we are satisfied that that Energex’s forecasts are reasonably reflective of the efficient costs of a prudent operator.

In addition to the general property programs, Energex proposed seven major projects for the 2025–30 period. From our bottom-up review of Energex’s major property project business cases we consider that, aside from the Rocklea training facility redevelopment, its investments are prudent and efficient. Energex assessed investment options against appropriate business-as-usual counterfactuals. We consider the business cases sufficiently describe the need for investment with reasonable assumptions based on historical data and industry standards.

#### Rocklea training facility redevelopment

We consider Energex has not justified the Rocklea training facility redevelopment. It submitted that the proposed redevelopment was driven by poor building condition, safety, and forecast capacity constraints for internal and external training.<sup>105</sup>

Energex submitted that its preferred redevelopment option provides an increase in training revenue due to the increase in training capacity.<sup>106</sup> Accordingly, Energex’s NPV model included additional training revenue from third parties as benefits for the redevelopment option. Energex confirmed that this revenue is collected directly from third parties and the training is classified as alternative control services.<sup>107</sup>

We do not consider revenue Energex collects from third parties benefit the consumers of standard control services. Energex stated that it considers training third parties benefit the consumers of standard control services as these participants work on its regulated

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<sup>102</sup> RRG, *Submission on Ergon Energy and Energex electricity distribution regulatory proposals 2025–30 and the Australian Energy Regulator’s Issues Paper*, May 2024, p. 4

<sup>103</sup> Energex, *Att. 5.9.01 – Non-network capex Property Plan 2025–30*, January 2024, p. 24.

<sup>104</sup> Energex, *Response to AER Information Request 005*, April 2024.

<sup>105</sup> Energex, *Att. 5.9.01 – Non-network capex Property Plan 2025–30*, January 2024, p. 3.

<sup>106</sup> Energex, *Att. 5.9.07A – Business case Non-network Property - Rocklea Stage 2*, January 2024, p. 20.

<sup>107</sup> Energex, *Response to information request 012*, April 2024.

network.<sup>108</sup> It did not provide reasoning as to how consumers benefit nor did it provide any further quantification of these benefits.

While there may be benefits to consumers relating to training third parties that work on Energex's regulated network, we do not consider the revenue it collects from providing this training is the appropriate quantification. As such, we removed the additional training revenue from Energex's Rocklea training facility NPV model. Once we removed these benefits from the NPV calculations, the preferred option changed to the lower cost business-as-usual base case. We therefore included capex for the base case option, which is \$8.2 million lower than Energex's preferred option for the Rocklea training facility.

## A.8 Capitalised overheads

Overhead costs include business support costs not directly incurred in producing output, and shared costs that the business cannot directly allocate to a particular business activity or cost centre. The Australian Accounting Standards and the distributor's cost allocation methodology determine the allocation of overheads.

### A.8.1 AER's draft decision

We do not accept Energex's capitalised overhead forecast of \$838.1 million would form part of a total capex forecast that reasonably reflects the capex criteria. Our draft decision includes \$615.7 million in capitalised overheads, which is a \$222.5 million (or 26.7%) lower than Energex's proposal.

### A.8.2 Energex's proposal

Energex proposed \$838.1 million for capitalised overheads for the 2025–30 period. To arrive at its forecast, Energex used its own methodology based on a bottom-up build.<sup>109</sup>

Energex used the most recent year of actual capex and overheads from 2022–23. In contrast, our methodology uses the available actual capex and overheads from the current period. This is typically three years for a draft decision and four years for a final decision.

In addition, Energex has applied an annual 1% efficiency adjustment to its capitalised overheads forecast.

### A.8.3 Reasons for the decision

The AER has a standardised approach to forecasting overheads which has been applied by almost all NSPs. We do not require NSPs to adopt the AER's approach but expect that a different approach is transparent so that it can be verified by the AER to ensure reasonableness of assumptions.

We have reviewed Energex's methodology and do not consider that sufficient evidence has been provided to support the reasonableness of its approach. This is because:

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<sup>108</sup> Energex, *Response to information request 012*, April 2024.

<sup>109</sup> Ergon Energy, *Response to information request 014 – Capitalised Overheads*. The response to this information request relates to both Ergon Energy and Energex.

- Its cost pool calculations, from which its overheads are allocated, use hardcoded data with no supporting information. As such, we are unable to verify Energex's figures;
- For these types of costs, we find that a bottom-up approach tends to overstate a NSP's requirement. Thus, we would expect a top-down check of its capitalised overhead forecast which was not provided; and
- We note a wide disparity between Energex's forecast overheads and those produced by our standard methodology without supporting evidence to explain the reasons for why Energex's approach is more appropriate than the AER's approach.

The standard AER methodology is based on:

- 75% of capitalised overheads are fixed.
- 25% of capitalised overheads vary with direct capex.

The forecast for capitalised overheads is calculated by assuming that for every 4% change in direct capex, capitalised overheads change by 1%.

Using our standard approach, an increase in direct capex of the size proposed by Energex would produce a \$50.7 million (5.5%) increase in capitalised overheads, against Energex's proposed increase of \$398 million (43%).

We have used our standard methodology including three years of actual expenditure. As Energex has proposed a 1% productivity adjustment, this has been included in our alternative forecast, although we note that our standard approach does not include that adjustment. We commend Energex for introducing the 1% productivity adjustment to its capitalised overheads forecast.

Our final decision will update for changes in total direct capex and we will re-test the methodology using the available four years of current period actual expenditure. Energex's proposal did not explain why it selected to use one year of actual expenditure. We encourage Energex to provide further information to support its selected number of years in the revised proposal, and to test the sensitivity of this assumption.

## Shortened forms

Term	Definition
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulatory
Augex	Augmentation Expenditure
capex	capital expenditure
CBA	Cost benefit analysis
CCP30	Consumer Challenge Panel, sub-panel 30
CER	customer energy resources
DNSP or distributor	Distribution Network Service Provider
ENA	Energy Networks Australia
EV	electric vehicle
ICT	information and communication technologies
NEL	National Electricity Laws
NEO	National Electricity Objectives
NER	National Electricity Rules
NPV	net present value
NSP	Network Service Provider
opex	operating expenditure
RAB	regulated asset base
repex	replacement expenditure
SAIDI	system average interruption duration index
SAIFI	system average interruption frequency index
SCADA	supervisory control and data acquisition
SCS	standard control service