Response to EMCa cost benefit analysis concerns

ERGON ENERGY NETWORK

Part of Energy Queensland

CONTENTS

List of Tables

1 PURPOSE

This document outlines our response to the key findings made in Australian Energy Regulator's (AER's) Draft Decision regarding the application of our cost benefit analyses (CBA) framework in Ergon Energy Network's Regulatory Proposal submitted in January 2024. More specifically, we explain why we consider that that the AER and its technical consultant Energy Markets Consulting Associates' (EMCA's) incorrectly concluded that that our CBA had 'fundamental flaws'[1] on the basis that our counterfactual biased the CBA towards our preferred option, and overstated benefits.

2 BACKGROUND

For its Draft Decision, the AER engaged technical and economic consultants Energy Market Consulting Associates' (EMCa) to conduct an analysis of elements of our historic and forecast capital expenditure (capex). It is Ergon Energy Network's view that EMCa's assessment of these two elements is incorrect, and this document provides a counterargument to EMCa's claims and demonstrates, through example, that these two elements have no impact on the preferred option/volume outcome in our CBA's.

Ergon Energy Network has also sought two independent opinions on EMCa's assessment of our CBA (refer to Attachments 5.02, 5.03) which should be read alongside this document.

3 INCORRECT COUNTERFACTUAL

EMCa's report outlines a key concern with the definition of the counterfactual. Specifically:

> *"The counterfactual (BAU) case is incorrect as it does not allow an unbiased assessment of Ergon Energy's preferred and other options. Typically, the BAU assumes that the asset(s) are not retired and are operated and maintained on a BAU basis. Ergon Energy has defined the counterfactual as assuming that assets are retired and replaced at the same time. As the BAU already includes the asset replacement, a proper comparison between BAU and Ergon Energy's preferred option (which includes replacement) cannot be made."*[2]

Ergon Energy Network disagrees with this assertion and submits that it is factually incorrect to claim that an "incorrect" choice of counterfactual biases any option over the other. CBA is an incremental approach, whereby a counterfactual is chosen and various options or volumes for replacement are chosen and compared against the counterfactual. While the counterfactual outlined by EMCa could be chosen, choosing an alternative counterfactual does not bias the outcome. Section 3.1 shows a simple example of how the choice of counterfactual does not result in a different preferred option outcome.

3.1 Simple Replacement Example

To demonstrate that the specification of the counterfactual does not have a bearing on the outcome of the preferred option in a CBA, we have constructed a simple example of a network with 10 poles. Table 1 below shows the value of the "risk" for each pole, the replacement of which would eliminate the risk and result in a "benefit" for modelling in the CBA.

[1] EMCa, *Ergon Energy 2025/26 to 2029/30 Regulatory Proposal, Review of Aspects of Proposed Expenditure*, September 2024, p. 34.

[2] EMCa, *Ergon Energy 2025/26 to 2029/30 Regulatory Proposal, Review of Aspects of Proposed Expenditure*, September 2024, p. 29.

Table 1: Risk Values for Individual Poles

Individual Risk Value																				
Pole	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
1	200	210	221	232	243	255	268	281	295	310	326	342	359	377	396	416	437	458	481	505
2	800	840	882	926	972	1021	1072	1126	1182	1241	1303	1368	1437	1509	1584	1663	1746	1834	1925	2022
3	600	630	662	695	729	766	804	844	886	931	977	1026	1078	1131	1188	1247	1310	1375	1444	1516
4	400	420	441	463	486	511	536	563	591	621	652	684	718	754	792	832	873	917	963	1011
5	85	89	94	98	103	108	114	120	126	132	138	145	153	160	168	177	186	195	205	215
6	850	893	937	984	1033	1085	1139	1196	1256	1319	1385	1454	1526	1603	1683	1767	1855	1948	2046	2148
7	550	578	606	637	669	702	737	774	813	853	896	941	988	1037	1089	1143	1201	1261	1324	1390
8	200	210	221	232	243	255	268	281	295	310	326	342	359	377	396	416	437	458	481	505
9	350	368	386	405	425	447	469	492	517	543	570	599	629	660	693	728	764	802	842	884
10	50	53	55	58	61	64	67	70	74	78	81	86	90	94	99	104	109	115	120	126

Table 1 shows that for pole 1, the level of risk increases from $200 in 2025 to $505 in 2044. For clarity, this is not a real example, and the exact calculation of the values is not important. What is important is that each pole has a level of risk associated with it, and the replacement of each pole will eliminate the risk. That is, replacing pole 1 will reduce the risk by $200 in 2025, and up to $505 in 2044, which all things being equal will result in a benefit of $200 in 2025 and a benefit of $505 in 2044.

We have created four options for risk reduction to undertake a CBA. These are:

- **Replace one pole per year**
- **Don't replace any poles** – this is a run-to-failure option
- **Replace 4 poles in the first year, and 1 in the sixth year** – as will be discussed in Section 0, this replacement strategy has been determined utilising the "Equivalent Annual Cost" method outlined in Section 0, with the value of optimum replacement found to be when the risk reduction value (or benefits) reaches $507 per year.
- **Replace two poles per year** – this replaces all poles in the five-year period.

To demonstrate that the counterfactual is not a determinant in finding the optimum solution we have undertaken a simple CBA and compared the outcomes having chosen differing counterfactuals. The results are shown in Table 2, and the underlying calculations included in Attachment 5.3.04B.

Table 2: CBA with Differing Counterfactuals

Counterfactual	Volumes / Options	Net Present Value ($)
Replace 1 pole per year	Do nothing	-29,427,21
	Replace 4 poles, then 1 pole	3,277.67
	Replace all poles	-8,015.42
Do nothing	Replace 1 pole per year	56,236.89
	Replace 4 poles, then 1 pole	59,514.56
	Replace all poles	48,221.46
Replace 4 poles, then 1 pole	Replace 1 pole per year	-3,277.67
	Do nothing	-59,514.56
	Replace all poles	-11,293.10
Replace all poles	Replace 1 pole per year	8,015.42
	Do nothing	-48,221.46
	Replace 4 poles, then 1 pole	11,293.10

In Table 2 we have highlighted in yellow the option that has the most positive NPV for each choice of counterfactual. The option to replace 4 poles in the first year, and then 1 pole in a later year has the most positive NPV in each of the cases where that option wasn't the counterfactual. Where "Replace 4 poles, then 1 pole" was the counterfactual, no option had a positive NPV, demonstrating that "Replace 4 poles, then 1 pole" is the best option for customers.

It can also be seen that the relative difference between options remains the same. That is, "Replace 4 poles, then 1 pole" is always $3,277.67 higher than the "Replace 1 pole per year" option. This is important, as it demonstrates that CBA is an incremental analysis, and is a comparison between competing options, rather than being an absolute outcome where the exact definition of the counterfactual is critical.

This demonstrates that EMCa's finding that we have chosen a counterfactual which biases our preferred option is factually incorrect. Irrespective of which volume has been chosen as the counterfactual, the winning volume will always have the highest NPV.

4 ASSESSMENT PERIOD OF BENEFIT AND COSTS

EMCa's second key finding on our CBA is that:

> *"The assessment period of benefits does not align with the costs, where Ergon Energy has included a 20-year assessment period for the benefits and only 5 years for the risk costs avoided. Only considering 5 years for costs does not accurately represent the actual investment that will be incurred by Ergon Energy over the assessment period. At a minimum, failed assets would need to be replaced for every asset class, and therefore the investment would not be zero, and this investment would impact the calculation of benefits. By considering benefits over 20 years, the risks (and therefore assumed benefits) exponentially increase over that period which creates a significant difference between the options at 20 years. This in effect drives the major difference in the benefits between options and bestows high NPV values on Ergon Energy's high-replacement option."* [3]

Ergon Energy Network disagrees with this claim by EMCa. Our risk-cost modelling included the replacement of failed assets as part of our financial risk element. Where options were included that had a lower volume of replacement, we modelled the increased failure rate that results and factored these in as a risk cost for that option. We have sought to avoid this confusion in our Revised Regulatory Proposal by using the Equivalent Annualised Cost Method, which converts up-front capital costs into an annualised figure, which can then be compared against the risk avoidance benefit in a CBA to determine optimum timing of an investment. This method is further explained in Section 0.

[3] EMCa, *Ergon Energy 2025/26 to 2029/30 Regulatory Proposal, Review of Aspects of Proposed Expenditure*, September 2024, p. 29.

4.1 Equivalent Annualised Cost Method

A widely accepted alternative method in determining whether a project or program can be justified under CBA is to apply the Equivalent Annual Cost method. This method allows an up-front capital cost, such as a pole replacement, to be compared against a yearly risk reduction or benefit stream to determine the optimum timing for replacement. Inherently, this method does not require a counterfactual to be constructed, but rather the timing of the replacement of an individual asset can be assessed against the risk reduction that is calculated for the replacement of the asset. The formula for the Equivalent Annual Cost is:

$$\frac{Cost\ of\ Replacement * WACC}{1-(1+WACC)^{-n}}$$

where *n* is the number of years that the life of the asset is to be calculated over.

It is our view that given EMCa's concern with our approach (which we have demonstrated to be sound), EMCa could have utilised the simple Annualised Cost of Replacement method to alleviate doubt over the timing of an investment, and the construction of the counterfactual. For clarity, this method will not result in a different preferred volume. That is, the optimal timing calculation will result in a volume of replacements with the highest CBA outcome.

As a simple example, if the unit rate of a pole replacement is $7,200, the Equivalent Annual Cost for its replacement for a 20-year assessment period is $507. This indicates that a pole should be replaced when the benefit achieved from replacing the pole is $508 or higher. In simple terms, this is when the benefits are higher than the costs.

In our simple example in Section 3.1, the risk is above $508 for four poles in 2025, and one pole in 2030. This option is the preferred option in our simple example, demonstrating how this method can be utilised to find the optimum replacement timing, and further highlighting the exact specification of the counterfactual is not important in the determination of the optimum solution.