11 October 2019

Mr Chris Pattas
General Manager - Distribution
Australian Energy Regulator

Dear Chris

Evoenergy Response to Review of Repex Modelling Assumptions

Thank you for the opportunity to provide comment and feedback on the review of repex modelling assumptions.

We welcome the review of the repex modelling assumptions and believe it is timely to consider how the repex model will be utilised in future revenue determination processes.

Our response sets out Evoenergy's views as to how the AER's repex model is utilised in future revenue determination processes, as well as Evoenergy's strategy for developing the repex forecast. Our response is informed by our first-hand experience engaging with the AER during the 2019-24 determination process with aspects of the repex model, and investments we are making to further improve our investment forecasting process.

We look forward to engaging further with the AER as it continues to explore and develop the tools used to support the regulatory determination process.

Yours sincerely

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About Evoenergy

Evoenergy owns, operates, and maintains the regulated electricity and gas networks in the Australian Capital Territory. Our electricity distribution network supplies electricity to over 200,000 residential and business customers across the ACT and 146,000 gas customers in the ACT and NSW.

AER repex modelling for Evoenergy's 2019-24 revenue proposal

The AER employed the repex model to perform a top-down challenge on Evoenergy's 2019-2024 replacement expenditure in the revenue proposal. The output of the repex model suggested that Evoenergy's proposed high voltage cable investment program was significantly higher than required.

Evoenergy had managed its investment in the high voltage cable network on a reactive basis. Historically, this strategy was prudent and covered a period where the cables were in a relatively healthy condition and failures were rare. However, as the condition of cables had been deteriorating over time, more cable failures were occurring. Due to the increasing failure rate, an alternative asset management strategy was needed to redress the increasing risk.

As the repex model is an aged based replacement model calibrated to recent historic replacement volumes, a step change in investment due to a change in strategy (i.e. from reactive replacement to planned replacement based on condition and risk), has a strong likelihood of being identified as an area for further investigation.

Nevertheless, the change in asset management strategy was not the primary reason for the discrepancy between Evoenergy's forecast and the repex model forecast. The primary issue driving the discrepancy was the integrity of data inputs used in the repex model. The unit replacement rate used for high voltage cables significantly under-priced the true unit cost of replacement and was multiples lower than the AER had used in the repex modelling for other DNSPs. The AER had implied a unit replacement rate from RIN data provided by Evoenergy; however, as Evoenergy had historically reported the majority of cable replacement projects as augmentation expenditure, this significantly under-valued the implied unit replacement cost. The implied unit rate was circa 20 per cent of the average actual unit rate for high voltage cable replacement projects that had occurred in the last three years.

After correcting for the unit rate input error, Evoenergy's proposed repex forecast implied an expected life of 88 years under the repex modelling framework. This represents a significant outperformance relative to industry norms. In particular it was 30 years (53%) longer than the industry standard and significantly longer than the industry average from modelling the AER has performed on other networks.

Evoenergy's approach to forecasting replacement expenditure

Evoenergy adopts an iterative, three-step process to construct the replacement expenditure forecast for both internal budget planning and regulatory proposal purposes. The process adopts an ex-ante top-down challenge rather than the ex-post approach adopted by the repex model.

Step 1 involves the development of Asset Specific Plans. Asset Specific Plans identify the activities required to maintain acceptable levels of risk across individual asset groups and the associated level of expenditure. The plans consider how asset life can be maximised and the risk of failures can be managed. This bottom up approach is sufficiently detailed to enable consideration of risk at the asset level; however, it is recognised that using this approach in isolation has the potential to result in over-expenditure at the aggregate level, whereby the same risk outcome is targeted by multiple activities.

Step 2 involves the optimisation of replacement expenditure across the portfolio of assets. This step addresses the potential of an over-expenditure in the aggregate by considering the investment required across all asset classes to manage network risk. Where opportunities for reprioritising expenditure between asset classes are identified, these are considered via adjustments to the Asset Specific Plans. For the 2019-2024 regulatory proposal, this process was performed qualitatively; however, from 2020 onwards, Evoenergy will utilise a quantitative investment planning tool to perform this process with increased objectivity.

Step 3 involves a top-down challenge of the optimised replacement expenditure forecast. For the 2019-2024 regulatory proposal, Evoenergy engaged an independent external advisor to challenge the expenditure forecast using a top down model of both risk and expenditure. Recommendations by the independent external advisor to reallocate expenditure between asset classes and adjust total expenditure were reviewed by Evoenergy and reflected in the Asset Specific Plans.

Whilst it is not essential to Evoenergy's forecasting approach, the repex model provides Evoenergy and the AER with a tool to compare the historic expenditure to the forecast expenditure to identify variations at the asset class level. This information can be used to support the explanation of variations between forecast capital expenditure and historic capital expenditure as required by S6.1.1 (7) of the National Electricity Rules.

Evoenergy will continue to refine the risk modelling approach to replacement investment planning. The investment forecasts that will be prepared for the 2024-2029 regulatory proposal will use this approach.

How the AER's model should be used in the determination process

Evoenergy supports the continued use of the repex model as a first pass method for assessing a DNSP's proposed repex, and to inform further areas for more detailed assessment during a regulatory review. The AER's repex model provides an assessment of the forecast replacement expenditure, principally based on a DNSPs expenditure in the preceding regulatory period. Whilst there are obvious limitations in how accurate this forecasting approach is, it is nevertheless, worthwhile from the AER's perspective to understand where differences exist between historic and forecast expenditures at the asset class level.

In response to the AER's proposed changes to asset replacement lives, calibration periods and excluded assets, Evoenergy largely supports a continuation of the status quo. The AER should in all cases exercise its discretion when using the repex model and reject clearly misleading results. Any further increases to the scope or complexity of the repex model may result in unanticipated consequences and should be considered carefully.

Asset replacement lives

The AER should not conflate the 'mean asset life' input parameter of the repex model with the actual mean asset life of the assets. The model parameter is an arithmetic parameter and is only loosely related to the actual mean asset life. As such, the use of minimum and maximum values will have consequences for the model and the results.

Furthermore, it has been observed in many asset classes that asset failure/replacement does not follow a normal distribution centred on the mean asset lifetime. There is a tail of very long-lived assets that, due to their unique circumstances, may have a low probability of failure over the coming years. However, due to the statistical nature of the failure function, these assets are assigned probabilities nearing 100%. This also applies in reverse, with many young assets requiring replacement. Based on historical data, replacement tends to be driven by particular asset manufacturer/model issues, geographic location and random chance rather than age.

The use of maximum and minimum values must also be viewed in the context of the calibration approach used by the AER. This calibration approach is to align forecast replacements in the first year of the forecast period with observed replacements during the calibration period. Any constraint on the mean asset lives parameter would result in a step change in replacement volumes (and therefore replacement expenditure), which may be significant. Where a step change is reasonable and justifiable, this would be more appropriately incorporated into the AER's decision making through the assessment of the model results and the evidence provided by the DNSP rather than through an arbitrary limitation on an input parameter.

As there are inherent limitations in what the repex model can accurately forecast, it should not be assumed that by setting maximum and minimum bounds for asset replacement lives, the forecasting accuracy would improve. Evoenergy expect that the use of maximum and minimum values would result in unrealistic model results that the AER would reject.

Calibration period

Evoenergy considers that the selection of the calibration period should be flexible to ensure that the historical period being used is relevant to the forecast period. Consideration should be given to asset management practices, jurisdictional regulations and unique network characteristics. This may require different calibration periods for particular networks and asset categories rather than a one-size-fits-all approach.

In Evoenergy's case, as a small network, even moderately long calibration periods may not be representative of an average asset replacement program, especially for rarely replaced assets such as zone transformers. In these cases, the low number of assets can result in apparent volatility of replacement volumes over a fixed period of time.

No calibration period will be perfect. Therefore, the repex model results must only be used as a guide for further analysis by the AER and the factors that influenced replacement volumes during the calibration period should be encompassed in the AER's decision to further investigate specific expenditure areas.

Historic replacements are not always a good predictor of future replacements. Asset replacement requirements are more closely correlated to historic asset installations rather than to the short-term replacement programmes. The AER should continue to use the repex model as a first pass assessment tool to identify asset classes for further investigation. When selecting asset classes for further investigation, it is an imperative that the selection is balanced. That is, asset classes should be selected for investigation where the forecast is both higher and lower than the repex model output. This is important given Evoenergy's replacement expenditure forecasting approach is risk based. Using a risk based approach, investment can be reprioritised to asset classes that have higher risk, resulting in differences between historic and forecast expenditure profiles.

Modelling wooden poles

Evoenergy supports the current approach used by the AER for the assessment of wooden poles.

Excluded assets

Evoenergy supports the current approach to excluding asset classes from the repex model. This comprises asset classes that are more heterogeneous, do not have relevant age profile data, cannot be compared with other businesses, or have expenditure tends to be more volatile in nature.

Any attempts to modify the model to incorporate currently excluded asset classes would require a significant increase in complexity while being unlikely to provide the required level of sophistication to be comparable to the detailed bottom up modelling conducted by DNSPs. The AER should continue to individually assess DSNP proposals for excluded assets.

Evoenergy notes that there are asset classes that are not replaced on a like-for-like basis due to changing technologies. This complicates the comparison of asset replacement practices across DNSPs that continue to use like-for-like replacement and those that use the new technology. All factors influencing a DNSPs determination of proposed replacement volumes (and unit rates) should be incorporated into the AER's future selection of excluded assets.