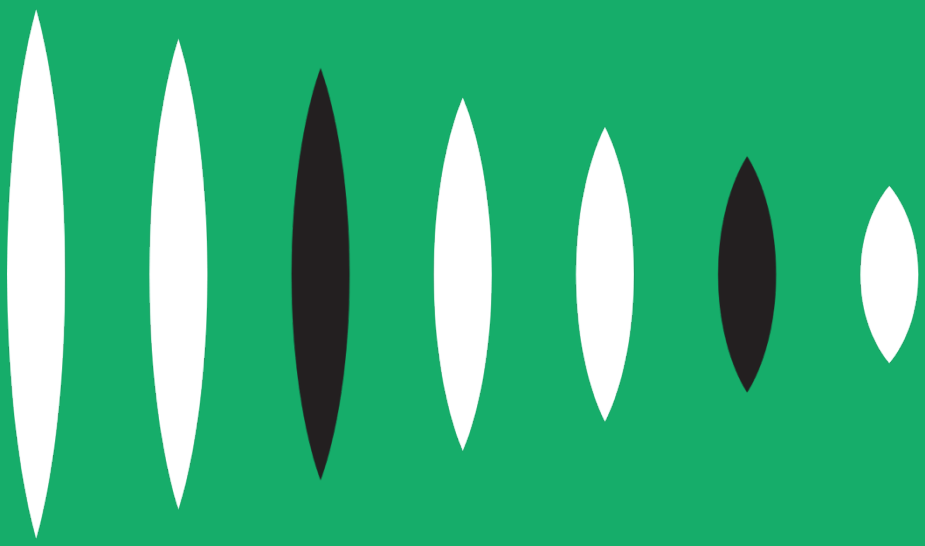
AER Issues Paper:
QLD electricity distribution determinations
Energex and Ergon Energy
2020 to 2025

Submission

June 2019



ENERGY CONSUMERS AUSTRALIA

Contents

Version history

VERSION	DATE	COMMENTS
1	6 June 2019	Final

Summary

Improving energy affordability through contemporary risk management practices and achieving further efficiencies to reduce network costs is a priority for energy consumers in Queensland.

Energy Consumers Australia is the national voice for residential and small business energy consumers. Established by the Council of Australian Governments Energy Council in 2015, our objective is to promote the long-term interests of energy consumers with respect to price, quality, reliability, safety and security of supply.

We appreciate the opportunity to respond to the Australian Energy Regulator (AER) on its *Issues Paper: QLD electricity distribution determinations – Energex and Ergon Energy 2020-2025.* In our response, we will comment on matters raised in the AER Issues Paper, as well as matters from Energy Queensland's Energex and Ergon Energy regulatory proposals (the Proposals). At this point we note that there is no Tariff Structure Statement (TSS) lodged with the AER (following the withdrawal of the previous TSS submitted in January 2019). We are conscious that the proposals have been developed at the same time as Energy Queensland has been settling its new organisational structure.

Affordability is a priority for households and small businesses and is Energy Consumers Australia's focus in applying the long-term interests of consumers test when reviewing network revenue proposals. Energex and Ergon Energy estimate that average household bills will fall by 8.3 per cent and 7.4 per cent respectively in the first year (2020-21) of the next regulatory period.

These price reductions in the first year would provide welcome relief for consumers. However, in the final four years of the period prices would trend back up – an outcome that is inconsistent with consumers general preference for price stability over time that allows them to plan and manage their own energy use.

We do not think this price path is acceptable when there appear to be opportunities for the businesses to more deeply embed contemporary risk management practices to secure greater efficiencies and further savings for consumers. We are keen to engage with Energy Queensland on these matters with a view to moving towards Proposals that are capable of acceptance.

Our analysis is informed by advice from the consulting firm Dynamic Analysis, who we engaged to provide a technical perspective on the Energy Queensland Proposals. We made a submission on Energy Queensland's

Draft Plan in October 2018 which included initial advice from Dynamic Analysis outlining strategic questions for the network.[1]

Dynamic Analysis has undertaken further detailed analysis since Energy Queensland published its formal Proposals in January 2019 (**Attachment A**). This advice poses a series of questions about the proposals that we are keen to explore in the next phase of the process, including:

- Do operating and environmental factors justify the mid-range performance of both networks on AER benchmark models for operating expenditure (opex)?
- Are the businesses applying best practice risk-based asset management strategies and how is this informing the replacement capital expenditure (capex) proposals?
- Has Energy Queensland fully explored demand management opportunities with a view to deferring localised capex augmentation to reduce costs for consumers?
- How is Energy Queensland addressing the challenges associated with increasing levels of distributed energy resources (DER) on the network? In particular, how is it seeking to optimise network and consumer investments?
- Are there opportunities for property and fleet plans to be better prioritised?
- Have consumers benefited from historic information and communications technology (ICT) investments and do forward plans represent value for money?

What energy consumers in Queensland are telling us

Energy affordability remains a priority for households and small businesses in Queensland, after a ten-year period where prices increased substantially, driven by network costs in the first instance, and more recently wholesale costs. This is reflected in the latest results of our Energy Consumer Sentiment Survey, which indicate that consumers are much more satisfied with electricity reliability (84 per cent), compared to value for money (51 per cent).[2]

As we outlined in our submission on the Draft Plan in October 2018, moves by the Queensland Government in the last two years to bring the costs of feed-in-tariffs on budget, and to issue directions to state-owned generators to modify their bidding behaviour, have reduced the pressure on energy bills. Scores on key indicators in the Energy Consumer Sentiment Survey have been steadily improving in Queensland, with satisfaction with value for money increasing by 16 per cent between December 2017 and December 2018.

While the costs of the Solar Bonus Scheme are being funded by the Queensland Government for three years from 2017-18, the scheme is

[1] https://energyconsumersaustralia.com.au/publication/energy-queensland-energex-and-ergon-energy-our-draft-plans-2020-25-submission/
[2] https://energyconsumersaustralia.com.au/publication/energy-consumer-sentiment-survey-findings-december-2018/

scheduled to run until 2028[3]. There is a question about how the scheme will be funded after the current network period which ends in June 2020. The Australian Competition and Consumer Commission (ACCC) found that environmental and other scheme costs were making a substantial contribution to consumer bills, and welcomed the move of the Queensland Government to fund the Solar Bonus Scheme itself ($771m in its budget for three years), rather than have consumers fund the scheme through network costs. This saw average savings on electricity bills of around $72 per customer in 2017-18[4]. We would be concerned about the consumer impacts of bringing this back onto bills.

Energy Consumers Australia is currently undertaking a national review of costs imposed on consumers through electricity bills that have not been subjected to the long-term interests of consumers test by the AER. Preliminary findings suggest that these costs nationally amount to hundreds of millions of dollars per annum.

As in other parts of the National Energy Market (NEM), consumers' confidence that the market will deliver value for money over the long-term remains very low at 32 per cent. Energy Queensland's decision to become a signatory of the Energy Charter, which was launched in January 2019, is a positive sign of its commitment to rebuilding trust and confidence and delivering better outcomes for consumers over the longer-term.

Our framing and approach

The objective – the long-term interests of energy consumers

Promoting the long-term interests of consumers means that current and future consumers pay no more than they need to for the quality of service they require. To put it in even simpler terms, not one dollar more is spent than necessary; not one day earlier than it is needed. This is an outcome that can best be achieved through a process of dialogue and alignment between network businesses and the consumers they serve. When this happens, businesses are demonstrably careful with consumers' money and investors are earning reasonable returns.

This does not happen when investors (or owners in the case of government owned assets) or managers are incentivised to follow a strategy that is distorted by objectives beyond the regulatory framework. In our assessment of regulatory proposals, we are guided by three principles to explore and understand the direction the business is taking.

1. The network business should be able to demonstrate that it has developed a deep understanding of the preferences of its consumers.

2. The business should be able to talk about its longer-term strategy and business plans to provide a context for the five-year revenue

[3] ACCC, *Restoring electricity affordability and Australia's competitive advantage, Retail Electricity Pricing Inquiry – Final Report June 2018*, Table 9.1, page 214. Accessed from https://www.accc.gov.au/publications/restoring-electricity-affordability-australias-competitive-advantage

[4] Ibid, page 219.

proposal under consideration, including a long-term price path expectation.

3. The business should be able to acknowledge the problems created by decisions made previously – comparatively less spending per se, is not enough. Consumers are looking for positive assurance that the spending proposed and approved is designed to meet the National Electricity Objective (NEO).

How we assess draft plans and regulatory proposals

We include Dynamic Analysis' detailed advice to support our submission (**Attachment A**) and as a shared resource for all stakeholders engaging with Energy Queensland as part of this process.

It is important to note that this advice does not reflect an Energy Consumers Australia final position. Rather, it is an input which informs our thinking and highlights areas for further exploration. We ask that network businesses and the AER consider the questions posed and issues raised in the advice, to help further public understanding of the network's strategy and reasoning for the revenue setting proposal.

When we engage with proposals, we hope to see proposals that successfully demonstrate the link between the business strategy and revenue proposal. In these documents, we look to see if the business has unpacked why the decisions being made (or proposed) are in the long-term interests of consumers. We seek evidence about the claims in the proposal and how they link back to consumer preferences and outcomes; and how informed consumer preferences have influenced decisions within the business.

Based on our experience in similar processes, we have also come to the position that if one party has information that would make the choice between two alternatives in a draft plan or revenue proposal clear, but will not provide the information, we will assume the information works against the proposed preferred option. Consequently:

- If we are not provided with the information we request, our position is that the expenditure is unjustified.
- If we cannot see evidence of consumer preferences, our position is that the expenditure is unjustified.
- If we cannot see clear evidence of ring-fencing integrity, our position is that the expenditure is unjustified.

Our observation is that different businesses are at different stages of maturity as we move away from the old way of making revenue determinations. Some businesses have taken us on the entire journey; some have willingly shared non-public information with us and our experts; and some re-started this journey with a clear and demonstrated commitment.

At the end of this process, we would ideally be in a position where we can confidently assure consumers that the very best use of their next $1 is to

spend it with their local network to deliver the high-quality network services consumers have said they wanted.

We recognise that it is the responsibility of the AER to set the maximum revenues that networks are allowed to recover from consumers through network tariffs over the five-year regulatory period, based on its assessment of efficient costs and an informed view on expected electricity demand.

Consumer views and perspectives are integral to ensuring that the decisions made by the AER are in the long-term interest of consumers.

Our response

Engagement with stakeholders

In informing our views on this proposal, Energy Consumers Australia has had a laser like focus on affordability, which needs to be a constraint on all expenditure decisions of the business.

The energy system is undergoing a paradigm shift, driven by technological advances and consumers making new choices about how they meet their energy needs and participate in the energy market. The task of networks in this context is transitioning from supporting a system comprising a small number of large things, to supporting one comprised of a large number of small things.

The values, needs and preferences of consumers must shape decisions about the future. This is not just an engineering challenge – it is an extraordinary social and economic reshaping that demands new thinking, new frameworks and new tools. To meet this challenge, networks need to engage in a deep dialogue with consumers.

Energy Queensland adopted an innovative approach to the development of the revenue proposals for the 2020-25 period, publishing a draft plan in September 2018, ahead of its formal Proposals which it lodged with the AER in January 2019.

Energy Consumers Australia made a submission on this draft plan on 23 October 2018.[5]

Comparison to the Draft Plan

Energex and Ergon Energy both proposed overall reductions to revenue compared to the draft plan. For Ergon Energy, the reduction was $353.8m, and for Energex the reduction was $153.7m.

Analysis undertaken by Dynamic Analysis in Figures 1 and 2, compares the components of revenue between the draft plan and regulatory proposals for Ergon Energy and Energex respectively.

[5] https://energyconsumersaustralia.com.au/publication/energy-queensland-energex-and-ergon-energy-our-draft-plans-2020-25-submission/

Figure 1: Drivers of revenue reduction from draft plan to regulatory proposal for Ergon Energy ($m, real 2020)

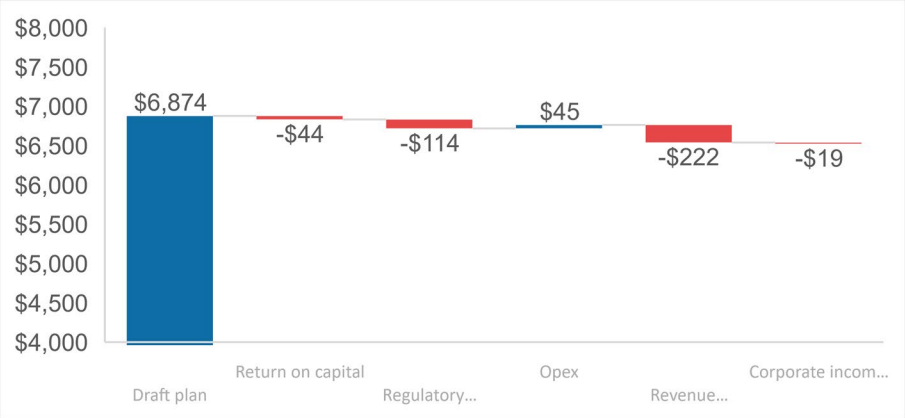
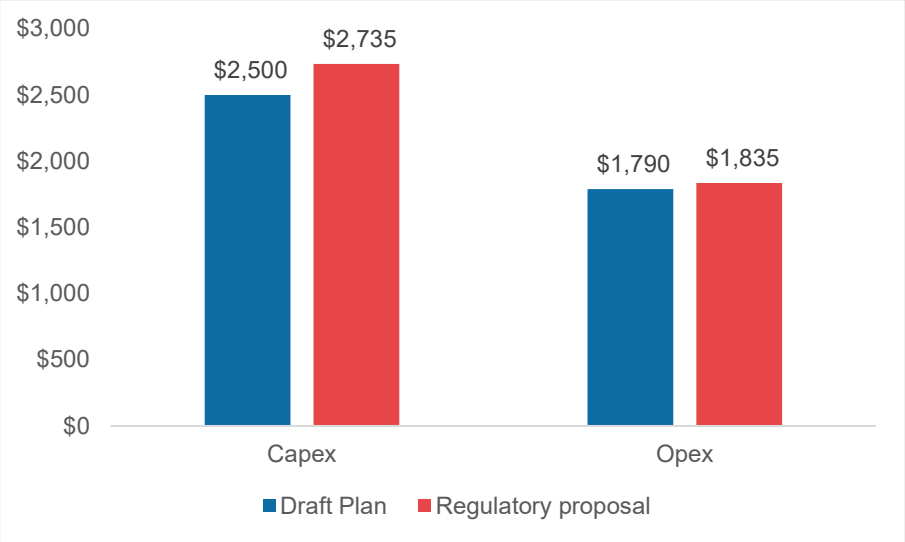


Figure 2: Drivers of revenue reduction from draft plan to regulatory proposal for Energex ($m, real 2020)

We note that most of the revenue reductions are linked to a decision to not claim incentive payments.

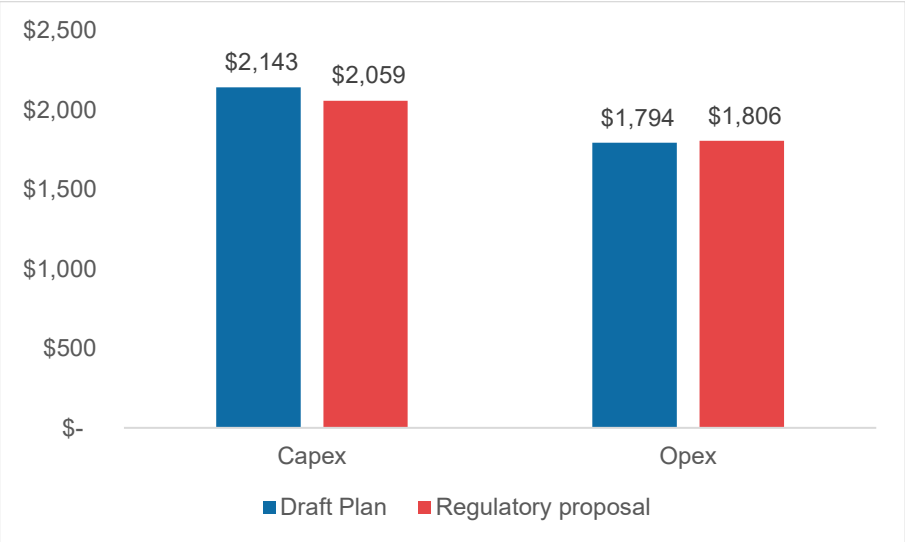
In terms of proposed expenditure, Ergon Energy has increased its net capex by $234m relative to the draft plan, with most of this relating to new replacement capex (repex) programs (about $214m). It has also sought an increase of $45m for opex compared to the draft plan. The increase in expenditure since the draft plan is set out in Figure 3 below. Our draft submission had raised a number of concerns on the level of capex and opex being proposed by Ergon Energy, and these remain.

Figure 3: Ergon Energy change in capex and opex between draft plan and regulatory proposal ($m, real 2020)



In contrast, Energex has reduced its net capex proposal by $83m compared to the draft plan which is welcome given that our view in the submission on the draft plan was that minor reductions to repex and connections could be possible. However, there is no reduction in non-network capex, an area where we also raised concerns. Energex has increased its proposed opex by $12 million since the draft plan. Figure 4 shows the difference for Energex.

Figure 4: Energex change in capex and opex between draft plan and regulatory proposal ($m, real 2020)



Looking at the decision-as-a-whole, Dynamic Analysis's advice to us is that:

> *Under Energy Queensland's guidance, Energex and Ergon Energy have made significant inroads into improving their efficiency. They have put forward a proposal that lowers prices for Queensland customers in the 2020-25 regulatory period. Our review of the proposal suggests both networks can find a deeper level of cost savings without impacting safety or reliability of services. This includes reductions to base year operating expenditure and capital expenditure. We also seek more evidence to assure Queensland customers that they have not paid twice for past Information and Communication Technology assets in the Regulatory Asset Base.*

Energy Consumers Australia is keen to engage with Energy Queensland on these issues with a view to working towards Proposals that are capable of acceptance. We highlight these matters in the following section, with supporting detail available in the Dynamic Analysis advice at **Attachment A**.

An area where we have engaged in depth with Energy Queensland is in relation to the pricing arrangements that will govern how it recovers revenues from consumers in the 2020-25 period – settings that are outlined as part of the TSS that accompanies the proposals.

One of the challenges we have faced in this engagement is that the shape of the tariff proposals have not been settled, and no revised TSSs have been submitted. In this context, our comments are both directed to the AER to support its decision making and to Energy Queensland.

The bottom line – costs to consumers

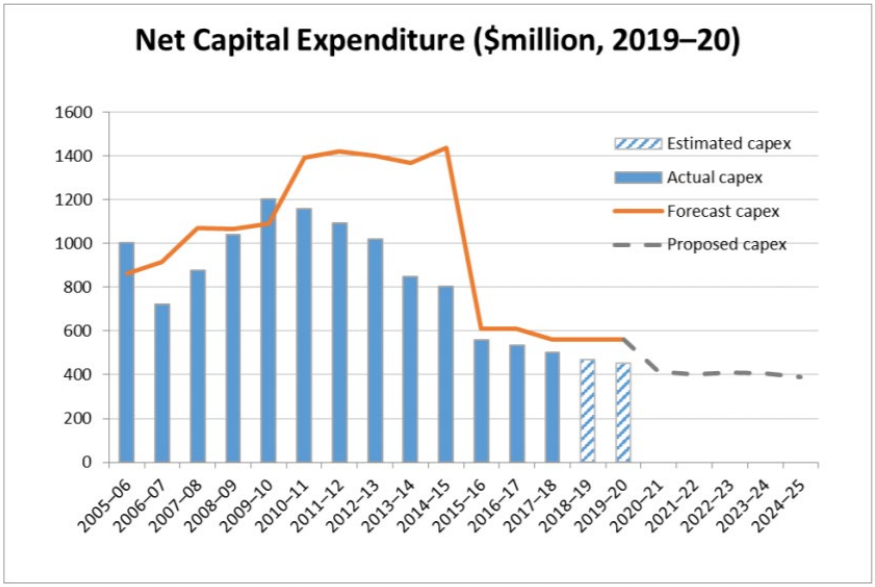
Energy Queensland has developed a proposal that would see average household bills fall by 8.3 per cent (Energex) and 7.4 per cent (Ergon Energy) in 2020-21, and then increase in the remaining four years of the period (see Table 1). On average over the period this would keep prices at current levels. We support a smoother revenue path as we view stable prices as a road to building consumer confidence and trust.

TABLE 1: PROPOSED PRICE PATH FOR AVERAGE HOUSEHOLD BILLS

	2020-21	2021-22	2022-23	2023-24	2024-25	Average 20 20-25
Energex	-8.3%	2.0%	2.5%	1.7%	1.9%	-0.1%
Ergon Energy	-7.4%	2.2%	2.2%	2.2%	2.2%	0.2%

These price outcomes reflect regulated revenues that are 9.4 per cent lower for Energex, and 5.4 per cent lower for Ergon Energy, for the next five years compared to the 2015-20 period[6]. For both networks these revenues are significantly lower than the peak that was reached in 2014-15, achieved principally through big reductions in annual capex – Energex proposes to spend 20 per cent less on capex in 2020-25 then in the previous period (see Figure 5)[7].

Figure 5: Comparison of Energex's past and forecast net capex



Source: AER analysis based on data from AER Final decision PTRM and RFM for 2015-20 regulatory period; Energex Regulatory Proposal PTRM and RFM for the 2020-25 regulatory period.

Note: Total proposed Capital expenditure is $2020 million ($2019-20). These amounts exclude Capcons.

The regulated asset base (RAB) legacy

A network business's RAB is a significant factor in the affordability of the network, as (in simple terms) the higher the RAB per customer, the greater the overheads the network will recover from consumers and the greater the pressure on bills.

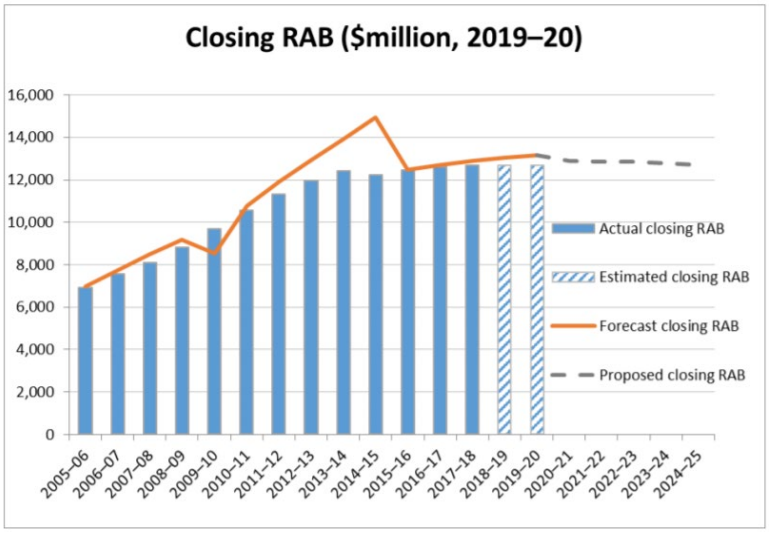
Despite Energy Queensland making these reductions and finding efficiencies in other areas, the legacy of previous high investment remains, with high RABs continuing to be a major factor for revenues and therefore energy bills over the next five years.

[6] AER, *Issues Paper: Energex and Ergon Energy distribution determinations 2020-25*, pages 14 and 15 respectively. Accessed from https://www.aer.gov.au/networks-pipelines/determinations-access-arrangements/energex-determination-2020-25/proposal.

[7] Ibid, page 25.

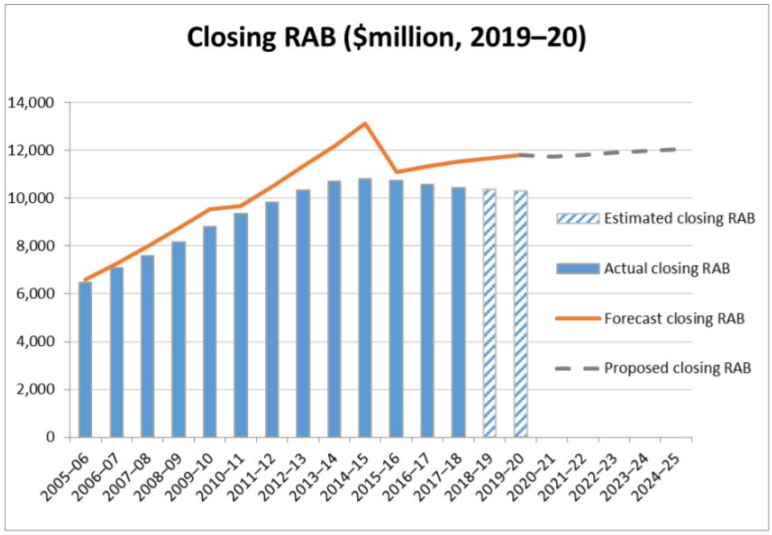
As figures 6 and 7 below show, the RABs for both networks will remain at high levels, reducing by one per cent in the case of Energex and increasing by three per cent in the case of Ergon Energy.

Figure 6: Energex's RAB value over time ($million, 2019/20)[8]



Source: AER analysis based on AER Final decision PTRM and RFM for 2010-15 and 2015-20 regulatory periods; Energex Regulatory Proposal PTRM and RFM for 2020-25 regulatory period, DNSP performance report.

Figure 7: Ergon Energy's RAB value over time ($million, 2019/20)[9]



Source: AER analysis based on AER Final decision PTRM and RFM for 2010-15 and 2015-20 regulatory periods; Ergon Energy Regulatory Proposal PTRM and RFM for 2020-25 regulatory period, DNSP performance report.

[8] Ibid, Figure 9, page 24.
[9] Ibid, Figure 14, page 36.

The ACCC estimated that recommended measures could reduce the contribution that network costs were making to the average bill for a household in south east Queensland by $147 (Figure 8). This is significantly higher than the $53 saving than is being proposed for the Energex region.

Figure 8: Achievable average annual residential bill savings by 2020-21[10]

	Achievable savings ($ per annum)							
Region	2017–18 Bill	Networks	Wholesale	Enviro	Retail	Reduction	2020–21 Bill	% Reduction
Victoria	1457	39	192	34	26	291	1166	20
NSW	1697	174	155	43	37	409	1288	24
South east Queensland	1703	147	192	18	62	419	1284	25
South Australia	1727	13	227	89	42	371	1356	21
Tasmania	1979	113	226	75	–	414	1490	21

Comments on key components

The Energy Queensland Proposals incorporate material savings for consumers that lays a platform for improved consumer outcomes over the longer-term. Both Energex and Ergon Energy have reduced opex, constrained capex programs, embedded productivity and forgone incentives – efforts which help effect a course-correction following historic overinvestment in network capacity.

The Dynamic Analysis advice also indicates that Energy Queensland has provided clearer justification of its programs and revenue since its Draft Plan, which we welcome. However further substantiation is required in relation to several key elements of the Proposals. We provide a high-level summary of these issues below, with a more detailed discussion available in **Attachment A**.

Opex

Energex and Ergon Energy have achieved significant reductions in opex since 2015, when expenditure peaked, with further savings proposed through productivity commitments that go beyond the AER Guidelines in the 2020-25 period.

[10] ACCC, *Restoring electricity affordability and Australia's competitive advantage, Retail Electricity Pricing Inquiry – Final Report June 2018*, Table A, page xv. Accessed from https://www.accc.gov.au/publications/restoring-electricity-affordability-australias-competitive-advantage

Energex proposes to spend $1805.8m in opex over the period 2020-25, which represents a downward trend from current levels[11]. Ergon Energy is also proposing a reduction in this element compared to current levels, with total opex over the period of $1834.6m[12].

Dynamic Analysis has focused on how Energex and Ergon Energy have performed against the AER opex benchmarks, as well as evaluating the robustness of the starting point (the 'base year') that has been selected to calculate its performance on opex metrics.

The key question raised in this analysis is whether Energex and Ergon Energy's performance in the mid-range of the AER's opex benchmarks is justified, and whether consumers should expect the networks to achieve deeper efficiencies. Energy Queensland argues in the Proposals that this performance reflects the special environmental and operating context in these regions, but we are not yet convinced that these circumstances justify higher costs compared to networks that face similar challenges.

Based on this analysis, we are seeking further assurance of the justification for approximately $98 million of Energex's proposed opex, and $215 million of Ergon Energy's proposed opex.

Capex

As discussed above, both Energex and Ergon Energy are proposing to maintain lower levels of capex that each transitioned to in the 2015-2020 period following the elevated levels earlier in the decade.

Energex is proposing $2.0bn in capex over the period, which is 20 per cent lower than the actual capex in 2015-20[13]. Ergon Energy is proposing $2.7bn for the period, which is an increase of eight per cent compared to 2015-20[14].

The Dynamic Analysis review has focused on high-level indicators – including, capex performance over the past ten years, age of the network, performance against AER benchmarks and reliability performance – to identify areas that require further review and assurance.

Replacement capex

Energex proposes $643m in replacement capex or 'repex' during 2020-25 – 28 per cent of the total capex spend[15]. This figure for Ergon Energy is $1094m which is 38 per cent of its overall capex budget[16]. Whereas Energex's repex is much lower (26 per cent lower) than the current period, Ergon Energy is proposing a significant increase in repex, being 23 per cent higher than 2015-20.

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[11] AER, *Issues Paper: Energex and Ergon Energy distribution determinations 2020-25*, page 31. Accessed from https://www.aer.gov.au/networks-pipelines/determinations-access-arrangements/energex-determination-2020-25/proposal
[12] Ibid, page 43.
[13] Ibid, page 25.
[14] Ibid, page 37.
[15] Ibid, page 27.
[16] Ibid, page 39.

As discussed earlier in this submission, the increase to Ergon Energy's repex since the Draft Plan was published in September 2018 is about $214 million.

Given the significance of repex expenditure, in particular in the Ergon Energy network, we would like to hear from the business on its longer-term strategy and trajectory to provide a context for the five-year revenue proposal under consideration. We will continue to engage with Energy Queensland to better understand how the goals and key target areas in its *Summary of Energy Queensland Corporate Plan 2020-25*[17] guides network investment in this period and the longer term.

Dynamic Analysis raises a question about whether Energex and Ergon Energy are taking an unduly conservative approach to managing their infrastructure. While Energy Queensland has one of the younger networks in the NEM, they appear to be replacing their assets earlier than their peers. Energy Consumers Australia needs to be assured that Energy Queensland is following good risk quantification and management practice that we are seeing elsewhere.

This analysis, which has also reviewed unit costs and failure rates for various asset categories, indicates that we need assurance on 20 per cent of the proposed repex for Ergon Energy and 15 per cent of the proposed repex for Energex.

Augmentation capex

Augmentation capex or 'augex' for both networks are a relatively small part of their overall capex budgets, with Energex proposing to spend $301m (13 per cent of capex)[18] and Ergon Energy $249m (eight per cent of capex)[19].

It is critical that networks partner with consumers, particularly by rewarding flexibility, to reduce the need to expand the network and keep costs down, as the energy system transforms. The Energy Queensland networks have been leaders in this area, through programs like PeakSmart, which rewards consumers for allowing their air conditioners to be managed in a more dynamic way, while maintaining comfort within the home.[20]

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[17] Energy Queensland, Supporting documentation: *Summary of Energy Queensland Corporate Plan 2020-25*, January 2019. Accessed from https://www.aer.gov.au/networks-pipelines/determinations-access-arrangements/ergon-energy-determination-2020-25/proposal

[18] AER, *Issues Paper: Energex and Ergon Energy distribution determinations 2020-25*, page 28. Accessed from https://www.aer.gov.au/networks-pipelines/determinations-access-arrangements/energex-determination-2020-25/proposal.

[19] Ibid, page40.

[20] https://www.energex.com.au/home/control-your-energy/positive-payback-program/positive-payback-for-households/air-conditioning-rewards

The results of the Energy Consumer Sentiment Survey indicate that there is a huge potential for networks to build on these initiatives, with more than 40 per cent of households in South East Queensland indicating that they would be willing to reduce their energy use during periods of very high demand.[21]

The Dynamic Analysis review indicates that Energy Queensland is shifting the focus of its augex away from traditional work to accommodate peak demand growth, to improving its ability to manage the network in a smarter way. Key here is upgrading the technology on its network to give it greater visibility about how electricity is moving around its low voltage network.

Both networks have historically spent less on augex than they sought in their revenue proposals, and we need to be assured that the approximate 15 per cent buffer that we have seen in earlier periods is not also built into the 2020-25 proposal. Dynamic Analysis explores issues associated with reinforcement programs, worst performing feeders and power quality programs in its advice which provide a basis for engagement on this element of the proposal in the next phase of the process.

Non-network capex

As the energy system transforms, networks will need to spend more (at least in proportional terms) on things other than the 'poles and wires' to play their role as the platform for new energy services – first and foremost here will be the ICT systems that will act as the brain for a much more sophisticated network.

Developing and rolling-out new ICT infrastructure is therefore critical, but it must be done in a systematic way that represents value for money for consumers. Energy Consumers Australia sees a need for networks, as well as regulators and consumer advocates, to increase capability and skills in ICT strategy, planning and procurement. Dr Rob Nicholls, an ICT expert with the University of NSW Business School, is working with Energy Consumers Australia on these issues and we will be facilitating a series of stakeholder webinars in the coming months that will provide an opportunity for dialogue between networks and consumer advocates on this key transformation issue.

Over the last decade Energex and Ergon Energy have spent almost $1.2bn on ICT. Looking forward, the networks propose to spend $350m and $290m respectively on ICT capex over the 2020-25 period. Dynamic Analysis has reviewed the effectiveness of ICT investments to date, finding that Energex and Ergon Energy have not provided quantified evidence to show that consumers have benefited from this significant spend – approximately $500 per household between 2011 and 2020. Better data platforms should create opportunities to defer capex and reduce maintenance costs, but this is not evident in the proposals.

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[21] ECA, *Energy Consumer Sentiment Survey*, December 2018, page 24. Accessed from https://energyconsumersaustralia.com.au/wp-content/uploads/Energy-Consumer-Sentiment-Survey-Report-December-2018.pdf.

Roll forward of previous ICT assets

Two strong themes we are hearing about ICT is lack of transparency and, subsequently, lack of trust, about what benefits consumers are receiving from the investment; and the risks of consumers paying twice for the same thing. The case for rolling forward the SPARQ assets into the RAB raises these two issues as we cannot see clear explanatory materials about how the value of the assets were derived and we are uncertain about whether consumers could potentially end up paying twice for the assets.

The advice provided by Dynamic Analysis is that there is little documentation or data to establish that the:

- written down value of the past ICT investments is correct; and
- forecast process for deriving opex and capex in the 2020-25 period reflects that Energex and Ergon Energy will no longer pay an annual service fee.

Dynamic Analysis suggests that a rough 'rule of thumb' guide about the written down value of the assets after an annual usage fee would be about $100m instead of the $147m and $154m for Energex and Ergon Energy respectively[22].

The technical report provided by Dynamic Analysis at **Attachment A** provides key questions for data for review, that supports the approach to the roll-forward of legacy ICT assets in the Proposals.

Property, fleet and plant

Energex is proposing $182m for fleet and equipment, which is eight per cent lower than the current period[23]; while Ergon Energy is proposing $225m which is 12 per cent higher than the current period[24].

For property costs, Energex is proposing $174m (11 per cent lower than the current period)[25]; while Ergon Energy is proposing $220m (five per cent higher than the current period).[26]

The advice from Dynamic Analysis suggests that there might be other options for managing property, fleet and plant given the reduced workforce and the efficiencies driven by the creation of Energy Queensland.

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[22] Energy Queensland, Supporting Information – 8 – *Integration of Legacy ICT Assets 2020-25 January 2019*. Table 2, page 2. Accessed from https://www.aer.gov.au/networks-pipelines/determinations-access-arrangements/energex-determination-2020-25/proposal

[23] AER, *Issues Paper: Energex and Ergon Energy distribution determinations 2020-25*, page 30. Accessed from https://www.aer.gov.au/networks-pipelines/determinations-access-arrangements/energex-determination-2020-25/proposal

[24] Ibid, page 42.

[25] Ibid, page 30.

[26] Ibid, page 42.

The advice also highlights the different unit costs that Ergon Energy and Energex face for its fleet capex. We ask the AER and Energy Queensland to consider whether there are opportunities for Energy Queensland to use its buying power to obtain better pricing outcomes on its fleet expenditure.

Tax and depreciation

Tax allowance

Dynamic Analysis suggests that we would expect to see a reduction in the tax allowance for Ergon Energy and Energex due to the finalisation of the AER's tax review in December 2018. We defer to the AER's expertise on the calculation of the tax allowance for Ergon Energy and Energex however, Dynamic Analysis suggests that the tax allowance proposed by Ergon Energy and Energex could be reduced by a third.

Depreciation

Ergon Energy has proposed using the year by year tracking approach for the calculation of depreciation, which would result in an increase of 27 per cent on the current period[27].

Energex has also proposed moving from the Weighted Average Remaining Life (WARL) method to the year on year tracking approach for implementing straight line depreciation, which would see the depreciation allowance increase significantly by 55 per cent compared to the current period[28].

In its Issues Paper, the AER states that it has limited discretion in the methodology employed by businesses, as the year by year methodology satisfies the requirements in the National Electricity Rules for the matching of depreciation with the assets' underlying asset lives.

The technical report provided by Dynamic Analysis at **Attachment A** discusses the approach to calculating asset lives given assets are living longer than in the Post Tax Revenue Model.

The AER Issues Paper notes that most distribution network businesses apply the year on year methodology. We questioned the value of year on year over the WARL in our submission to the AER Issues Paper for the Ausgrid 2019-24 revenue determination, noting that it increases the amount of revenue collected from today's consumers, raising a question of intergenerational equity between todays and tomorrow's consumers.

The advice provided by Dynamic Analysis raises a similar point, in that the year on year methodology brings forward depreciation. This doesn't seem to be the only implication. There is the potential for the year on year methodology to result in a "cliff-face drop off in straight line depreciation" where the drop-off bears no relationship to the underlying costs of the network at the time.

[27] Ibid, page 36.
[28] Ibid, page 24.

We have seen the impact that volatile pricing has on consumers managing their energy costs and question whether the year on year approach to depreciation could have negative revenue and price implications for consumers in the longer term. In terms of meeting the NEO, does this approach meet the long-term interests of consumers test?

Tariff Structure Statement

The context

There is a renewed focus on tariff reform following the ACCC's Retail Electricity Pricing Inquiry, which found that progress in shifting to 'user pays' or 'cost reflective pricing' for the use of electricity distribution networks has been too slow. While we agree that this important reform project has not progressed as intended, we are concerned about approaches that simply mandate new network tariffs for all consumers with digital meters given the risk of unknown and unintended consequences around how these charges are passed through by retailers in their final energy bills. Moves by some retailers to limit choice, such as no longer offering 'flat rate' retail pricing following the implementation of cost reflective network tariffs, or see consumers experiencing bill shock from being charged peak rates, negatively impacts confidence and trust which is already low in this market.

Energy Consumers Australia is therefore interested in how the tariff proposals affect residential consumers, particularly those who face difficulties managing their energy bills; and small businesses, including agricultural enterprises in regional Queensland. We are also interested in the extent to which the tariff designs can unlock the potential flexibility in consumers' energy use over the longer-term. Tariff designs that facilitate 'demand side participation' help make the system more efficient and cheaper to run by reducing the need for expensive new infrastructure to be built.

However, changing the tariff structures can create risk for consumers that needs to be managed.

Firstly, the benefits of tariffs that better reflect the underlying costs of delivering the service will only be realised where consumers understand and can respond to new price signals. Without the right information and tools, a price signal can quickly become a penalty. Exposing consumers to the risk of higher bills – or the opportunity for lower bills – without ensuring they have the capacity to understand and respond is in stark contrast to the intention of the package of measures that have been recently introduced to improve consumer outcomes in retail energy markets.[29]

Secondly, reviewing the merits of proposed changes to the design of electricity distribution network tariffs is difficult because only rarely is information provided about how these new prices will be passed through to consumers by retailers.

[29] This includes the default market offer
https://www.energy.gov.au/publications/price-safety-net

And finally, while governments can and are playing a role in providing a safety-net for consumers who might not be able to respond to new pricing, identifying who needs assistance can be challenging.

Our most recent Energy Consumers Sentiment Survey June 2019 report finds that there have been increases in the positive rankings for energy services in South East Queensland since the deregulation of electricity prices in July 2016. Overall satisfaction with energy services is now at 75% (up 4% in the last year) while the proportion reporting positively on value for money is now at 58% (up 8% in the last year) which is the highest level nationally.

In our view this demonstrates that a positive outcome is possible when significant changes to pricing are introduced alongside a targeted information campaign and assistance for low income consumers to understand and make choices about their energy use.

Response to tariff proposals

Energy Queensland is yet to provide revised TSSs to replace the TSSs that were part of the Energex and Ergon Energy's regulatory proposals submitted on 31 January 2019, and subsequently withdrawn.

Given the stage that the we are at in the determination process, Energy Consumers Australia has provided comments on several aspects to assist the AER in its decision-making in relation to the possible tariff structures and pricing to be put forward by Energy Queensland.

In our view, the AER should progress to making its Draft Determination on its usual timetable, which we understand would be September 2019. A delay beyond that point only adds to the uncertainty for consumers, and an inability to plan for tariff changes that are scheduled to come into effect on 1 July 2020. In this regard, it may be that there is merit in the start date being delayed, until 1 July 2021. Such a delay should be to allow pricing and information to communicated by retailers, and if necessary supporting measures by government, to support consumer decision-making. This means that Energy Queensland should aim to finalise their tariff structures, and pricing with a view to these being settled by the time of the Draft Determination.

The nature of the engagement with Energy Queensland on tariffs

Throughout the process, including the most recent intensive engagement with consumer groups since January 2019, Energy Queensland's approach has been at the inform end of the International Association for Public Participation (IAP2) spectrum, rather than consult, involve or collaborate.

It is disappointing that there have been information gaps and inaccurate information provided, and feedback from consumer groups has not been or only partially addressed. The result is that we are yet to arrive at a clear understanding of Energy Queensland's proposed tariffs and the overarching strategy.

The proposed tariff strategy

In our view no clear link has been established between the discussion of proposed tariffs and the known challenges that are facing Energex and Ergon Energy in adapting to a more decentralised energy system, driven by the need to lower emissions and facilitated by rapid technological change. Given the level of penetration and further growth in rooftop solar systems and expected uptake of both batteries and electrical vehicles, our expectation was that there would be discussion of what this means for tariffs that incentivise utilisation of the Queensland networks.

As we have seen in South Australia, the low levels of demand in the middle of the day are being addressed through time-of-use network tariffs that incentivise consumers to shift when they use power to utilise this available energy. At the same time, a 'prosumer network tariff' is designed to reward consumers for using energy in a more flexible way, assisted by technology (batteries, home energy management systems, etc). How to manage limits on the 'hosting capacity' of the network – particularly where electricity generated from rooftop solar systems is being injected into the grid is also being discussed.

The absence of a more joined-up discussion about these issues in Queensland, particularly as it has led the way in "automated" load management that has a high acceptance by consumers, is a significant missed opportunity.

We understand from the engagement with Energy Queensland that peak demand is no longer a driver of significant capital expenditure, although it is possible that there are parts of the network where there are locational constraints. As a result, the tariff strategy appears to be focussed on reallocating revenue recovery between different groups of consumers, rather than sending a price signal to reduce future network investment costs.

Our understanding is that the following are the proposed default tariffs that are to apply from 1 July 2020.

- All existing customers as at 1 July 2020 (regardless of their meter) will be assigned to an inclining block tariff, with the blocks increasing in 10,000-kilowatt hour increments for residential customers and 20,000-kilowatt hour increments for small business (noting that existing Ergon Energy customers have an inclining block tariff and Energex customers have a flat (or single) rate tariff;
- From 1 July 2020, customers who are supplied with a digital meter (new connections and replacement meters) will be assigned to a demand tariff that has morning and evening windows (at different rates) in addition to a fixed charge and a volume charge.

We note that where customers have a secondary tariff (i.e. have load control), that this usage is excluded from charging under the primary tariff.

Our understanding is that both existing customers and customers with digital meters can opt out from the assigned tariff – either the inclining block or the demand tariff – to what is described as the existing flat rate legacy tariff (Energex customers) or the existing inclining block tariff (Ergon Energy customers).

We also understand that all existing customers after 1 July 2020 can opt-in to a demand tariff if they choose, or a capacity tariff (which will be based on kilowatt bands), and presumably customers who have been assigned to a demand tariff can also opt-in to the proposed capacity tariff.

The demand and capacity tariffs proposed by Energy Queensland create specific challenges for retailers, and by extension consumers. They are not a familiar concept – unlike time-of-use pricing which is simpler and easier for consumers to understand and respond to. Where demand tariffs have been introduced by networks in other jurisdictions, such as in Victoria on an opt-in basis and in the ACT and in New South Wales on a default basis, it remains the case that consumers lack the information and tools they need to manage their energy use to respond to these tariffs. In this context, it is critical that consumers have the choice at the retail level, of a flat rate tariff so that they are not forced into managing the risk inherent in peak pricing.

We understand from the AER that both time-of use and demand tariffs can be cost-reflective, in signalling drivers of network costs. We would have preferred that the concerns raised by consumer advocates about demand tariffs had been addressed earlier, but at this late stage we place greater weight on the AER settling the choice of tariff structure as matter of urgency, rather than Energy Queensland going back to the drawing board.

Pricing and impact analysis

The tariffs proposed by Energy Queensland to take effect from 1 July 2020 are intended to increase the proportion of the revenue recovered from the following consumer groups, within the overall allowed revenue.

- Consumers with higher overall usage, compared with consumers with lower usage (below the threshold), which could include customers with medical or cooling needs, larger families and specific housing including residential villages, community housing and caravan parks.
- Consumers with higher peak usage, compared to consumers with flatter loads, which could negatively impact families with children and working families, who use air-conditioning and are not on load control.
- Consumers with rooftop solar systems compared to consumers without rooftop solar systems.

The impacts for consumers, compared with the current tariffs and pricing, depend on the overall revenue to be recovered and the pricing for each tariff, noting that the indicative pricing provided to consumer groups in recent engagement appears to be preliminary.

We are not yet able to accept the network tariff proposals being put forward by Energy Queensland, in advance of a TSS being submitted.

To move forward we are seeking further information to be made available, to enable impact analysis to be undertaken to identify which consumers are potentially at risk of higher bills, and to inform the development of measures to assist consumers to mitigate this risk. Our request is that Energy Queensland:

- within the TSS finalise the preferred network tariff structure as well as the indicative pricing of each of the proposed network tariffs, including the proposed fixed charges, the pricing for each parameter, the relative pricing between each of the tariff choices available to consumers, and the price path over the five years;
- make available a data set with load profiles, linked where possible to socio-demographic information (including solar versus non-solar) for households and also for small business to be made available publicly, including being accessible through the University of New South Wales Centre for Energy Environmental Markets Tariff Assessment Tool (available online here); and
- assist with the customer impact analysis, over the five years of the revenue determination not only the initial year.

Consumers able to understand and respond to retail pricing

Ultimately, it is the impact on consumers of retail pricing that is critical to ensuring a transition that is in line with community expectations. Consumers need to be able to understand and respond to the retail pricing offers available, in deciding whether a flat retail rate tariff or a retail peak pricing offer best meets their circumstances.

For retailers to have this in place for 1 July 2020, there needs to be certainty around the network tariff, clarity around how different groups are impacted and how any opt-out mechanism will work in practice.

Consumers should not be faced with a situation where the first time they learn about a demand tariff is when they get a higher bill. While many consumers could be better off – those that have flatter loads or can be flexible in how they manage their energy use – similar numbers of consumers could be worse off.

It should not be assumed that consumers with digital meters will be provided with the information on their energy use in such a way that enables them to make decisions to shift or reduce their use at peak times. There is a need for a whole of sector conversation in advance of the introduction of these tariffs on 1 July 2020 that addresses how consumers will be provided with information on their use that is meaningful, timely and actionable.

Energy Queensland is in a unique position to play a leadership role, in how network tariffs are translated into retail tariffs, with Ergon Retail as part of its corporate structure. There is an opportunity for Ergon Retail to lead the way in developing innovative energy services and accessible information to assist consumers in regional Queensland to achieve better bill outcomes at the same time as new network tariffs are introduced. Ergon Retail could play an active role in improving access to load control – for major electricity appliances – for renters and low-income households to help mitigate the potential impact of demand tariffs.

There are also important opportunities for the Queensland Government in:

- supporting the development of an information campaign, to be directed at households and small business, on the choices available for retail tariffs that are appropriate for their circumstances;

- encouraging retailers to improve access to the load control of major appliances for renters and low-income households; and
- tasking the Queensland Competition Authority, to take a more contemporary approach in its price setting approach to retail tariffs to apply from 1 July 2020.

Conclusion

Energy Consumers Australia has appreciated the opportunity to comment on the Energy Queensland Proposals for 2020-25 and address issues raised in the AER Issue Paper.

If you have any questions about our comments in this submission, or require further detail, please contact Shelley Ashe, Associate Director – Networks, by email at [redacted] or phone on [redacted].

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ENERGY CONSUMERS AUSTRALIA

Technical regulatory advice to the ECA
Review of 2020-25 regulatory proposals
Energex and Ergon Energy

Dynamic Analysis Pty Ltd
31 May 2019

Contents

Executive summary

Decision as a whole

Under Energy Queensland's guidance, Energex and Ergon Energy have made significant inroads into improving their efficiency. They have put forward a proposal that lowers prices for Queensland customers in the 2020-25 regulatory period. Our review of the proposal suggests both networks can find a deeper level of cost savings without impacting safety or reliability of services. This includes reductions to base year operating expenditure and capital expenditure. We also seek more evidence to assure Queensland customers that they have not paid twice for past Information and Communication Technology assets in the Regulatory Asset Base.

In February 2019, we were engaged by Energy Consumers Australia (ECA) to undertake a review of the 2020-25 regulatory proposals for Energex and Ergon Energy (Ergon). The ECA asked us to provide a strategic perspective of whether the networks' proposals provide a foundation for long term affordability and reliability in Queensland.

We found that both networks have made significant efficiencies under the stewardship of Energy Queensland. In the past 3 years, the networks have transformed their businesses leading to capital expenditure (capex) deferrals and operating expenditure (opex) savings. This is welcome news for Queensland customers after a period of over-investment and structural inefficiencies in the 2005 to 2015 period.

Ergon and Energex are proposing a material 10% reduction in network prices in 2020-25. External factors such as the Australian Energy Regulator's (AER) rate of return guidelines and low interest rates partially explain the price reduction. However, we also observe that both networks have proactively reduced prices in the 2020-25 period. For example, Ergon and Energex have not claimed incentive rewards and have embedded significant productivity savings related to a new digital strategy. Both companies also deliver replacement programs at lower cost than their peers.

Our review suggests that Energex and Ergon can pursue more efficiencies to deliver greater price reductions to Queensland customers in 2020-25. The businesses are performing in the mid-range of their peers, indicating scope for further improvement. We also note that mass investment between 2010 and 2015 leaves the networks with greater ability to manage reliability and security risks.

We consider the AER should scrutinise key elements of Energex and Ergon's proposals including the efficiency of the opex base year, replacement, augmentation, and non-network capex programs, the roll-forward of past Information and Communication Technology (ICT) expenditure, and the tax allowance. In our view, about $224 million of revenue for Energex and $356 of revenue for Ergon requires further justification before it can be accepted by the AER. In addition, we have found that the proposed tariff structures appear complex and do not demonstrate a clear case for change.

Our findings are informed by a strategic review of long-term challenges facing the Queensland networks. There are many drivers that could lead to higher prices in the future including ageing assets, higher interest rates, and the costs of integrating solar, batteries and electric vehicles into the grid. In this context, it is critical that Ergon and Energex aggressively pursue efficiency improvements, extend asset lives, and start thinking about how to 'retire and downscale' rather than 'like for like' replacement of ageing assets, and improve asset utilisation by pursuing growth in energy consumption. Pursuing these strategies could yield price reductions over time.

Strategic challenges and opportunities

We have explored whether the Queensland regulatory proposals provide the foundation for long term affordability and service sustainability. Our review suggests there may be some issues facing the networks that may lead to deteriorating reliability and higher prices in the long term. This includes a replacement challenge, higher interest rates and additional costs of integrating solar, batteries and electric vehicles into the grid. We consider there are great opportunities for the networks to improve their asset management and productivity strategies to meet these challenges.

Asset Management strategies

Our review shows that the networks face a moderate risk of higher capital expenditure (and prices) in the long term. At current rates of replacement, we expect the network to significantly age by 2050, potentially leading to deterioration issues. Without a plan to cost-effectively address deteriorated assets, replacement capex (repex) could rise significantly. Looking forwards, we also envisage more capex to integrate solar, batteries and electric vehicles into the grid.

Against this backdrop, we would expect the regulatory proposal to show a clear asset management strategy that includes:

- Implementing 'best practice' risk quantification tools to extend asset lives. We are concerned that the asset lives being achieved by Queensland are below frontier firms, although we recognise that this may be partially due to operating and environmental factors.
- Using spare capacity and leveraging distributed energy resources (DER) to steadily 'retire' rather than replace ageing assets. We have seen some instances where the networks have retired assets. However, we consider Ergon and Energex need to think about a future strategy that reimagines today's network, including a plan to retire core parts of its network such as the sub-transmission and high voltage elements.

Productivity strategies

Energy Queensland has made inroads into addressing structural inefficiencies within Ergon and Energex.

The majority of savings over the last 3 years appear to be related to deferring capital works. There was also some demonstration of lower opex and reduced capex costs from efficiency initiatives. However, we did not find evidence to suggest a comprehensive or methodical plan to transform the cost structure of the networks.

Going forward, we commend Energy Queensland for embedding the savings in overheads and project delivery from its proposed digital strategy.

Our analysis shows that a more fulsome efficiency program is likely to uncover a range of cost efficiencies in capital delivery, system maintenance, and corporate costs. We think that the current and future Information and Communication Technology (ICT) program will assist in unlocking these efficiencies and will provide the data tools to defer capex. We also encourage EnergyQueensland to look at a broader transformation program that uses AER benchmarking data to uncover further areas of efficiency such as maintenance.

Our view is that the quicker Queensland networks move to the efficiency frontier, the greater the chance of meeting the strategic challenges ahead in an affordable and reliable way for customers.

Focus areas for AER review of the regulatory proposals

Our strategic findings informed our review of the 'building block' elements of Energex and Ergon's proposals. We understand it takes time to implement efficiency reform, but we also think the onus is on the networks to demonstrate value for every dollar of proposed expenditure. The proposal documentation makes some headway to justifying the programs and revenue. But in our view, there is a lack of evidence to justify a significant portion of proposed expenditure.

Our strategic findings informed our review of the 'building block' elements of Ergon and Energex's proposals.

We are encouraged by Energy Queensland's commitment to deliver a material price reduction. Both networks have reduced opex from current levels, constrained capex programs, embedded productivity, and given up incentive payments. This means both networks have made inroads into improving efficiency after a period of over-investment in the 2005-15 period.

Despite these improvements, both networks perform in the mid-range of efficiency compared to peers. Our review indicates that Energex and Ergon can achieve a greater level of productivity gains than embedded in the proposal. We have also found areas of the proposal where there is insufficient justification or strategic weakness. We consider the AER's technical experts should scrutinise these areas in more detail and reduce the networks' proposed expenditure if there is no positive evidence of efficiency and prudency. These issues include:

Opex

We strongly question whether Ergon and Energex's operating and environmental factors justify its mid-range performance on AER benchmark models. We would like the AER to undertake more bottom-up category benchmarking of the base year. Our high level analysis suggests that maintenance costs may be higher than rural peers for Ergon. We also consider that Ergon and Energex have not incorporated the stated operating efficiencies (about $79 million) it expects from the merger for the 2019-20 regulatory year.

Replacement (repex) capex

We consider the AER's technical team should review if the networks' risk quantification approach is more conservative than peers. The networks appear to be younger than their peers. However, it has one of the highest rates of replacement in the NEM. This reflects Ergon and Energex's proactive replacement strategy where risky assets are replaced before they fail. Other networks focus on reactive replacement and only proactively replace assets when a clear quantifiable risk to safety, reliability of security of supply.

Augmentation (augex) capex

We consider there may be further demand management opportunities to defer localised augmentation. We support investments to monitor the low voltage (LV) network in light of high solar and battery penetration. However, we consider that smart meters may be more cost effective at providing data.

Non-network capex

We are concerned that Energex and Ergon are replacing ICT assets early to help its transition to a unified enterprise platform. We consider a slower transition would reduce ICT costs. Our review of property and fleet indicate that the programs can be better prioritised in the 2020-25 period.

Roll forward of previous ICT assets

We would like the AER to check whether customers are paying twice for past ICT investments that have now been rolled forward into the RAB. There is little data provided by Energex and Ergon to substantiate its calculations.

Regulatory reform

The regulatory framework is providing a generally resilient method to test regulatory proposals. The AER has been a robust regulator, protecting customer interests through evidence based appraisals of proposals. As part of our review, we have highlighted areas that require a new brand of regulatory thinking. This includes new tools to assess if networks are tackling the challenges of the future, new ways to assess ICT expenditure, and incentive frameworks that only reward networks for actions that are clearly in the interest of customers.

In 2012, the Australian Energy Market Commission (AEMC) made substantial reforms to the National Electricity Rules (NER) on how the AER should assess regulatory proposals. The Rules gave the AER more powers to use benchmarking data in its decisions. It also encouraged networks to involve its customers in the proposal process.

Since that time, the AER has developed a consistent and resilient process to assess regulatory determinations. Prices have tracked down for most networks, relieving some of the affordability pressures that arose before the AEMC amended the Rules.

We have also seen a great change in the way networks engage and involve customers in the proposal process. While still on a journey, networks have made great leaps to listen and respond to their customers' feedback.

Regulation constantly needs to evolve to meet the challenges of the day. The key issue is how to regulate in a rapidly changing energy landscape. This requires broader industry thinking.

We see three areas where regulatory reform would further promote the long term interests of customers.

- Long term regulation - A shortcoming with regulatory proposals is they only require DNSPs to put forward expenditure plans for 5 years. We would like to see DNSPs showing long term trends of expenditure, prices and service outcomes. Some of our analysis shows that customers may experience increased prices and poorer reliability in the long term unless networks address key challenges. We would like regulation to reward DNSPs that actively transform their businesses to meet these challenges, and who consult widely with stakeholders
- ICT assessment -New technology is the toolkit for positive transformational change. However, ICT is the 'hidden' RAB - it requires continual investment over 5 year cycles and is a large contributor to prices. The issue at present is that there is no overarching framework to review whether proposed ICT is efficient and prudent. We also consider that there is no clear method on how to link ICT capex to productivity gains in expenditure proposals. We are encouraged by the AER's recent review into ICT expenditure.
- Incentive Framework - We are not convinced that the Capital Expenditure Sharing Scheme (CESS) is providing a fair sharing of rewards between customers and networks. Networks are being rewarded for underspending capex due to delivery issues, rather than true cost efficiencies. We encourage the AER to conduct a review of its current capex incentive guidelines.

Key findings

Key findings

Our review has focused on whether the regulatory proposals will deliver long term affordability and service quality to Queensland electricity customers. Ergon and Energex have made significant headway to reducing electricity prices over the last 3 years under the stewardship of EnergyQueensland. We also see an effort to keep downward pressure on prices in the 2020-25 period. Our analysis suggests there is significantly more efficiency that can be achieved by Ergon and Energex in the short term, and that this should be passed onto consumers through lower prices. We also encourage the businesses to provide more thinking on the long term challenges and opportunities.

The strengths for customers

- EnergyQueensland has helped the networks to significantly lower costs. While much of the savings relate to capex deferrals, there have also been reduction in cost delivery through scale efficiencies and better workplace practices. Customers will benefit from these structural efficiencies through lower prices in the 2020-25 period and beyond.
- Ergon and Energex are proposing a material reduction in distribution network prices of about 10 per cent in real terms.
- More importantly they have put customers ahead of financial gain by voluntarily giving up incentive rewards. We agree this is the right thing to do, given that the savings relate to over-estimated capital and operating programs.
- Energex and Ergon have put forward some efficiency initiatives such as a proactive reduction in overhead costs. Both networks also appear to have low unit costs for delivering replacement projects relative to their peers.

The weaknesses for customers

- The networks are likely to face significant pressures to keep costs and prices down for customers in the long term. In this context, we would like to see Ergon and Energex consider more ways to embed efficiency in its cost structures as soon as possible.
- On the evidence provided, our analysis suggests material headroom for Ergon and Energex to propose lower expenditure in the 2020-25 period. Key areas where we found scope for cost reduction are:
  - Base year: We have not been persuaded that the opex base year is comparable to the top 4 of DNSPs in the National Electricity Market (NEM). We see some evidence to suggest maintenance costs are too high for Ergon compared to peers. We also question whether the base year has been adjusted for opex efficiencies in the last year of the current period.
  - We consider that Ergon and Energex could deliver significant reductions to replacement, augmentation and non-network capex by deferring less risky investments and prioritising programs.
  - Energex and Ergon have not applied the AER's tax guidelines. We expect this will also significantly reduce revenues.

Our targeted review suggests at least $224 million of revenue for Energex and $356 million of revenue for Ergon should not be accepted by the AER unless further justification is provided.

Materiality of outstanding issues - Energex

Decision as a whole – impact on revenue

Our limited review has uncovered a number of areas where further review is required by the AER, or further evidence from Energex. The materiality to revenue is about $224 million in total over the 2020-25 period. Of this, almost 43% relates to operating expenditure (opex) issues, and 22% to capital expenditure (capex) issues.

Figure 2 – Impact on Enrgex's proposed revenue from issues raised in our review ($m, real 2020)

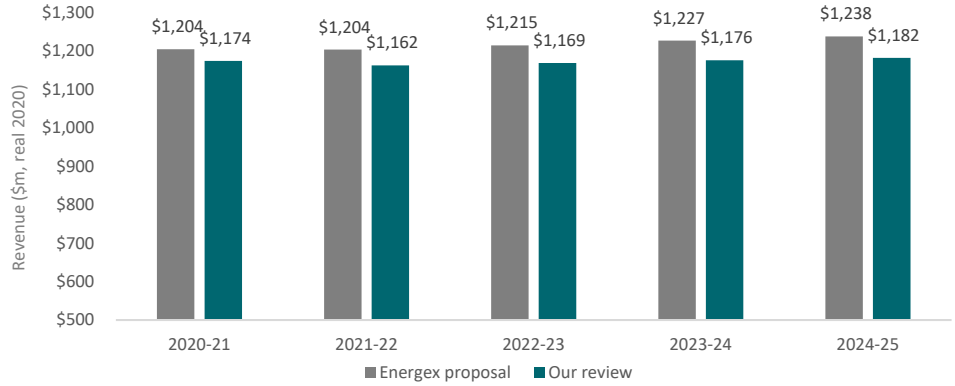
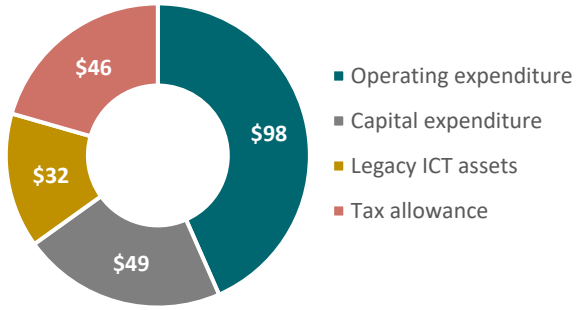


Figure 3 – Materiality of building block on revenue ($m, real 2020)

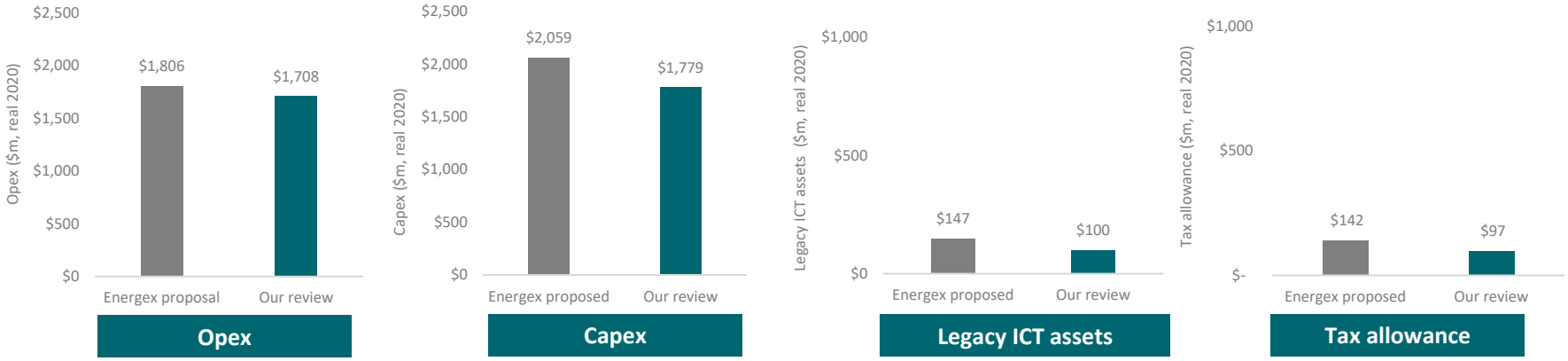


*Tax is based on high level estimate of impact of AER's tax review

Materiality of issues by building block

Our limited review suggests that at least $98 million of opex, and $280 million of capex (which has a consequential impact of $49 million on revenue) require further evidence from Energex or technical review by the AER before it can be accepted. We also consider that insufficient evidence has been provided on the roll forward of previous Information and Communication Technology (ICT) assets. Our very high level estimate considers $47 million (which has an impact of $26 million of revenue) requires justification before it can be rolled into the Regulatory Asset Base. Finally, Energex has not incorporated the AER's latest tax guidelines. As an estimate we think that the tax allowance may be reduced by $46 million.

Figure 4 – Comparison of Energex proposal and our review for operating expenditure (opex), capital expenditure (capex), legacy ICT assets and the tax allowance ($m, real 2020)



Materiality of outstanding issues - Ergon

Decision as a whole – impact on revenue

Our limited review has uncovered a number of areas where further review is required by the AER, or further evidence from Ergon. The materiality to revenue is about $356 million in total over the 2020-25 period. Of this, almost 61% relates to operating expenditure (opex) issues, and 21% to capital expenditure (capex) issues.

Figure 5 – Impact on Ergon's proposed revenue from issues raised in our review ($m, real 2020)

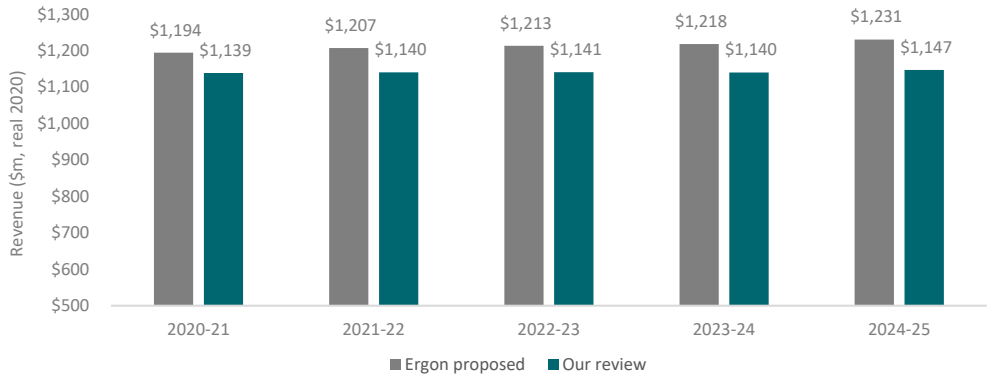
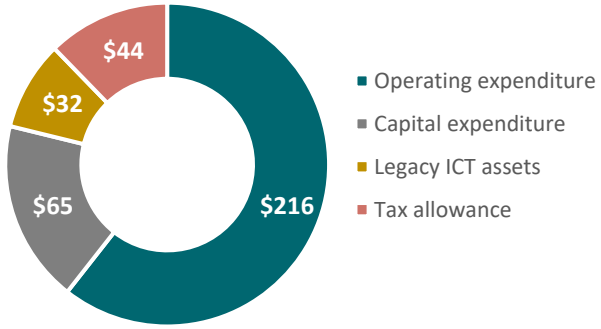


Figure 6 – Materiality of building block on revenue ($m, real 2020)

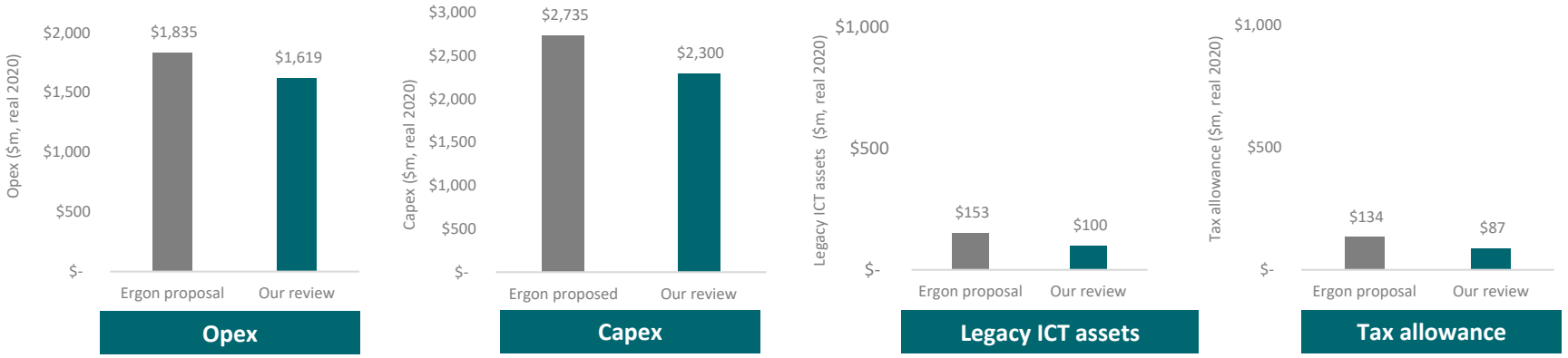


*Tax is based on high level estimate of impact of AER's tax review

Materiality of issues by building block

Our limited review suggests that at least $216 million of opex, and $435 million of capex (which has a consequential impact of $65 million on revenue) require further evidence from Energex or technical review by the AER before it can be accepted. We also consider that insufficient evidence has been provided on the roll forward of previous Information and Communication Technology (ICT) assets. Our very high level estimate considers $53 million (which has an impact of $32 million of revenue) requires justification before it can be rolled into the Regulatory Asset Base. Finally, Ergon has not incorporated the AER's latest tax guidelines. As an estimate we think that the tax allowance could be reduced by $44 million.

Figure 7 – Comparison of Ergon proposal and our review for operating expenditure (opex), capital expenditure (capex), legacy ICT assets and the tax allowance ($m, real 2020)

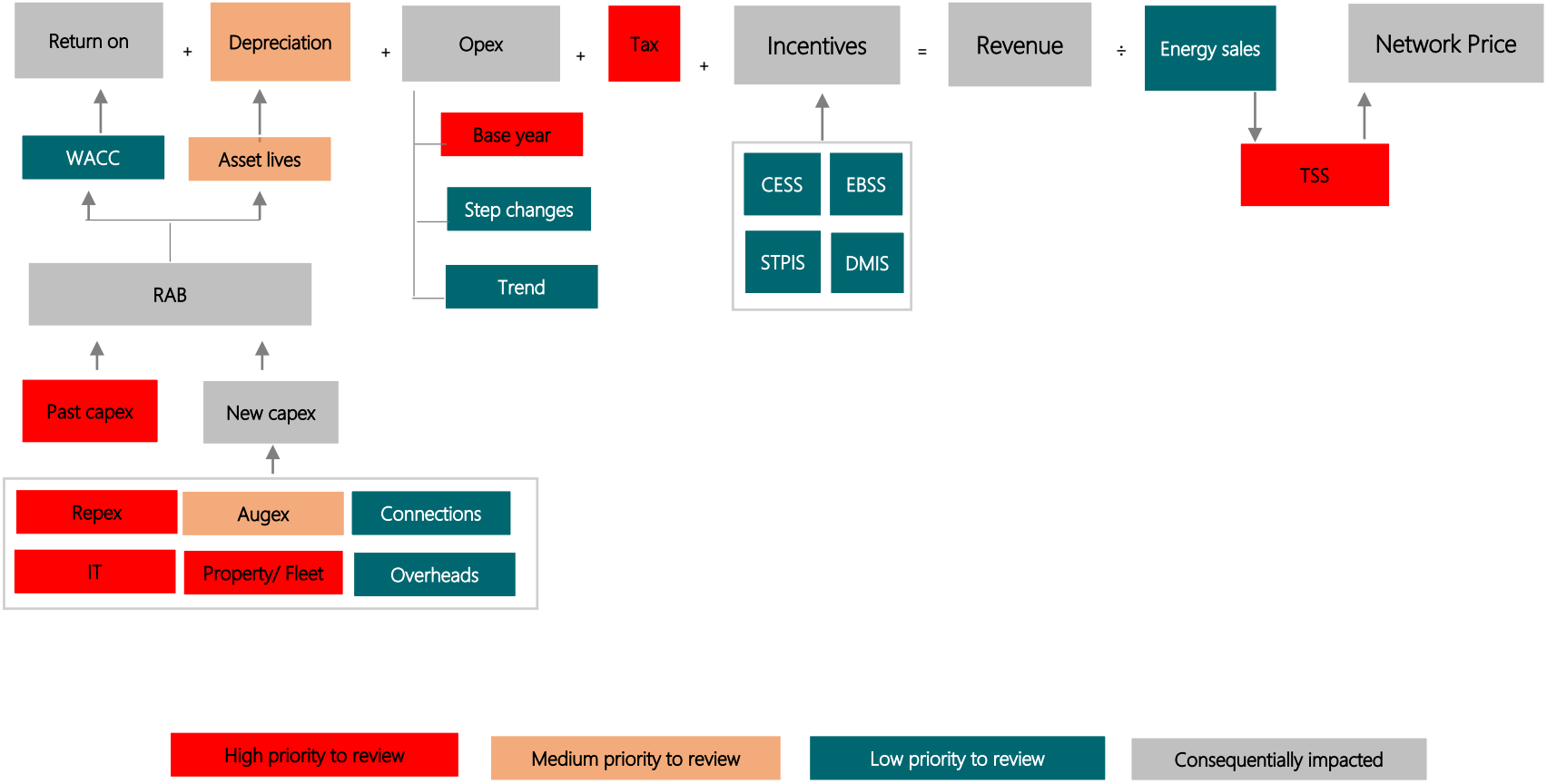


Focus areas we would like the AER to review

Findings on building blocks based on limited review

We have not undertaken a line by line assessment of each element of the building blocks. We have identified areas where we think further evidence is required or rigorous AER technical review is required to satisfy customers of the efficiency of the proposal. Our view is that the AER and its technical consultants are in a much better position to assess Energex and Ergon's proposal in detail and deliver findings based on additional evidence provided by Energex and Ergon.

Figure 1 – Focus areas for the AER's review of Ergon and Energex regulatory proposal



Section 1
Approach to review

How did we approach our review?

Our review was directed at testing whether Ergon and Energex's 2021-25 proposals were in the long term interest of Queensland customers. Our methodology was to undertake a strategic review of the 'proposal as a whole' to identify if the proposals cater for challenges and opportunities from a changing energy market. We used our strategic review to deep dive into elements of Ergon and Energex's building blocks.

Why is it important to look at long term impacts?

- Ergon and Energex's proposal will have a significant impact on the price and service quality experienced by customers well beyond the 2020-25 regulatory period.
- New technologies such as solar and batteries are fundamentally changing the role of networks. Today's investments may become obsolete or under-utilised, with customers picking up the bill for an oversized RAB into the future.
- At the same time, unsustainable cost cutting and deferrals simply delays today's problems to tomorrow. This sets up the conditions for large and unexpected price increases.

What was our methodology?

- **Strategic review** - Our first step was to examine the proposal 'as a whole' from a strategic perspective. We explored the past to future strategic context for Energex and Ergon, and identified headwinds facing the network. We tested whether the companies' proposals were positioned to address these future headwinds.
- **Deep dive review of key building blocks**- Our second step was to 'deep dive' into material elements of the building blocks, informed by our strategic review. We did not undertake a 'line by line' review, but tested key elements such as opex increases, repex, growth and non-IT capex. We suggested areas for further review by the AER.

What were the key questions we asked in our strategic review?

- Does the proposal cater for future challenges and opportunities?
- Do the expenditure proposals reflect a discipline to minimise costs now and in the long term?
- Is there a plan to deliver productivity?
- How are the businesses planning to improve use of their network?

What were the key questions we asked in our deep dive review?

- Is there a high level explanation of key trends in Ergon and Energex's expenditure and tariff proposals?
- Are the expenditure plans directed by a sound governance, risk management and prioritisation framework?
- How do Ergon and Energex compare to their peers?
- Is there evidence of need, options and costings for programs?

Approach and methodology

Using our strategic review to guide our deep dive review

We tested whether the proposal is underscored by a plan to meet future challenges and opportunities facing Energex and Ergon over the long term. This informed our deep dive into elements of Energex and Ergon's building block proposals.

Figure 8 – Key areas of exploration in our review of Energex and Ergon's proposals

Strategic review

Strategic context

- How have the companies performed?
- What are the drivers of change in the future?

Opportunities and challenges

- What will impact prices or service quality?
- What actions are available to the companies today and into the future?

Transformation strategies

- Is there a clear plan to meet challenges and opportunities?
- Is this reflected in the proposals for 2020-25?

Deep dive review

Materiality

- What are the areas of the proposal of strategic value?
- What are the most material elements of the proposal?

High level test

- Is there a compelling narrative to explain past and trends?
- What benchmarking evidence to test with peers?

Detailed justifications

- Is there a sound framework for decisions?
- Is there detailed evidence of needs, options and costings?

Section 2
Strategic review of proposal

Strategic context – Past to future

Under Government direction, Energex and Ergon increased expenditure to improve capacity and condition of the network following mass outages in 2004. In turn, this resulted in higher expenditure which translated to a very high increase in prices for customers. The recent merger has made significant inroads to arrest price increases. But the businesses face significant challenges ahead in the long term. It will need to integrate new technologies into the grid, address condition issues from an ageing asset base, and potentially face higher financing costs if interest rates return to historically stable levels.

How have Energex and Ergon dealt with change in the past?

- In the early 2000s, Queensland's networks faced a series of challenges. Assets had been poorly maintained. Air conditioners were also being installed en masse, creating high peak demand and capacity issues.
- Following mass outages, the Queensland Government directed networks to invest significantly in improving the security and reliability of the network. This led to a massive increase in expenditure compared to the past, a higher RAB, and a consequential price spike for Queensland customers. This contrasts with networks in South Australia and Victoria who did not have security conditions imposed. These states managed to keep a lid on RAB and prices.
- The investments have delivered improved reliability and security to Queensland customers, and means the networks are comparatively young and resilient compared to peers. But it has come at a cost to Queensland electricity customers. The investments are locked in the RAB, and it takes time to unwind a large labour force.
- The recent merger of Ergon and Energex recognised that more needs to be done to put downward pressure on costs. Capex has been deferred, and delivery efficiencies have been implemented.

What does the future look like for Energex and Ergon?

- Over the next 40 years, the shape of the energy market will change significantly. Nothing is certain, but we know that new technologies will change the role of the network.
- In particular, we see that there will be a need to efficiently invest in the distribution network to integrate solar and batteries. Queensland has one of the highest penetration of solar in the country so will need to adapt relatively quickly compared to peers.
- Electric vehicles offer great opportunities to improve the utility of the networks, but could lead to a rapid spike in peak demand if there are no pricing rewards for charging in the middle of the day or overnight.
- In the long run, we see a replacement challenge ahead for all networks in the NEM. Energex and Ergon have a relatively young network compared to peers, which means it can keep the lights on with a minimal repex spend today. In the long run, repex may need to increase but not to the levels in older networks in Victoria and South Australia.
- Interest rates may be higher than they are today. This will increase the costs of financing a very large RAB.

Strategic context

External and internal factors shaping Queensland distribution networks future

A Queensland customer today pays significantly more for electricity than in 2005. We think Queensland networks are well positioned to drive down electricity prices in the future despite fundamental changes in the energy market. But this will require innovative thinking about how to keep costs low, and deep thinking on how to improve utilisation of the grid.

Figure 9 – External and internal factors impacting Ergon and Energex affordability and reliability in the long term

	External drivers	Internal drivers
2000 to 2010	▪ Air conditioning leads to peak demand growth ▪ Consistent growth in energy sales	▪ Onerous security conditions results in higher capex and prices ▪ Many older assets replaced
2010 to 2020	▪ Solar takes off ▪ Energy sales fall and peak demand growth flattens ▪ LV network becomes more important to deliver 2 way energy.	▪ Investment continues to rise between 2010 to 2015. ▪ Merger results in deferral of new capital and cost efficiencies.
2020 to 2040	▪ Solar continues to grow ▪ Batteries and VPPs take off ▪ Interest rates rise ▪ Electric vehicles penetrate the market	▪ Assets getting older but can be kept in service. ▪ Local constraints from integrating DER and EVs ▪ Spare capacity on sub-transmission network.
2040 to 2060	▪ Solar reaches saturation ▪ Batteries reach saturation ▪ Electric vehicles dominate the market	▪ Ageing assets replaced or retired ▪ Spare capacity on high voltage and sub-transmission network as localized generation supplies households.

The Past

Ergon and Energex responded to changing technology by significantly investing in new network that is now 'locked' in the RAB. In recent times, the merger has sought to place downward pressure on prices.

Possible future

The key question is does Ergon and Energex have a strategy to drive down prices when faced with new cost pressures such as an ageing network, higher interest rates, and capacity issues from 2 way flow of energy and Electric Vehicle load.

Strategic challenges to keep prices affordable

Our analysis shows that Ergon and Energex are well placed to meet the opportunities from changing energy technologies. But it must first have a plan for dealing with some strategic challenges that may impact reliability of services and affordability. These challenges include dealing with an ageing network in the long term, potentially higher costs of financing investment, slowing energy sales in the short term, and constraints on the network from new technologies.

The repex challenge

- Energex and Ergon appear to have one of the youngest networks in the NEM. When both networks are looked at collectively, only 5% of the modern day value of assets are between 50 and 60, and only 2.5 per cent are over 60 years of age. This is due to a significant replacement program in the 2005 to 2015 period. This gives both networks significant headroom to propose a lower replacement allowance than what is sustainable in the long term.
- At current rates of replacement, Ergon and Energex will have a greater proportion of older assets by 2060. Our modelling of both networks suggests that 26% of the network will be between 50 and 60, with a further 10% over 60.
- This suggests that Ergon and Energex will need to address condition issues in the long run. However, the challenge is not as pronounced as other jurisdictions such as South Australia.
- Our modelling shows that if Ergon and Energex are able to successfully and safely extend the average technical life of their assets, they may be able to avert an uplift in replacement capex and prices.

Compounding challenges

Bond rates

- Yields on corporate bonds are a key component of the AER's calculation of the rate of return on the RAB. Yields are at historical lows, and well below the medium term average since 2005. This reflects interest rates in Australia and globally, which are at record low levels since the Global Financial Crisis.
- While uncertain, we would expect that interest rates would also rise from today's historically low levels sometime in the future. This would increase the finance costs of Energex and Ergon who have a high RAB and could face capex pressures in the future.

Decline in energy sales despite increase in customers

- Growth in energy consumption (via more customers) helps dilute price increases when revenues rise.
- However, energy sales have been flat between 2006 and 2018 despite customer growth of 17%. This is due to customers using their own solar and batteries to feed energy, falling commercial load, and more energy efficiency.

Capacity issues to integrate solar, batteries and electric vehicles (EVs)

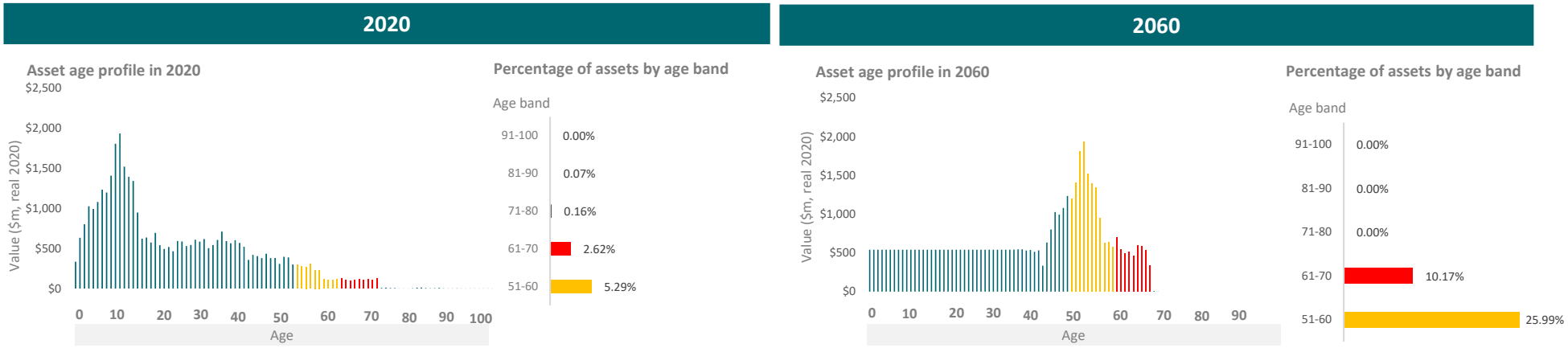
- Increased solar and batteries may lead to voltage and thermal constraints on the network. Unrestricted EV charging may also drive augmentation to meet a short, sharp peak.

Repex challenge

How old will Ergon and Energex combined network be in 2060 if it continues to invest at today's levels?

Our modelling suggests that about 35 per cent of the network will be over 50 years of age by 2060 if Ergon and Energex invest in system capex at current expenditure levels. Only 8 per cent of its assets are over 50 years old today.

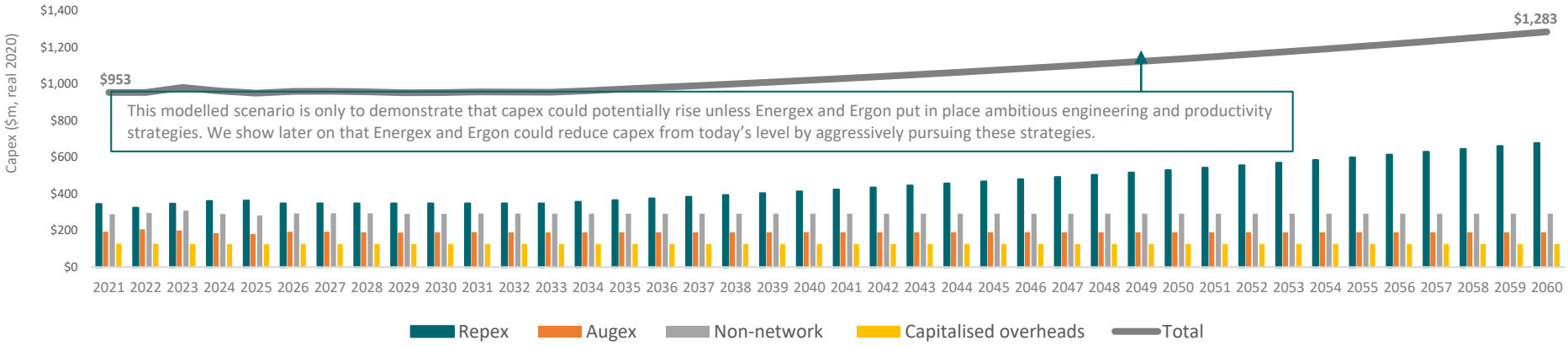
Figure 10 – Asset age profile in 2020 and 2060 by replacement value assuming today's rate of replacement ($m, real 2020)



Capex could increase significantly by 2060 unless Energex and Ergon have a clear transformation strategy that addresses future cost drivers

Our modelling assumptions suggest Ergon and Energex may need to collectively increase annual capex by $300 million (real $2020) by 2060 if it aims to achieve an average technical life of assets of 65 years. Under this profile Ergon and Energex would still have 27 per cent of assets over 50 years old by 2060. We show later on that engineering and productivity transformation can significantly reduce the modeled scenario above, and potentially even lower capex over time.

Figure 11 - Net SCS combined Capex forecast for Energex and Ergon to 2060 by category ($m, real 2020)

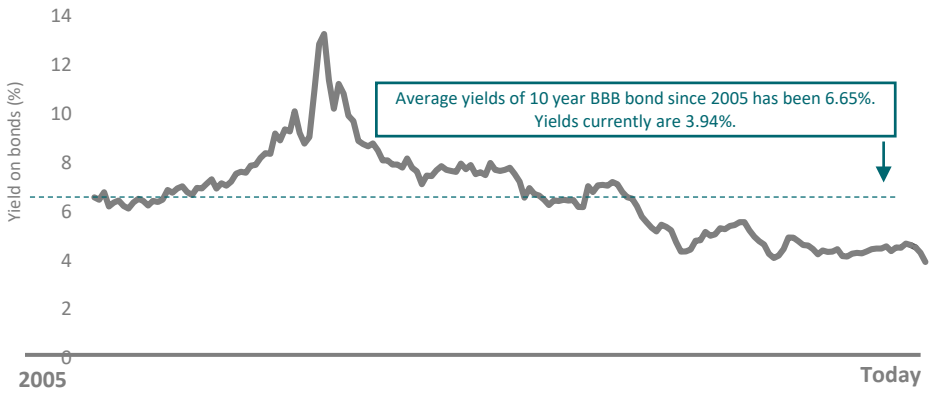


Compounding challenges

Today's interest rates are at historically low levels

Historically low interest rates are helping keep the rate of return low for the moment. However we would expect interest rates (and yields on corporate debt) to rise in the medium term.

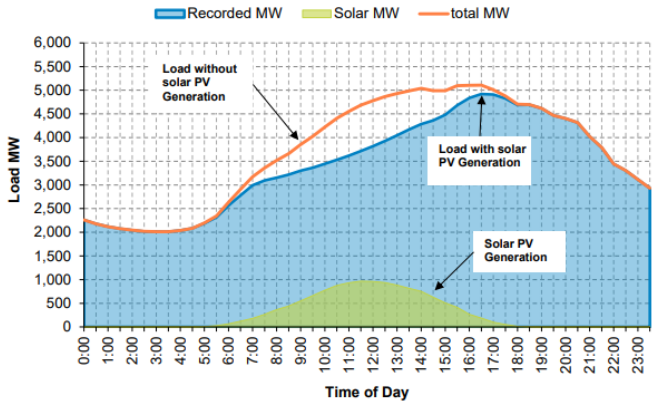
Figure 12- RBA BBB yield on 10 year bonds (%)



Integrating DER may require capex

Integrating solar, batteries and EVs may drive capacity capex to augex to manage short bursts of peak demand, and to manage 2 way flows during the solar trough.

Figure 13– Energex load profile on peak day at Arana Hill

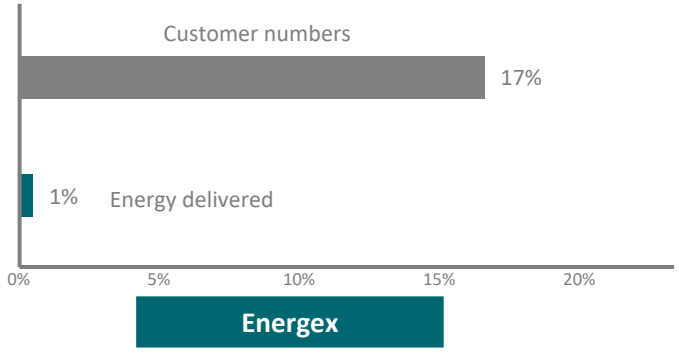


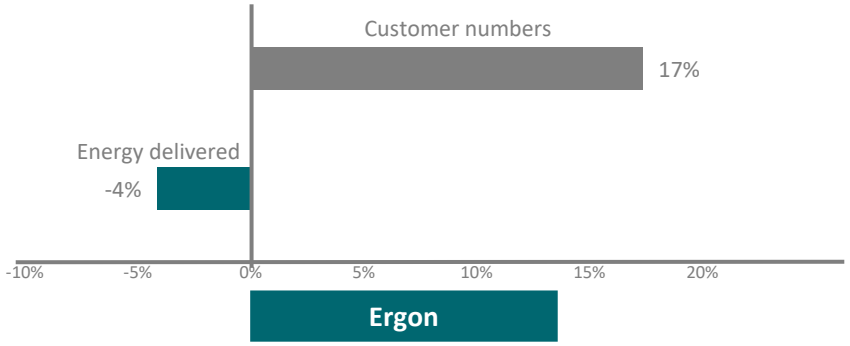
Source: Energex Distribution Annual Planning Report p38

Energy sales falling despite customer number increase

Customer growth has traditionally soaked up revenue increases. However, energy sales have only increased by 1% for Energex and declined by 4% for Ergon between FY2006 and FY2018 even though both networks have experienced a growth in customer numbers of 17% over that time. This equates to a decline in energy use of 1.3% per annum for an Energex customer and 1.6% for an Ergon customer over this period.

Figure 14 - Energex and Ergon growth (decline) in customer numbers and energy sales between FY2006 and FY2018 (%)





Strategic opportunities

With new technology comes opportunities to transform Energex and Ergon's network and operations to address the challenges ahead. In reviewing the proposals we were looking for evidence that Energex and Ergon were looking to re-engineer their networks, improve utilisation, minimise expenditure plans, and drive productivity.

Reimagine the network of the future

- Solar and batteries provide new tools to re-imagine the design and footprint of Ergon and Energex's networks.
- Importantly DER provides opportunities to 'retire' assets rather than 'like for like' replacement, saving significant capex. It also allows for growth in peak demand to be met by demand management.
- Opportunities to streamline and slim the network include:
- Stand-alone networks in areas where the network is no longer economically efficient.
- Upstream networks: With increased generation locally available, the sub-transmission and high voltage network may need to deliver less, and with lower redundancy. This offers opportunities to retire or descale expensive assets, rather than like for like replacement.

Keep expenditure plans to a minimum

- The key ingredient for Energex and Ergon to lower prices over time is to take every opportunity to minimise expenditure plans and programs.
- Every dollar of expenditure should be challenged and prioritised to see if the activity could be sustainably deferred, provided at lower cost, or cost drivers absorbed through economies of scale.

Increase energy growth and improve utilisation

- Increasing energy sales at off-peak times will help keep average prices lower even if revenues increase.
- Keeping residential and commercial customers connected to the grid is crucial for avoiding a death spiral. Keeping a lid on prices will incentivise customers to stay on the grid and in business.
- EVs could provide the magic pill for increasing energy sales. However the charging infrastructure needs to be in place.
- Tariffs will need to rewards customers for shifting energy appliance use (including EVs) to off peak times, and incentives for customers with batteries to export at peak periods. The key is to get customers on board through simple and gradual tariff changes that reward customers for switching energy use to non-peak periods.

Drive productivity

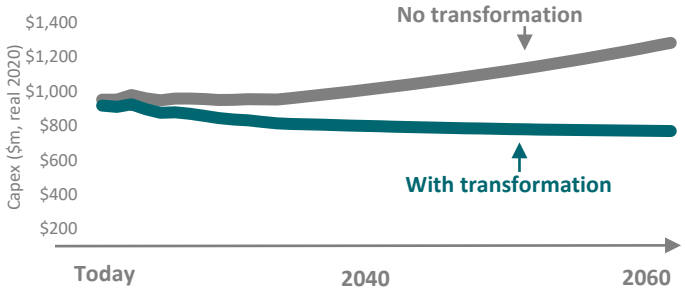
- Continuous cost productivity can significantly drive down opex and capex over time without impacting service quality.
- We note the considerable inroads that both networks have made to drive down capex and opex plans. However, we note that the networks started from an inefficient point relative to peers in South Australia and Victoria.
- We would expect both Ergon and Energex to have a rigorous productivity plan that spans the entirety of their operations.

Opportunities to transform the business

Impact of productivity and ambitious engineering

An ambitious engineering and productivity transformation could lead to $14 billion totex saving by 2060. Our modelling suggests that the key is to stretch asset life, retire (rather than replace) by leveraging customers' solar and batteries, and pursue an aggressive strategy to reduce the cost of delivering capex and opex

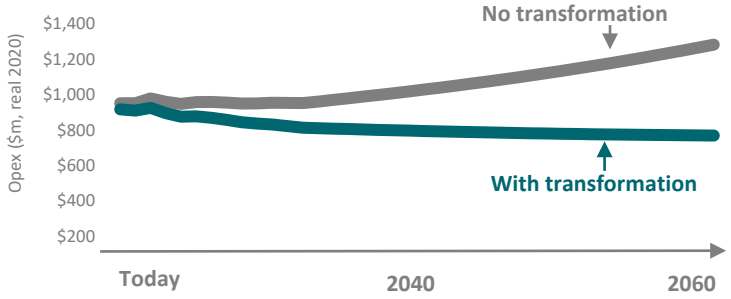
Figure 15 - Capex projection for Energex and Ergon (combined) to 2060 with and without transformation



Capex transformation strategy - Assumptions

- Stretching average asset life from 65 to 70 years
- Retiring 10% of aged assets instead of replacing like for like
- Cost productivity of 1% per year applied to all capital programs.

Figure 16 - Opex projection for Energex and Ergon (combined) to 2060 with and without transformation



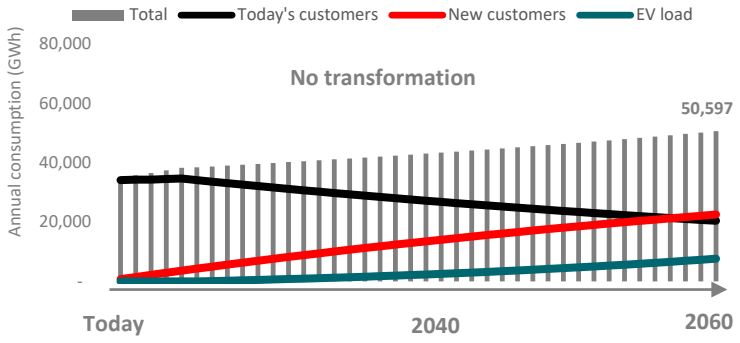
Opex transformation strategy - Assumptions

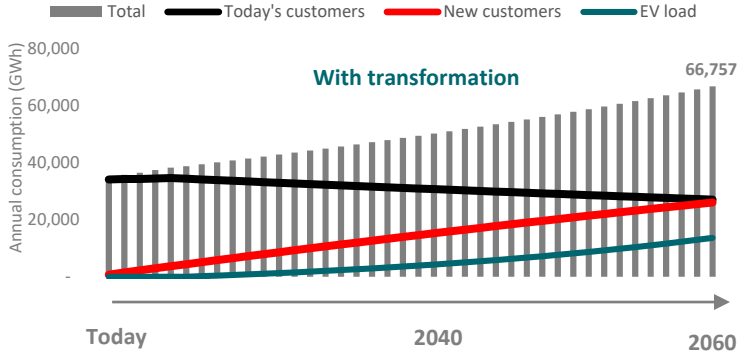
- Cost productivity of 1% per year to all opex after 2025
- No step changes after 2025
- Output factors but no real escalation after 2025

Increasing energy sales

A key strategy to lower average price is to grow energy sales without investing in more network assets. This will require facilitating EVs, keeping customers connected to the grid by providing a reliable and affordable service, and cost reflective prices to shift energy consumption (including EVs) to off peak periods.

Figure 17 – Projection growth in energy sales across Energex and Ergon's networks - with and without transformation (GWh)





Energy sales transformation strategy

- Arresting decline in energy per customer from 1.5% pa now to 0.7%pa.
- Enabling Evs from 40% penetration to 80% by 2060.

Is the proposal positioned to deliver long term benefits?

Ergon and Energex have been focusing on cost savings to reduce prices for Queensland customers in the short term. We think this is an excellent first step to keeping prices down in the long term. However, we have not seen quantitative data on long term expenditure plans. We think this would be useful to understand how the businesses will deliver asset management and productivity strategies that provide affordable and reliable services in the long term.

Positives

- Our strategic analysis has shown the importance of embedding cost savings in opex and capex as soon as possible to drive total costs down in the long run.
- Ergon and Energex have both deferred significant capex in the current regulatory period. This has helped avoiding new investment that gets added to the RAB.
- Similarly Ergon and Energex have made headway into finding inefficient areas in their operations including overheads and program work delivery. These efficiencies are now embedded in the cost structures of the businesses.
- Going forward, we have seen an effort to reduce costs. Unlike other networks in the NEM, Ergon and Energex have tied their proposed ICT investments to substantial savings in overheads and labour productivity.
- Our conversations with Ergon and Energex staff also shown a keen awareness of the challenges and opportunities with a changing energy market. Of note, are measures to roll out charging points for electric vehicles across its network. We also note that Energex and Ergon have been thinking hard about how tariffs could be changed to drive better utilisation of the network.

Areas for improvement

- Energex and Ergon have a detailed future grid roadmap. We would like to see both networks incorporate a long term vision on how it will keep prices affordable and reliable for Queensland customers by integrating new technology. We think that 25 to 50 year expenditure forecasts, expected energy sales, and utilization of the network is vital to this analysis.
- We are concerned with Ergon's statements that it is proactively replacing assets to avoid a large replacement cycle in the future. In our view, assets should only be replaced if they fail in service, or where there is a clear risk to safety or security of service. Our analysis suggests that Ergon and Energex should pursue a strategy that extends the technical life of assets. In the future, we consider there may be more opportunity for both networks to retire or de-scale their aged assets by leveraging generation from customers' solar and batteries.
- We would like to see a more expansive productivity strategy that looks at potential inefficiencies across the business. This includes in areas such as maintenance. This should be informed by benchmarking peer networks in the NEM using the AER's comprehensive RIN dataset.
- We are also concerned that the proposed tariff structures are highly complex, and could lead to confusion and disillusionment of customers. We think a more steady, simple and progressive approach is warranted such as time of us tariffs.

How the strategic review directed our deep dive review

The strategic review shows the importance of driving today's costs down so that we have headroom to deal with the challenges ahead. Our review has focused on material elements of the building block where Energex and Ergon have control over their decisions today.

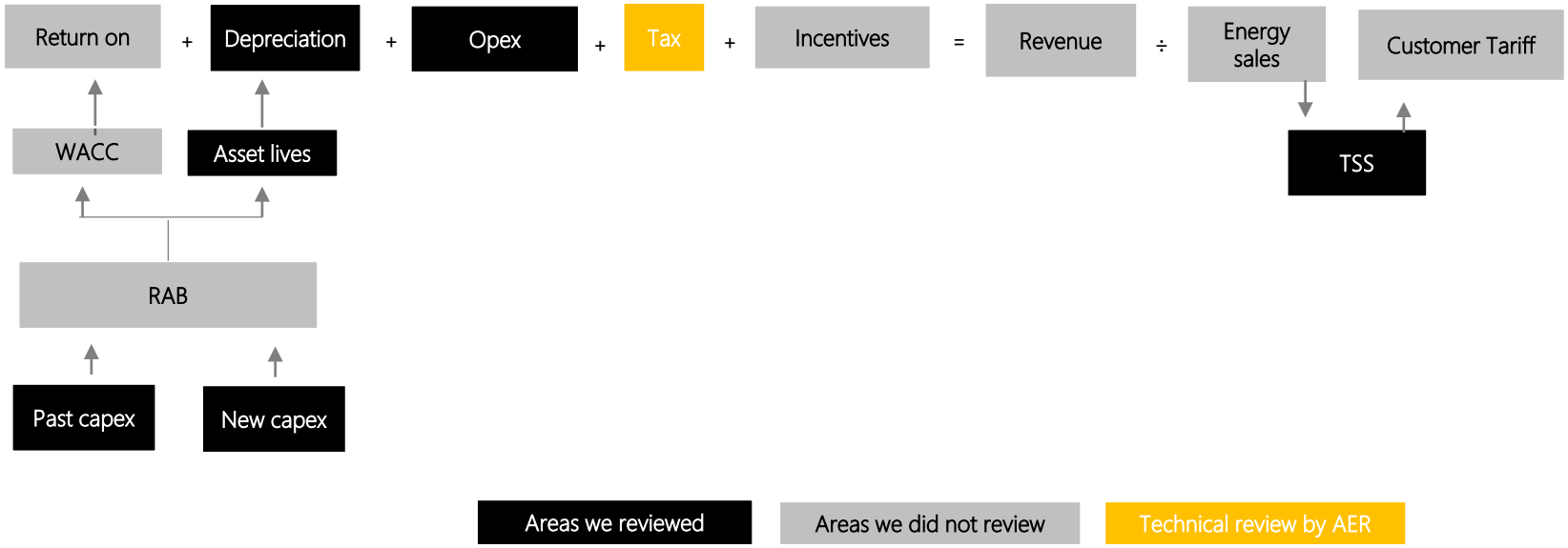
Strategic review implications

Our strategic review demonstrates the importance of embedding opex efficiencies in the 2020-25 proposal, extending asset life where safe to do so, and minimising new capex. It has also shown the benefits of ensuring that the network is equipped to integrate solar, batteries and electric vehicles but to do so at least cost. Finally, we have shown that Ergon and Energex will need to think carefully about tariffs that reward customers for shifting energy use to off peak periods.

Deep dive review

Our deep dive review has focused on material elements of the building blocks where we see that Ergon and Energex have control over the decisions it is making. This includes new capex, past ICT assets capex being rolled into the RAB, opex, and the tariff structure statement. Many of the blocks are 'locked in' from previous decisions such as weighted average cost of capital, tax and asset lives for depreciation. Our deep dive review is summarised in the following sections of this document.

Figure 18 – Areas we have focused on in our deep dive based on our strategic review



Section 3
Review and findings on proposed opex

Opex as a whole

Energex and Ergon perform in the mid range of distribution networks based on raw AER econometric benchmarks. Both networks have considerably reduced their opex over the last decade, and have proposed to continue this downward trajectory in the 2020-25 regulatory period. Our analysis suggests there may be more opportunities to sustainably lower opex. This includes efficiencies in Ergon's network opex, and incorporating EnergyQueensland's targeted efficiencies in the last year of the current regulatory period. We have estimated that about $98 million of Energex opex and $215 million of Ergon opex require further evidence and AER review before they should be accepted.

Performance based on AER benchmarks

- Based on raw AER benchmarks, Ergon and Energex are not currently performing in the top 4 frontier firms despite efficiency savings over the last decade.
- We recognise that the raw benchmarks have limitations and do not fully account for operating and environmental factors nor accounting differences. We note the report prepared by Frontier Economics that seeks to show that both networks are within the top 4 firms in NEM when these factors are taken into account.
- We have concerns that the report overstates the impact of operating and environmental factors influence on costs in Queensland. For example, we struggle to see how a small fraction of sub-transmission assets can impact system operating and maintenance costs. For example, why are the maintenance costs of a sub-transmission zone substation markedly higher than a zone substation?
- We think the onus is on the networks to quantitatively demonstrate that operating and environmental factors lead to higher cost structures, with examples. We look forward to Energex and Ergon providing this deeper level of analysis.

Performance over time

- Ergon and Energex have both improved their performance over the last decade. Opex in the 2018-19 base year will be about 13 per cent lower than the peak of opex in 2014-15.
- Both networks are proposing productivity savings that go beyond the AER's guidelines. The result of these savings will be about a 7 per cent reduction for Energex and 10 per cent reduction in opex between 2018-19 and 2024-25. While welcome, this also shows some structural inefficiencies are embedded in the base year.
- Our analysis suggests that more efficiencies may be available to Ergon and Energex. Some of our benchmarking suggests Ergon can reduce maintenance costs from the base year. We also note that both networks do not seem to have embedded the full extent of the merger savings forecast by Energy Queensland.

Evidence on trade-off between base year and productivity

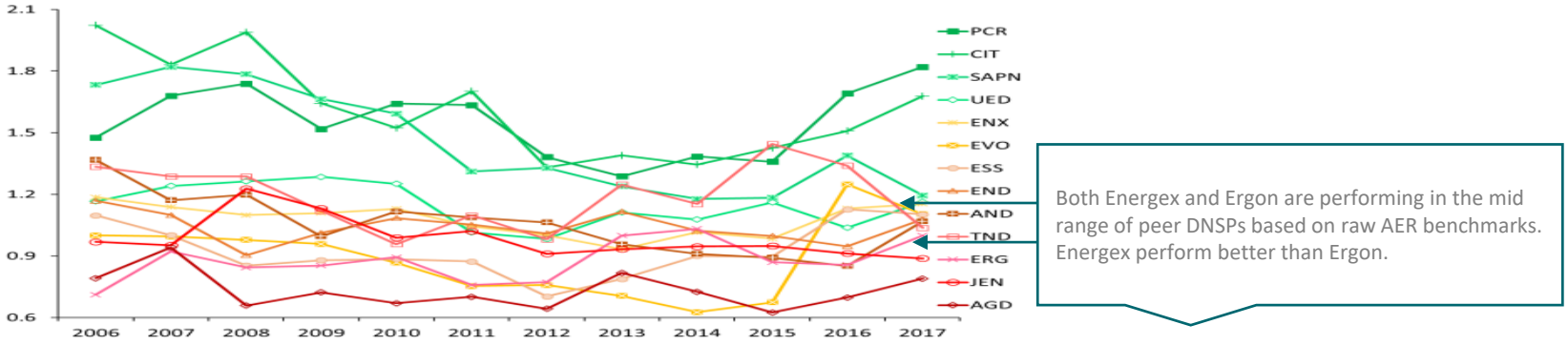
- While we have identified potential efficiencies in the base year of the networks, both companies have put forward substantial productivity savings. We would like to see more evidence from the networks on the trade-off between base year inefficiencies and proposed productivity. This may provide some evidence that a lesser reduction to opex is warranted.

Opex as a whole – trends over time

Energex and Ergon are in the mid range of networks

Based on most recent raw AER benchmarking, Energex is performing 5th and Ergon 11th in the 2018 Annual benchmarking report.

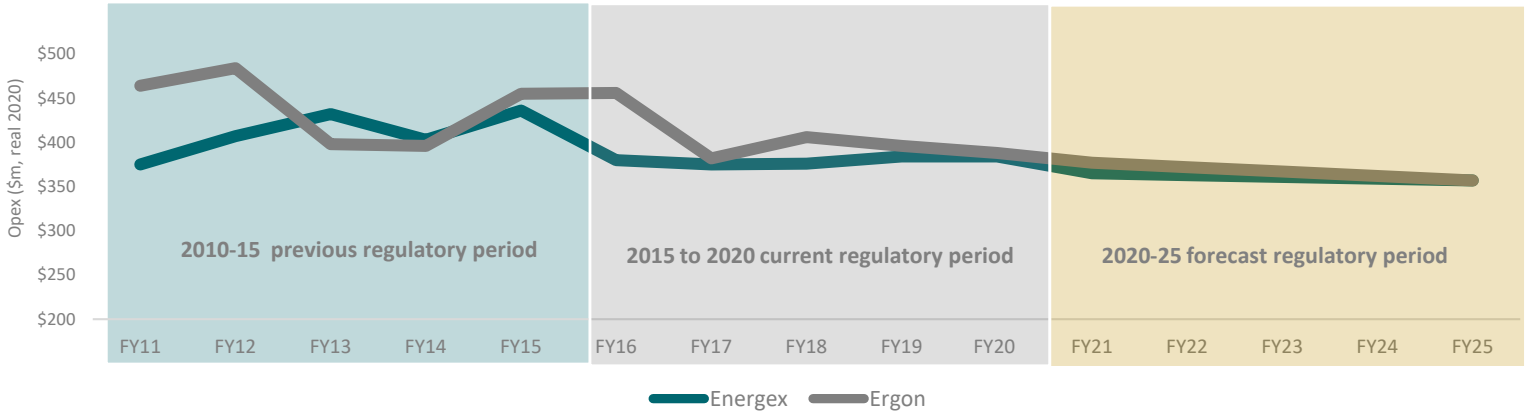
Figure 19 – AER findings on DNSP opex multilateral partial factor productivity indexes, 2006–17



Ergon and Energex's performance have improved markedly since FY2015

Energex and Ergon made marked improvements in the current regulatory period, and are proposing to embed more productivity in its opex forecasts for 2020-25. We are still not persuaded from the evidence that the full extent of cost efficiencies have been factored into the base year adjustments as discussed in the next sections.

Figure 20 – Ergon and Energex opex between FY2011 and FY2025 ($m, real 2020, including debt raising costs



Opex components – Base Year

We understand that economic benchmarking has limitations. We agree with Ergon and Energex that there may be some good reasons why Ergon and Energex do not appear in the top 4 of the AER's econometric model. However, we still question whether sufficient evidence has been provided to show how the operating and environmental factors have influenced the cost structures of the networks. Our high level analysis shows that Ergon's maintenance costs are higher than rural peers. We consider that $25 million of base year opex is materially inefficient unless Ergon can support its higher costs.

How we appraised evidence on the base year

- We assessed if the 2018-19 base year is an appropriate starting point to forecast opex. We were looking for evidence to show that Energex and Ergon's costs were not materially inefficient compared to peers.
- Energex and Ergon are not in the top quartile of efficient firms based on raw (ie: unadjusted) AER econometric models.
- Ergon and Energex provided a report by Frontier Economics showing the networks operate at efficient levels once operating and environmental factors (OEFs) have been considered. We consider the report is of good quality, and should be given some weight in the AER's assessment.
- However we do not think the findings are conclusive. We would like to see more innovative category benchmarking that compares expenditure of firms with similar characteristics and networks. We have conducted limited analysis of how Ergon and Energex compare to similar types of firms on network opex. We also looked at how much the firms spend on non-network capex using customer numbers to normalize the data.

Findings for Energex

- Energex is an urban distributor. We found that Ausgrid and Endeavour were its closest comparators in terms of network characteristics. All networks have sub-transmission assets.
- Energex network opex is higher than Ausgrid and Endeavour but proportional to its larger size. This provides some comfort that Energex network opex is not excessive compared to its urban comparators, although none of these businesses are at the efficiency frontier.
- We note that Victorian and South Australian firms (who perform at the frontier) have been excluded from the analysis due to incomparability. It is therefore difficult to comparatively assess if Queensland networks compare with the frontier firms on network opex.
- Energex also does not appear to have excessively high non-network costs per customer compared to peers.
- The very limited analysis suggests (together with Energex ranking as 5th on AER benchmarks) the 2018-19 base year is not materially inefficient.

Findings for Ergon

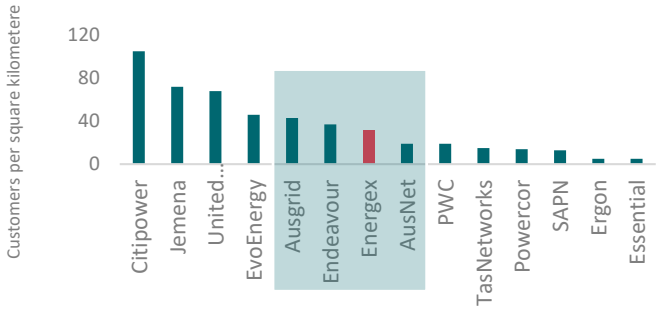
- We tested Ergon's network opex to its rural peers including Essential Energy, SA Power Networks (SAPN) and Powercor. We excluded vegetation management noting that this is very specific to a network.
- We found Ergon has high network opex compared to peers. Most relevantly its costs are higher than Essential Energy. Essential Energy have more assets than Ergon, and a higher proportion of aged assets. The very limited analysis suggests that about $25 million of Ergon's network opex may be materially inefficient.
- Ergon does not appear to have excessively high non-network costs per customer compared to peers.

Base year analysis – Comparing Energex to peers

Who are Energex's peers in terms of network characteristics?

Ausgrid, Endeavour and AusNet have similar customer density to Energex. Our analysis shows that Ausgrid and Endeavour are comparable to Energex in terms of network composition, relative size and urbanity. Ausnet is quite different and is therefore not readily comparable. Ausgrid is roughly 20-25% the size of Energex, while Endeavour is about 30 to 35% smaller, although this is difficult to accurately quantify due to different composition of network.

Figure 21– Customer density of all networks



Source: Energex Regulatory Proposal, Attachment 6.003, p9

Figure 22 – Network characteristic of low density rural distributors

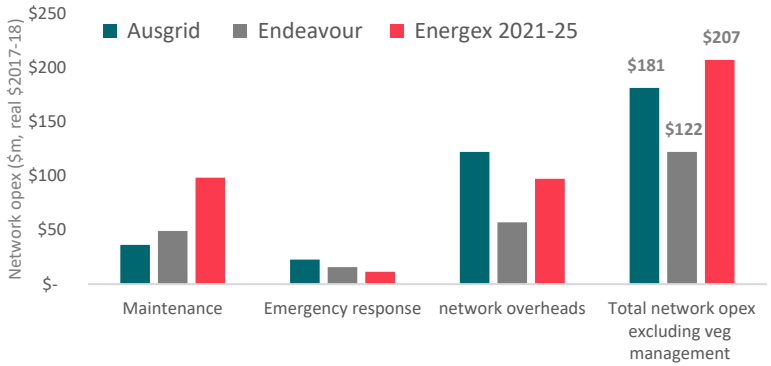
	Ausgrid	Ausnet	Endeavour	Energex
Customers	1,700,000	729,000	1,000,000	1,463,494
Network line length (kms)	50,000	44,800	59,300	54,266
Poles	511,026	383,000	433,000	683,611
Distribution transformers	31,998	61,000	31,913	50,374
Bulk supply substations	46	0	24	42
Zone substations	190	53	164	246

Source: Regulatory proposals and Annual Distribution Planning reports of each network

How does Energex compare on network opex?

While Energex has higher network opex (excluding vegetation management) than Ausgrid or Endeavour, its costs are in proportion with the larger size of its network.

Figure 23 – Network opex of Energex compared to peers*($m, 2017-18)

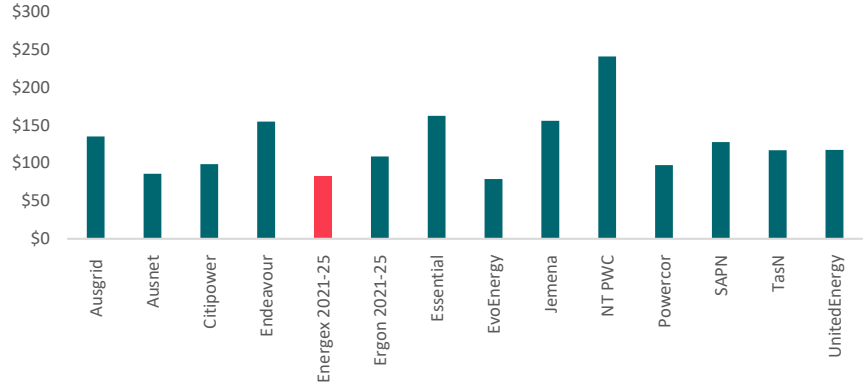


Source: Ausgrid and Endeavour 2017-18 category analysis RIN. Energex 2020-25 Reset RIN. Base year was de-escalated by CPI series to express in $2017-18

How does Energex compare on non-network opex?

Energex have one of the lowest non-network opex per customer.

Figure 24– Non-network opex per customer



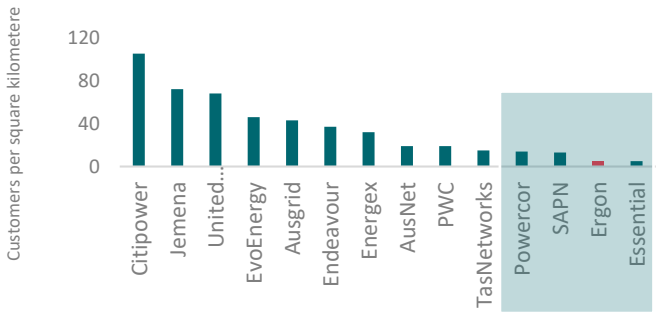
Source: 2017-18 category analysis RIN for all networks other than Energex and Ergon. Energex 2020-25 Reset RIN. Base year was de-escalated by CPI series to express in $2017-18

Base year analysis – Comparing Ergon to peers

Who are Ergon's peers in terms of network characteristics?

Essential, Powercor and SAPN have similar customer density to Ergon. Of these networks, Essential is a close comparator to Ergon, but has more assets, and is an older network.

Figure 25 – Customer density of all networks



Source: Ergon Regulatory Proposal, Attachment 6.003, p9

Figure 26 – Network characteristic of low density rural distributors

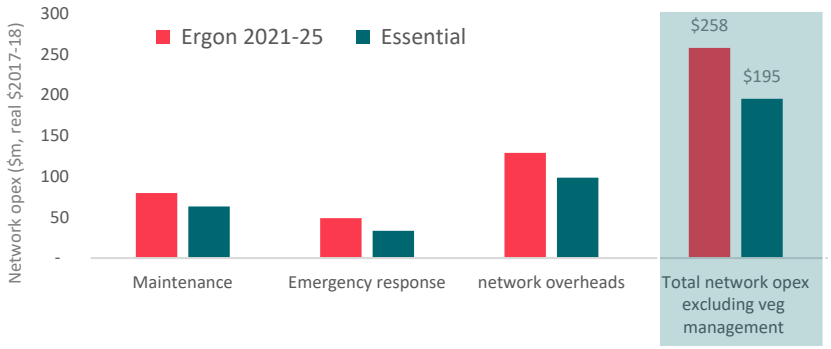
	Ergon	Essential	Powercor	SAPN
Customers	752,909	840,000	765,000	860,000
Network line length (kms)	151,976	183,612	67,000	200,000
Poles	973,700	1,381,758	561,471	640,000
Distribution transformers	101,000	140,000	83,859	77,800
Bulk supply substations	30	20	-	-
Zone substations	288	377	141	400

Source: Regulatory proposals and Annual Distribution Planning reports of each network

How does Ergon compare on network opex?

Ergon incurs more than $60 million on network opex compared to Essential. While emergency response explains $15 million, we note that Essential is a larger network with more aged assets. We would like the AER to undertake more rigorous review to understand the drivers of this difference. We consider at least 10% ($25 million) of network opex may be a material inefficiency based on this high level analysis.

Figure 27 – Network opex of Ergon compared to Essential*

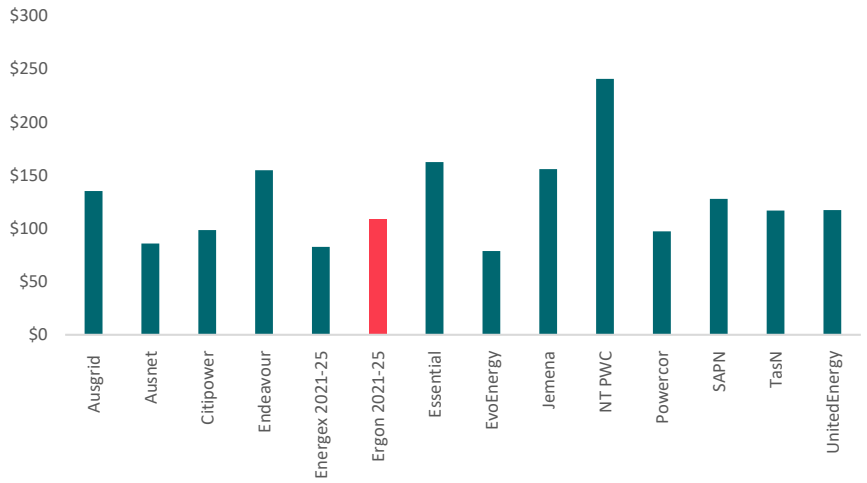


*Note: Source data and adjustments are set out at Appendix 1

How does Ergon compare on non-network opex?

Similar to Energex, Ergon is proposing a relatively low non-network opex per customer compared to its peers.

Figure 28 – Non-network opex per customer



Opex components – Adjustments to base year

Energex and Ergon are proposing adjustments to the base year. Both networks are doing the right thing by removing restructuring costs. We also recognise that changes to the cost allocation method (which increases opex) are likely to be sensible, subject to the AER review. Our key concern relate to whether targeted savings in 2019-20 have been fully embedded in the opex forecast for 2020-25. We also seek clarification on how the networks have accounted for the transfer of ICT to the RAB. We consider that at least a $20 million adjustment to the base year is required for Ergon and Energex respectively to reflect the opex savings that Energy Queensland will target in 2019-20.

Nature and magnitude of adjustments

- Overall Energex and Ergon are proposing to make downward adjustments to the base year to reflect key changes it will be making going forward. Energex is proposing to reduce the base year by $15 million and Ergon by $9 million. This adjustment is carried forward into the 2020-25 period.
- Energex and Ergon have adjusted the base year upwards to reflect changes in accounting approaches and service classification. Subject to the AER's review we consider these adjustments are appropriate.
- We note that both networks are proposing to embed efficiencies they expect from the 2019-20 period. We think it is fair to consumers to embed available efficiencies into the forecast.
- Both networks have also removed non-recurrent costs with changing the business. While we have not seen evidence on what this specifically relates to, we recognise that both networks are trying to do the right thing by excluding non-recurrent costs.
- We note that Ergon and Energex have not adjusted opex relating to the transfer of ICT assets into the RAB. d.

Concerns over base year adjustment

- We are concerned that Ergon and Energex may not have embedded the full level of efficiencies it expects in the 2019-20 year.
- There is conflicting and confusing information provided by Energex and Ergon on the savings expected from the merger.
  - Information in the proposal suggests that it expected to make $189 million of savings in opex compared to the AER's allowance. Of this $71 million relates to the 2019-20 year.
  - However, Ergon and Energex have only made a combined downward adjustment to the base year of about $25 million for efficiencies in the 2019-20 year.
- We seek additional evidence from EnergyQueensland on the data put forward in the proposal. Without additional evidence, we consider there may be about $20 million of savings for Ergon and Energex respectively that have not been embedded in the forecast. We recognise that this may be an interpretation issue, or a data error, so look forward to further clarity.
- We seek further evidence to show why base year opex does not need to be adjusted for the transfer of ICT assets into the RAB.

Base year analysis – Comparing Energex to peers

Adjustments to the base year for Energex and Ergon

Ergon have proposed a downward reduction to the base year of $15.0 million, while Energex have proposed a $10.6 million reduction to the base year relating to efficiency programs in 2019-20. Both networks are proposing upward adjustments for accounting reasons.

Figure 29 –Energex adjustments to base year ($m, real 2020)

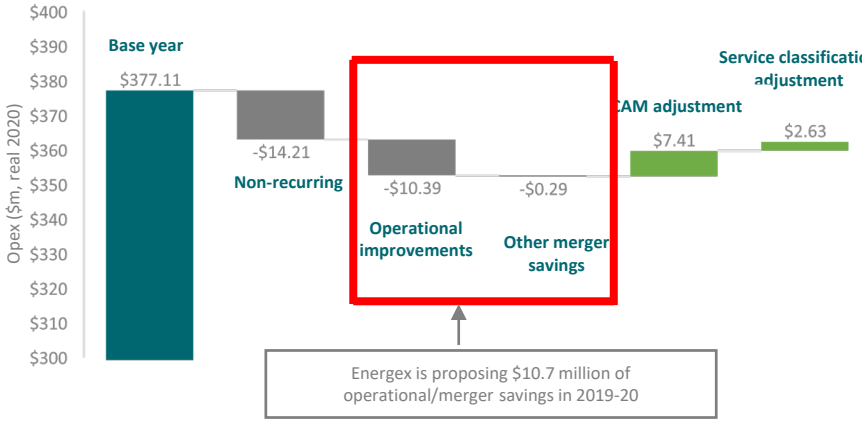
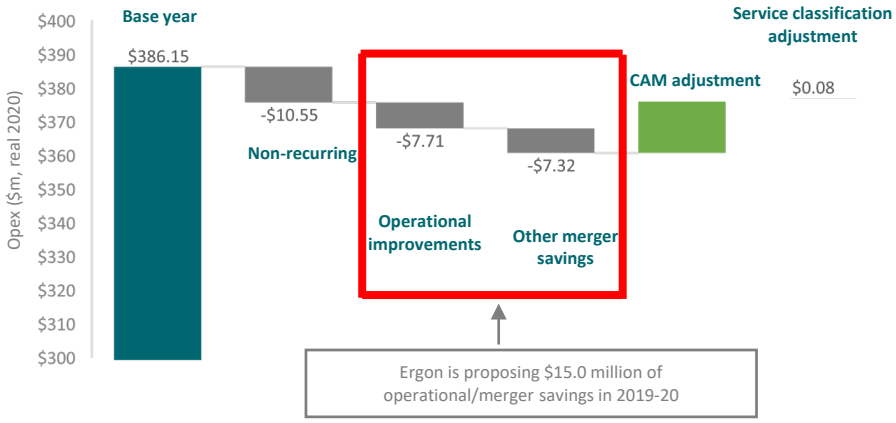


Figure 30 –Ergon adjustments to base year ($m, real 2020)



Targeted efficiencies for opex in 2019-20 do not appear to have been fully embedded

Both networks identified that the total opex savings relative to the AER's allowance will be $189 million from the merger.

Of this, $71 million relates to the 2019-20 regulatory year. However Energex has only included opex savings of $10.7 million and Ergon has only included $15 million of opex savings. In total this is $45.3 million short of the targeted Energy Queensland opex savings (ie: $71-$10.7– $15m=$45.3m).

This may indicate that Ergon and Energex are capable of embedding at least a further $20 million reduction each in the 2019-20 year, that can be carried forward into the 2020-25 period.

Figure 31 –Energex and Ergon post merger net savings over the 2015-20 regulatory control period ($m, real 2020)

Consolidated Group ($M, Nominal)	Target	2017-18 Estimated Actuals	2018-19 Plan	2019-20 Plan	Total
AER SCS Totex Allowance		1,913.0	1,939.0	1,979.0	7,789.0
SCS Totex Actual / Target		1,707.0	1,795.7	1,798.8	7,022.5
Total Savings		**206.0**	**143.3**	**180.2**	**766.5**
Opex savings		35.0	53.3	71.4	189.7
Capex savings		171.0	90.0	108.8	576.8
Implementation and Redundancy costs		39.0	50.6	54.3	187.9
EQL net savings compared to AER	**562.0**	**167.0**	**92.7**	**125.9**	**578.6**

Source: Energex regulatory proposal (p23) and Ergon regulatory proposal (p22)

The combined operational merger savings included in the base year forecasts are only $25 million, but Energy Queensland estimates opex savings of $71 million.

Opex components – Trend

We have reviewed Ergon and Energex trend from the adjusted base year. Both networks should be commended for driving productivity that exceeds the AER's guidelines. We have also seen the networks incorporate labour productivity into its forecast.

Output growth

- Energex and Ergon have projected an increase of about 1% pa related to increase in customer numbers, circuit length, ratcheted maximum demand and energy growth. This leads to about a $66 million increase in total opex over the 2020-25 regulatory period for each business.
- We note the growth in energy volumes and customer number forecast are higher than actuals in the 2015-20 period, but overall the forecast appears reasonable.

Price escalation

- Ergon are proposing an increase of about 0.16% per annum for higher labour costs. This amounts to only a $2 million increase in total opex over the 2020-25 regulatory period for each business.
- We note that the networks engaged BIS Economics to advise on real cost escalation. Energex and Ergon have also used the AER's previous forecast to average the forecast escalation.
- We consider this is a sensible approach and likely to derive a reasonable estimate of labour costs.
- We also note that Ergon and Energex have applied a labour productivity adjustment of 0.6% per annum related to delivery of capital works.
- Overall we consider that the proposed escalation is reasonable.

Productivity

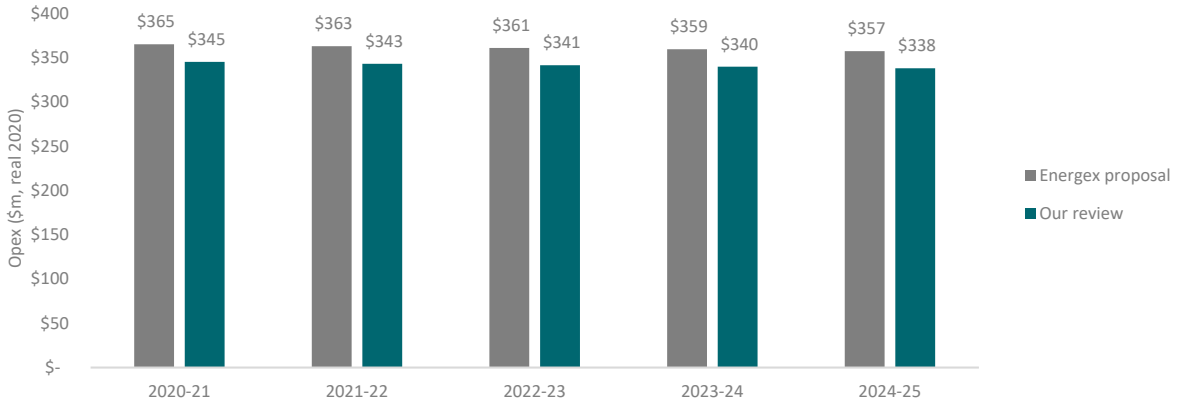
- The AER's recent productivity guidelines suggest that networks should embed productivity into opex forecasts.
- In a positive step forward, Ergon and Energex are proposing to substantially exceed the AER's guidelines. Both networks have proposed to cut overheads by 10 per cent Some of this saving will be achieved through the new digital strategy that customers are being asked to pay for in the Information and Communication Technology capex program.
- Ergon is proposing 2.58% per annum efficiency which equates to about $160 million of savings to customers through the 2020-25 period. Energex is proposing 1.72% per annum efficiency which equates to about $103 million saving to customers.
- In comparison, had the networks applied a 1% productivity (as would be expected with networks that have structural legacy inefficiencies), the productivity would only be about $60 million for each network.
- We would not like to see Ergon and Energex unduly punished by receiving a reduction for base year inefficiency and the application of very high productivity targets. We would like to see more evidence/ scenarios from Ergon and Energex to show the trade off between the base year reduction and productivity. This may provide some positive evidence to suggest that the total opex reduction does not need to be as suggested on the next page.

Conclusion on Energex opex

Proposed opex requiring further substantiation

Based on our targeted review, about $98 million of opex requires further explanation before it can be accepted by the AER. The key evidence Energex needs to demonstrate is that the full extent of stated merger savings for opex in 2019-20 have been incorporated into the adjusted base year. This has consequential impacts on other elements of Energex proposal.

Figure 32 – Our conclusions on level of opex that requires further review ($m, real 2020)



Our calculations draw out where further evidence and review is required on base year costs, rather than a substitute estimate.

The networks have proposed savings that go beyond AER productivity benchmarks. We would like to see more evidence from the networks to show that the higher productivity may offset some of the base year inefficiencies. If this were the case, the opex reduction would be less than we have quantified.

Areas for AER review

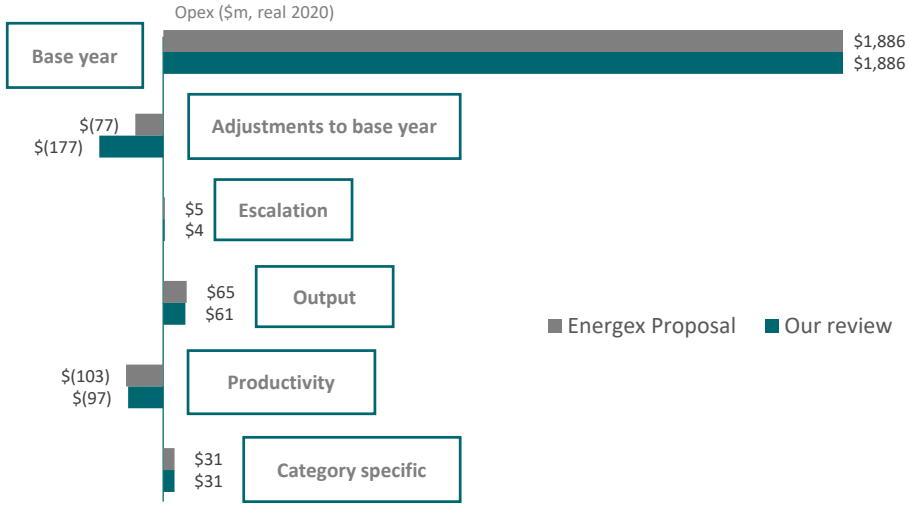
Our very high level review suggests that Energex's base year opex does not contain material inefficiency. However, we still consider the AER's technical experts should review this issue in detail as we still have concerns with the OEF analysis put forward by Energex.

Our key concern is adjustments to the base year to reflect stated merger savings. We think about $20 million a year should be deducted from opex for each year of the 2020-25 regulatory proposal.

The reduction in the base year has a consequential impact on other opex calculations. It reduces the total amount of opex for opex factors (about $4 million) and escalation (about $0.2 million). However it means that less productivity needs to be deducted from total opex (about $6 million).

For clarity, we have continued to apply the productivity percentages proposed by the businesses, rather than a substitute such as the AER's productivity guidelines.

Figure 33 – Magnitude of adjustments to components of opex ($m, real 2020)

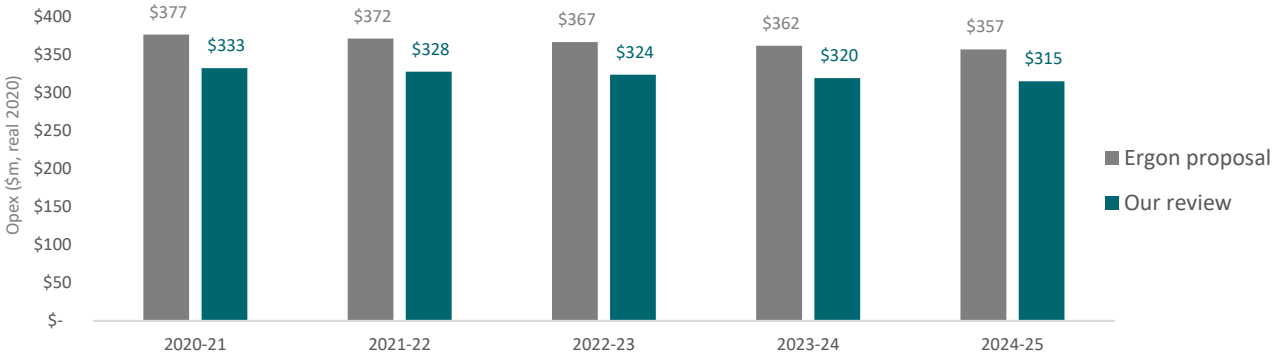


Conclusion on Ergon opex

Proposed opex requiring further substantiation

Based on our targeted review, about $215 million of opex requires further review before it can be accepted by the AER. We would like the AER to review whether Ergon's network opex compared to peers such as Essential Energy to determine if there is an explainable difference between costs. We also want Ergon to provide information on how it has embedded merger savings into its base year adjustments.

Figure 34 – Our conclusions on level of Ergon's opex that requires further evidence and review



Our calculations draw out where further evidence and review is required on base year costs, rather than a substitute estimate.

The networks have proposed savings that go beyond AER productivity benchmarks. We would like to see more evidence from the networks to show that the higher productivity may offset some of the base year inefficiencies. If this were the case, the opex reduction would be less than we have quantified.

Areas for AER review

Our very high level review suggests that Ergon's base year opex may contain a material inefficiency compared to its peers. We have found that Ergon's network opex (excluding vegetation management) is more than 10% higher than Essential Energy despite having less assets. We consider the AER should undertake a technical review to assess if there is a good reason for the difference.

We also note that there is a discrepancy between the stated opex merger savings for 2019-20 compared to the base year adjustment allowed for in Ergon's proposal

The reduction in the base year has a consequential impact on other opex calculations. It reduces the total amount of opex for opex factors (about $7 million) and escalation (about $0.5 million). However it means that less productivity needs to be deducted from total opex (about $18 million).

For clarity, we have continued to apply the productivity percentages proposed by the businesses, rather than a substitute such as the AER's productivity guidelines.

Figure 35 – Magnitude of adjustments to components of Ergon's opex

Section 4
Review and findings on proposed capex

Capex as a whole

Energex and Ergon have significantly reduced their capital expenditure over the last decade. Energex is proposing to spend less than the last period, but Ergon is seeking more capex. Our review has focused on high level indicators to identify which programs require technical review by the AER. We observe that both networks are replacing more assets than their peers despite having a younger network. We also consider the augex and non-network capital programs can be better prioritised.

Trends in capex performance

- Ergon and Energex perform in the mid range of capital efficiency based on AER partial factor analysis. We think only limited weight can be placed on this data. Unlike opex, there are many time variable factors that influence capex levels across networks.
- Both networks have reduced capex significantly since FY2011. Despite spending less capex, Ergon and Energex have managed to maintain and improve reliability levels for their customers.
- We observe that the key driver of lower capex has been a reduction in growth related capex, in particular for Energex. Replacement capex has been relatively steady. Non-network has grown as a proportion of capex and is now at similar levels to replacement capex.
- Going forward we see that Energex is proposing a further reduction to its capex profile. In contrast, Ergon is proposing a modest increase from capex over the last 3 years of the current 2015-20 regulatory period. This is primarily being driven by higher replacement capex.

Our findings

- We consider that Energex and Ergon's proposals to be generally within reason. However, our high level analysis indicates that there are opportunities to prioritise, defer and streamline capex.
  - Repex - Our analysis of replacement trends suggests Ergon and Energex replace more assets than their peers despite having a younger and more robust network. We would like the AER's technical staff to review if the difference relates to a conservative risk appetite or unique factors in Queensland.
  - Augex – We have not seen good evidence that Energex and Ergon have sought to minimise costs on the LV monitoring project. We also question whether Energex could use DER to manage local constraints on the network.
  - ICT – We support well targeted ICT that leads to efficient transformation. We are concerned that previous investments may not have yielded the value they promised. We question whether the new ICT strategy will be delivered on time and effectively.
  - Building, fleet and minor capex – We question the drivers of increases in Ergon's fleet and property capex. We also raise issues with particular projects and programs where we consider efficiencies can be derived.

Capex as a whole

Energex and Ergon have reduced capex over the last 10 years

Both networks have made significant decreases to capex over the last decade. A key driver has been lower augex and connections.

Figure 36 – Energex capex over time ($m, real 2020)

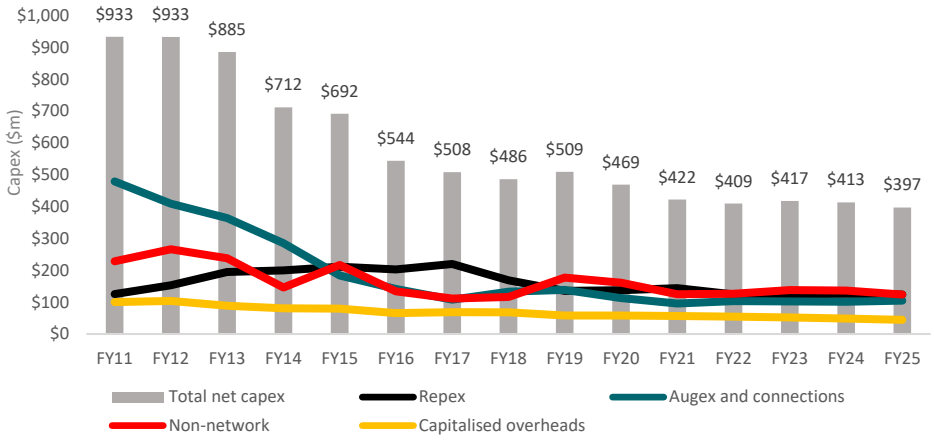
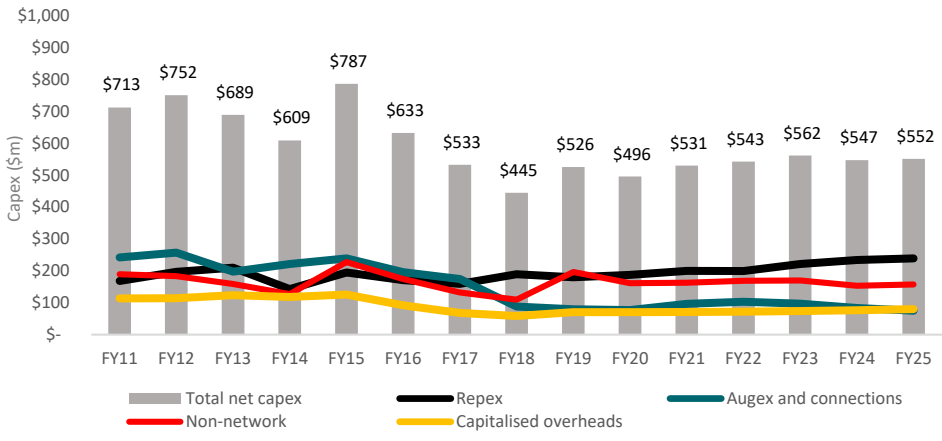


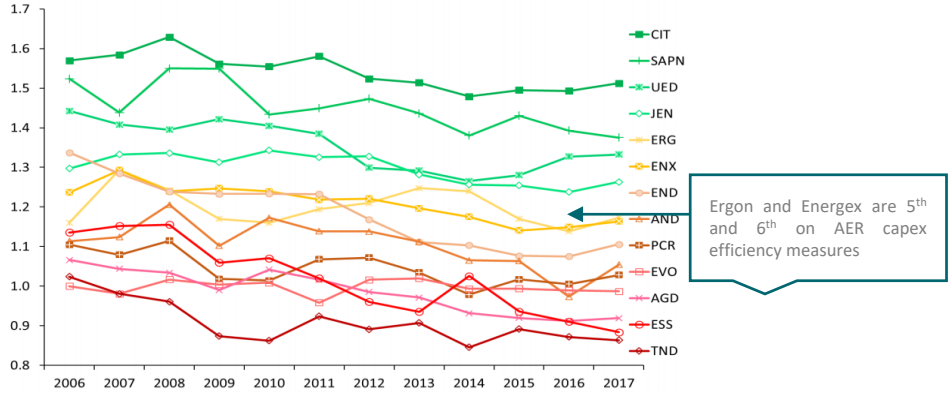
Figure 37 – Ergon capex over time ($m, real 2020)



Energex and Ergon rank in the middle of DNSPs on AER benchmarks

Energex and Ergon rank in the middle of networks on AER measures of capex efficiency

Figure 38– AER capex econometric benchmarking results



Reliability has slightly improved over the last 3 years

Figure 39 - Energex duration and outage frequency by customer location

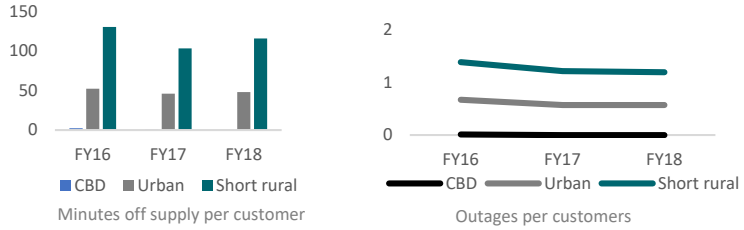
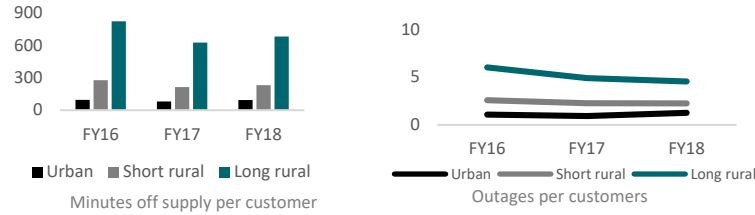


Figure 40 – Ergon duration and outage frequency by customer class



Capex – Replacement

We have looked at key indicators of Ergon and Energex proposed repex program. This includes the risk management framework underpinning replacement decisions, the age assets are replaced, unit costs, and trends in failure rates. Our main concern is that both networks appear to be replacing assets at an earlier age to their peers, and this may be due to a less mature risk management framework. Based on this analysis, we consider repex could be reduced by 20% for Ergon and 15% for Energex to bring the networks closer to their peers. However, we recommend that the AER's technical consultants assess if the safety or reliability risks would be unmanageable under a lower repex allowance.

Asset management strategy

- We reviewed the joint asset management strategy of the networks. We have two concerns with the application of the replacement strategy.
- The networks state: "We are seeking to avoid the boom and bust investment cycles of the past and manage risk to ensure that the program is sustainable" (p3 of Attachment 7.026). Our long term strategic analysis suggests this may not result in best long term outcomes for customers. We consider that extending asset age as long as possible is the best strategic choice. This not only gives greatest value for past investment but also gives time for DER to grow and provide alternatives to 'like for like' investment in the future. In our view this will best promote long term affordability.
- We have not seen the degree of risk quantification evident in networks such as SAPN. Ergon and Energex subject individual projects to a risk score review. We consider that a matrix approach does not allow for a quantitative risk vs cost decision, or appropriate risk ranking of the portfolio. Other firms such as NT Power and Water have similar issues, but for their revised proposal looked at new ways of assessing projects using risk quantification and prioritisation. We encourage Energex and Ergon to assess its proposed replacement program using these quantitative tools.

High replacement rate given youth of network

- Our first observation is that Ergon and Energex both have relatively young networks compared to peers. Based on age profile data (which may contain inaccuracies), Ergon and Energex have 12% and 4% of assets over 50 years of age respectively. This compares to peers such as Essential and SAPN which have 26% and 30% respectively.
- Despite the relative youth of the network, Ergon and Energex have relatively high replacement rates (replacement per population) for major asset categories. At a high level, this gives us concern that the risk management strategy may be too conservative. An alternative interpretation is that assets have worn out earlier due to weather or past poor maintenance.

Unit costs

- Both networks both appear to have very low unit rates, suggesting work delivery is efficient and best practice.

Failure rates

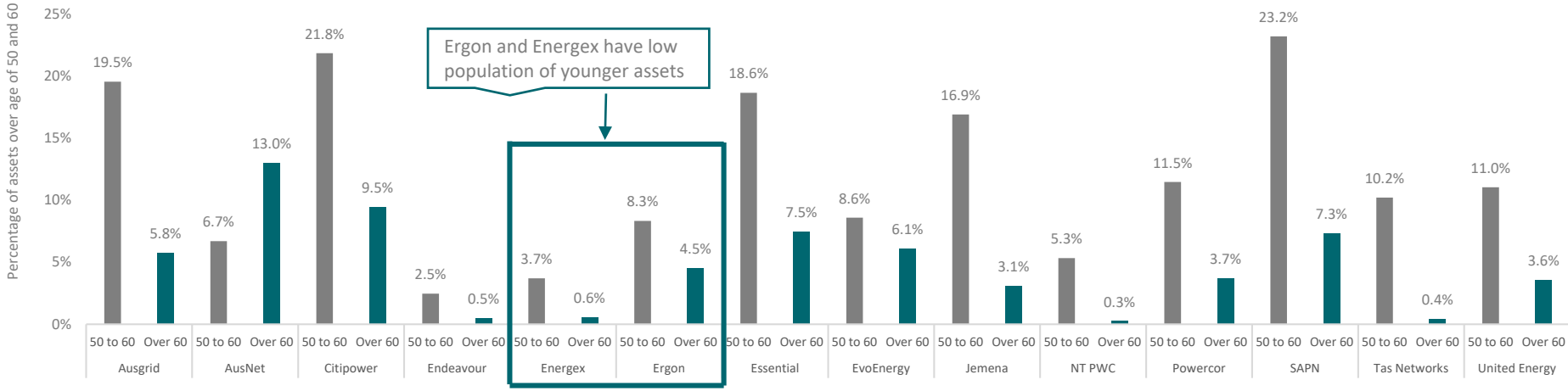
- We note that failure rates seem to be increasing for some asset categories. We would like to understand these issues in greater detail to assess if it is better data reporting, or a systemic decline in the health of assets. We note that the failure rates have not negatively impacted reliability, suggesting failures are being managed effectively.

Replacement – high level indicators

Energex and Ergon have a relatively young network

Energex and Ergon appear to have relatively young networks compared to peers. Energex ranks 13 out of 14 of peer networks in terms of number of old assets on the network. Ergon ranks 11 out of 14. This means they have the second and fourth youngest networks in the NEM. Please see Appendix 3 for more information on source and details by asset category.

Figure 41 – Percentage of total asset population between 50 and 60, and over 60 years of age by network



Energex and Ergon replace more assets (as a % of the asset population) than peers with older networks

We would expect Ergon and Energex to be replacing less assets than its peers. But both networks appear to have high rates of replacement (assets replaced/ asset population) compared to peers for poles, service lines, transformers and SCADA systems. On face value, this indicates there may be opportunities to extend the life of assets, and reduce the replacement capex. Please see Appendix 2 for more information on source and details by asset category.

Figure 42 – Energex and Ergon ranking in terms of replacement rate (assets replaced per population) compared to peers

	Energex	Ergon
Poles	2nd	7th
Overhead conductors	3rd	6th
Underground cables	Equal 12th	Equal 12th
Service lines	3rd	2nd
Transformers	2nd	3rd
Switchgear	11th	8th
SCADA systems	8th	4th

On face value, we would expect the networks to have relatively lower rates of replacement than their peers. This is the case for underground cables and switchgear but does not appear to be the case for poles, overhead conductors, service lines, transformers and switchgear.

Capex – Replacement programs

We have undertaken a desktop review of the proposed replacement programs to get a sense of how Energex and Ergon make replacement decisions. A key observation is that the program is dominated by proactive replacement (ie: before the asset fails in service). In most cases, this appears to be triggered by safety or security of supply issues. We do not have the engineering expertise to provide a clear opinion on the prudency and efficiency of the program. However we note the business cases do not exhibit the level of risk quantification we have evidenced in other networks. This could be why Energex and Ergon appear to replace assets at a younger age than their peers.

Sub-transmission capex

- About 25 per cent of Energex and 22% of Ergon's proposal relates to proactive sub-transmission capex. We undertook a desktop review of Energex and Ergon's combined business case for the 33kv/11kv transformer replacement program (Attachment 7.41) which is a large component of capex. Our observations:

- Both networks have good practice in how the assets are maintained across the life-cycle. They have clearly outlined issues with the condition of these assets.

- We note that other networks have similar assets which have lived well beyond the predicted asset age such as Essential.

- Our key concern is that Energex and Ergon have not demonstrated the same level of maturity as peer networks in risk assessment. For example we note that Ausgrid recently developed a 'best practice' approach for quantifying risks on the sub-transmission network.

- Energex and Ergon in contrast use risk matrices and scoring. We would like to see an improved approach to quantifying the risks for customers. This includes identifying the value of lost load to customers under different contingencies and load transfers to adjoining substations. We would also like to understand if mobile transformers could be implemented to reduce risks.

Proactive distribution capex

- About 50% of Ergon and Energex proposed replacement is to proactively replace distribution assets. At a high level, we think repex could be delayed without increasing probability of risks to customers. Other networks have significant proportions of aged distribution assets without exposing customers to safety or reliability issues. We seek evidence that the networks have a higher level of safety or reliability risk than peers and reasons why.

- We examined the pole replacement business case (attachment 7.37) where Energex and Ergon appear to replace more assets than their peers, despite having a younger network. We saw some evidence to suggest this relates to tougher operating conditions, including storm related pole failure.

- However, we seek further quantitative evidence from Energex and Ergon that it cannot manage the risks of failure within the bounds of other networks. No risk quantification is provided. We compare this to networks such as SAPN which identify the dollar value of the risk, and compare this to costs. Other networks (NT Power and Water) have also provided evidence in their revised proposal which seek to prioritise the pole program based on population density metrics. We see some evidence of this is practice at Energex but there is no quantitative data underlying the approach.

- We strongly recommend that the AER examine key business cases to assess if there are opportunities to extend asset lives.

Capex – Augmentation

Energex and Ergon's augmentation capex has fallen significantly in the current regulatory period. This relates to flattening peak demand across its network and less investment in the security of the network. Going forward, Energex and Ergon have factored in the slowing of the traditional drivers of augmentation capex (peak demand) and have proposed capex to improve monitoring on its low voltage (LV) network to better manage 2 way flows of energy in the future. We consider there may be more opportunities to manage demand than forecast by the networks, as evidenced by underspends in the past. Based on past underspends, we consider that both networks could reduce augex by at least 15% compared to forecast for 2020-25 period.

Trends in augmentation capex

- Augex has fallen by $340 million for Energex and $70 million for Ergon between FY2011 and FY2017.
- There are many drivers of lower capex including a reduction in peak demand from less air conditioning, new technology and energy efficiency. Further, Energex and Ergon had been investing substantial augex to improve security of the network. Going forward, Energex is proposing less augex than the trend over the last three years of actual data, but Ergon is seeking slightly more. The key drivers of capex relate to:

- Reinforcing the network to meet pockets of high peak demand on the network. This is largely caused by 'spot loads' which require upstream augex such as real estate developments.
- Investing in 'worst performing feeders' to improve reliability in rural areas.
- Monitoring technology on the LV network which will assist in better managing 2 way flows of energy in the future.

Key findings on augex

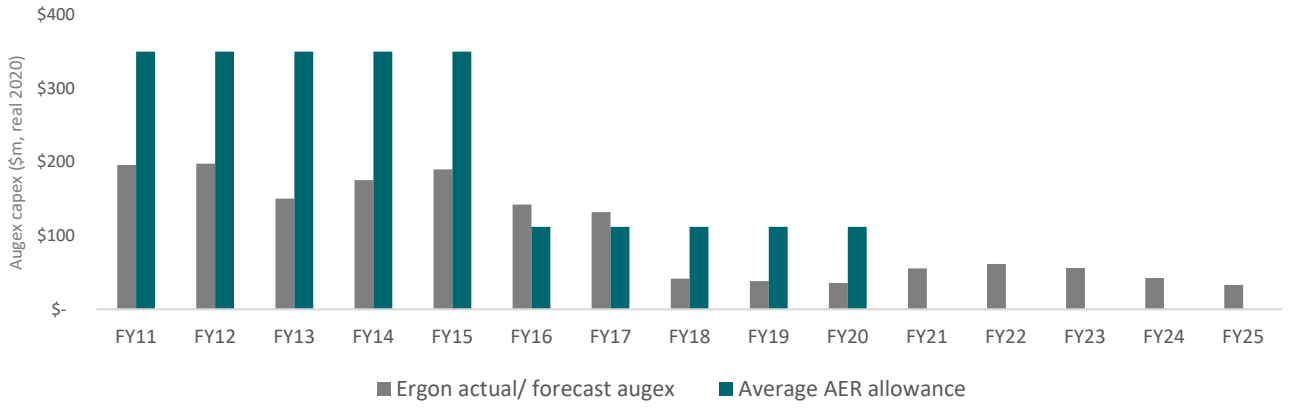
- We consider Ergon and Energex's level of proposed augex is within reason. However, our strategic analysis shows a risk of asset stranding from investing in new network.
- We note that Ergon (and to a lesser extent Energex) have overstated required augex in the past. This could reveal a deficiency in the forecast process. The deficiency may arise from forecasting growth areas that do not eventuate, or under-estimating opportunities to defer augex.
- We consider there may be more opportunities for Energex and Ergon to defer growth related capex.
- We note that Energex and Ergon continue to invest in improving the reliability of worst performing feeders. We understand the concerns of rural customers, but would like to understand the cost-benefit analysis for all customers.
- Finally we have concerns with the costs and durability of proposed capex to monitor the LV network.

Capex augmentation

Potential issue in over-forecasts of augex capex

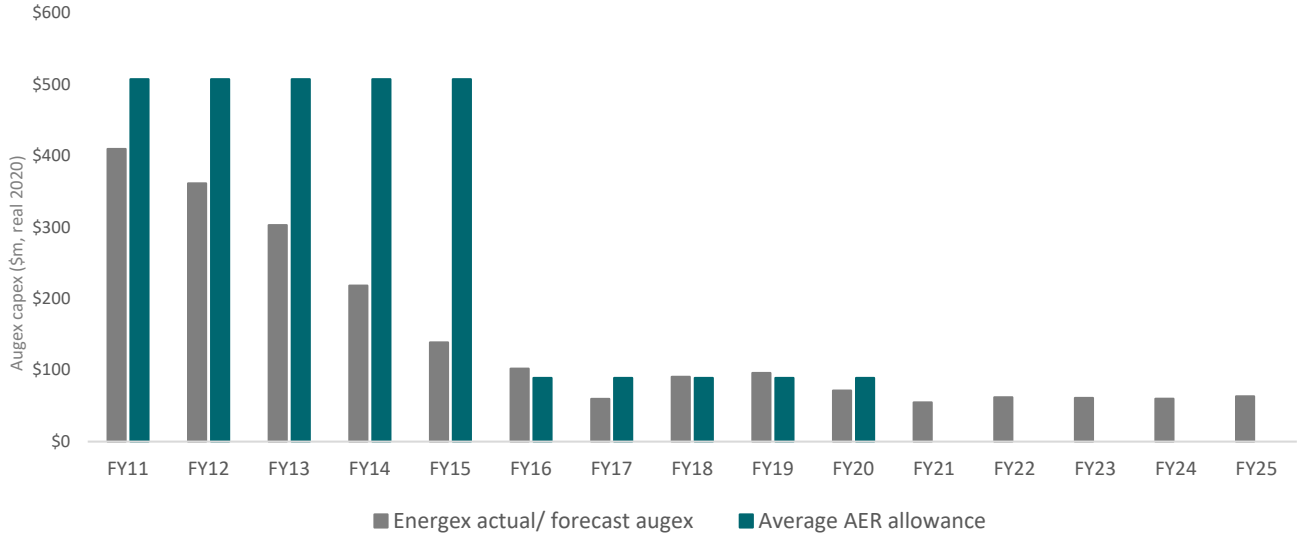
At a high level, we consider the AER should review Ergon and Energex forecast process to determine if there is a systematic issue in over-forecasting augex capex. This issue seems to be more prevalent for Ergon. We note that both networks have not claimed a reward under the CESS.

Figure 43– Ergon's actual/ forecast augex capex compared to AER allowance



Ergon underspent the 2010-15 AER allowance by 48%. It also underspent the AER allowance for 2015-20 allowance by 30%.

Figure 44 – Energex's actual/ forecast augex capex compared to AER allowance



Energex underspent the 2010-15 AER allowance by 77%. It also underspent the 2020-25 AER allowance by 5%.

Capex – Augmentation programs

We have undertaken a high level desktop review of material augex projects proposed by Energex and Ergon to get a sense of the bottom-up justifications underlying the forecast. At a high level, we consider there are opportunities for Energex and Ergon to prioritise the proposed augex portfolio.

Reinforcement programs

- About 2/3 of Energex proposed augex relates to increasing capacity of the network to meet growing demand on local sections of the network. For Ergon this represents about 50% of the program.
- Most programs relate to pockets of local growth from a cluster of industrial and real estate developments. We reviewed Energex Bells Creek project and Ergon's distribution feeder augmentation projects. Areas which we would like the AER to review include:
  - Have Ergon and Energex previously over-estimated the load or connection time for strategic developments?
  - Can Ergon and Energex use existing capacity from adjoining areas to manage local constraints. We would like to understand capacity of transfers of load from areas close to the constraint.
  - Have Ergon and Energex considered future local generation (solar, batteries and embedded generators) that could defer the timing of the project.
  - Have Ergon and Energex utilized 'best practice' planning standards. For example, can the project be delayed if there is a low chance of a load outage. Also, are the standards for operating network equipment too conservative. For example, do the networks operate equipment at emergency or normal ratings when making decisions?
  - Are customers paying their fair share of augex. We understand that the driver of augex is clusters of new customers. We would expect the customers as a whole to pay some portion of the augex burden put on all customers.
  - Have the networks embedded the benefits of the ICT program such as "reducing or deferring capex through better analysis of energy usage, targeting of demand management programs and use of non-network alternatives" (p85 reg proposal).

Worst performing feeders

- Both networks have sought funding to invest in the worst performing feeders on the network. Energex has proposed $22 million, while Ergon has only proposed $4 million.
- This appears disproportionate. Our analysis of reliability indicates that Ergon customers receive a worse level of service. We note that the customer reliability strategy (Attachment 7.48) also notes an inconsistency between the businesses.
- We would like further evidence from Energex to show that its worst performing customers perform worse than Ergon.

Power quality programs

- Energex and Ergon propose to invest $42 million and $13 million respectively in programs that monitor and address voltage issues on their low voltage (LV) networks arising from exports of solar and batteries.
- Strategically, we support innovative and timely investment to integrate new technology into the grid. We consider this may give opportunities for networks to manage demand and retire (rather than replace) assets.
- The key issue is whether the monitoring equipment is the best value option. We note that smart meters may be more cost-effective at providing LV data than the proposed option by providing a good sample of data to develop models.

Capex – Connections

Both networks have delivered what they forecast for connections for the 2015-20 period, and are forecasting similar capital expenditure for the 2020-25 period. This provides us with confidence that the forecast process is sound. We note that the customer connection growth rate does appear high compared to the average over the last 5 years, but this has not impacted the proposed capex. The proposed connection policy seems to be reasonable, but we question how it relates to the augex program.

Connection capex trends

- Ergon and Energex appear to have relied on the average trend of connections capex to forecast expenditure in the 2020-25 period. In the past, this approach has produced accurate estimates of forecast connection capex.
- From a methodological viewpoint, we think this approach has some shortcomings. The volume of connections is impacted by changes in growth rate and economic activity.
- The key question for customers is whether the approach is likely to result in an overstatement of capex. This would occur if we expect connection capex to decline from current levels due to population or a fall in economic activity.
- We note that overall connection activity in the 2015-20 period was relatively subdued. Ergon and Energex are forecasting higher rates of connection in the 2020-25 period. If this were the case, the connections forecast may be slightly understated.
- On balance, we consider it is a reasonable approach to rely on actual connections capex to forecast the future.

Connection policy

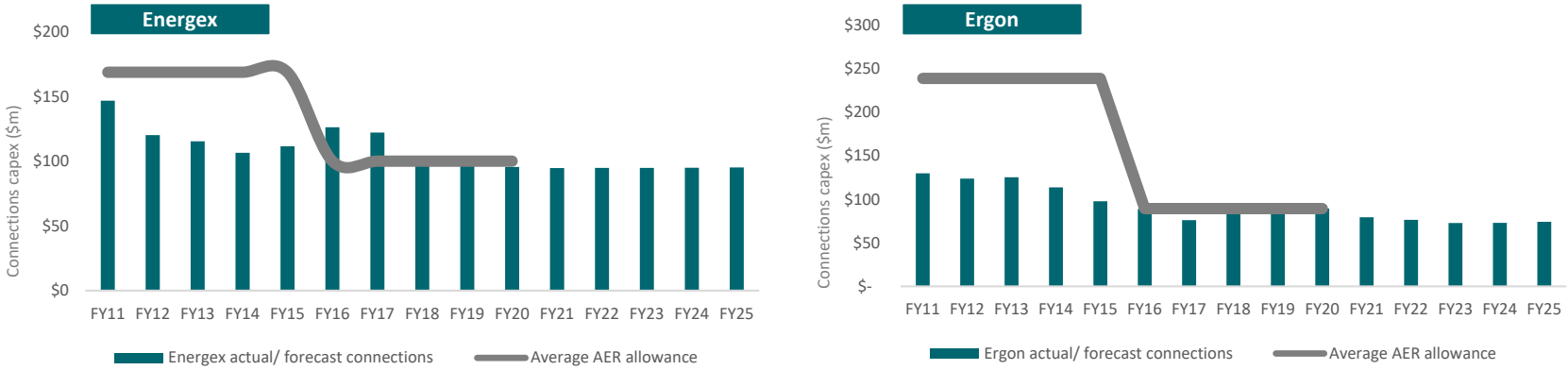
- The connection policy provides a framework for identifying who pays for the costs of connecting new customers.
- In our view, new customers should pay for the cost of their dedicated connections, and for their fair share of augmenting the network. This provides incentives for customers to locate in areas where there is capacity on the network.
- We consider that the incremental revenue test in Energex and Ergon's connection policy provides for a fair sharing of augmentation costs. We also think this is reflected in the relative proportions of contributions and net capex.
- As noted in the augex section, we question whether developers, commercial and industrial customers should be paying a larger share of augex projects. If they are driving the upgrades (albeit before they are connected) should they not refund customers later for the upgrades to the network.

Capex connections

Energex and Ergon are asking for more than actuals despite spending less than AER's allowance

In the 2015-20 period, Energex and Ergon accurately forecast capex for connections. Both networks are relying on trends in actual capex to forecast connections capex for the 2020-25 period. On balance, we consider this is a reasonable approach.

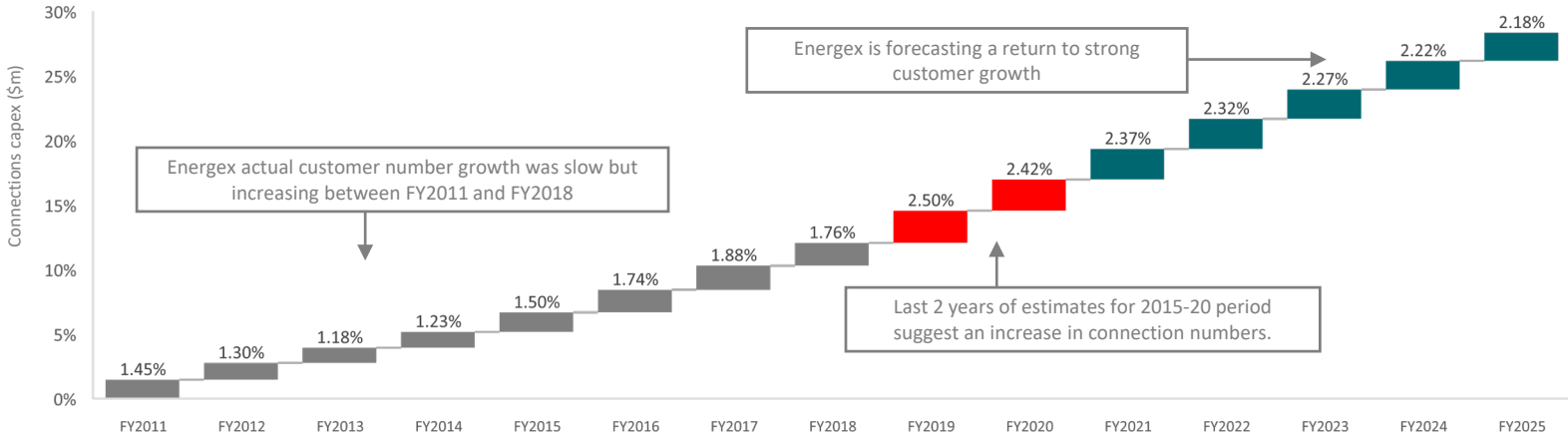
Figure 45 – Energex and Ergon's actual/ forecast gross connections capex compared to AER allowance ($m, real 2020)



Unclear if connections will rebound to levels predicted by Energex

Energex are forecasting the same level of capex despite a predicted rise in connections capex. We note that customer growth is important to the opex growth factor and indicative price calculations. For this reason, we think it still remains a metric the AER should assess in its determination.

Figure 46 – Cumulative and annual connection growth on Energex's network



Capex – ICT

Energex and Ergon have spent almost $1.2 billion on ICT over the last decade. The key question for consumers is: have the customer benefits been worth the costs? In some jurisdictions, networks have shown how ICT helped extend asset life and kept the lid on prices. We have not seen the same evidence from Queensland networks where expenditure and prices have risen substantially since 2000. We see some evidence that Queensland networks are embarking on a more disciplined ICT program, but it still lacks a value proposition or delivery plan. We consider that both networks could reduce the proposed ICT capex by 20 per cent.

How effective has Queensland's ICT investment been?

- Data provided by the networks suggest over $700 million in direct ICT, and $500 million in indirect ICT capex will be spent by the networks between FY2011 and FY2020. This translates to customers paying roughly $550 over a 10 year period for these investments (ie: $1.2 billion over 2.2 million customers).
- Energex and Ergon have not provided any quantified evidence to show that customers have benefited from such a large ICT spend. We recognise this is difficult to quantify, but without such evidence it is hard to justify the benefits of continuing ICT investment.
- In South Australia and Victoria, networks have linked ICT expenditure to better risk decisions that help defer system capex. We have not seen the same evidence in Queensland where capex and prices increased significantly between 2005 and 2020.
- We would like the Queensland networks to have a go at quantifying the value provided by past investments. This should be in terms of capex deferred and avoided, lower opex, and value provided to customers for better service.

Key findings on proposed ICT plan for 2020-25

- Ergon is proposing over $200 million in direct ICT capex and $150 million in indirect ICT capex over the 2020-25 period. Energex is proposing about $190 million in direct capex and a further $100 million in indirect capex.
- Energex and Ergon should be commended for embedding the savings from the new digital strategy into its opex forecasts. This is a good demonstration that both networks are trying to tie IT investments to quantified benefits to customers.
- However our concerns are:

- Apart from the $250 million of savings to opex, we have not evidenced any other savings embedded in the opex or capex forecasts. We would expect that better data platforms would provide opportunities for both networks to defer more system capex, and generate savings in maintenance.
- We do not think the increase in ICT capex will be delivered effectively in a business that is already undergoing significant change. This is evident from the low level of actual capex in the last 3 years of actual data. We think a slower pace will help the business realise the full extent of efficiencies.
- The unit costs are derived from vendors. We question whether the networks are trying to negotiate lower prices. We think a slower pace would provide more market power to the networks.

Capex – ICT projects

The networks have kept the project costings confidential. This is common practice for ICT projects in the industry and goes against the principle of transparency and openness. We encourage the networks to release this information so a fair assessment can be made by consumer groups. It would also allow us to compare and contrast with other networks. We have reviewed the public versions of business cases made available by Energex and Ergon. The business cases do not explore if an ICT asset can be sustained in service longer without undue risk, and ignore the least cost option.

Key issues with business cases

- Asset renewals and extensions account for more than 80% of proposed capex. New capabilities account for about 20% of proposed capex.
- Our review of the ICT plan suggests that a key driver of renewal is to transition existing systems onto a unified enterprise platform. This raises the question of whether the assets are being replaced before the end of life to further this strategy. If this were the case, we question whether it is more prudent to slowly transition existing systems to the platform only when the asset has come to the end of its life.
- We also found little information on project costings. This appears to be confidential as it relates to vendor costs. We would like the AER to examine whether networks are negotiating as hard as they can to get lower prices for ICT products. We note that unified platforms could 'lock in' a vendor who then has market power for all decisions.

Review of sample of business cases

- We undertook a desktop review of a sample of ICT replacement projects to assess the principles and rigour applied to replacement decisions. Our view is that the projects have not been assessed from a cost-benefit perspective but from a strategic desire to transition to a unified platform. Low cost options have been dismissed on this basis.
- The rationale for replacing the Geographical Information System appears to relate to efficiencies that can be derived from a new system. Much of the business case is made confidential, not allowing for proper review. It appears there are minimal risks to the networks from continuing to use the existing system. While we agree there may be benefits from a new common system, these have not been quantified. We note that the 3rd option to undertake minimal works is the least cost in the business case. This has been rejected by the networks on the basis that it does not meet arbitrary objectives of the business case. This is not compelling evidence to terminate a functioning ICT asset. No costings have been made available. There is also no discussion of alternative providers.
- The risks associated with the current Meter Data Management System (MDMS) have been made confidential to stakeholders. This should be tested by the AER. Once again we see that the driver of the project is to transition the MDMS onto a unified enterprise platform, and for this reason lower cost options have been dismissed. We would like the AER to review how much the project contributes to the proposed opex efficiencies, and whether this is greater than the cost of a new system.
- The cyber security business case is not available for stakeholders to review. Our key issue is whether all avenues to reduce cost have been explored. We would also like the AER to review if Energex and Ergon's costs are higher than peers.

Capex – Property, fleet and plant

Energex and Ergon are proposing to spend about $500 million on property, fleet and plant in the 2020-25 period. Our analysis shows that the companies spend the most on property, fleet and plant of all networks in the National Electricity Market but this could be due to owning rather than leasing assets, larger service area for Ergon and more work delivered by internal employees. We have undertaken a desktop review of documentation, and suggest some areas for further technical review by the AER. Our analysis suggest that at least 20 per cent of proposed capex could be deferred or minimised.

Property capex

- Energex are proposing to spend $174 million and Ergon $221 million on property in the 2020-25 period.
- We note both networks have deferred property investment to the end of the period, suggesting that the timing of projects in the 2020-25 period may also be delayed. We also would think that reductions in employee numbers would reduce the need to invest in property in the 2020-25 period.
- We have reviewed the property strategy to understand the drivers of investment. The investment is directed at renewing depots, improving security, and investing in new corporate facilities for Energy Queensland.
- We agree in principle with investments to ensure the security and safety of depots. However, we consider that with a reduced workforce, there may be opportunities to retire non-compliant depots and transfer staff to nearby facilities.
- We are concerned with the large increase in corporate facilities for EnergyQueensland including a new office and training facility.
  - We would like the AER to review the basis for re-building the training facility compared to refurbishing. We consider the case has not been made to show the existing facility is non-compliant, and that the costs of refurbishing should be lower than re-build.

Fleet capex

- Fleet capex has declined from the peak of investment between 2010 and 2015. This reflects that there are less system capital projects and lower employee numbers. We would like the AER to review if Energex and Ergon have more fleet per field worker than other jurisdictions.
- We reviewed the fleet strategy of Energex and Ergon to understand the drivers of capex for the next regulatory period. We note that the key driver is replacing vehicles in the fleet
- We note evidence submitted by SAPN in its 2020-25 regulatory proposal which has sought to compare replacement cycles of a range of networks. Our observation is that Energex and Ergon are generally within a reasonable range compared with peers. We see some opportunities to extend the life of some vehicles. This may yield savings of up to 10 per cent of the program.
- We would also like the AER to review if Energex and Ergon are paying more than their peers for their fleet. This could involve examining the cost and volume data of networks, and considering if the higher cost provides a better service.
  - In this regard, we note that Ergon and Energex have very different unit costs (see page 10 of Attachment 7.002). On face value, the networks should be using each other as benchmarks unless there is a reason for differences in the vehicles. Also we consider that the merger provides greater bargaining power to access cheaper vehicles from suppliers through bulk purchases.

Fleet metrics

Ergon and Energex have reasonable replacement cycles compared to peers, but there may be opportunities for improvement

SAPN's 2020-25 regulatory proposal provided the following table outlining the replacement cycles of peers including Energex and Ergon. We consider there may be opportunities for both networks to extend asset life for EWPs, cranes, borers and wire winders, commercial trucks, passenger vehicles, and light commercial –heavy duty.

Figure 47 – Replacement ages for different fleet for peers of Ergon and Energex

	SA Power Networks	PowerCor (under review)	AusGrid	Essential	Ergon	Energex
EWP	10 year	15 year	10 year	10 year	10 year	10 year
Crane	14 year	10 yrs/300,000Kms-Cab 20 yrs Crane	10 year	10 year	10 year	10 year
Borer's and Wire Winders	20 year	10 yrs/300,000Kms-Cab 20 yrs Borer	10 year	10 year	10 year	10 year
Commercial Trucks	15 year	15 year/300Kms	15 year	10 to 15 year	10 to 15 year	10 to 15 year
Misc. Equipment	20 year	10 year	15 year	15 year	15 year	15 year
Trailers	15 year	15 year	15 year	15 year	15 year	15 year
Passenger	5 year/150,000Kms	4 year/120,000Kms	5 year/120,000Kms	5 year/100,000Kms	4 year/100,000Kms	4 year/100,000Kms
Light Commercial 4x2	5 year/150,000Kms	6 year/150,000Kms	6 year/150,000Kms	5 year/120,000Kms	7 year/140,000Kms	7 year/140,000Kms
Light Commercial 4x4	5 year/150,000Kms	6 year/140,000Kms		5 year/120,000Kms	7 year/140,000Kms	7 year/140,000Kms
Light Commercial - Heavy Duty	5 year/150,000Kms	300,000Kms		5 year/120,000Kms	4 year/150,000Kms	5 year/150,000Kms
TEC	3 year/90,000Kms	4 year/100Kms		100,00Kms	3 year	2 year/90,000Kms

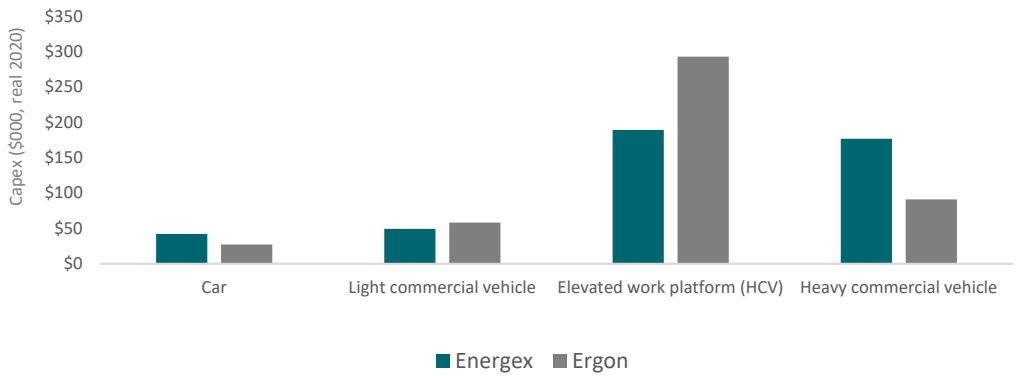
Source: SAPN regulatory proposal (Attachment 5.30, p27)

There are opportunities for Ergon and Energex to extend asset life of fleet to meet the best benchmark of other peers. We consider these opportunities may yield a 10% saving in capex.

Ergon and Energex differ in their actual unit costs

We encourage Energex and Ergon to use each other as benchmarks to establish if better value can be derived from their fleet. 2017 RIN data shows that Ergon have significantly lower unit costs for cars and heavy commercial vehicles. In contrast Energex gets better value for light commercial vehicles and elevated platforms. This difference in unit costs has been carried forward to the 2020-25 regulatory proposal. In our view about 10% of capex can be saved by each network by getting best value from suppliers.

Figure 48 – Actual unit costs for fleet for Energex and Ergon in 2017-18 ($,000, real 2020)

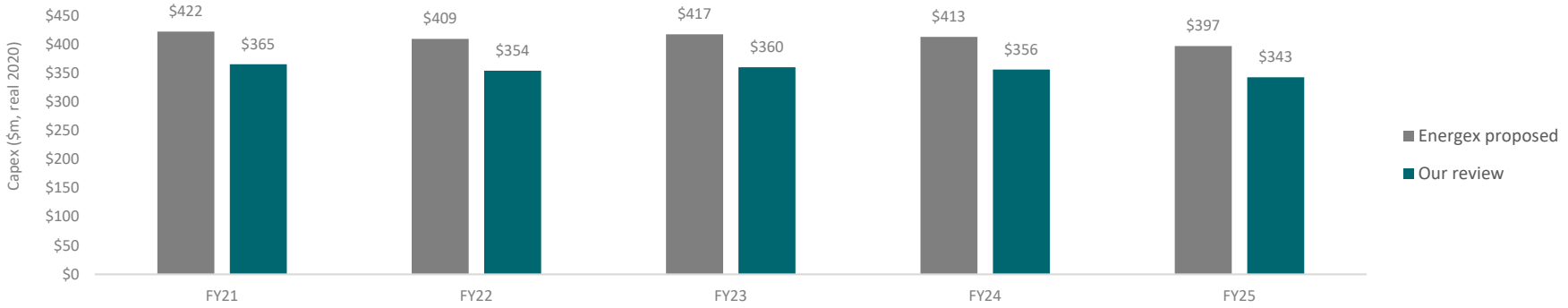


Conclusion on Energex capex

Proposed capex requiring substantiation

Based on our targeted review about $280 million of capex requires further technical review by the AER or substantiation by Energex

Figure 49 – Our conclusions on level of Energex proposed capex that requires further review

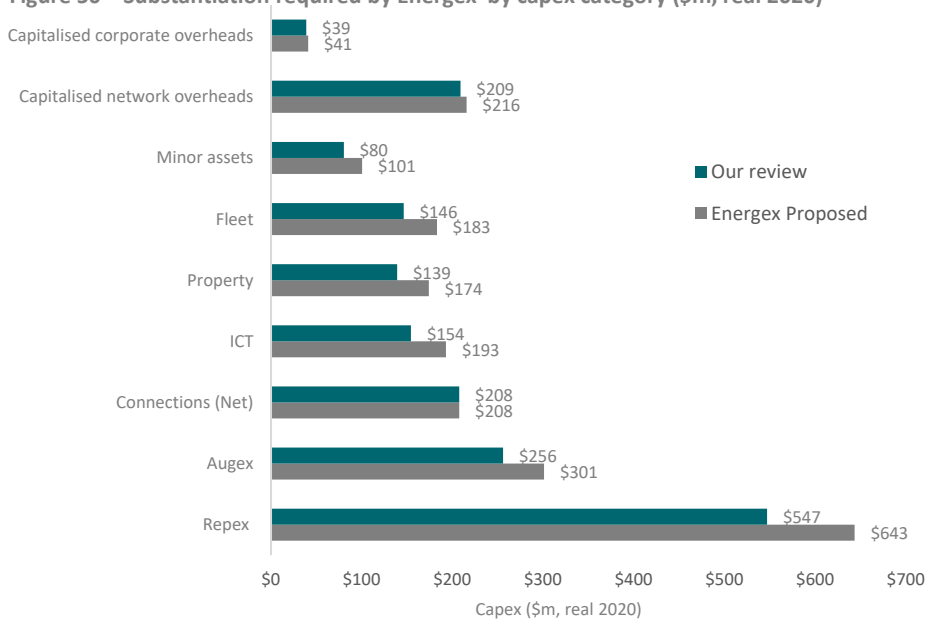


Areas for review

We consider most components of Energex proposed capex require substantiation:

- Repex – We consider about 15% of the repex program requires further detailed evidence to justify seemingly early replacement of assets compared to peers.
- Augex – We consider there is a potential 15% opportunity to prioritise the portfolio using demand management and through lower costs.
- ICT – We consider that the replacement of assets is being driven less by condition/risks and more by a strategic imperative to have a uniform platform. We consider that a slower pace of ICT projects will extend ICT asset life and help with cost discipline. We consider that this may be up to 20 per cent reduction.
- Fleet property and plant – We consider there is likely an overstatement of about 20% for corporate property projects and fleet based on high level review of property business cases, and benchmark replacement rates and unit costs for fleet.
- Overheads – We have estimated a 3 per cent reduction in overheads relating to a lower network capital, and 5% relating to lower non-network capital. This assumes 75% of overheads are fixed once productivity has been applied to the 2020-25 period.

Figure 50 – Substantiation required by Energex by capex category ($m, real 2020)

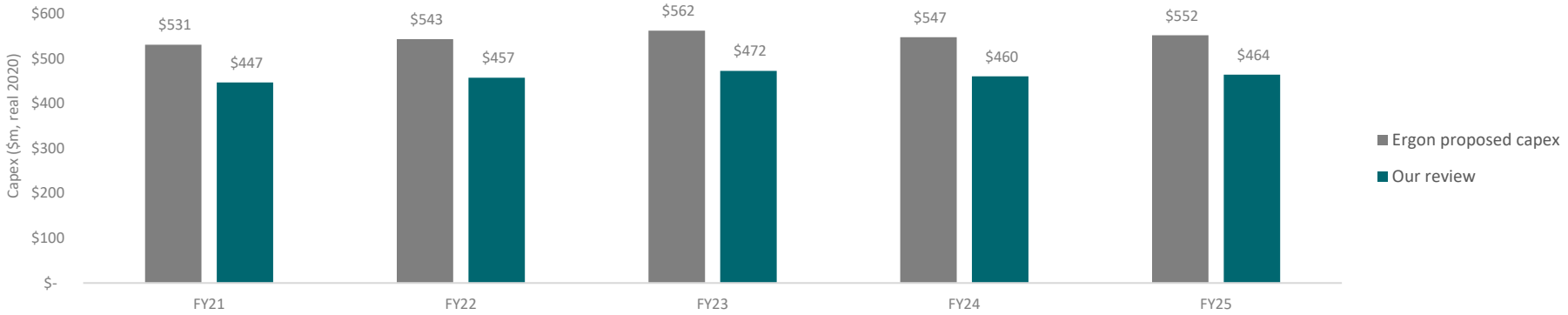


Conclusion on Ergon capex

Proposed capex requiring substantiation

Based on our targeted review about $435 million of capex requires further technical review by the AER or substantiation by Ergon.

Figure 51 – Our conclusions on level of Ergon proposed capex that requires further review

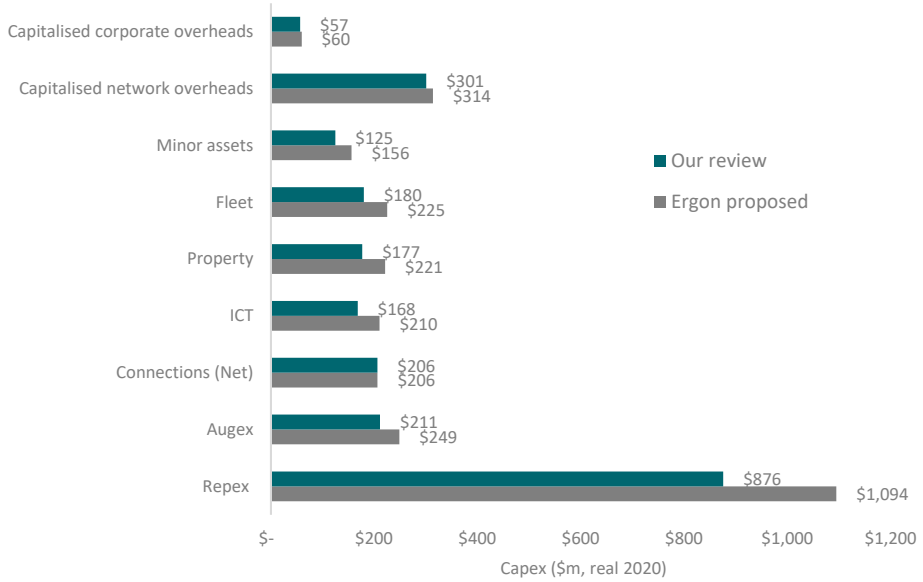


Areas for review

We consider most components of Ergon proposed capex require substantiation:

- Repex – We consider about 20% of the repex program requires further detailed evidence to justify seemingly early replacement of assets compared to peers. This is a slightly higher reduction than Energex on basis that Ergon have sought an uplift of about 20% from capex in the current period.
- Augex – We consider there is a potential 15% opportunity to prioritise the portfolio using demand management and through lower costs.
- ICT – We consider that the replacement of assets is being driven less by condition/risks and more by a strategic imperative to have a uniform platform. We consider that a slower pace of ICT projects will extend ICT asset life and help with cost discipline. We consider that this may be up to 20 per cent reduction.
- Fleet property and plant – We consider there is likely an overstatement of about 20% for corporate property projects and fleet based on high level review of property business cases, and benchmark replacement rates and unit costs for fleet.
- Overheads – We have estimated a 3 per cent reduction in overheads relating to a lower network capital, and 5% relating to lower non-network capital. This assumes 75% of overheads are fixed once productivity has been applied to the 2020-25 period.

Figure 52 – Substantiation required by Ergon by capex category ($m, real 2020)



Section 5
Review and findings on roll forward of assets

Roll forward of ICT assets

Energex and Ergon have both proposed to transfer the depreciated value of ICT assets to the RAB. Previously, ICT assets were an annual fee that was captured in opex and capitalised overheads. Ergon and Energex have not provided sufficient evidence to demonstrate customers will not get double charged for ICT investments. We seek the AER's technical advice on this matter, and seek models and explanatory material from the networks.

Our understanding of the change in treatment of ICT assets

- Previously, Energex and Ergon use to receive ICT services from an independent entity (SPARQ). Both networks would pay SPARQ an 'annual usage fee' to compensate SPARQ for investment and running costs associated with the ICT service. We understand the fee would be recognised as an overhead in the regulatory accounts, and be distributed to opex and capex.
- For 2020-25, both networks propose no longer paying an annual service fee. Instead:
  - New ICT capex will be added to the RAB and depreciated over 5 years. This is relatively straight-forward and there are no issues here except for the short life of the asset (see next section).
  - The 'written down' value of past ICT assets in the 2015-20 period would be added to the RAB on 1 June 2020. This value would be depreciated over 10 years.
- In principle, we agree with the proposed change in regulatory accounting. We agree that the 'annual usage fee' lacked transparency and inhibited benchmarking with peers.
- We agree there would be some level of written down value after an annual usage fee. However, we would expect this amount to be about $100 million for Energex Ergon. This is based on a rough rule of thumb where half of the ICT capex is recovered by an annual usage fee in a regulatory period. This is a very rough calculation and may be not appropriate.

Our concerns and questions

- Our concern is that there is little documentation or data to establish that:
  - The written down value of past ICT investments is correct.
  - The forecast process for deriving opex and capex in the 2020-25 period reflects that Energex and Ergon no longer will pay an annual service fee.

The key questions we seek data on:

- How much were Energex and Ergon paying as an annual fee? What proportion of this fee related to expenditure of a capital and operating nature, and was this documented at the time? How much of this was related to the legacy ICT assets included in the RAB?
- How was the annual service fee accounted for in the regulatory accounts and RIN reporting from a process perspective?
- In determining the written down value, have the networks only used the portion of the annual service fee reported as capital overheads?
- Has this amount been deducted in full when forecasting capex and opex overheads in 2020-25?
- Is the residual annual service fee relating to opex likely to be re-occurring in nature?

Section 6
Review and findings on tax and depreciation

Tax and depreciation

We note that the AER will be adjusting Ergon and Energex's proposed tax allowance. We would also like the networks to justify if economic lives for new assets reflect the expected technical life. Finally we would like Ergon and Energex to explain if the 'year on year' tracking method is optimal for price and cash flow sustainability. Our analysis suggests a large fluctuation will occur between 2040 and 2050.

Adjustments to incorporate AER's tax review findings

- The AER published its findings on a tax review in December 2018. The AER has made two major changes that impact the calculation of the tax allowance provided to networks. This includes changes to immediate expensing, and using diminishing value to calculate tax profiles.
- Our understanding is that Ergon and Energex's regulatory proposals have not incorporated the AER's findings. This was to be expected given that the AER planned to make changes to its models after the time the networks submitted their regulatory proposal.
- We consider that the tax changes will have an impact on reducing Energex and Ergon's tax allowance calculation for the 2020-25 period.
- Due to our technical limitations, we have not been able to estimate the revenue reduction. As a high level estimate, we consider the revenue reduction may be 2/3 of the proposed allowance submitted by the distributors.

Depreciation lives

- We note that assets are living longer than the economic life in the Post Tax Revenue Model and tax lives.
- We question whether new assets should be an entirely new asset class and depreciated over a greater length of time.
- In particular we question why ICT systems only have a 5 year life.

'Year on year' method to depreciate assets

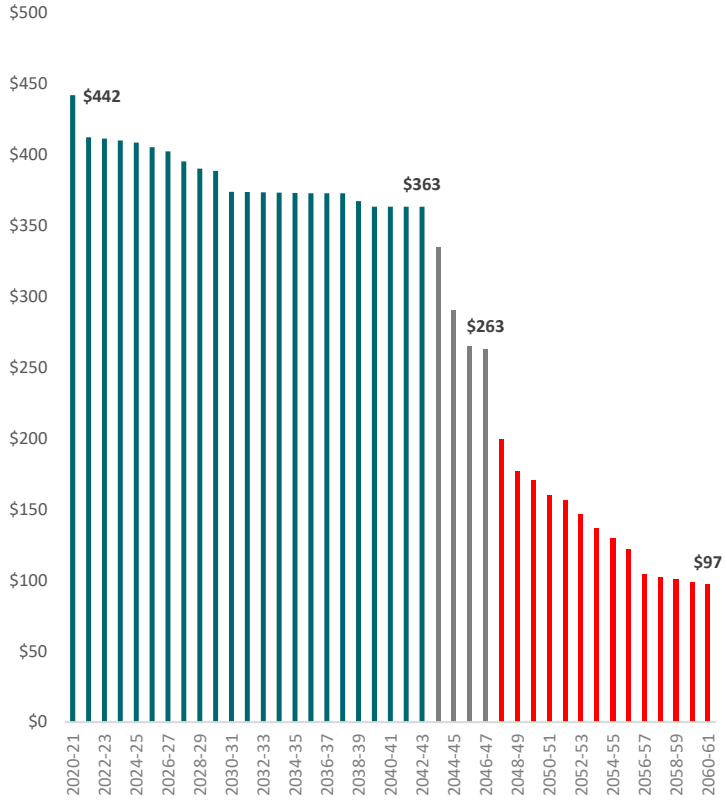
- Ergon and Energex are proposing to use a 'year on year' method to calculate economic depreciation. This contrasts with a weighted average remaining life (WARL) approach previously used by the networks. We understand the networks are entitled to propose a 'year on year' tracking method to calculate economic depreciation on assets.
- We agree that 'year on year' tracking does provide a precise means of depreciating assets. However it does have the effect of bringing forward depreciation compared to the WARL.
- Our concern is whether the approach leads to inadvertent price fluctuations for Energex and Ergon, who both have a very high for opening asset value in 2020-21. This original value is depreciated year by year until the opening value is exhausted. If a cluster of assets reach exhaustion at the same point there is a 'cliff-face' drop off in straight line depreciation, which has an unexpected impact on price and revenue. The drop off bears no relationship with the underlying costs of the network at the time.
- For Energex, this drop off will occur in a five year period between 2043 to 2048 as assets with large value such as underground sub-transmission cables, overhead distribution lines, and substation bays are fully exhausted at the same time. Similar issues occur with Ergon at that time but will not be as sharp.
- We seek Ergon and Energex's view on this issue. Our analysis shows that weighted average remaining life method lead to smoother prices and cash flows. In our view, this would better serve the long term interests of Queensland customers.

Year on year depreciation methods – price fluctuations

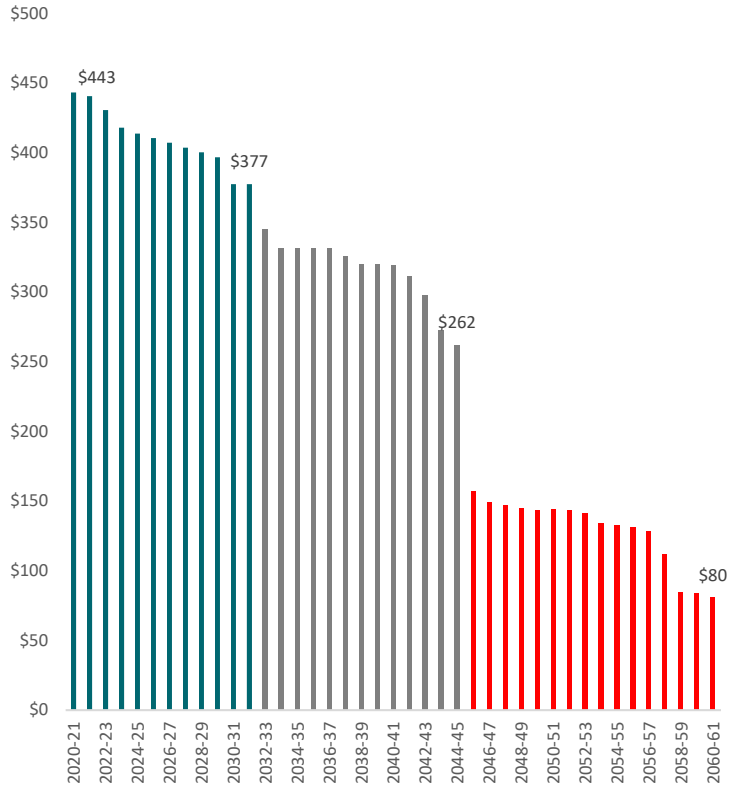
Year on year depreciation method may result in inadvertent price and cash flow fluctuations

In our view, a regulatory framework is best served by steady price variations and cash flows. We consider that transitioning to a 'year on year' method when the value of the opening asset base is very high leads to a risk of a 'cliff-face' drop in revenue and prices. This could result in cash flow issues at the time, as the drop off bears no relation with the cost structures faced by the business at that time. We consider that the WARL method has the advantage of reducing the depreciation allowance in the short term, and providing a more smooth profile over time.

Figure 53 – Straight line depreciation profiles of opening asset value of existing asset base in 2020-21 ($m, real, 2020)



Energex



Ergon

Section 7
Review and findings on tariff structure statement

Tariff structure statement

We have undertaken a very high level review of the updated TSS. We understand that Ergon and Energex have been working tirelessly with stakeholders on improving the initial TSS submitted in the regulatory proposal. We have only been partially involved in these conversations, and have only had limited time to review the suggested changes. From a principles perspective, we consider less complexity and a slower transition would give customers time to understand the end goal that Ergon and Energex are striving towards.

The case for change

- Energex and Ergon have provided a highly complex array of tariff changes. Based on our high level review, both networks have still not articulated the case for change, and why their tariff design is of an optimal design.
- The networks contend that peak demand will no longer be the dominant driver of network capex. However they have not spelt out what they see as the key issue that requires tariff change.
- There are many stated objectives including improving network utilisation, removing cross subsidisation between customers, and discouraging uneconomic solar investment. The businesses have not articulated how meeting these objectives would improve affordability or service quality. The networks also state that capacity and demand price structures hold the key, without showing how these structures achieve these objectives.
- We compare this to SAPN's TSS which has provided a compelling argument for change. SAPN have shown that shifting load to off peak periods will help with the emerging solar trough issue, and bursts of peak demand. In turn, this will reduce investment and prices for customers. They have then shown how their time of use and optional prosumer tariff will further this objective, while providing the foundation for for more innovative tariffs later on.

Understanding change from a customer's perspective

- From a customer's perspective, demand and capacity options may seem complex and arbitrary. Customers who were previously on a simple energy charge will now suddenly be faced with a bill that looks at their maximum demand on days in a month. This is a very confusing change for customers. More importantly they appear to be punished for something which they may find difficult to control.
- Without the support of customers, the tariff changes are likely to be controversial and be perceived negatively, even if the economic rationale happens to be sound.

A slower transition to cost reflective prices

- Ergon and Energex have not shown that an immediate transition to demand tariffs is required to avoid unnecessary investment in the grid. The issue seems to be more medium to long term.
- This provides opportunities for Ergon and Energex to design more gentle change that allow consumers to understand how their behaviour can positively impact bills. Simple time of use tariffs can get customers use to the idea of shifting energy to times when solar is at its peak or overnight. Setting up new opt-in tariffs for electric vehicles can get early buy-in from influential trend setters to charge vehicles when solar is on.

Appendices

Appendix 1 – Opex maintenance category data

Source data for comparison of Ergon and Essential Energy's maintenance opex

One of our key findings is that Ergon has higher maintenance opex (once vegetation management is excluded) compared to Essential Energy. This is despite Essential Energy having significantly more assets including sub-transmission.

Figure 54 – Extract of Ergon's opex data submitted in regulatory proposal

2.1.2 - STANDARD CONTROL SERVICES OPEX BY CATEGORY	Forecast ($0's, real June 2020)	
	2018-19	2019-20
Vegetation management	41,333,552	40,574,237
Maintenance	83,118,209	81,591,291
Emergency response	50,852,670	49,918,484
Non-network	49,716,303	48,802,993
Metering	-	-
Network overheads	134,306,792	131,839,518
Corporate overheads	36,255,715	35,589,681
Total	395,583,240	388,316,204

Source of this data was Ergon's RIN for 2020-25 submitted as part of the regulatory proposal. This is tab 2.1 (B:23 to D33). The data is expressed as June $2020. To get back to $2017-18 we have used the inflation assumptions for 2019-20 and 2018-19 in CPI series submitted by Ergon. This has the effect of reducing opex when expressed as $2017-18.

Figure 55 – Extract of Essential Energy RIN submitted in category analysis Rin for 2017-18

2.1.2 - STANDARD CONTROL SERVICES OPEX	EXPENDITURE ($0's) 2017-18
Vegetation management	101,134,591
Maintenance	63,197,943
Emergency response	33,508,051
Non-network	95,863,890
network overheads	98,514,629
corporate overheads	49,035,501
Metering	
Public Lighting	
balancing item	(95,863,890)
TOTAL OPEX	345,390,715

This is sourced from Essential Energy's category analysis RIN for 2017-18 - Tab 2.1 (cells C:30 to C:49). It is nominal $ so we have assumed this is $2017-18, so no adjustment has been made.

Appendix 2 – Replacement capex data

Source data for replacement rates

Our review has provided information which suggests that Ergon and Energex have higher replacement rates than peers, given the relative youth of their network. The replacement rate was determined by the following equation by asset class: Replacement volumes/ Population = Replacement Rate. There are three steps to the calculation. The source data is provided below.

Step 1 of calculation – Replacement volumes data

The table below provides the replacement volumes of each network as reported in the 2017-18 Category Analysis RIN. It then compares this with the average annual replacement volumes of Ergon and Energex proposed for the 2020-25 period as submitted by each network in their 2020-25 Reset RIN (Tab 2.2)

Figure 56 – Replacement volumes by asset category (2017-18)

	AUSGRID	AUSNET	CITIPOWER	ENDEAVOUR	ESSENTIAL	EVO ENERGY	JEMENA	NT PWC	POWERCOR	SA POWER	TASNETWORKS	UNITED	ENERGEX	ERGON
	2018	2017	2017	2018	2018	2018	2017	2018	2017	2018	2018	2017	AVERAGE 2021-25	AVERAGE 2021-25
Poles	2,929	6,429	341	2,707	8,798	568	615	63	1,951	8,091	3,107	1,951	6,294	8,763
Overhead conductors (kms)	1,492	105	1	257	154	37	0 *	9	291	86	65	28	265	545 *
Underground cables*** (kms)	153	1,144	8	19	4	6	0*	2	5	11	29	5	12	5
Service lines	20,724	8,712	21	14,431	5,282	1,237	4,279	-	91	18,007	879	91	20,247	14,551
Transformers	147	802	6	98	1,195	20	26	113	493	702	223	493	789	1,411
Switchgear	3,469	5,707	239	2,720	2,800	6,272	76	87	7,900	41	1,282	7,900	1,858	2,665
Scada systems	1,478	53	18	571	53	24	110	61	59	117	-	59	282**	394

Notes

*Jemena and United Energy appear to have reported some overhead conductors and underground cables as metres rather than kilometres. We have cross checked the data with the Distribution Annual Planning Reports. Based on this analysis we have divided the reported some of the underground and overhead cables by 1000 to express the numbers in kilometres.

** Energex appears to have a data anomaly for communication linear assets. We have divided the units by a 1000 to correct the apparent measurement issue. This means the amount is similar to Ergon and other DNSPs.

*** Underground cables are reported without the 'other underground' cables sub- category to ensure that it does not include pillars etc as opposed to kilometres.

Appendix 2 – Replacement capex data

Source data for replacement rates

Our review has provided information which suggests that Ergon and Energex have higher replacement rates than peers, given the relative youth of their network. The replacement rate was determined by the following equation by asset class: Replacement volumes/ Population = Replacement Rate.

Step 2 of calculation – Population data

The table below provides the population of assets as reported in the 2017-18 Category Analysis RIN of all networks. This is calculated by summing the rows for each sub-asset category in template 5.2 of the RINs. We have made some adjustments to reflect data anomalies or measurement inconsistencies.

Figure 57 – Population (Number) of assets by category (2017-18)

	AUSGRID	AUSNET	CITIPOWER	ENDEAVOUR	ESSENTIAL	EVO ENERGY	JEMENA	NT PWC	POWERCOR	SA POWER	TASNETWORKS	UNITED	ENERGEX	ERGON
	2018	2017	2017	2018	2018	2018	2017	2018	2017	2018	2018	2017	2018	2018
Poles	472,981	334,987	49,119	313,667	1,315,264	50,607	81,234	28,055	488,157	647,494	259,432	488,157	448,397	1,025,213
Overhead conductors (kms)	25,917	38,333	2,569	28,357	186,152	2,579	4,456	5,428	68,817	174,290	20,207	12,860	35,089	143,166
Underground cables*** (kms)	15,973	6,575	2,117	19,025	9,695	3,022	1,883	1,621	6,325	18,056	2,560	6,325	19,176	8,810
Service lines	965,748	182,504	148,266	771,650	722,175	211,227	269,265	28,878	546,576	796,125	193,797	546,576	596,769	400,485
Transformers	36,049	60,963	4,945	31,989	140,657	5,209	6,517	4,830	85,422	74,928	32,836	85,422	51,342	102,665
Switchgear	160,663	163,911	26,705	81,733	486,796	118,289	44,976	7,169	380,253	5,920	63,372	380,253	240,481	179,934
Scada systems	92,497	9,359	5,040	2,836	1,086	3,780	468,922	16,011	8,981	12,886	1,018	8,981	105,617**	33,877

Notes

*Jemena and United Energy appear to have reported some overhead conductors and underground cables as metres rather than kilometres. We have cross checked the data with the Distribution Annual Planning Reports. Based on this analysis we have divided the reported some of the underground and overhead cables by 1000 to express the numbers in kilometres.

** Energex appears to have a data anomaly for communication linear assets. We have divided the units by a 1000 to correct the apparent measurement issue. This means the amount is similar to Ergon and other DNSPs.

*** Underground cables are reported without the 'other underground' cables category to ensure that it does not include pillars etc as opposed to kilometres.

Appendix 2 – Replacement capex data

Source data for replacement rates

Our review has provided information which suggests that Ergon and Energex have higher replacement rates than peers, given the relative youth of their network. The replacement rate was determined by the following equation by asset class: Replacement volumes/ Population = Replacement Rate.

Step 3 of calculation – Replacement rates

The table below provides the replacement rates which are the division of the replacement volumes in Figure 56 by the population in Figure 57.

Figure 58 – Replacement rates by asset category (Replacement volumes/population)

	AUSGRID	AUSNET	CITIPOWER	ENDEAVOUR	ESSENTIAL	EVO ENERGY	JEMENA	NT PWC	POWERCOR	SA POWER	TASNETWORKS	UNITED	ENERGEX	ERGON
	2018	2017	2017	2018	2018	2018	2017	2018	2017	2018	2018	2017	AVERAGE 2020-25	AVERAGE 2020-25
Poles	0.62%	1.92%	0.69%	0.86%	0.67%	1.12%	0.76%	0.22%	0.40%	1.25%	1.20%	0.40%	**1.40%**	**0.85%**
Overhead conductors (kms)	5.76%	0.27%	0.04%	0.90%	0.08%	1.44%	0.00%	0.16%	0.42%	0.05%	0.32%	0.22%	**0.75%**	**0.38%**
Underground cables*** (kms)	0.96%	17.40%	0.36%	0.10%	0.04%	0.20%	0.00%	0.14%	0.08%	0.06%	1.13%	0.08%	**0.06%**	**0.06%**
Service lines	2.15%	4.77%	0.01%	1.87%	0.73%	0.59%	1.59%	0.00%	0.02%	2.26%	0.45%	0.02%	**3.39%**	**3.63%**
Transformers	0.41%	1.32%	0.12%	0.31%	0.85%	0.38%	0.40%	2.34%	0.58%	0.94%	0.68%	0.58%	**1.54%**	**1.37%**
Switchgear	2.16%	3.48%	0.89%	3.33%	0.58%	5.30%	0.17%	1.21%	2.08%	0.69%	2.02%	2.08%	**0.77%**	**1.48%**
Scada systems	1.60%	0.57%	0.36%	20.13%	4.88%	0.63%	0.02%	0.38%	0.66%	0.91%	0.00%	0.66%	**0.64%**	**1.16%**

Notes

*Jemena and United Energy appear to have reported some overhead conductors and underground cables as metres rather than kilometres. We have cross checked the data with the Distribution Annual Planning Reports. Based on this analysis we have divided the reported some of the underground and overhead cables by 1000 to express the numbers in kilometres.

** Energex appears to have a data anomaly for communication linear assets. We have divided the units by a 1000 to correct the apparent measurement issue. This means the amount is similar to Ergon and other DNSPs.

*** Underground cables are reported without the 'other underground' cables category to ensure that it does not include pillars etc as opposed to kilometres.

Appendix 3 – Age profile

Source data for age profile

Our analysis found that Ergon and Energex have one of the youngest networks in the NEM. Our analysis is based on 2017 and 2017-18 Category Analysis RIN (Tab 5.2) which has population by asset category by installation year. We have aggregated the data by asset type. Note that this data reflects age of assets in the reported year

Figure 59 – Percentage of assets within age bands by asset class for Ausgrid, Ausnet, Citipower and Endeavour as reported in 2017-18

Company	Age band	Poles	Staked poles	Overhead conductors	Underground cables	Service lines	Transformers	Switchgear	SCADA	Total
AUSGRID	1 to 10	13.73%	67.74%	12.21%	25.82%	31.30%	25.56%	39.07%	26.51%	27.39%
AUSGRID	11 to 20	10.23%	32.24%	10.07%	16.60%	14.71%	19.37%	20.07%	13.43%	14.29%
AUSGRID	21 to 30	10.74%	0.02%	5.81%	7.88%	8.98%	19.19%	9.70%	10.77%	9.61%
AUSGRID	31 to 40	16.23%	0.00%	11.21%	10.45%	11.22%	13.42%	9.76%	10.12%	12.17%
AUSGRID	41 to 50	17.11%	0.00%	17.32%	12.04%	8.18%	12.24%	10.54%	16.96%	11.25%
AUSGRID	51 to 60	28.11%	0.00%	34.83%	16.20%	18.65%	7.27%	8.07%	13.68%	19.54%
AUSGRID	61 to 70	3.26%	0.00%	7.32%	8.05%	5.29%	2.75%	1.59%	6.12%	4.41%
AUSGRID	71 to 80	0.51%	0.00%	0.66%	1.28%	0.50%	0.15%	0.35%	1.08%	0.51%
AUSGRID	81 to 90	0.08%	0.00%	0.00%	0.68%	0.00%	0.04%	0.53%	0.89%	0.12%
AUSGRID	91-100	0.00%	0.00%	0.56%	0.99%	1.07%	0.01%	0.21%	0.24%	0.63%
AUSGRID	Over 100	0.00%	0.00%	0.00%	0.00%	0.10%	0.00%	0.10%	0.19%	0.07%
AUSNET	1 to 10	11.24%	36.23%	7.33%	32.26%	18.44%	16.31%	18.38%	73.78%	16.19%
AUSNET	11 to 20	7.70%	25.20%	6.53%	27.03%	16.95%	19.22%	9.72%	16.87%	11.83%
AUSNET	21 to 30	16.65%	36.16%	9.25%	11.51%	10.18%	19.99%	31.28%	4.06%	18.45%
AUSNET	31 to 40	27.63%	2.30%	13.96%	21.34%	19.66%	25.86%	22.62%	3.12%	22.91%
AUSNET	41 to 50	18.70%	0.02%	15.22%	7.80%	3.09%	11.53%	5.78%	2.08%	10.92%
AUSNET	51 to 60	12.27%	0.08%	18.87%	0.01%	0.01%	6.46%	2.36%	0.07%	6.70%
AUSNET	61 to 70	3.04%	0.01%	7.65%	0.00%	0.00%	0.56%	0.61%	0.01%	1.73%
AUSNET	71 to 80	1.25%	0.00%	2.44%	0.00%	0.00%	0.05%	0.01%	0.00%	0.61%
AUSNET	81 to 90	1.48%	0.00%	0.25%	0.00%	0.00%	0.02%	0.60%	0.00%	0.72%
AUSNET	91-100	0.05%	0.00%	18.50%	0.02%	31.68%	0.01%	8.63%	0.00%	9.94%
AUSNET	Over 100	0.00%	0.00%	0.00%	0.03%	0.00%	0.00%	0.00%	0.00%	0.00%
CITIPOWER	1 to 10	6.94%	50.87%	6.32%	10.52%	19.82%	20.77%	16.59%	35.65%	18.01%
CITIPOWER	11 to 20	7.04%	29.15%	7.43%	3.68%	5.71%	24.53%	14.30%	16.95%	8.12%
CITIPOWER	21 to 30	9.28%	15.64%	8.38%	4.38%	6.46%	9.71%	10.95%	4.19%	7.72%
CITIPOWER	31 to 40	20.45%	4.33%	20.18%	21.39%	17.47%	14.40%	10.97%	20.38%	17.02%
CITIPOWER	41 to 50	19.01%	0.00%	19.98%	18.92%	18.46%	13.81%	17.17%	15.56%	17.82%
CITIPOWER	51 to 60	24.00%	0.00%	25.73%	27.16%	22.81%	16.22%	21.49%	2.92%	21.83%
CITIPOWER	61 to 70	4.37%	0.00%	3.26%	4.33%	2.52%	0.36%	5.23%	4.37%	3.12%
CITIPOWER	71 to 80	4.23%	0.00%	3.53%	2.59%	2.45%	0.12%	1.38%	0.00%	2.51%
CITIPOWER	81 to 90	4.67%	0.00%	5.19%	6.45%	4.19%	0.08%	1.12%	0.00%	3.68%
CITIPOWER	91-100	0.00%	0.00%	0.00%	0.57%	0.11%	0.00%	0.45%	0.00%	0.12%
CITIPOWER	Over 100	0.00%	0.00%	0.00%	0.01%	0.00%	0.00%	0.36%	0.00%	0.04%
ENDEAVOUR	1 to 10	15.06%	45.49%	9.01%	26.87%	30.91%	22.12%	29.34%	59.85%	26.27%
ENDEAVOUR	11 to 20	22.47%	53.98%	19.12%	25.51%	26.33%	31.62%	20.12%	17.74%	25.05%
ENDEAVOUR	21 to 30	20.05%	0.53%	22.80%	17.02%	20.68%	19.65%	10.72%	1.37%	19.69%
ENDEAVOUR	31 to 40	23.25%	0.00%	16.50%	22.38%	18.10%	19.04%	22.62%	3.13%	19.59%
ENDEAVOUR	41 to 50	12.82%	0.00%	11.90%	7.45%	3.34%	5.06%	10.32%	7.04%	6.42%
ENDEAVOUR	51 to 60	4.95%	0.00%	16.43%	0.79%	0.59%	2.26%	6.35%	9.87%	2.46%
ENDEAVOUR	61 to 70	1.40%	0.00%	4.24%	0.00%	0.06%	0.24%	0.52%	1.00%	0.52%
ENDEAVOUR	71 to 80	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ENDEAVOUR	81 to 90	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ENDEAVOUR	91-100	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ENDEAVOUR	Over 100	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Appendix 3 – Age profile

Source data for age profile

Our analysis found that Ergon and Energex have one of the youngest networks in the NEM. Our analysis is based on 2017-18 Category Analysis RIN (Tab 5.2) which has population by asset category by installation year. We have aggregated the data by asset type. Note that this data reflects age of assets in 2017-18.

Figure 60 – Percentage of assets within age bands by asset class for Energex, Ergon, Essential Energy and Evo Energy as reported in 2017-18

Company	Age band	Poles	Staked poles	Overhead conductors	Underground cables	Service lines	Transformers	Switchgear	SCADA	Total
ENERGEX	1 to 10	22.48%	42.57%	4.53%	23.49%	36.85%	33.55%	52.07%	40.87%	38.98%
ENERGEX	11 to 20	13.26%	57.38%	6.22%	30.18%	35.59%	36.16%	26.22%	31.27%	30.07%
ENERGEX	21 to 30	19.91%	0.05%	15.02%	29.17%	10.50%	13.70%	13.46%	14.34%	14.26%
ENERGEX	31 to 40	22.09%	0.00%	27.73%	11.73%	10.48%	11.68%	7.01%	5.02%	7.45%
ENERGEX	41 to 50	15.09%	0.00%	31.73%	5.09%	4.62%	3.34%	0.93%	3.94%	4.99%
ENERGEX	51 to 60	5.16%	0.00%	8.03%	0.29%	1.96%	1.22%	0.29%	4.10%	3.70%
ENERGEX	61 to 70	1.34%	0.00%	4.12%	0.05%	0.00%	0.19%	0.02%	0.46%	0.47%
ENERGEX	71 to 80	0.42%	0.00%	1.74%	0.00%	0.00%	0.12%	0.00%	0.00%	0.05%
ENERGEX	81 to 90	0.24%	0.00%	0.89%	0.00%	0.00%	0.04%	0.00%	0.00%	0.03%
ENERGEX	91-100	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ENERGEX	Over 100	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ERGON	1 to 10	10.70%	45.53%	6.27%	53.82%	8.73%	27.64%	48.66%	57.27%	16.45%
ERGON	11 to 20	21.17%	41.85%	8.07%	39.24%	18.37%	23.32%	24.52%	24.44%	20.73%
ERGON	21 to 30	18.28%	12.04%	10.78%	3.69%	18.80%	19.32%	8.57%	5.95%	16.50%
ERGON	31 to 40	21.74%	0.58%	28.41%	2.33%	19.81%	16.62%	8.20%	5.87%	19.32%
ERGON	41 to 50	14.37%	0.00%	19.81%	0.75%	19.78%	8.60%	5.55%	3.36%	14.13%
ERGON	51 to 60	9.00%	0.00%	16.47%	0.14%	8.89%	4.18%	3.10%	2.81%	8.32%
ERGON	61 to 70	4.73%	0.00%	10.14%	0.03%	5.59%	0.27%	1.39%	0.31%	4.53%
ERGON	71 to 80	0.01%	0.00%	0.04%	0.00%	0.02%	0.04%	0.01%	0.00%	0.01%
ERGON	81 to 90	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	0.00%	0.00%	0.00%
ERGON	91-100	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	0.00%	0.00%
ERGON	Over 100	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ESSENTIAL	1 to 10	10.91%	45.43%	6.58%	28.59%	17.34%	17.63%	21.44%	76.52%	14.76%
ESSENTIAL	11 to 20	10.62%	28.72%	4.76%	31.63%	14.80%	22.55%	15.05%	23.39%	12.87%
ESSENTIAL	21 to 30	15.86%	25.85%	5.57%	19.29%	16.86%	18.97%	13.89%	0.09%	15.35%
ESSENTIAL	31 to 40	18.55%	0.00%	7.86%	11.75%	15.62%	16.64%	17.21%	0.00%	16.60%
ESSENTIAL	41 to 50	15.80%	0.00%	11.31%	7.02%	14.35%	10.98%	13.40%	0.00%	14.32%
ESSENTIAL	51 to 60	19.26%	0.00%	36.30%	1.33%	19.65%	9.62%	12.67%	0.00%	18.64%
ESSENTIAL	61 to 70	8.26%	0.00%	23.17%	0.34%	1.24%	2.95%	6.06%	0.00%	6.72%
ESSENTIAL	71 to 80	0.28%	0.00%	2.91%	0.04%	0.08%	0.35%	0.17%	0.00%	0.38%
ESSENTIAL	81 to 90	0.46%	0.00%	1.40%	0.00%	0.04%	0.30%	0.11%	0.00%	0.34%
ESSENTIAL	91-100	0.00%	0.00%	0.13%	0.00%	0.01%	0.00%	0.00%	0.00%	0.01%
ESSENTIAL	Over 100	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
EVO ENERGY	1 to 10	19.70%	48.66%	4.94%	24.30%	22.04%	16.24%	27.77%	35.53%	24.23%
EVO ENERGY	11 to 20	20.65%	51.32%	3.83%	10.69%	9.31%	22.50%	14.14%	19.81%	13.32%
EVO ENERGY	21 to 30	10.11%	0.01%	6.30%	14.45%	16.71%	20.54%	19.33%	31.14%	16.47%
EVO ENERGY	31 to 40	19.39%	0.01%	13.96%	13.84%	9.75%	23.52%	15.56%	12.78%	12.46%
EVO ENERGY	41 to 50	16.90%	0.00%	36.87%	18.70%	23.60%	14.61%	13.09%	0.74%	18.83%
EVO ENERGY	51 to 60	7.67%	0.00%	19.49%	6.29%	11.16%	2.38%	5.47%	0.00%	8.59%
EVO ENERGY	61 to 70	1.29%	0.00%	3.49%	1.95%	0.92%	0.19%	1.70%	0.00%	1.17%
EVO ENERGY	71 to 80	3.82%	0.00%	10.02%	6.43%	1.89%	0.02%	1.62%	0.00%	2.00%
EVO ENERGY	81 to 90	0.12%	0.00%	0.73%	0.85%	0.13%	0.00%	0.20%	0.00%	0.15%
EVO ENERGY	91-100	0.36%	0.00%	0.38%	2.51%	4.48%	0.00%	1.12%	0.00%	2.79%
EVO ENERGY	Over 100	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Appendix 3 – Age profile

Source data for age profile

Our analysis found that Ergon and Energex have one of the youngest networks in the NEM. Our analysis is based on 2017-18 Category Analysis RIN (Tab 5.2) which has population by asset category by installation year. We have aggregated the data by asset type. Note that this data reflects age of assets in 2017-18.

Figure 61 – Percentage of assets within age bands by asset class for Jemena, Power and Water Corporation, Powercor, and SA Power reported in 2017-18

Company	Age band	Poles	Staked poles	Overhead conductors	Underground cables	Service lines	Transformers	Switchgear	SCADA	Total
JEMENA	1 to 10	9.12%	54.67%	10.51%	25.97%	31.96%	22.53%	34.44%	17.00%	22.43%
JEMENA	11 to 20	8.49%	25.54%	9.56%	36.65%	24.08%	19.09%	25.44%	41.96%	32.42%
JEMENA	21 to 30	17.77%	18.23%	13.02%	25.13%	11.00%	20.56%	15.40%	1.62%	6.95%
JEMENA	31 to 40	26.27%	0.68%	29.78%	6.41%	7.81%	21.44%	13.61%	4.05%	7.65%
JEMENA	41 to 50	20.54%	0.76%	22.73%	3.65%	12.07%	11.11%	7.25%	8.71%	10.55%
JEMENA	51 to 60	14.66%	0.06%	13.23%	1.17%	12.97%	4.82%	3.50%	21.47%	16.89%
JEMENA	61 to 70	1.88%	0.03%	0.86%	0.24%	0.07%	0.41%	0.30%	4.26%	2.47%
JEMENA	71 to 80	0.86%	0.02%	0.18%	0.16%	0.02%	0.00%	0.04%	0.81%	0.51%
JEMENA	81 to 90	0.41%	0.00%	0.13%	0.41%	0.01%	0.05%	0.02%	0.13%	0.11%
JEMENA	91-100	0.01%	0.00%	0.00%	0.04%	0.00%	0.00%	0.00%	0.00%	0.00%
JEMENA	Over 100	0.00%	0.00%	0.00%	0.17%	0.01%	0.00%	0.00%	0.00%	0.00%
NT PWC	1 to 10	20.70%	na	9.86%	29.72%	28.87%	33.44%	32.19%	87.05%	35.89%
NT PWC	11 to 20	18.17%	na	15.99%	16.22%	24.04%	27.29%	20.17%	8.06%	18.73%
NT PWC	21 to 30	11.75%	na	8.49%	12.59%	12.35%	17.54%	6.32%	1.80%	9.91%
NT PWC	31 to 40	17.64%	na	51.05%	37.90%	14.26%	15.84%	28.41%	3.07%	17.12%
NT PWC	41 to 50	23.28%	na	9.49%	2.70%	12.88%	5.05%	9.76%	0.00%	12.78%
NT PWC	51 to 60	7.85%	na	5.03%	0.88%	7.42%	0.85%	3.10%	0.02%	5.32%
NT PWC	61 to 70	0.62%	na	0.09%	0.00%	0.18%	0.00%	0.04%	0.00%	0.25%
NT PWC	71 to 80	0.00%	na	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
NT PWC	81 to 90	0.00%	na	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
NT PWC	91-100	0.00%	na	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
NT PWC	Over 100	0.00%	na	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
POWERCOR	1 to 10	7.28%	32.51%	6.35%	35.53%	22.22%	12.69%	19.44%	44.77%	16.31%
POWERCOR	11 to 20	8.96%	24.92%	8.56%	41.30%	21.77%	20.47%	29.62%	30.39%	19.43%
POWERCOR	21 to 30	11.51%	38.54%	10.84%	15.36%	10.62%	19.24%	21.93%	6.91%	14.49%
POWERCOR	31 to 40	25.36%	4.04%	26.11%	5.35%	17.33%	23.75%	18.68%	12.09%	20.46%
POWERCOR	41 to 50	19.15%	0.00%	21.26%	2.23%	14.88%	12.16%	7.56%	3.32%	14.16%
POWERCOR	51 to 60	20.04%	0.00%	20.42%	0.21%	10.75%	10.42%	1.77%	1.10%	11.46%
POWERCOR	61 to 70	4.84%	0.00%	4.40%	0.03%	2.35%	1.27%	0.51%	1.41%	2.62%
POWERCOR	71 to 80	1.70%	0.00%	1.26%	0.00%	0.09%	0.01%	0.20%	0.00%	0.63%
POWERCOR	81 to 90	1.15%	0.00%	0.81%	0.00%	0.00%	0.00%	0.10%	0.00%	0.40%
POWERCOR	91-100	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.10%	0.00%	0.02%
POWERCOR	Over 100	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.08%	0.00%	0.02%
SA POWER	1 to 10	10.37%	1.73%	1.34%	15.24%	17.48%	15.29%	25.39%	44.10%	12.73%
SA POWER	11 to 20	3.12%	1.42%	2.42%	28.80%	15.66%	15.33%	10.57%	18.96%	9.65%
SA POWER	21 to 30	4.47%	4.47%	5.57%	25.08%	20.52%	19.42%	4.88%	8.96%	12.87%
SA POWER	31 to 40	8.51%	6.80%	8.61%	18.53%	18.55%	21.16%	6.81%	9.15%	13.68%
SA POWER	41 to 50	24.42%	32.17%	20.47%	11.75%	17.23%	14.76%	20.91%	8.95%	20.54%
SA POWER	51 to 60	33.73%	47.80%	43.16%	0.27%	10.19%	10.64%	23.58%	8.06%	23.20%
SA POWER	61 to 70	13.71%	5.55%	15.85%	0.34%	0.35%	3.40%	6.93%	1.64%	6.54%
SA POWER	71 to 80	1.03%	0.05%	1.73%	0.00%	0.01%	0.01%	0.47%	0.09%	0.50%
SA POWER	81 to 90	0.65%	0.02%	0.84%	0.00%	0.00%	0.00%	0.46%	0.08%	0.29%
SA POWER	91-100	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.02%	0.00%
SA POWER	Over 100	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Appendix 3 – Age profile

Source data for age profile

Our analysis found that Ergon and Energex have one of the youngest networks in the NEM. Our analysis is based on 2017-18 Category Analysis RIN (Tab 5.2) which has population by asset category by installation year. We have aggregated the data by asset type. Note that this data reflects age of assets in 2017-18.

Figure 62 – Percentage of assets within age bands by asset class for TasNetworks and United Energy reported in 2017-18

Company	Age band	Poles	Staked poles	Overhead conductors	Underground cables	Service lines	Transformers	Switchgear	SCADA	Total
TASNETWORKS	1 to 10	10.52%	48.05%	10.57%	38.21%	18.77%	16.95%	23.43%	47.45%	17.07%
TASNETWORKS	11 to 20	21.34%	24.51%	13.01%	19.87%	17.78%	28.79%	28.53%	52.55%	21.28%
TASNETWORKS	21 to 30	20.81%	26.92%	19.25%	14.41%	15.67%	29.61%	26.38%	0.00%	20.40%
TASNETWORKS	31 to 40	18.81%	0.52%	22.82%	16.26%	17.04%	16.98%	15.09%	0.00%	16.90%
TASNETWORKS	41 to 50	15.71%	0.00%	20.16%	7.05%	16.84%	6.47%	5.40%	0.00%	13.75%
TASNETWORKS	51 to 60	12.41%	0.00%	12.84%	4.19%	13.34%	1.16%	1.13%	0.00%	10.20%
TASNETWORKS	61 to 70	0.39%	0.00%	1.34%	0.00%	0.55%	0.04%	0.04%	0.00%	0.40%
TASNETWORKS	71 to 80	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
TASNETWORKS	81 to 90	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
TASNETWORKS	91-100	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
TASNETWORKS	Over 100	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
UNITED	1 to 10	7.28%	32.51%	5.58%	35.53%	22.22%	12.69%	19.44%	44.77%	16.73%
UNITED	11 to 20	8.96%	24.92%	3.69%	41.30%	21.77%	20.47%	29.62%	30.39%	19.89%
UNITED	21 to 30	11.51%	38.54%	11.12%	15.36%	10.62%	19.24%	21.93%	6.91%	14.64%
UNITED	31 to 40	25.36%	4.04%	44.77%	5.35%	17.33%	23.75%	18.68%	12.09%	20.26%
UNITED	41 to 50	19.15%	0.00%	25.58%	2.23%	14.88%	12.16%	7.56%	3.32%	13.87%
UNITED	51 to 60	20.04%	0.00%	4.37%	0.21%	10.75%	10.42%	1.77%	1.10%	11.04%
UNITED	61 to 70	4.84%	0.00%	2.34%	0.03%	2.35%	1.27%	0.51%	1.41%	2.54%
UNITED	71 to 80	1.70%	0.00%	0.81%	0.00%	0.09%	0.01%	0.20%	0.00%	0.60%
UNITED	81 to 90	1.15%	0.00%	1.64%	0.00%	0.00%	0.00%	0.10%	0.00%	0.38%
UNITED	91-100	0.00%	0.00%	0.10%	0.00%	0.00%	0.00%	0.10%	0.00%	0.03%
UNITED	Over 100	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.08%	0.00%	0.02%