9 February 2018

Evan Lutton
Assistant Director
Australian Energy Regulator
GPO Box 520
Melbourne VIC 3001

Via email: Evan.lutton@aer.gov.au

Dear Evan,

Re: Review of economic benchmarking operating environment factors

AusNet Services welcomes the AER's review of the economic benchmarking operating
environment factors (OEFs). The AER indicates that it is seeking to refine the OEFs as part of
its continuous improvement of the economic benchmarking toolkit.

The AER has commissioned the Sapere Research Group and Merz Consulting (Separe-Merz)
to undertake an independent technical review of the OEFs to identify the most material OEFs
and quantify the impact on operating costs.

I attach AusNet Services' submission on the Sapere-Merz report. Our most fundamental
concern with the report is that vegetation management, which is a very material driver of
variations in efficient opex, has not been quantified, while OEFs that are far less material have
been. If this is not addressed, applying the current OEFs is likely to distort the overall
benchmarking results and reduce, rather than improve their robustness.

Material OEFs for AusNet Services include those that stem from the rural nature of much of the
network business and the Victorian regulatory obligations relating to bushfire mitigation. These
regulatory obligations drive significant vegetation management, inspection and other bushfire-
management costs. At present, none of the quantified OEFs capture these significant drivers of
efficient opex.

Sapere-Merz describes the challenges associated with quantifying the vegetation management
OEF, and recommends ways of addressing this. AusNet Services supports further work being
progressed to develop this. Carving out vegetation management, and other bushfire-related
costs, from the benchmarking inputs to avoid this complexity should also be considered.

In addition, the AER's ability to make sound OEF adjustments (and to produce accurate raw
benchmarking scores) continues to be undermined by data limitations and inconsistencies.
AusNet Services would support industry-wide efforts (led by the AER) to improve the quality and
consistency of the benchmarking and OEF input data.

Once the scope of the OEFs is extended to include the material factors described above,
AusNet Services would also support a change from ex-post to ex-ante OEF adjustments. It also
supports the reporting of OEF-adjusted benchmarks in the annual benchmarking reports going

forward, to provide improved information to stakeholders on the drivers of the benchmarking results.

We look forward to attending the AER's upcoming workshop on this important topic. In the meantime, if you have further questions regarding this submission, please contact Deirdre Rose, Principal Economist at deirdre.rose@ausnetservices.com.au.

Sincerely,

Tom Hallam
General Manager, Regulation and Network Strategy
AusNet Services

Attachment – Response to Sapere Merz Draft Report

AusNet Services has reviewed the Draft Report prepared by Sapere-Merz and the associated OEF calculations summary spreadsheet. This submission addresses three broad areas of concern:

1. The requirement for additional material OEFs;
2. The approach to determining and applying OEFs; and
3. The quantification of material OEFs by Sapere-Merz.

1. Requirement for additional material OEFs

AusNet Services consider that OEFs that are highly material for our distribution network are not being accounted for in the existing OEF framework. To support this view we provide benchmarking analysis that shows unexplained efficiency differences for our rural and urban network, as well as supporting information on material OEFs.

These points are discussed below.

1.1 Unexplained efficiency differences between AusNet Services' urban and rural distribution network

AusNet Services operates a distribution network that covers both urban and rural areas (including a significant rural area over the north and east of the State). Material OEFs for AusNet Services include those that stem from the rural nature of much of the network business and the Victorian regulatory obligations relating to bushfire mitigation.

To illustrate the extent to which AusNet Services' rural and urban operations differ, the AER's preferred econometric model (Cobb Douglas Stochastic Frontier Analysis, CD SFA) has been re-estimated with AusNet Services' distribution business separated into an urban and rural network.[1]

AusNet Services' urban network is estimated to be 14 percentage points more efficient than the rural network using the AER's preferred model specification. As both businesses are run by the same management, it is implausible that this 14 percentage point difference in efficiency scores is solely due to differences in managerial efficiency. On the contrary, this is prima facie evidence that some differences between the rural and urban regions are not captured in the AER's model.

Given the negative OEF estimated for AusNet Services by Sapere-Merz (suggesting that our businesses overall faces one of the most favourable environments), this implies that the OEF framework is failing to account for material OEFs that affect our business.

1.2 Material OEFs for AusNet Services' distribution network

AusNet Services considers that our bushfire mitigation obligations and terrain are material operating environment factors that require OEFs.

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[1] This analysis using the same specification and sample of firms as included in the AER's CD SFA model.

1.2.1. Bushfire mitigation

The most important OEF for AusNet Services relates to bushfire mitigation. AusNet Services must comply with Victorian-specific regulations that apply to extensive bushfire risk areas within our network. AusNet Services incurs materially higher operating (and capital) costs to meet these obligations. These higher costs do not reflect managerial inefficiency, but are higher due to:

- the characterstics of our service area (that includes extensive rural hazardous bushfire risk areas); and
- the regulatory obligations imposed to mitigate bushfire risk in these areas.

Bushfire mitigation increases opex associated with vegetation management and inspections in particular.

Vegetation management

The significant impact of bushfire obligations on AusNet Services' vegetation management costs is reflected in our current (2016-2020) revenue determination decision by the AER.

> *A major driver of the increase in vegetation management opex across the industry is attributable to the changes in regulatory requirements as a result of the Electrical Safety (Electric Line Clearance) Regulations 2010 which was introduced in June 2010 following the Black Saturday bushfires. These new regulations introduced the following key changes to the Victorian service provider's regulatory requirements.*
>
> - *Minimum clearance spaces surrounding aerial bundled cable or insulated cable now applied to small tree branches. Under the previous version of the regulations, the minimum clearance spaces did not apply to small tree branches under specified conditions.*
> - *Minimum clearance spaces surrounding powerlines in hazardous bushfire risk areas now applied to tree branches above a powerline of 22kV. Under the previous version of the regulations, the minimum clearance space did not apply under specified conditions.*
>
> *We signalled that the Electrical Safety (Electric Line Clearance) Regulations 2010 would be a significant cost driver affecting the Victorian service providers' opex when we forecast large step changes in opex in our final decisions for the 2011 to 2015 regulatory control period. At the time, we forecast increases in opex of $206 million ($2015) from 2011 to 2015 due to these new regulations.*
> Source: AER, AusNet Service distribution determination final decision 2016-20, Attachment 7-Operating expenditure. p. 7-34 – 7-35.

Energy Networks Australia (and in particular it's Vegetation Management Reference Group) commissioned a study by GHD to examine the drivers of variability in vegetation management costs across network service providers in Australia.[2] This report also confirms that state-based regulations affect vegetation management program design, management and cost to different degrees in different jurisdictions.

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[2]   ENA, 2016, Electricity Network Service Provider Vegetation Management Variability Report, March.

Inspections and other bushfire mitigation opex

The Victorian Bushfire regulations require higher levels of inspections, maintenance and other operating expenditures.

For example, the regulations increased the asset inspection standards and procedures to require that all SWER and all 22kV feeders in areas of high bushfire risk are inspected at least every 37 months (or around every three years). As recognised by the AER, this has increased our (efficient) inspection expenditure including our pole inspection expenditure.[3]

Next steps

Sapere-Merz recognises the materiality of vegetation management as an OEF, including the need to account for differences in drivers of these costs between businesses, including the impact of bushfire mitigation regulations in Victoria.

As explained above, a bushfire OEF adjustment is needed that accounts for the broader set of bushfire-related expenditures, not just bushfire related vegetation management expenditure.

Establishing a bushfire-related OEF could be achieved more readily than addressing all of the current data problems associated with the reporting of vegetation management costs across the distribution businesses. It is a more straightforward task to identify bushfire-related costs and attribute these to specific drivers.

1.2.2   Terrain-driven expenditure

AusNet Services also consider that there are material cost differences due to terrain differences among the network businesses.

As noted in our response to the Sapere-Merz request for information on relevant material OEF's in May 2017:

> *Our network area includes the Victorian Alpine Region, which is characterised by mountainous and rocky terrain and high tree-density. Traversing this terrain to maintain and replace assets, restore customer outages and connect new customers requires materially higher operating expenditure relative to a network with more flat terrain.*
>
> *Importantly, the rural normaliser in the benchmarking model (i.e. the inclusion of circuit length as an output) does not control for this OEF, as not all rural network service areas encompass challenging terrain. Accordingly, applying a terrain OEF would not double count something that is already accounted for in the model and, hence, would be consistent with the AER's OEF criteria.*

AusNet Services has reviewed the measure of inaccessible terrain reported in the RINs, which is based on the line length requiring non-standard vehicle access.

The wide and unexplained variation in the reporting of this measure means that further work is required to improve the inaccessibility measure or to develop an alternative terrain OEF.

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[3]   AER, AusNet Service distribution determination final decision 2016-20, Attachment 7- Operating expenditure. p. 7-35.

1.3 AusNet Services supports further work to incorporate OEFs that are relevant to DNSPs outside of Queensland, NSW and the ACT

Sapere-Merz's proposed OEF framework reflects the AER's existing approach with only minor amendments.

As the starting point for its work, Sapere-Merz has adopted the AER's previous OEFs framework. This framework was developed in the context of regulatory determinations for the Queensland, NSW and ACT distribution businesses. Reflecting this process, the OEFs do not capture factors that are material for AusNet Services and other distribution businesses outside these regions.

We note that relevant omitted OEFs have been identified in the OEF survey conducted by the Sapere-Merz in May 2017. This sought information on additional material OEFs from businesses in Victoria, South Australia and Tasmania. It appears that these responses have not been fully considered in the Sapere-Merz analysis as yet.

Sapere-Merz has accepted the AER's approach to determining which candidate OEFs are material. As the AER has to date collected very little data on OEFs, the AER's assessment of materiality has largely been based on its qualitative judgements. The future analysis of the candidate OEFs needs to determine their inclusion in the OEF framework based on accurate, quantitative evidence rather than judgements.

AusNet Services would support work programs to incorporate material OEFs for the distribution businesses outside of Queensland, NSW and ACT and to make other necessary fundamental improvements to the OEF framework such as to data completeness and consistency. This work is needed prior to the Victorian revenue determination process for the 2021-25 period if the AER is to have regard to the OEF adjusted benchmarks.

2. Comments on the approach to OEFs in the Sapere-Merz report

This section of our submission comments on particular aspects of Sapere-Merz's approach to developing the OEF framework.

2.1 OEF candidates should not be restricted to non-systemic operating environment factors alone

The Sapere-Merz OEF framework makes a distinction between:

- 'systemic' operating environment factors that are experienced by *all* DNSPs, such as safety environmental legislation; and
- 'non-systemic' operating environment factors that are experienced by *some* DNSPs (but not all).

In the Sapere-Merz OEF framework, candidate OEFs are restricted to non-systemic factors alone. Systemic factors are not considered as candidate OEFs, owing to Sapere-Merz's assessment that these are already fully accounted for in the AER's benchmarking, and therefore do not require any further adjustment. This rationale is flawed. The AER's preferred econometric model does not include cost driver variables to account for all possible 'systemic' factors that are common to all DNSPs. For example, the model does not control for the example presented in the Sapere-Merz report of environmental and safety regulations.

More importantly, Sapere-Merz ignores the fact that systemic factors affecting all DNSPs can have significantly different cost impacts on different DNSPs. For instance, vegetation management which is common across all DNSPs is acknowledged by Sapere-Merz to be impacted by drivers that mean efficient costs vary across DNSPs. These drivers include bushfire mitigation obligations.

Confusingly, despite Sapere-Merz's statement in its report that systemic factors are not considered as candidate OEFs, a number of the OEFs short-listed by Sapere-Merz (such as vegetation management and taxes and levies) are, in fact, systemic in nature by Sapere-Merz's definition. There is therefore an inconsistency between the way in which the Sapere-Merz approach is described and the way in which it is implemented. This needs to be clarified.

In our view, candidate OEFs should not be restricted to non-systemic factors and this approach should be confirmed by Sapere-Merz.

2.2 The assessment of materiality should be based on quantitative evidence rather than qualitative judgements

Sapere-Merz has accepted the AER's approach to determining which candidate OEFs are material. As very little, good quality data on OEFs is available, the AER's assessment of materiality has largely been based on its qualitative judgements. In our view, data included in the RINs could be rationalised to ensure that relevant data on OEFs is available to support an assessment of materiality.

2.3 There are known issues with the data used to estimate OEFs

Sapere-Merz's OEFs are estimated using data from both the Economic Benchmarking RINs and the Category Analysis RINs. We note that the Category Analysis RINs in particular are limited by:

- inconsistencies in the way different DNSPs report data on the same variable;
- inconsistencies in capitalisation policies;
- inconsistencies in how data is reported over time; and
- gaps in the reporting of information, as not all DNSPs report information for all variables.

Inconsistent reporting can confound the estimation of OEFs, and considerable improvements in the consistency of the Category Analysis RIN data in particular must be made before OEFs are estimated. AusNet Services is keen to work with the AER in any industry-wide exercise to improve the consistency of RIN data.

2.4 Sample period for benchmarking scores and OEFs not aligned

The AER's efficiency scores (calculated using SFA) are average efficiency scores over an 11-year period. However, in the majority of cases, the estimation of OEFs is based on a more limited sample of data. For example, in the case of OEFs for sub-transmission (license conditions) and termite exposure, the estimation is based on a single year of data.

As the OEFs are used to adjust the AERs average efficiency scores estimated over an 11-year period, it would be important to ensure the OEF adjustments are representative of the average

OEFs over all 11 years. This is unlikely to be achieved by the use of a single year of data, particularly for OEFs that experience variation between years.

2.5   OEF adjustments should be ex-ante rather than ex-post

The Sapere-Merz OEF framework relies on the use of post-efficiency modelling OEF adjustments. In other words, the AER's efficiency scores are estimated first, using raw opex data that is unadjusted for OEFs, and the raw efficiency scores from the AER's preferred model are then adjusted ex-post for OEFs. The AER's choice of the target DNSP is also determined before OEFs are accounted for, based on its raw efficiency scores.

This ex-post OEFs approach is not optimal. As the raw opex data included in the AER's benchmarking is confounded by the inclusion of costs associated with OEFs, and as these OEF-related costs are poorly explained by the cost drivers in the AER's benchmarking model, the AER's efficiency scores are biased. This bias cannot be overcome by making ex-post adjustment to efficiency scores that are derived from relationships between costs and cost drivers that are skewed by the inclusion of non-comparable data.

A conceptually superior approach would be to first exclude any OEF-related costs from the opex, and then re-estimate the efficiency scores using an OEF-adjusted measure of opex. The advantage of this ex-ante approach is that it allows for the relationships between costs and cost drivers to be estimated on the basis of comparable data that is already normalised for OEFs.

As a priority, the scope of the OEFs should be extended to properly account for factors that are material in the Victorian context. As a further refinement, AusNet Services would support a change from ex-post to ex-ante OEF adjustments.

3. Sapere-Merz quantification of OEFs

This final section of our submission comments on Sapere-Merz's quantification of OEFs in their December 2017 report.

3.1   Simplified calculation of 'ideal optimised' base year opex

Sapere-Merz has made a simplifying assumption which affects all of its estimated OEFs. This is in relation to Sapere-Merz's calculation of 'ideal optimised' base year opex, which is estimated for simplicity and illustrative purposes using revealed opex from 2015.

This is likely to be significantly different from the value estimated using the AER's roll-forward approach to estimating efficient opex in the base year (under its benchmarking approach), which we understand would ultimately be applied.

Estimating a value that will differ to that ultimately used by the AER undermines transparency and the ability of stakeholders to respond to the material presented.

3.2   Concerns regarding the calculation of specific OEFs

AusNet Services consider that there are problems with the calculation of the following OEFs:
- 'extreme weather storms'; and
- 'sub-transmission'.

These are outlined in turn.

3.2.1 Extreme weather storms

AusNet Services has identified inconsistency in the emergency response RIN data used for the extreme weather storm OEF. Distribution businesses report Emergency Response expenditure in three categories in their RIN responses:

a) Total emergency response;
b) Emergency response expenditure attributable to major events; and
c) Emergency response expenditure attributable to major event days.

The Extreme Weather OEF is calculated based on the category b) expenditure, which is expenditure related to major events or major storms. Sapere-Merz comment that category b) (major event emergency response expenditure) represents the best available data regarding the direct costs of severe storms.

Based on our previous understanding of the RIN definitions, AusNet Services has until now reported expenditure on major event days exclusively in category c) and not in b). AusNet Services has checked the appropriate treatment of this expenditure with the AER. The AER has confirmed that expenditure on major event days should be reported in both category b) and c). Accordingly, AusNet Services will restate its emergency response expenditure.

Sapere-Merz note that there appear to be inconsistent methods in completing the RIN Emergency Response data, particularly regarding the categorisation of cost to the three categories. It would be prudent to ensure all businesses are reporting this expenditure correctly.

Applying the corrected AusNet Services data and if Sapere-Merz's methodology remains unaltered, AusNet Services would receive an extreme weather storms OEF adjustment of 0.31%.

We note that as Sapere-Merz considers that the AER's preferred econometric model is able to capture the impact of very low frequency, high impact events, Sapere-Merz exclude these events from its estimation of extreme weather OEFs. We do not agree with this reasoning. This is because the SFA Cobb-Douglas model imposes a normal distribution on the random component of its error term, and these very low frequency, 'rare, high impact events' (as described by Sapere-Merz) are unlikely to have a normal distribution. In our view, very low frequency, high impact events should be considered as candidate OEFs.

3.2.2 Sub-transmission

AusNet Services has concerns with the calculation of this important OEF.

First, the measure of the proportion of overhead sub-transmission lines is not clear. Sapere-Merz defines the percentage of overhead sub-transmission line as the ratio of sub-transmission overhead line length and ideal optimised opex, Where:

$$\text{Proportion of sub-transmission lines} = \text{km/\$}$$

We would expect the proportion of subtransmission lines to be defined relative to total line length. Where:

$$\text{Proportion of sub-transmission lines} = \text{km sub-transmission/km total}$$

The same comment applies to the measures of the proportion of underground sub-transmission lines and of zone-substation installed transformer capacity, which are both based on the ratio of the quantity of the asset (expressed in kilometres and kVA, respectively) and ideal optimised opex (expressed in dollars).

Second, Sapere-Merz derive efficient unit costs for sub-transmission assets as a weighted average of the unit costs of the top five DNSPs, excluding those costs that are:

- less than 30% of the average unit cost across the sample; and
- more than 300% of the average unit cost.

By doing so, Sapere-Merz excluded the unit costs for AusNet Services for both the overhead sub-transmission lines and the underground sub-transmission lines. This is because AusNet Services' unit costs in both cases are below 30% of the average unit cost. No explanation is given for either considering only the costs of the DNSPs in the reference group and choosing the criterion described above to rule out sub-transmission costs.

Finally, AusNet Services recommends that sub-transmission transformers (the largest component of the sub-transmission OEF) should be identified by reference not just to the installed capacity but also to the number of assets. This would improve the accuracy of the sub-transmission transformer measure and better account for the relationship between opex and sub-transmission transformer assets.

AusNet Services has compared the RIN and DAPR data for distribution businesses. It appears that there may be inconsistency in the reporting of the number of sub-transmission transformers and hence sub-transmission transformer capacity. The RIN transformer capacity appears to be overstated (perhaps due to the inclusion of transformers operating above 22kV which are not zone substation transformers e.g. pole mounted distribution transformers).

In terms of better capturing the relationship between opex and sub-transmission transformers, it is the number of transformers that is most relevant. The greater the number of transformers, the greater the opex required by the network for transformer maintenance. Installed transformer capacity alone will not show this relationship.

4. Inclusion of Demand Management Incentive Allowance in opex for benchmarking

While not directly related to the development of OEFs, AusNet Services requests that the AER considers whether it is appropriate for the Demand Management Incentive Allowance (DMIA) to be included in opex used for benchmarking purposes.

The DMIA is received by networks to provide an incentive to invest in demand management-related innovation. Including these costs in benchmarking opex will worsen a network's

benchmarking performance. This blunts the incentive provided by the Demand Management Incentive Scheme.

In addition, these costs do not directly relate to the productivity of a network. Therefore, if these costs are included in benchmarking opex, they will distort the benchmarking results, reducing their robustness.

As it is contrary to the intent of both the DMIS and the benchmarking to include these costs in benchmarking opex, AusNet Services requests that the AER clarifies that these costs are excluded.