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Mr Chris Pattas
General Manager, Distribution
Australian Energy Regulator
GPO Box 520
Melbourne Victoria 3001

Dear Chris

RE AER review of repex modelling assumptions

TasNetworks welcomes the opportunity to make a submission to the Australian Energy Regulator (**AER**) as part of the AER's review of the assumptions underpinning the operation of the model used to assess the asset replacement expenditure (**repex**) forecasts of distribution network service providers (**DNSPs**).

Repex is a significant component of TasNetworks' capital expenditure, making up just over a third of the capital expenditure on Tasmania's distribution network planned by TasNetworks for the 2019-24 regulatory period. The assessment by the AER of TasNetworks' forecasts of replacement expenditure in future regulatory control periods is, therefore, a critical component of the revenue determination process for TasNetworks. The results of those assessments have a direct bearing on the level of safety, quality, reliability and security TasNetworks can provide to the 293,000 residential and business customers who rely on the Tasmanian distribution network for their supply of electricity. TasNetworks is, therefore, keenly interested in the outcomes of the AER's review of repex modelling assumptions and supportive of the AER's efforts to improve the forecasting accuracy of the model and its ability to reflect DNSPs' operating environments and asset replacement practices.

The attachment to this letter (**Attachment A**) provides TasNetworks' feedback in relation to the questions posed in the AER's Issues Paper. Neither this letter or its attachment contains any confidential material that might prevent their publication.

To discuss the views expressed in this submission or opportunities for further collaboration between TasNetworks and the AER on the subject of repex modelling, please contact Scott Lancaster, Senior Regulatory Analyst, at Scott.Lancaster@tasnetworks.com.au or on (03) 6271 6519.

Yours sincerely

Chantal Hopwood
Leader Regulation

Attachment A

Question 1: *Do you consider that setting defined maximum and minimum expected asset replacement lives would improve the forecasting accuracy of the repex model?*

In principle, TasNetworks is supportive of the use of maximum and minimum expected asset replacement lives. The use of defined upper and lower bounds on distribution network service providers' (**DNSPs**) calibrated expected asset replacement lives is likely to improve the forecasting accuracy of the repex model.

The Tasmanian distribution network has been constructed by three different DNSPs. Many of the assets which are currently in service are decades old and predate the advent of digital asset registers or geographic information systems. This means that reliable commissioning dates, as well as asset attributes, are often not available as an input to reliability-centred maintenance analysis or repex modelling. The use of realistic upper and lower bounds for asset lives may reduce the need to rely on incomplete or inaccurate records.

We note, however, that asset age is only a proxy for the range of factors that drive asset replacement and that for a population of similar assets replacement life is likely to vary. Even with the use of upper and lower bounds for asset replacement lives, caution still needs to be exercised in the application of expected asset lives to repex modelling, due to the potential for any assumption based modelling to misrepresent average asset replacement lives and DNSP practices.

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?*

In order to best represent DNSPs' practices, the bounds defined for each asset category should be specific to each DNSP.

The bounding approach used should also take into consideration more than just the technical design lives of particular assets, in order to reflect the impact that environmental factors such as geography, soil types, climatic conditions and exposure to destructive pests like termites can have on the replacement lives of assets. Physical differences between the assets deployed by different DNSPs that impact on technical replacement lives, such as the stress grading of hardwood poles or use of corrosion protection, should also be taken into account when setting maximum and minimum expected asset replacement lives.

The approach to setting maximum and minimum asset lives should also be able to factor in departures from technical asset lives, to cater for breakdowns in the historical relationship between asset age and replacement expenditure. A range of factors, such as design flaws, manufacturing defects, or outmoded installation practices (e.g. cable jointing) can lead to premature asset failure and result in replacement being driven by something other than an asset's age.

Asset failures can also be attributed to failures in other assets. For example, new connectors on existing conductors frequently fail before the conductor itself is due for replacement, unless the conductor was already nearing the end of its technical lifespan, in which case, rather than just fitting a new connector, it may be more efficient and less disruptive for customers to replace the conductors at the same time. Pole-top assets also frequently have different (shorter) lives than the poles they are mounted to, which means that DNSPs are often faced with decisions about replacing poles before they reach the end of their technical or economic lifespans, because replacing the pole at the same time as the pole-mounted assets are being replaced is more efficient and less disruptive for customers.

The asset replacement lives of particular asset groups also need to capture the variations in asset replacement lives of the asset categories which make up that group, such as the different asset replacement lives that apply to poles constructed from different materials.

Where high quality historical asset failure data is available, TasNetworks suggests that that data be used to determine maximum and minimum expected asset replacement lives by applying a standard deviation to the mid-point (median).

Whatever approach is taken to setting maximum and minimum expected asset replacement lives, it needs to take account of changing circumstances that are likely to impact on asset replacements in the forthcoming period.

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?*

While TasNetworks is supportive of the proposed use of maximum and minimum expected asset replacement lives, we consider that the current approach taken by the AER of responding to outliers, data discrepancies or unrealistic results on a case-by-case basis has been effective.

If the Australian Energy Regulator (**AER**) does adopt the use of upper and lower bounds for asset lives, TasNetworks is of the view that the AER should retain the capacity to review outliers, discrepancies and unrealistic results on a case-by-case basis. The use of maximum and minimum asset replacement lives is, however, likely to reduce the number of interventions, decreasing costs both for DNSPs and the AER.

Question 4: *Do you consider that there are any other elements we need to consider should we limit expected asset replacement lives?*

Refer response provided to Question 2.

Question 5: *Do you consider that there is a better approach to selecting the calibration period?*

As noted in the Issues Paper, the AER uses recent asset replacement practices to estimate DNSPs' expected asset replacement lives and to forecast repex, while taking into account any recent changes in legislation or other factors which might affect the analysis. This has led to the use of different calibration periods for different distributors.

TasNetworks is of the view that a default calibration period should be applied to all DNSPs, with any variations due to state-specific reasons being agreed on using a transparent methodology, possibly set out in criteria along the lines of the rules for cost pass through events.

With the electricity supply industry and network businesses currently in the middle of a period of unprecedented, almost constant change, TasNetworks considers that the calibration periods used for the purposes of repex modelling should be shorter rather than longer, in order to better reflect contemporary obligations. On this basis, TasNetworks proposes that a default calibration period of three years be applied to all DNSPs.

Referring to the historical practices of DNSPs when selecting the calibration period potentially introduces bias into the analysis, in that the use of historical data assumes that the asset management strategies and practices of the past will continue in the future. If a DNSP has, for example, has favoured asset maintenance and not done a lot of asset replacement in the past, even though the deferral of repex makes asset replacement more likely as time goes on, the repex model will forecast repex based on those historical practices. This makes a proposed step-change in repex, whether it be an increase or decrease, difficult to assess using the repex model. Conversely, a recent period of increased spending on repex sets a benchmark against which it is easier for a DNSPs forecasts for the next regulatory period to appear efficient.

Questions 6: *Are there any issues with the current approach to select the calibration period?*

The use of different calibration periods for different networks limits the insights that can be gained through using the repex model to compare a distributor against other DNSPs in the National Energy Market.

Question 7: *What other issues or factors should we take into account when determining the calibration period?*

The approach used to determining the calibration period should be applied to median and historical forecasts.

Question 8: *Is our current approach to forecasting repex for wooden poles clear and appropriate based on the information available? If not, why not?*

While not limited to the issue of wooden pole replacement, TasNetworks would appreciate greater clarity about terms such as like-for-like replacement and the concept of modern equivalence, as neither term is defined in the National Electricity Rules or the Repex Model Handbook. *Attachment 5: Capital expenditure* to the AER's Final decision regarding TasNetworks' distribution determination for the 2019–24 regulatory period states that replacement expenditure is normally considered to be on a like-for-like basis, but then goes on to explain that when an asset is identified for replacement, it is assumed that the asset will be replaced with its modern equivalent and not a different asset. This suggests that like-for-like replacement and replacement with a modern equivalent are one and the same.

TasNetworks now sometimes replaces wooden poles with fibreglass concrete poles, due, amongst other things, to their fire resistant properties and their resistance to rot, rust and corrosion. The unit rate applying to a fibreglass concrete pole is significantly higher than the rate applying to a treated hardwood pole, however both items ostensibly perform the same function (and the fibreglass concrete poles can even accept the same pole fittings as wooden poles). However, it is not clear whether the replacement of a wooden pole with a fibreglass concrete pole constitutes like-for-like replacement, the use of a modern equivalent or neither, based on the aforementioned explanation provided in TasNetworks' distribution determination.

TasNetworks notes the AER's reservations about the assumption that the age at which a distributor should "intervene" on an asset (wooden pole) would be the same as it would be under like-for-like replacement. In TasNetworks' experience, this premise does not always hold true. Often this is due to the inherent variability in asset replacement lives acknowledged by the AER, as well as environmental factors. However, in the case of wooden poles, one of the main drivers of earlier interventions than might be expected under like-for-like replacement is the fact that pole-mounted hardware frequently doesn't last as long as the pole. This means that TasNetworks is often required to make a choice about replacing a pole before the end of its life, because the pole-mounted hardware needs to be replaced and replacing the pole at the same time is sometimes the most efficient option, and the least disruptive option for customers.

Definitional clarity will ensure like for like comparison and consistency in applicable unit rate assessment.

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?*

TasNetworks anticipates that the data required for estimating wooden pole staking and replacement volumes should be available from RIN given the volumes involved. Industry figures like CIGRE failure statistics are useful for low volume assets but the concept could equally be applied to high volume assets if the required data is not available.

Question 10: *Are there any other approaches that could be applied to reasonably forecast repex for wooden pole asset categories?*

Rather than relying primarily on recent asset replacement practices to forecast repex for wooden pole asset categories, TasNetworks considers that there would be merit in taking into account past asset management practices, such as the use of natural rather than treated poles, which might give rise to step changes in pole replacement volumes that may not be predicted by recent pole replacement volumes. The use of natural poles (which has been discontinued in Tasmania for some time) also has ramifications for pole staking volumes, because TasNetworks does not stake natural wooden poles.

Similarly, large-scale bushfire events can lead to a step change in replacement volumes which would not be predictable based on recent asset replacement volumes.

Factoring in the asset replacement lives of pole-mounted hardware/assets and the impact this has on pole replacement would, if the supporting data is available to enable such analysis, also lead to improved forecasting accuracy for 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 AER currently excludes unique assets from its repex modelling, instead assessing repex forecasts for any such assets using bottom-up and other analytical techniques. This approach is taken on the basis that the repex proposed by on a DNSP relating to unique assets cannot be meaningfully compared to other distributors.

That there are only 13 DNSPs in Australia makes meaningful comparisons using benchmarking difficult, particularly when the networks vary markedly in their scale, design, operating environments and the assets they employ.

We consider excluding unique assets from repex scenario modelling – as well as assets reported by three or less DNSPs – to be an appropriate treatment.

Question 12: *Are there other any approaches that could be applied to reasonably model excluded asset categories, while incorporating a level of benchmarking?*

Excluded assets cannot and should not be benchmarked because, by definition, the assets are either unique to a particular or uncommon in their use, and there are not enough comparators to make benchmarking feasible. For example, TasNetworks is alone in deploying a device like the CablePI broken neutral detector and it is not possible to incorporate benchmarking into modelling replacement volumes and unit costs for that asset.

Question 13: *What other repex model issues outside the scope of this review should the AER consider in future repex model reviews or forums?*

While not originally part of the AER's approach to modelling repex, the AER has more recently introduced comparisons of the historical performances of other distributors in the NEM to its analysis of a DNSP's repex forecasts. This comparative scenario analysis relies on four scenarios produced using the repex model that consider both a DNSP's historical replacement practices and the replacement practices of other distributors in the NEM.

As noted in TasNetworks' response to question 10, the fact that there are only a dozen DNSPs in Australia makes meaningful comparisons using benchmarking difficult. This situation is exacerbated by the fact that the networks in question vary markedly in their scale, design, operating environments, the assets they employ and their asset replacement practices, past and present.

Even though the AER's approach, thus far, has been to set the repex model 'threshold' at the higher of the cost scenario and the lives scenario, those scenarios are set respectively with reference to the minimum of a DNSP's historical unit costs, its forecast unit costs and the median unit costs across the NEM, and the maximum of a DNSP's calibrated expected replacement lives and the median expected replacement lives across the NEM.

TasNetworks has reservations about the implicit assumption that the lowest unit cost or longest asset life will, by default, be the most reasonable figures for comparison with a DNSPs repex forecasts, or the most relevant in the circumstances faced by individual DNSPs.

In relation to the amendment of a distribution determination for a contingent project, the NER (s6.6A.2(g)(4)) stipulate that the AER must have regard to the expenditure that would be incurred in respect of a contingent project by an efficient and prudent DNSP in the circumstances of the DNSP requesting amendment of a determination. This reference to the circumstances of the DNSP is lacking from the current approach to repex comparisons, and the application of network benchmarking more widely. Yet there is little value, for example, in comparing the asset replacement practices, asset lives and unit costs of TasNetworks with those of a DNSP supplying a customer and energy-dense, entirely urban service area using a heavily undergrounded network.

TasNetworks is of the view that recognition of the scale, operating environment and circumstances of individual DNSPs is required in order for any comparisons of repex between DNSPs to yield meaningful insights. We recognise, however, that achieving this is in a modelling sense is not methodologically easy.

Few DNSPs resemble TasNetworks sufficiently to make meaningful comparisons possible. Nonetheless, limiting the comparators used in the repex model when benchmarking a particular DNSP's repex to only those DNSPs that most closely resemble the DNSP in question would result in more relevant and useful comparisons of repex, for both the AER and DNSPs seeking to better their performance.

Alternatively, the small number of regulated DNSPs in Australia should enable the AER to employ more detailed analysis of each DNSP's forecasts of repex with greater reference to the circumstances of that DNSP, as an alternative to investing additional resources in refining the means by which the repex model assesses forecasts against asset lives and unit costs throughout the NEM.