



Part of the Energy Queensland Group

10 October 2019

Mr Chris Pattas  
General Manager - Distribution  
Australian Energy Regulator  
GPO Box 520  
Melbourne VIC 3001

Dear Mr Pattas

**Issues Paper: AER Review of repex modelling assumptions**

Energex Limited (Energex) and Ergon Energy Corporation Limited (Ergon Energy) welcome the opportunity to provide comment to the Australian Energy Regulator (AER) on its replacement capital expenditure (repex) modelling assumptions issues paper.

Energex and Ergon Energy generally support the AER's efforts to refine its repex model assumptions and improve stakeholders' understanding of the model and its application in assessing distributors' forecast repex requirements. However, our ongoing concern is that as an age-based model, the repex model does not appropriately account for other factors which determine the optimal timing for replacing assets, such as safety, environment, changes in defect rates, and obsolescence issues. It is important that the repex model results in sustainable repex forecasts. Therefore, continued refinement is necessary.

Energex's and Ergon Energy's detailed responses on the questions raised in the issues paper are provided in the attached response. Should the AER require additional information or wish to discuss any aspect of our submission, please contact me on (07) 3664 4105 or Guy Mutasa on (07) 3664 4459.

Yours sincerely

A handwritten signature in black ink that reads 'C. G. Martin'.

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# AER review of repex modelling assumptions

Joint response to  
AER's Issues Paper

10 October 2019



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# AER review of repex modelling assumptions

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## ABOUT ERGON ENERGY

Ergon Energy Corporation Limited (Ergon Energy) is part of the Energy Queensland Group and manages an electricity distribution network which supplies electricity to more than 740,000 customers. Our vast operating area covers over one million square kilometres – around 97% of the state of Queensland – from the expanding coastal and rural population centres to the remote communities of outback Queensland and the Torres Strait.

Our electricity network consists of approximately 160,000 kilometres of powerlines and one million power poles, along with associated infrastructure such as major substations and power transformers.

We also own and operate 33 stand-alone power stations that provide supply to isolated communities across Queensland which are not connected to the main electricity grid.

## ABOUT ENERGEX

Energex Limited (Energex) is part of the Energy Queensland Group and manages an electricity distribution network delivering world-class energy products and services to one of Australia's fastest growing communities – the South-East Queensland region.

We have been supplying electricity to Queenslanders for more than 100 years and today provide distribution services to almost 1.4 million domestic and business connections, delivering electricity to a population base of around 3.4 million people via 52,000km of overhead and underground network.

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# AER review of repex modelling assumptions

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## 1 INTRODUCTION

On 26 August 2019, the Australian Energy Regulator (AER) published an issues paper on a set of replacement capital expenditure (repex) modelling assumptions (issues paper).

The AER's repex model is a statistical tool used to assess a distributor's forecast repex for future regulatory control periods. The model has been applied in all electricity distribution decisions since 2011. In recent regulatory resets, the AER has refined some of the assumptions in the repex model and the purpose of the review is to seek stakeholder comments on a specific set of assumptions.

The AER has requested that interested parties make submissions by 7 October 2019. Comments in response to the consultation paper are provided by Energex and Ergon Energy in sections 2 and 3 of this submission.

We are available to discuss this submission.

# AER review of repex modelling assumptions

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## 2 GENERAL COMMENTS

Energex and Ergon Energy generally support the refinement of the AER's regulatory tool-kits to ensure they remain fit-for-purpose. We appreciate the AER's efforts to refine its repex model assumptions and improve stakeholders' understanding of the model and its application in assessing distributors' forecast repex requirements.

Repex is currently the largest component of our future capex requirements. This is driven by several factors, including meeting reliability and security of supply targets in our Distribution Authority, as well as safety, environmental, and regulatory obligations.

Our ongoing concern is that as an age-based model, the repex model does not appropriately account for other factors which determine the optimal timing for replacing assets, such as safety, environment, changes in defect rates, and obsolescence issues. It is important that the repex model results in sustainable repex forecasts. Therefore, continued refinement is necessary.

# AER review of repex modelling assumptions

## 3 RESPONSES TO SPECIFIC QUESTIONS

Question	Energex and Ergon Energy's response
<p>Question 1: Do you consider that setting defined maximum and minimum expected asset replacement lives would improve the forecasting accuracy of the repex model?</p>	<p>Energex and Ergon Energy consider that setting defined maximum and minimum expected asset replacement lives would improve the reasonableness of repex modelling outcomes and, more importantly, provide sustainable expenditure forecasts.</p>
<p>Question 2: What do you consider would be the preferred approach to setting maximum and minimum expected asset replacement lives, including supporting engineering and statistical evidence?</p>	<p>Our preferred approach would be to rely on engineering evidence and industry experience in setting maximum expected asset replacement lives. Both national and international industry experience is worth considering. For example, as part of its regulatory proposal for the 2015-20 period, Energex engaged Jacobs Engineering Group to undertake an analysis of the repex model, and they noted that:</p> <p><i>The replacement asset life ranges applied by Jacobs in this review has been based on industry experience from the Australia, UK, South Africa and New Zealand. The voltage levels, design and construction of electrical infrastructure built in these countries over the last century have all been based on the historical British Standards including the design assumptions for ambient and maximum operating temperatures. We therefore consider the average design and safe operational asset lives achieved in these countries to be relevant industry experience and good engineering practice.</i></p> <p>We do not consider that it is appropriate to rely solely on statistical analysis of National Electricity Market (NEM) data in determining maximum and minimum asset</p>

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Question	Energex and Ergon Energy's response
	<p>replacement lives for several reasons. Firstly, and most importantly, robust and consistent data does not currently exist in the NEM which provides a strong statistical basis for all asset classes. Secondly, different asset management approaches and capital expenditure / operating expenditure trade-offs between distributors impact on expected life in different asset classes.</p>
<p>Question 3: Is the current approach of addressing these concerns on a case-by-case basis sufficient, as we have done for previous decisions? If not, why not?</p>	<p>Given the nature of the repex model as a simple top-down approach to determine a range of outcomes, the current case-by-case approach does not seem sufficient. Our experience to date is that there is a reluctance by the AER to engage in a line-by-line discussion of assets, but rather use the repex model outcomes in their entirety.</p> <p>The current case-by-case approach puts the onus on the distributor to identify and present arguments as to why modelling outcomes for particular asset classes are not appropriate or do not yield sensible results. We consider that the AER should also actively review the model outcomes to ensure they are sensible.</p>
<p>Question 4: Do you consider that there are any other elements we need to consider should we limit expected asset replacement lives?</p>	<p>There are two main areas in the repex model that we suggest the AER consider in limiting expected asset replacement lives:</p> <ul style="list-style-type: none"> <li>• <b>Life extension of assets</b> - This is most obvious for the nailing / staking of poles but could also be related to the rewinding or refurbishment of power transformers or for the replacement of circuit breakers while retaining the fixed portion of a switchboard.</li> <li>• <b>Non-homogenous assets</b> – This is exemplified by the difference between contemporary design circuit breakers compared to older designs. Modern circuit breakers are not designed to have the same life expectancy as the older types, resulting in a reduction in the expected mean age of the asset class over time as circuit breakers are replaced. The historical replacement age of the population would show as older than the expected replacement age of the newer design equipment.</li> </ul>



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Question	Energex and Ergon Energy's response
<p>Question 5: Do you consider that there is a better approach to selecting the calibration period?</p>	<p>Our experience is that for low volume asset replacements such as large power transformers, the outcomes of repex modelling rarely support forecast requirements. This is particularly the case where there is not the scale of assets in the network that would result in replacements over the calibration period. This suggests a different approach to calibration is likely to be required for some asset classes.</p>
<p>Questions 6: Are there any issues with the current approach to select the calibration period?</p>	<p>The current approach to selection of the calibration period is rather arbitrary. We agree that changes in asset management practice or engineering standards and the resultant impacts on historical and forecast replacement rates should be recognised in the historical calibration. We suggest that a guideline to determining the calibration period would provide a clear and transparent method for the distributor and the AER to determine the calibration period.</p>
<p>Question 7: What other issues or factors should we take into account when determining the calibration period?</p>	<p>No comment.</p>
<p>Question 8: Is our current approach to forecasting repex for wooden poles clear and appropriate based on the information available? If not, why not?</p>	<p>In our experience the AER's approach to forecasting repex for wooden poles is unclear. The published repex modelling guidelines do not reference a different "pole blended" approach, and a distributor is currently limited to understanding past decisions and precedent to determine the changes in approach for wooden poles.</p> <p>The current approach is not fit-for-purpose, as pole and pole nail data sets between distributors in the Category Analysis (CA) Regulatory Information Notice (RIN) vary significantly in their Basis of Preparation. This has a material impact on the wood pole category repex model outcomes as some distributors provide the age of the pole stake or pole nail, while others provide the age of the pole with the stake or nail attached. We have discussed this challenge with the AER repex modelling team to</p>

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Question	Energex and Ergon Energy's response
	mitigate unwarranted impacts on the recent Energex and Ergon Energy regulatory proposals for the 2025-25 regulatory control period.
Question 9: What are your views on the appropriate estimation method for wooden pole staking or replacement volumes when the required data is not available?	We suggest that staking expenditure is removed from the repex modelling and separately assessed in conjunction with the distributor's asset management approach for wooden poles.
Question 10: Are there any other approaches that could be applied to reasonably forecast repex for wooden pole asset categories?	In our view, if the pole blending approach for nailing of wood poles is addressed, repex modelling of wooden poles should provide a reasonable estimate of future wood pole replacements.
Question 11: Do you consider the assumption and rationale underpinning the exclusion of unique assets is clear and appropriate based on the information available?	The assumptions and rationale that underpin the exclusion of unique assets is currently unclear. This appears to follow the process of using precedent in previous regulatory determinations. Our preference would be for these assumptions and rationale to be made clear through consultation and publication of the repex modelling guideline.
Question 12: Are there other any approaches that could be applied to reasonably model excluded asset categories, while incorporating a level of benchmarking?	On the issue of the exclusion of assets on the basis of the number of distributors with assets in that class, there should be an assessment of the volume that a distributor has of these assets. For instance, those with low counts could alter the expected life and unit cost significantly because of the limited number of replacements that may have occurred.
Question 13: What other repex model issues outside the scope of this review should the AER consider in future repex model reviews or forums?	<p>There are several issues that Energex and Ergon Energy recommend the AER should consider in this and future repex model reviews:</p> <ul style="list-style-type: none"> <li>• <b>CA RIN data quality and preparation</b> – Our view is that there is a lack of consistency in the reporting and the basis of preparation of this CA RIN data to accurately compare asset lives and unit rates across the NEM. For example, the</li> </ul>

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Question	Energex and Ergon Energy's response
	<p data-bbox="764 506 1410 613">difference in how distributors apportion costs across multiple asset classes appears to cause a material difference in asset replacement costs.</p> <ul style="list-style-type: none"> <li data-bbox="716 640 1410 904">• <b>Accounting policies</b> – The difference in accounting practices between distributors also results in differences in asset replacement costs reported by distributors. While the repex only considers direct costs, the definitions of “direct costs” vary among distributors. It is unclear to us how material these differences are in practice.</li> <li data-bbox="716 931 1410 1232">• <b>Calculation of median asset ages</b> – The approach that the AER takes for calculation of NEM median distributor asset ages and costs has to our knowledge not been published or made available. As a result, we are unable to replicate these results and have concerns about the appropriateness of substitution of NEM median asset lives and unit costs as a result.</li> <li data-bbox="716 1258 1410 1518">• <b>Documentation on the model</b> – The use of the repex model itself, including the use of different scenarios is not well documented. In particular, we encourage the publication of the approaches adopted and how the outcomes are to be used to inform substitution of a distributor’s modelled repex forecast.</li> <li data-bbox="716 1545 1410 1805">• <b>Justification for repex above the modelled outcome</b> - The expectations on a distributor to justify a forecast that is above modelling outcomes is not clear. For instance, where a large single project does not sit within the bounds of the repex model, the extent to which this can be justified outside of the model is unclear.</li> <li data-bbox="716 1832 1410 2056">• <b>Asset recoveries</b> – The CA RIN reports on a distributor’s asset replacements. Where a distributor instead recovers assets without replacement (i.e. by tolerating additional network risk or by relaxation in a distributor’s standard of expected network security), this inherently</li> </ul>

## AER review of repex modelling assumptions

Question	Energex and Ergon Energy's response
	<p>disadvantages a distributor's repex modelling outcomes. We suggest that the impacts of these scenarios should be recognised, and the impacts considered, conceivably through changes to expected asset class lives.</p> <ul style="list-style-type: none"> <li> <b>Long-term replacement forecast</b> – We consider that the use of the model is limited in its application by only considering a five-year regulatory period view. Considering a longer time period such as a 10-year forecast would give regard to increasing or decreasing longer term requirements of a distributor and sustainable replacement expenditure. For instance, if there is a significant increase in replacement forecast in the five to 10-year period, it may be prudent and efficient to begin some of the future investment in the first five-year period. This is currently not factored into the model. In our view, a year-by-year representation of repex modelling scenario outcomes rather than a five-year aggregate view has benefits for identification of replacement expenditure trends. This would enable the AER to consider future period requirements and trends when coming to a determination decision for distributors in the situation whereby proposed replacement expenditure for modelled assets is higher than repex modelling outcomes.         </li> </ul>