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Nuttall review of repex

Ausgrid

15 April 2018

Attention: Matt Webb
Head of Asset Investment
Ausgrid
Level 13, 570 George Street
Sydney, NSW 2000

Dear Mr Webb

Subject: Review of Ausgrid Repex

Nuttall Consulting was engaged by Ausgrid to provide analytical support and advice on the application of the AER repex model to their recent historical replacement expenditure (repex) and volumes. In addition, Ausgrid sought advice on various aspects of the application of the repex model in their circumstances. A key part of this engagement was to undertake an assessment of Ausgrid's repex forecast, through the AER repex model, using the approach the AER has applied in its most recent set of decisions.

I, Brian Nuttall of Nuttall Consulting, have provided the analysis and support. This letter summarises the key results from this assessment and provides Nuttall Consulting's opinions on several matters, as requested by Ausgrid[1].

Note, this letter is not an endorsement or otherwise of Ausgrid's repex forecast or the AER assessment method.

Overview of my analysis

Ausgrid provided data for this assessment in the form of completed Regulatory Information Notices (RIN) templates, namely age profile data provided on Template 5.2 and historical data provided on Template 2.2. Ausgrid advised that it has restated its historical data to more accurately categorise some data against replacement asset categories and to correct for a reporting error in Ausgrid's 2017 annual RIN. Ausgrid further advised that they intend to formally (re)submit this data to the AER but have not yet done so. The analysis referred to in this correspondence is based on the restated data.

$1,107.3 million (68%) of Ausgrid's repex forecast has been assessed through the studies discussed in this letter. This portion reflects the repex in the RIN asset groups that I

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[1] For readability, I will refer to myself in this letter. However, the engagement is with Nuttall Consulting and I am speaking on behalf of Nuttall Consulting in this letter.

understand can be readily assigned for assessment using the repex model, covering the same six asset groups that the AER has previously assessed using the repex model[2].

My assessment has used the three key studies that the AER has used recently to assess repex with the repex model, and used model benchmark parameters that the AER has published in previous decisions. The three studies cover:

1. Historic unit costs / Calibrated lives (HUC/CL)
2. Forecast unit costs / Calibrated lives (FUC/CL)
3. Benchmark unit costs / Calibrated lives (BUC/CL)

I have assessed Ausgrid's repex, using a range of calibration periods. However, for the results presented here, I used the last three years of historic data (FY2015-FY2017) as the calibration period for lives and unit costs. For the study using forecast unit costs, I have used the 5-year period, covering Ausgrid's next regulatory period (FY2020-24), to calculate the forecast unit costs.

The results of this assessment are set out in the table below.

Scenario	Forecast Assessable Repex ($2019'Millions over FY2020-24)
Ausgrid forecast repex (assessable component)	1,107
Repex model - Historic Unit Cost/ Calibrated* Lives	1,279
Repex model - Forecast Unit Costs/ Calibrated* Lives	1,027
Repex model - Benchmark Unit Costs/ Calibrated* Lives	1,283

*(calibrated using FY15-17 data)

Using the AER's recent assessment approach, the Forecast unit costs/ Calibrated lives study would set the AER's *alternative estimate* – being the lowest study result. As such, this approach supports a large portion of the Ausgrid forecast covered by the assessment, with only 7% of the Ausgrid's covered forecast above the *alternative estimate*.

Opinions

Ausgrid has requested that I provide opinions on two matters:

1. the appropriateness of using a 4th year (FY2018) for the calibration, when FY2018 repex and volume data is available
2. the use of studies using benchmark lives in such an assessment approach.

These two matters are discussed below

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[2] This covers repex assigned to the Poles, Overhead conductor, Underground Cable, Services, Transformers and Switchgear asset groups.

Using the 4th year of data (FY2018) for calibration

I understand that the AER has advised Ausgrid that it considers the most recent three years (FY2015-FY2017) as the most appropriate period to calibrate model parameters for Ausgrid's assessment. I understand that this is because the AER considers that this period represents Ausgrid's recent replacement practices and needs. This period corresponds with the period used for my studies presented here.

I support the careful consideration of the calibration period so as to give the best basis for calibration, and in turn, the assessment of repex. Further, assuming the AER's decision to select a 3-year calibration period is valid and given that FY2018 and corresponding annual RIN templates will be completed before the AER's final determination, it may be appropriate to extend the calibration period to four years (ie FY2015 to FY2018) once the FY2018 data is available. This should provide a more robust data set for calibration, and in turn, a more reliable assessment result.

This view is based on the following considerations.

Ideally, the calibration period should reflect the long-term sustainable level of replacement and repex, for the DNSP's current practices and assets – assuming the calibration is to provide model parameters suitable for some form on intra-company benchmark.

Too long a period could capture older, less efficient practices and works to address asset issues and types that no longer exist on the network. On the other hand, too short a period can capture short term planning and budgeting decisions that may not be sustainable in the longer term (i.e. they would result in a degradation of network performance and risk in the longer term that is beyond what would be prudent and efficient).

In previous work for Nuttall Consulting, on behalf of the AER, I have used 5 years as a default period for calibration. This also corresponds with what the AER has typically used in its recent decisions. For this previous analysis, this period was selected as I considered that it struck a good balance between these long and short-term considerations, and importantly reflected a full regulatory period.

In Ausgrid's circumstance, it has gone through a recent sale and repex has reduced significantly from the levels at the start of such a 5-year period. As such, I can appreciate why the AER may prefer to use a shorter 3-year period for Ausgrid – I most likely would have done the same had I been in its position.

That said, I consider 3 years around the limit of a reasonable period for calibration, under the AER assessment approach. Periods of this length and shorter are more likely to be susceptible to short term planning and budgeting decisions. This effect could be most significant on any conclusions drawn at the asset group and asset category level, particularly due to its effect on the calibrated asset lives.

Given this, I consider careful consideration should be given to using the 4th year of data (FY2018) when this is available.

The use of AER benchmark lives in the AER assessment approach

Although the AER has previously been deriving intercompany benchmark lives, its recent assessment approach has only used the DNSP's calibrated asset lives. In effect, its studies reflect an intra-company benchmark for its replacement volumes.

Ausgrid has requested that I comment on issues I consider relevant to using such benchmark lives in the AER's assessment.

It is important that I stress at the outset that I do not consider that benchmark lives should not be used by the AER. I used benchmark lives when conducting an assessment of Aurora Energy (now TasNetworks Distribution) using the repex model, when Nuttall Consulting was engaged by the AER as its principle technical advisor for its Aurora Energy (2012-2017) regulatory decision.

However, there are matters to be considered when using benchmark lives that, in particular, can affect model results at the asset group and asset category level. As such, it is more important to have robust processes when developing benchmarks to ensure that they are appropriate or robust processes following the application of the benchmarks to test whether conclusion drawn are appropriate (or ideally, a combination of both). For example, for our Aurora Energy assessment, we also undertook a detailed engineering review of the underlying programs, focusing particularly in the asset groups and categories where Aurora Energy benchmarked poorly.

The following discusses some of the matters that should be considered further if benchmark lives are used more directly in the assessment studies. Note, this may not represent a complete detailing of all possible limitations with using benchmark lives.

As I understand matters, the AER produces its benchmarks (asset lives and unit cost) at the individual asset category level by calibrating the model for each DNSP and then using the mean asset life and mean unit cost across all DNSPs (after removing outlier) as the benchmark for that asset category.

Although I don't have a strong concern with this method (some method has to be applied and any method will have its own limitations), there are some issues with it that need to be recognised and allowed for in the overall assessment process.

Three matters I consider have the potential to be significant are as follows.

Firstly, the asset categories need to be pre-defined in the RIN so that benchmarking across asset categories can be performed. However, there must be a trade-off between effort and accuracy in how many categories are defined and how they capture matters that can affect lives and unit costs across DNSPs. Therefore, the categories will still capture some variation between DNSPs that would result in differences in asset lives (and unit costs) to some degree.

Secondly, care needs to be taken so that DNSPs with small populations of an asset do not have too great a weighting on the benchmark for that asset. If a DNSP has only a small population of a particular asset, this asset may not have the focus it could have in another DNSP with a much larger population. This could mean that that the lives for a small population of assets do not reflect a risk position that the DNSP with a larger population could sustain across its network.

Finally, and related to the points above, as the AER produces its benchmarks individually for each asset category, there is the possibility that the full set of benchmarks does not represent what any individual business could achieve. That is, the asset category benchmark could be influenced too much by what individual DNSPs, who benchmark very well in that category, may be doing for that category. This apparent good performance could be due to the categorisation limitations noted above, or even the short-term budgeting considerations discussed above (these matters could still be affecting some individual asset categories of a DNSP, even if a 5-year calibration period is used).

Importantly, the effect that these matters can have on the accuracy of the benchmark can be far more significant when using benchmark lives in arriving at an alternative estimate. Most notably, the model's repex forecast can be far more sensitive to small changes in an asset life than it is to changes in the unit costs. In some situations, what may appear a modest increase in an asset life could result in far more significant reduction in repex. This is different for unit cost changes, where there is an equivalent change in the repex forecast for the change in the unit cost. As such, any inaccuracy in the benchmark life can have a more significant effect on the resulting forecast.

Resolving these matter is made more difficult because there is not a transparent relationship between reported data (i.e. replacement volumes and age profiles), the calibrated asset lives, and the DNSP's actual replacement practices. As such, it is more difficult for the AER or its technical experts to gauge whether the benchmark life is reflective of a sustainable life for the DNSP under review, and if it's not, what adjustment could be applied to the life.

Presumably, these problems (and possibly others) were the reason why the AER has not used its benchmark lives in its decisions to this point.

It is important to acknowledge that the AER's method for preparing its set of benchmarks provided some margin to absorb the effects of these issues i.e. using the mean life to define the benchmark and removing outliers for this averaging process. Consequently, the benchmark does not represent a true "frontier. It is also important to acknowledge that the AER applies other assessment methods in forming its overall opinion on repex.

Nonetheless, I still consider that these issues together could be sufficient to mean that much greater care is needed in producing, validating and applying the benchmark lives to determine whether a DNSP's repex forecast is appropriate, and if it's not, what the alternative estimate should be.

Although, as noted above, I do not consider that benchmark lives should not be used by the AER, in order to improve the development of the benchmarks, the process could include some further validation analysis. This could include:

- checking that the relative performance of DNSPs, seen through the AER's other benchmarking methods, is similarly matched through the benchmarks; if there are significant movements then some benchmarks may need to be adjusted to correct for these
- checking how benchmarks are varying over time as new data is reported and used in the calibration process and derivation of benchmarks; large changes above what could be expected from productivity changes may suggest possible issues with a benchmark that would need further testing, which may require an adjustment to the benchmark.

To improve the application of the benchmarks, and decisions to use a benchmark life study result as an alternative estimate, the engineering review would need to be more closely integrated with the assessment. For example, the asset groups and asset categories that benchmark poorly should be identified and assessed via the AER's engineering review. This review would examine whether there are matters specific to the DNSP that could cause its lives to vary from the benchmark, and what that variance is likely to be. This may require greater transparency in which DNSPs sits above and below individual benchmarks, and by how much, to resolve these matters.

Closing

I trust you will find this letter helpful. If you require any further clarifications, I can be contacted on 0434 390 623.

Yours sincerely

Brian Nuttall
Director, Nuttall Consulting