HERBERT
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Mr Michael Martinson
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13 February 2015

By mail

Dear Michael

Confidential

AER Draft Decision – Forecast Operating Expenditure

We attach a submission in relation the draft decisions by the Australian Energy Regulator (**AER**) on the 2014-2019 regulatory proposals submitted by Endeavour Energy, Ausgrid and Essential Energy (**Networks NSW**) in so far as it deals with the application of clause 6.5.6 of the National Electricity Rules (**NER**) to those proposals and matters which may affect the validity of any Final Decision by the AER.

The submission identifies that any final decisions by the AER which have constituent decisions in relation to forecast operating expenditures arrived at through the reasoning apparent in the draft decisions, will be flawed and inconsistent with the NER. Specifically, for the reasons dealt with in the attached submission, the draft decisions indicate that the AER has failed to take steps to consider the practical impact of the proposed revenue reductions arising from the proposed global adjustments to forecast operating expenditure.

Further, those adjustments have been made on the basis of a benchmarking analysis which is subject to multiple and substantial deficiencies. Consequently, the draft decisions do not provide the AER with a basis on which it could reasonably form a view that its proposed substitute allowances are derived in a manner consistent with clause 6.5.6 of the NER and, in particular, reflect the operating expenditure objectives and criteria.

The attached submission has been prepared with the assistance of Cameron Moore SC, Banco Chambers, Catherine Dermody, Victorian Bar and Adam Hochroth, Banco Chambers.

Yours sincerely

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AER Draft Decision – Forecast Operating Expenditure

1 The AER's draft decision proposes to impose extremely large reductions to the forecast operating expenditure for the Network NSW businesses based on a top-down deterministic approach to benchmarking set out in the draft decision. The adjustment has been made primarily on the basis of the annual benchmarking report published by the AER.

2 The operating expenditure forecasts for the Network NSW businesses are formulated based on actual expenditure in the base year (2012-13), adjusting for future changes to requirements and building in some further gains in efficiency and for any relevant step changes – expenditure required in order to maintain the safety, quality, reliability and security of the distribution systems for the benefit of New South Wales consumers over the 2014-19 period. The magnitude of the reductions proposed by the AER will provide insufficient revenue to permit the proper maintenance and operation of the New South Wales distribution networks. In formulating the draft decision, the AER has taken no steps to consider the practical impact of the proposed revenue reductions, or whether the reductions satisfy the national electricity objective.

3 The AER has not considered at any appropriate level of detail (or indeed any level of detail) which aspects of the Network NSW's proposed opex involve inefficient expenditure. It has not properly engaged with the detail of the proposals, or examined or considered which particular items of expenditure (if any) should be managed more efficiently. It has not considered the circumstances of each individual business. Rather, it has identified wholesale adjustments to be made on a global level based on a benchmarking model.

4 Nor has the AER taken into account in a proper manner the constraints and obligations faced by the Network NSW businesses. For example, the Network NSW businesses cannot dramatically reduce the number of their employees, and cannot reduce employee numbers without incurring significant redundancy costs. These matters cannot simply be ignored, or simply assumed to be borne by shareholders. As Professor Newbery observes, a proper application of regulatory economics requires an allowance to be given for any restructuring costs. Otherwise, the owners of the business are not given an opportunity to obtain a proper return on the investment, which in turn would affect regulatory risk and the perception of the stability of returns from regulated businesses.

5 Further, the benchmarking conducted by the AER is itself fundamentally flawed. It provides no adequate basis to reject the forecasts of operating expenditure provided by the Network NSW businesses. The resulting allowance for opex is not in accordance with the NER, including because it does not meet the operating expenditure objective.

6 The deficiencies in the AER's approach to benchmarking are multi-faceted and have been analysed in detail in the expert reports provided with the revised proposals. Many are discussed later in this submission. The key deficiencies include the following:

(a) The data which is an input into the analysis is of insufficient quality to permit an accurate figure to be derived for expenditure in identified categories. It is clear that the data does not reflect actual costs – in many cases it is an estimate or guess or is missing information, and it is not organised into consistent categories between businesses and thus simply does not permit like-for-like comparisons. This issue alone prevents the benchmarking analysis from having any utility or weight whatsoever until these data quality issues are

addressed. To use the faulty data as a basis for removing billions of dollars of revenue from the Network NSW businesses is quite extraordinary.

(b) The simple bases of comparison used in the benchmarking analysis (e.g. line length) obscure fundamental differences in the businesses and mean that the analysis is not comparing apples with apples. The analysis does not capture obvious and significant differences between the regulatory and physical environment applicable to the different businesses. Merely by way of example, the analysis does not capture that responsibility for vegetation management varies between NSW and Victoria. The latent heterogeneity is not captured or isolated, and instead is (wrongly) attributed to managerial "inefficiency". Unsurprisingly, the small, urban entities are considered as more "efficient", simply because they do not face obvious categories of cost that apply to larger entities with regional or rural geographic presence. Put shortly, they are not comparable entities, but the AER bizarrely seeks to compare them and to make deterministic adjustments accordingly. That approach is fundamentally misconceived.

(c) Further to (b), there are obvious examples of differences in scope between entities (such as the fact that the Network NSW businesses operate high voltage assets and other entities do not) which have not been allowed for or appropriately adjusted.

(d) None of the statistical or other techniques used by the AER's methodology deal with the obvious deficiencies in the structure of the comparison. Instead, the AER makes an entirely notional and unsupported adjustment of 10% to attempt to deal with these problems. That adjustment has no basis in fact, evidence or methodology, and is nothing more than a poor and unjustified guess. For the AER to use that as a basis for removing billions of dollars of revenue from the Networks NSW businesses is extraordinary.

(e) The results of the analysis are driven by the inclusion of Ontario and New Zealand entities, which are not comparable companies and for which data has not been collected on a comparable basis. Even the AER's own expert accepts that this is likely. The naïve method used to attempt to compensate for this (being the use of dummy variables) is inadequate for the purpose, and cannot solve the problems with the model.

(f) The use of alternative available models produces radically different results, which indicates that no confidence can be placed in the data or in the results from the particular model selected.

(g) The AER's approach is not in accordance with any recognised international practice for the use of benchmarking, and indeed is directly contrary to such practice. As discussed in the expert reports, in accordance with recognised practice, the quality of the data and analysis in the present case would not support <u>any</u> adjustment on the grounds of benchmarking, and an improved data-set and methodology over time would support a more cautious adjustment in due course. The correct approach is, as a first step, to ensure the accuracy and consistency of the data, a task that is likely to take some years. That should be combined with a bottom-up review by experts (such as engineers) to assess costs and quantities. The AER's approach in the present case is unique, and out of step with all responsible application of benchmarking techniques.

7 It is a requirement pursuant to the Rules that a building block proposal submitted by a service provider include the total forecast operating expenditure for the relevant

regulatory control period which the DNSP considers is required in order to achieve the operating expenditure objectives.[1]

8 The Networks NSW businesses included in their regulatory proposals, and have incorporated in their revised regulatory proposals, the respective total forecast operating expenditures that they consider to be required in order to achieve the operating expenditure objectives. As noted above, these are based on actual expenditure, not some theoretical construct.

9 The AER is required to accept the forecast of required operating expenditure of a DNSP that is included in a building block proposal if the AER is satisfied that the total of the forecast operating expenditure for the regulatory control period reasonably reflects the operating expenditure criteria.[2] The operating expenditure criteria are as follows:

(a) The efficient costs of achieving the operating expenditure objectives;

(b) The costs that a prudent operator would require to achieve the operating expenditure objectives; and

(c) A realistic expectation of the demand forecast and cost inputs required to achieve the operating expenditure objectives.[3]

10 Importantly, the operating expenditure objectives are framed in terms of meeting expected demand, complying with applicable regulatory obligations or requirements, maintaining the quality, reliability and security of supply, and maintaining the safety of the distribution system.[4] The objectives do not require or permit any balancing between cost and matters such as quality, reliability and safety.

11 The benchmarking conducted by the AER, and the purported adjustments made by the AER to account for obvious differences between the benchmarked networks, do not provide the AER with any basis upon which it could reasonably form a view that its proposed substitute allowances are sufficient for each respective Networks NSW business to achieve the operating expenditure objectives. The AER could only form a view that its allowances were sufficient to achieve the operating expenditure objectives if it gave genuine consideration to the differing geographical and operating environments in which each benchmarked business operates. The AER's benchmarking exercise does not do this. As such, the AER cannot be satisfied that its substitute allowance reasonably reflects the operating expenditure criteria.

12 In the explanatory material accompanying the November 2012 rule amendments, the AEMC emphasised that in assessing a service provider's proposal, and in determining any substitute amount, the AER would need to give real consideration to the individual circumstances of the business.

> Under the first expenditure criterion the AER is required to accept the forecast if it reasonably reflects the efficient costs of achieving the opex objectives. These include references to the costs to meet demand, comply with applicable obligations, and maintain quality, reliability and security of supply of services and of the system. These necessarily require an assessment of the individual circumstances of the business in meeting these objectives. So to the extent that different businesses have higher standards, different topographies or climates, for example, these provisions lead the AER to consider a NSP's individual circumstances in making a decision on its efficient costs.[5]

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[1] National Electricity Rules, clause 6.5.6(a).

[2] National Electricity Rules, clause 6.5.6(c).

[3] National Electricity Rules, clause 6.5.6(c).

[4] National Electricity Rule, clause 6.5.6(a)

[5] AEMC, *Rule Determination – National Electricity Amendment (Economic Regulation of Network Service Providers) Rule 2012 and National Gas Amendment (Price and Revenue Regulation of Gas Services) Rule 2012*, p. 107.

13 The AER has manifestly failed to have regard to differences between businesses (including businesses the subject of the benchmarking analysis) in the draft decision.

14 In providing guidance on the November 2012 amendments to the National Electricity Rules, the AEMC was clear that the starting point of the AER's assessment was the relevant service provider's proposal.

> The NSP's proposal is necessarily the procedural starting point for the AER to determine a capex or opex allowance. The NSP has the most experience in how a network should be run, as well as holding all of the data on past performance of its network, and is therefore in the best position to make judgments about what expenditure will be required in the future. Indeed, the NSP's proposal will in most cases be the most significant input into the AER's decision.[6]

15 The AEMC also said:

> The Commission is of the view that the removal of the "individual circumstances" clause does not enable the AER to disregard the circumstances of a NSP in making a decision on capex and opex allowances. Benchmarking is but one tool the AER can utilise to assess NSPs' proposals. It is not a substitute for the role of the NSP's proposal. Should the phrase remain, it appears that the AER's interpretation of it may restrict it from utilising appropriate benchmarking approaches to inform its decision making.
>
> The Commission considers that the removal of the "individual circumstances" phrase will clarify the ability of the AER to undertake benchmarking. It assists the AER to determine if a NSP's proposal reflects the prudent and efficient costs of meeting the objectives. That necessarily requires a consideration of the NSP's circumstances as detailed in its regulatory proposal.
>
> Under the first expenditure criterion the AER is required to accept the forecast if it reasonably reflects the efficient costs of achieving the opex objectives. These include references to the costs to meet demand, comply with applicable obligations, and maintain quality, reliability and security of supply of services and of the system. These necessarily require an assessment of the individual circumstances of the business in meeting these objectives. So to the extent that different businesses have higher standards, different topographies or climates, for example, these provisions lead the AER to consider a NSP's individual circumstances in making a decision on its efficient costs.

16 The AER has not acted in a manner consistent with these observations. For example, the AER has not taken any account of differing standards, topographies or climates. In its draft decision, the AER does not start with the regulatory proposals of the respective Networks NSW businesses. It takes the base year (2012-13) operating expenditure amount and applies a reduction to that amount based on the results from the modelling done by its expert, Economic Insights (**EI**), and then trends that amount forward to provide its substitute forecast for the 2014-19 period.

17 In short, given the benchmarking exercise that the AER has undertaken and the significant shortcomings associated with that exercise, and the lack of regard the AER has given to the respective proposals of the Networks NSW businesses which deal with the actual geographical and operating environments in which these businesses deliver standard control services, the AER could not be satisfied that its substitute amount provides an allowance over the 2014-19 period that is required by these businesses to achieve the operating expenditure objectives.

18 In the balance of this submission we deal with deficiencies in the AER's model and approach to benchmarking, and also the practical evidence of the businesses in relation to opex.

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[6] AEMC, *Rule Determination – National Electricity Amendment (Economic Regulation of Network Service Providers) Rule 2012 and National Gas Amendment (Price and Revenue Regulation of Gas Services) Rule 2012*, p. 111-112.

The EI model is heavily reliant on overseas data

19 The preferred modelling technique selected by EI is known as Stochastic Frontier Analysis. That particular type of modelling cannot be applied without a sufficient quantity of data: see Frontier report,[7] pp. 11-12, Huegin report,[8] pp. 29, 38. As a result, EI was forced to use overseas data from New Zealand and Ontario in order to enlarge the sample and apply this modelling technique.

20 The model constructed by EI contained far more overseas data than Australian data. EI used data from a total of 68 entities, of which only 13 were Australian, with 18 from New Zealand and 37 from Ontario. That is, the Australian DNSPs make up only 19% of the AER's sample: Frontier report, p. 23.

21 To test the comparability of the Australian and overseas data, Frontier ran the EI model for Australian, New Zealand and Ontarian networks separately. The results of that exercise show that when one does the exercise separately, the results for just the Ontarian networks are the most similar to the overall results of the EI model: Frontier report, p. 23.

22 Frontier then used those results to test, statistically, whether the Australian and overseas data were sufficiently comparable to be pooled together. The results of their testing "*overwhelmingly reject*" the hypothesis that the data are comparable: Frontier report: p. 25.

23 The notion that the overseas data are not comparable is also supported by consideration of the very substantial differences between the distribution entities overseas and the Australian DNSPs and the conditions they face. This is dealt with in the next section.

24 For present purposes, it should be appreciated that EI's model, in effect, is capturing a relationship between the overseas (primarily Ontarian) networks' opex and their cost drivers, and imposing that relationship on the Australian DNSPs.

The overseas data is not comparable with the Australian data

25 There are major differences in respect of scale, population density, network characteristics, weather and terrain between Australia, New Zealand and Ontario. Owing to these differences, entities in Ontario and New Zealand have developed different business models and design philosophies to serve their regions from those developed by DNSPs in Australia: Frontier report, p. 12. See also Huegin report, section 4.2.

26 In terms of scale, for example, the Australian DNSPs are, on average, four times larger than the Ontario entities in terms of energy delivered and demand, six times larger in terms of customer numbers, and eleven times larger in terms of circuit length. They are, on average, eight times larger than New Zealand entities on all of these measures: Frontier report, p. 26. See also Advisian report,[9] p. 15-16, 23-29. The omission of any variable in the model to allow for differences in scale essentially assumes that returns to scale are constant and does not allow for the possibility of economies or diseconomies of scale faced by different networks, including the NSW DNSPs: see Frontier report, pp. 28, 69, 75, 93.

27 In particular, the frontier (most efficient) firm in the EI model is smaller in scale than any Australian DNSP. Indeed, it is one of the smallest firms even in the Ontario sample. It also has the highest percentage of undergrounding (over 70%) of any entity in EI's sample: Frontier report p. 12.

28 Weather conditions in Ontario are significant colder resulting in harsh winters: Frontier report, pp. 32-34. This appears to have resulted in a substantially greater proportion of

[7] Ausgrid RRP, attachment 1.05, Endeavour Energy RRP, attachment 1.03, Essential Energy RRP, attachment 7.1.

[8] Ausgrid RRP, attachment 1.06, Endeavour Energy RRP, attachment 1.02, Essential Energy RRP, attachment 6.9.

[9] Ausgrid RRP, attachment 1.09, Endeavour Energy RRP, attachment 1.04, Essential Energy RRP, attachment 7.2.

the network being undergrounded: undergrounding is, on average, almost twice as prevalent in Ontario (and New Zealand) as Australia: Frontier report, pp. 34-35. Underground networks require less opex in terms of ongoing maintenance than overhead networks: see statement of Rod Howard, p. 38.

29 One would also expect that Ontarian networks would expend less on vegetation management than Australian DNSPs, given their lower bushfire risk and colder climates. Unfortunately, the Ontarian networks do not report vegetation management separately, so it appears that this has not been checked. This is a matter of concern which compounds the problem that some Australian networks appear not to have reported any vegetation management expenditure: Frontier report, pp. 51-52; Advisian report, pp. 62-63.

Differences between countries are not adequately accounted for

30 The EI model used an inadequate technique to attempt to account for the differences between entities in different countries. EI adjusted for this by using a so-called "dummy variable". That is, in addition to the costs drivers which were input variables into the model (circuit length, ratcheted peak demand, number of customers and share of undergrounding), there was an additional variable indicating whether the entity was located in Australia, New Zealand or Ontario.

31 As PEG explains, this type of variable can account for a situation in which costs differ by a *consistent* amount in a given country, but they cannot address *differences in the degree* to which cost changes in response to a change in another variable: PEG report,[10] p. 55. The inclusion of dummy variables simply adjusts for differences in cost levels between the three jurisdictions (i.e. by altering the intercept term of the regression line), without allowing for any fundamental differences between the relationship between costs and cost drivers (i.e. the estimated slope coefficients of the regression line are unaffected by the inclusion of dummy variables alone): Frontier report, pp. 40, 43. Where there are significant differences between entities, there is no basis for assuming that the relationship between costs and cost drivers in Ontario is the same as in Australia.

32 Similarly, Professor Newbery explains that a dummy variable will not control for cost relationship differences between datasets: Newbery report,[11] p. 17.

33 More generally, if the relationship between cost drivers and opex differs across countries, that will not be captured by the EI model. For the reasons set out above, there is in fact reason to believe that the relationships between the cost drivers and opex vary across the different countries.

The data used by EI contain errors

34 The data used by EI appear to contain significant and numerous errors which render use of the data unsafe. These errors are apparent from large changes in data points from year to year which could not realistically have been caused by changing conditions. For example Frontier has identified, in respect of the Ontario entities (Frontier report, pp. 55-56):

(a) nine instances where opex rose or fell by 30% or more;

(b) three instances where energy supplied rose by 97% or more;

(c) three instances where maximum demand changed by 30% or more (one of which was a 94% change and another nearly 100%, with maximum demand reported near zero for one year); and

(d) six instances where circuit length changed by 32% or more.

[10] Ausgrid RRP, attachment 1.08, Endeavour Energy RRP, attachment 1.07, Essential Energy RRP, attachment 1.6.

[11] Ausgrid RRP, attachment 1.07, Endeavour Energy RRP, attachment 1.06, Essential Energy RRP, attachment 7.3.

35 These errors in the overseas data are compounded by errors in the Australian data which appear to have been caused by difficulties in the process which led to the RIN data being submitted. Those difficulties are addressed further below. See also chapter 5 of the Frontier report.

36 It also appears similar errors may have occurred across the international data, as EI does not appear to have checked whether the data reported in different jurisdictions are consistent with one another: Frontier report, p. 43. Frontier's investigation reveals various inconsistencies in the relevant definitions used across jurisdictions: Frontier report, pp. 45-48. By way of example, even the definition of "opex" across jurisdictions is not consistent and no investigation has been undertaken by EI to determine whether what the Ontarian and New Zealand networks were reporting as "opex" represented the same categories of expenditure which the Australian networks were reporting as "opex".

Relevant cost drivers have not been accounted for

37 In order for the EI model to accurately measure efficiency, it needs to capture the effects of relevant cost drivers, by including those drivers as variable inputs into the model. The EI model fails to do this. It only includes input variables for a limited number of cost drivers (namely customer numbers, circuit length, ratcheted peak demand, and share of undergrounding). Cost drivers which have not been captured by these variables are assumed to represent inefficiency in the EI model.

38 Advisian have identified a range of matters which, in their view, affect network costs but which are not taken account of in the EI model. These include:

(a) poles per customer: Advisian report p. 43;

(b) installed transformer capacity: Advisian report pp. 44-46;

(c) the proportion of single wire earth return (**SWER**) technology used in the network (this technology is used extensively in Australia and New Zealand but not in Ontario): Advisian report pp. 50-52;

(d) reliability: Advisian report pp. 55-59;

(e) vegetation management spans: Advisian report pp. 60-62; and

(f) asset age: Advisian report pp. 73-77.

39 Professor Newbery has constructed a series of alternative models to the EI model using different input variables. The results are shown in graph form on p. 21 of the Newbery report. It can be seen that in general, the alternative models produce higher efficiency scores for each of the NSW DNSPs (labelled as AGD, END and ESS on the graphs). The EI efficiency score is the black bar whereas the other models are coloured – in general the coloured bars show much higher efficiency scores (in some models, Endeavour Energy and Essential Energy are on the efficient frontier).

40 Professor Newbery observes that the additional models he tested were very sensitive to the different variables included: Newbery report, p. 22. He concludes that "*a greater range of operating environmental variables are almost certainly required to control for differences between the DNSPs.*": Newbery report, p. 22.

The EI model does not sufficiently take account of the high voltage assets operated by the NSW DNSPs

41 A particular cost driver that has been omitted is the proportion of high voltage assets operated by a network. Some, but not all, of the Australian DNSPs operate substantial high voltage (over 50kV) network assets. Each of the NSW DNSPs operates such assets, which comprise "sub-transmission" lines and substations.

42 The EI model does not take account of the fact that some, but not all, of the entities operate high voltage assets. This is a relevant variable which affects costs which is omitted from the model. The extra cost incurred by entities operating high voltage assets

is picked up by the EI model as inefficiency: Frontier report, p. 35. See also Huegin report, section 4.2.1, Advisian report, section 5.3 (pp. 46-48).

43 It appears that in part, the exclusion of this relevant variable has been driven by lack of available data. The Ontario dataset excluded high voltage (over 50kV) network assets, so if the Ontario data was to be included, high voltage assets would need to be excluded as a variable: PEG report, p. 54.

44 The omission of high voltage assets as a variable in effect penalises the NSW DNSPs, by making their costs of operating those assets appear as inefficiency. EI have acknowledged and attempted to compensate for this shortcoming in the model by making an allowance of 10% (intended to cover both the greater sub-transmission assets operated by the NSW DNSPs as well as differences in occupational health and safety requirements) in favour of the NSW DNSPs when applying their model to adjust allowable opex. The adjustment has no statistical basis behind it and is arbitrary: Frontier report, p. 98.

EI's model produces drastically different results to the Ontario regulator's own benchmarking model

45 The Ontario regulator, the Ontario Energy Board (**OEB**) itself uses a benchmarking analysis as part of analysing efficiency. A report for the OEB was prepared by PEG in July 2014. The report used the "ordinary least squares" statistical model rather than Stochastic Frontier Analysis.

46 The results of the OEB's modelling compared to EI's modelling vary significantly. For example, the most efficient firm on the EI analysis ranks only 25 out of 73 Ontarian entities in the OEB study. The second most efficient Ontarian network on the EI model is 9th on the OEB model, while the third most efficient on the EI model ranks 51st on the OEB model: Frontier report, p. 62.

47 These discrepancies are so large that they call into doubt what EI has done. One would expect that the OEB model better captures the Ontarian market. It follows that the cost drivers which EI has used and the relationships which it has estimated between those drivers and opex in respect of the Ontarian entities does not accord with the opinion of the local regulator. This gives further reason to doubt that EI has adequately taken account of the relevant cost drivers which determine opex, not only in relation to the Ontarian entities, but also in relation to the Australian DNPS.

Testing by alternative models reveals the weakness in EI's model

48 The expert reports have demonstrated how sensitive the EI results are to the specific model specification, and have tested the plausibility of EI's results by the use of alternative models, which suggest that EI's results are neither plausible nor rigorous.

49 For example, Frontier Economics tested the data using an alternative model that captured heterogeneity, whereupon the measured differences in inefficiency became negligible. This indicates that EI's results are strongly affected by latent heterogeneity. This is hardly surprising, having regard to the obvious differences between the entities and the inappropriateness of EI's criteria (circuit length etc.) to capture these differences. It is obvious why a kilometre of circuit in Essential Energy's network would incur more vegetation cost than a kilometre of circuit in CitiPower's network, for reasons that have nothing to do with efficiency. Put more simply, the efficiency scores from EI's model are, in fact, likely to be largely measuring latent differences in operating circumstances between the various entities, rather than any inefficiency. This means that no reliance whatsoever can be placed on the outputs of the EI model. See Frontier report, pp. 21-22.

50 The use of alternative models to test the robustness of the EI model is also considered by PEG (p. 58ff), Huegin (p. 38) and Professor Newbery (p. 21).

The data used by the AER was not prepared on a consistent basis

51 In order for the benchmarking exercise carried out by EI for the AER to be relied upon, the AER would need to be satisfied that the data used by Economic Insights for each DNSP was sufficiently comparable. In particular, given that EI was modelling total opex, it would need to be satisfied that:

(a) there were no cost categories which had been recorded by some businesses as opex, but which had been capitalised by other businesses; and

(b) there were no cost categories in which some businesses' costs appeared artificially inflated or reduced by reason only of differences in circumstances having nothing to do with managerial inefficiency, or differences in the manner in which those costs had been estimated or calculated; and

(c) there were no discrepancies in data as to relevant cost drivers affecting opex.

52 The evidence supporting the revised proposals of the NSW DNSPs suggests that the data used by EI was not comparable as between the various Australian DNSPs and therefore could not form a sound basis for benchmarking.

53 Certain differences in the data supplied by the various DNSPs are identified in the expert report of PWC.[12] PWC's report identifies significant differences between the basis of preparation of the RIN data submitted by the 13 Australian DNSPs which, in PWC's opinion, raise the risk of inaccurate benchmarking.

54 The differences identified by PWC include:

(a) differences in the methods used by each entity to determine the value and allocation of its regulatory asset base: PWC report pp. 24-25;

(b) differences in the methods used by each entity to adjust the data for seasonal differences: PWC report p. 26;

(c) differences in the methods used by each entity to estimate the data required in respect of vegetation management: PWC report pp. 27-28;

(d) differences in the vegetation management minimum clearance requirements between states: PWC report pp. 28-29;

(e) differences in the allocation of responsibility for vegetation management between states, for example in NSW the DNSPs are responsible for vegetation management over their networks whereas in Victoria responsibility is shared between DNSPs and local councils: PWC report p. 29;

(f) differences in the methods used by each entity to estimate route line length and circuit length where data was not available: PWC report pp. 31-32;

(g) differences in related party arrangements, in particular there are related party arrangements significantly impacting operation of the Victorian entities: PWC report pp. 33-35;

(h) differences in cost allocation methods for indirect costs (i.e. overheads) – in particular the NSW DNSPs allocate indirect costs by identifying the activities to which those costs relate (activity based costing) whereas CitiPower and Powercor allocate indirect costs using the value of the regulatory asset base: PWC report p. 36;

(i) differences in capitalisation policies, which may have resulted in significant differences in the ratio of capex to opex in each entity: PWC report pp. 36-37.

[12] Ausgrid RRP attachment 1.10; Endeavour Energy RRP attachment 1.05; Essential Energy RRP attachment 6.3.

55 To take one obvious example, in NSW vegetation management is primarily the responsibility of each DNSP,[13] whereas in Victoria DNSPs share responsibility for vegetation management with local councils. Thus the data supplied to the AER in respect of vegetation management expenses will artificially understate the true vegetation management expenses incurred for the Victorian networks as compared with the NSW networks. In other words, all other things being equal, the data would suggest that Victorian networks carry out vegetation management in a more efficient manner than NSW networks, even if that were not the case. This is not in any sense a trivial example as vegetation management comprises a very substantial portion of the NSW DNSPs' overall opex.

56 In relation to the division between capex and opex, Frontier Economics notes that experience in Great Britain suggests that different companies may choose to adopt very different approaches to designing and operating their networks, that can lead to a different mix between opex and capex. Some distribution network operators in GB adopt an investment-heavy approach with an associated focus on keeping operating expenditures low, whilst other operators seek out innovative ways to avoid incurring capex by looking for opex-based solutions until it is optimal to make the investment: Frontier Report p. 53. The AER's approach would put these differences down to inefficiency, when that is obviously not the case.

57 More generally, service providers have been explicit in informing the AER that due to differences and difficulties in record keeping and systems, they are unable to provide accurate figures for the data requested and therefore have to estimate or guess. The service providers have been told to do their best, but that is hardly a sound basis for deterministic benchmarking.

58 The nature and number of the inconsistencies in the basis of preparation of the RIN data identified by PWC, summarised above, is substantial. The inconsistencies affect basic inputs into the EI model. To take another example, even the manner used by each entity to estimate as fundamental an input as the overall length of its network was not consistent between entities.

59 The number and nature of these inconsistencies raises the likelihood that some or all of the "inefficiency" identified by the EI report is no more than variance caused by the differences in the manner in which the different entities prepared their data.

Evidence from the businesses

60 As Frontier Economics have identified in their report, EI has presumed in its benchmarking exercise that the variation between entities in their model, after accounting for idiosyncratic error, may be ascribed to inefficiency: see, e.g., Frontier report, section 1.1.3. An alternative thesis would be that the variation detected in the EI model may be caused by differences between entities not otherwise accounted for in the model. That such differences exist and are likely to be unaccounted for in the EI model is supported by the evidence of the COOs of each of the NSW DNSPs, namely Mr Trevor Armstrong of Ausgrid,[14] Mr Rod Howard of Endeavour Energy,[15] and Mr Gary Humphreys of Essential Energy.[16]

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[13] Only in limited circumstances would the cost of trimming vegetation (including the cost of bush fire risk mitigation work under direction) be borne by a private owner/occupier of land. These circumstances are where vegetation is planted by a private owner/occupier who ought reasonably to have known that it would interfere with electricity works, or where vegetation is planted on land subject to an easement in favour of the DNSP. In practice, however, vegetation management costs are largely borne by DNSPs because it is difficult to show when vegetation was planted, by whom and with what state of knowledge.

[14] Ausgrid attachment 1.02.

[15] Endeavour Energy attachment 1.08.

[16] Essential Energy attachment 1.1.

61 The evidence from the Networks NSW businesses included with the revised proposals is relevant to an assessment of the AER's approach. Firstly, it provides further detail of the differences between the various businesses the subject of the benchmarking analysis. One aspect of this is the choice between opex and capex (a topic discussed earlier). Secondly, the evidence refers to the likely impact on reliability, security and safety of the AER's draft decision. The evidence highlights the failure by the AER to consider whether forecast opex is necessary and efficient, and thus a failure to assess the proposal in accordance with the NER.

62 The evidence of the COOs establishes the following matters:

(a) first, there is a trade off which every DNSP must make between the level of capex which it incurs as compared to the level of opex which it incurs. This is problematic for the EI benchmarking exercise, as that exercise was done in relation to opex in isolation rather than in relation to overall expenditure;

(b) secondly, overall expenditure, as well as the relative levels of capex and opex, may be affected by an entity's past history of investment and the resultant condition of its assets. In other words, there is a "cycle" of investment and at different points on the cycle, an entity may be entering a phase of increased capex, increased opex, or both;

(c) thirdly, the different conditions faced by each network result in different requirements in relation to capex and opex. These are more complicated than accounted for in the EI model. They involve questions, for example, of how much risk in relation to safety and network reliability is acceptable? The answers to these questions may depend in part upon the physical constraints affecting the measures which the particular entity can take to address safety and reliability, as well as the preferences of the entity's customers, for example in relation to the degree of network interruption they are willing and able to tolerate (which itself may depend in part upon prices).

63 In other words, the evidence of the COOs demonstrates that overall network expenditure involves the application of judgment in relation to overall expenditure required, the relative amounts of capex and opex expended and also in relation to complex decisions of policy which must be made in setting levels of safety and reliability which are achievable and appropriate having regard to the physical features of the individual network and the needs and preferences of customers.

64 The relevant evidence may be summarised as follows.

Capex/opex trade-offs

65 Each DNSP faces trade-offs when it comes to setting an appropriate level of capex and opex. As Mr Howard explains, if less opex is spent, network equipment deteriorates such that more capex will be required to compensate for the reduction in opex. Similarly, less capex may contribute to a decrease in reliability (amongst other consideration) which may require increased opex: Howard, p. 20.

66 Concrete examples of this trade-off are illustrated in the evidence. For example, one important asset class of each network comprises the poles which carry overhead conductors. Poles may be made of wood, concrete or steel. Steel and concrete poles are about 2½ times more expensive to install than wooden poles (increased capex): Humphreys, p. 36. However, steel and concrete poles require less maintenance (decreased opex): Howard, p. 25.

67 Moreover, different poles have different risk and safety profiles. For example, concrete and steel poles are less prone (compared with wooden poles) to bushfire risk and termite infestation, but also give rise to the risk of live voltage being conducted to the ground in the pole vicinity if the insulator at the top of the pole fails: Howard, p. 25.

68 A second example is the choice between a network being underground or overhead. An underground network is much more expensive to install, but requires much less ongoing maintenance. However, faults also become harder to detect in an underground network, which may impact reliability and unplanned maintenance (repair) expense: Howard, p. 38.

69 That there are substantial differences in the split of capex to opex for the Australian DNSPs is identified by PWC. The range goes from 61% capex/39% opex (Essential Energy) to 74% capex/26% opex (CitiPower). PWC considers this could be due to a range of factors including the relative age of the networks, capitalisation polies and cost allocation approaches: PWC report p. 37.

Different policy decisions for different networks

70 The extent to which levels of capex and opex are set by reference to policy decisions which must take into account the physical characteristics of the network and customer preferences is also illustrated in the COOs' evidence. One example is the extent of unassisted pole failure (that is, a pole structure failing and falling over, not due to weather or some external event) tolerated by each of the three NSW DNSPs. Each pole failure may have impacts on network service and reliability as well as safety. As one would expect, Ausgrid, with its higher customer density and the proximity of its network to urban areas, has the lowest pole failure rate of the NSW DNSPs – 1 in 56,000 poles per year: Armstrong, pp. 72-73. Endeavour Energy's pole failure rate is higher (about 1 in 40,000 poles per year) which Essential Energy's is higher still (1 in 11,500 poles per year): Humphreys, p. 21.

71 The differing pole failure rates are a result of:

(a) the different safety impacts of pole failure. For example, Ausgrid has many poles along major roads in Sydney, which if they were to fail, could injure individuals and/or cause traffic disruption: Armstrong, p. 72. By contrast, many of Essential Energy's poles are located in remote rural areas where the potential impact of a pole falling is far lower: Humphreys, p. 22;

(b) the physical and geographic constraints of the network. For example, due to the geographic spread of Essential Energy's network, the costs of keeping the same reliability standards as Ausgrid or Endeavour Energy would be prohibitively high: Humphreys, p. 22; and

(c) customer preferences in relation to reliability. For example, Essential Energy's rural residential customers have lower reliability expectation than urban customers and accept extended power outages as part of living in regional and rural areas: Humphreys, p. 22.

72 Indeed, even *within* an entity these considerations can vary. Reliability requirements, for example, may vary significantly within the customer base of a particular entity. Essential Energy has 35% residential, 35% commercial, and 30% mining and industrial customers: Humphreys, p. 9. Mining customers have high reliability requirements as they typically operate 24 hours per day, 7 days per week: Humphreys, p. 10.

73 These kinds of considerations affect the capex/opex trade-off made by each entity in different ways. Taking, again, expenditure in relation to poles as an example, where a pole is nearing the end of its usable life, a DNSP may have several options. Opex can be expended to extend the life of the pole, by applying chemical treatment to the pole or by using a steel reinforcement (known as "staking" or "nailing" the pole): Armstrong, p. 69; Howard, p. 24. Alternatively, the pole can be replaced (capex). The extent to which these options are available may be affected by the way in which the network is managed. For example, extent to which nailing or staking is effective depends on the risk profile of the network. Essential Energy, being more tolerant of unassisted pole failure than other networks, allows poles to degrade to a lower wall thickness than other networks, at which point nailing does not further increase the usable life of the pole: Humphreys, p. 33.

74 As noted above, one factor affecting the capex/opex split may be the age of the network assets. As assets get older, more may be need to be spent on them by way of maintenance (although correspondingly, when assets reach the very end of their usable life there may be a drop in maintenance opex but a spike in capex as assets are replaced). The age profiles of the three NSW DNSPs differ substantially. Ausgrid's nework, for example, includes some of the oldest pole support structures in Australia with some poles over 80 years old and nearly 35% of wooden poles over their standard life of 50 years: Armstrong, p. 65. By contrast, Endeavour Energy's network is currently in a reasonable state, with the average weighted remaining life of network assets around 50%: Howard, p. 16. The weighted average age of assets at Essential Energy is higher than either Ausgrid or Endeavour Energy: Humphreys, p. 23.

75 Asset functionality is another factor impacting the relative levels of capex and opex spending which a DNSP may undertake. For example, another asset class of the three NSW DNSPs is "protection equipment" – circuit breakers and switches which de-energise parts of the network in cases of failure or overload. Protection equipment ranges from simple mechanical devices to more modern electronic devices. More modern equipment has a shorter asset life (requiring more frequent replacement capex) but is electronic and can be remotely controlled (meaning that the network can be restored without someone physically attending – a reduction in opex): Armstrong, p. 103, Howard, pp. 58-59.

76 Once again, the availability of these trade-offs is determined, in part, by the different physical characteristics of the networks. For example, 20% of Essential Energy's pole top circuit breakers cannot be remotely controlled. In some cases this is because the circuits are literally out of range of telecommunications services in remote areas: Humphreys, p. 60.

Other factors influencing opex are driven by particular circumstances

77 The evidence of the COOs provides other examples of spending which are driven by circumstances peculiar to the different networks.

78 One such category is particular regulatory requirements. For example, Ausgrid has a program to replace oil-filled underground cables in respect of which there are environmental concerns, which has been implemented following direct consultation with the EPA: Armstrong, p. 84.

79 Another matter falling into this category is the fact that the network configuration in NSW is different from, in particular, Victoria, in that there is an extra layer of transmission between the high voltage transmission network operated (in NSW) by Transgrid at 330kV or 500kV and the distribution network operated by the NSW DNSPs at 22kV or 11kV. As a result of that additional layer, the NSW DNSPs operate sub-transmission substations and higher voltage networks which the Victorian DNSPs do not. That results in greater capex and opex: Howard, p. 44-45. That is because the inclusion of a sub-transmission network (33kV, 66kV and 132kV) into the supply chain means that there are more assets per customer used to supply each customer, and therefore greater costs included in the opex. If the NSW DNSPs did not have to operate sub-transmission networks due to different network design or these assets being operated by another entity (i.e. a transmission entity), they would have fewer assets and less costs.

80 Essential Energy is further affected by factors to do with the vast geographic size of its network and low customer density. One must remember that each network is required, as part of its licence conditions, to provide service to any customer within its network area who requests service. Essential Energy's network includes, for example, a feeder line approximately 1900 kilometres long servicing the area from Broken Hill to Tibooburra: Humphreys, p. 15. There are about only 100 customers in Tibooburra, but Essential Energy's licence conditions require that it provide service to those customers, irrespective of the high marginal cost of doing so: Humphreys, p. 16.

81 Further, Essential Energy, uniquely in NSW, must also maintain a radio communications network with sufficient reliability across 95% of NSW: Humphreys, pp. 69-73.

The EI Model does not take account of the heterogeneity of networks

82 The evidence of the COOs outlined above demonstrates that the EI benchmarking model is unsound to determine specific adjustments to base year opex. It makes no proper allowance for various matters impacting upon opex, including:

(a) different regulatory requirements or responsibilities for expenditure;

(b) the level of capex incurred by a DNSP relative to its opex;

(c) the age of a DNSP's network assets and the point where that DNSP is in the investment cycle;

(d) the level of safety risk and reliability adopted by the DNSP;

(e) physical characteristics of the DNSP, other than circuit length; or

(f) other heterogeneous features of a DNSP which may impact upon its opex (i.e. scope of obligations).

83 It follows that the benchmarking exercise is unsound as much or all of the variation detected by the EI model may be due to factors other than inefficiency.

No Identification of Inefficiencies by the AER

84 The AER has based its revenue reductions to opex on the benchmarking exercise done by EI, rather than on identification of any particular inefficiencies in the manner in which the NSW DNSPs conduct their operations. Such an approach lacks rigour and cannot support the proposed adjustment.

85 The NSW DNSPs have provided substantial detail on their main categories of opex. This includes significant programs such as the following:

(a) **Pole Inspection.** Each DNSP carries out a program of inspection of all of the poles comprising its overhead network. Ausgrid inspects poles every 5 years (Armstrong, p. 68); Endeavour energy every 4½ years (Howard, p. 23) and Essential Energy every 4 years (Humphreys, p. 30). This is in line with industry standard practice: Armstrong, p. 68.

(b) **Substation Inspection.** Each DNSP carries out a program of inspection and maintenance of substations. Frequency of the work varies depending on the type of substation, which range from large sub-transmission and zone substations (occupying whole buildings) to distribution substations (typically fixed to poles or contained in pillar boxes). Ausgrid inspects these every 1 to 6 years, depending on the type of substation: Armstrong, pp. 95-96. Endeavour Energy inspects distribution substations every 4½ years, and zone substations every 3-6 months: Howard, pp. 51-52. Essential Energy inspects distribution substations every 4 years: Humphreys, p. 56.

(c) **Vegetation Management.** A very substantial proportion of vegetation management is contracted out to external providers. Ausgrid outsources 95% of its vegetation management program (Armstrong, p. 117); Endeavour Energy outsources the entire vegetation management program except for a small area in Wollongong (which has been market tested and kept in house as internal resources offered better value) (Howard, p. 86); and Essential Energy outsources the physical clearing work (which comprises 88.6% of vegetation management expenditure) (Humphreys, pp. 89, 91). Vegetation management in all three networks is performed substantially in accordance with an external standard, namely the ISSC 3 Guidelines for Managing Vegetation Near Power Lines. Contracts are performance based and go through an open tender

process. Copies of the relevant tendering policies are attached to the statements of the COOs.

86 Beyond vegetation management, other operational tasks are also outsourced. At Ausgrid and Endeavour Energy, pole inspection is 100% outsourced, again through an external, open tender process: Armstrong, p. 74, Howard, p. 23. Essential Energy has implemented a blended approach to outsourcing of maintenance within zone substations, protection equipment and control devices in the field. More routine tasks are outsourced while maintenance of more complex equipment is not. This is due to both the specialised nature of the equipment and the immediate response times required over a large geographic area, making the outsourcing of these tasks uneconomic: Humphreys, p. 65.

87 It is difficult to see how operational expenditure being sourced from an open competitive market can be said to be performed inefficiently.

88 As for tasks which are performed by employees of the DNSPs, in many cases there are compelling reasons to keep work in-house, for example work performed to maintain strategic assets such as large substations and the network control system (SCADA): see, e.g., Armstrong, pp. 98, 107, Howard, p. 56.

89 Details of the DNSPs' labour force and the mix of skill sets possessed by different employees are also contained in the evidence of the COOs. See Armstrong, pp. 121-123, Howard, pp. 74-77, Humphreys, pp. 95-99. The entities allocate labour so as to utilise the most appropriate resource skillset and resourcing level for a given task so as to minimise the quantity of man hours expended to complete the task safely and effectively: see, e.g., Humphreys, p. 100. Each NSW DNSP has an "operational performance" group which monitors performance and implements productivity initiatives: Armstrong, p. 122, Howard, p. 80, Humphreys, p. 96.

90 Each DNSP has conducted various initiatives over the previous regulatory period to increase efficiency, including reductions in staff numbers through voluntary redundancies and "mix and match" program, reductions in overtime, and various other initiatives: see Armstrong, pp. 133-135; Howard, pp. 91-104; Humphreys, pp. 110-115. It should be noted, again, that efficiency improvements must take into account the specific circumstances of each network. For example, although Essential Energy has undertaken a program to manage overtime hours, and has achieved an annual reduction of approximately $20 million in so doing, it is also mindful that unplanned overtime is a necessary part of maintaining its network. Due to the long distances required to be travelled to perform maintenance tasks, it may be more efficient, if a task is not quite complete at the end of an ordinary work day, for some overtime to be expended, rather than to incur the additional costs of travel time to and from the site the next day: Humphreys, p. 111.

91 Some examples of what is involved in carrying out common tasks, the number of personnel involved and the average time taken is also set out in the COOs' evidence: Armstrong, p. 144, Howard, p. 105, Humphreys, p. 102.

92 Similarly, the approach of the NSW DNSPs to common capex tasks is also described in the COOs' evidence. For example, all three networks maintain a general policy of replacing cables or conductors when they fail or are likely to fail, or where a class of cable is shown to have repeated failures, safety or environmental issues: Armstrong, p. 87; Howard, p. 42; Humphreys, p. 44.

93 Similarly, distribution transformers are typically replaced when they fail (Armstrong, p. 95, Howard, p. 50, Humphreys, p. 56) and switch gear is replaced either when it fails, is approaching the end of its life or belongs to a class of equipment that have shown common safety issues (Armstrong, p. 97). Protection equipment is replaced when it fails or shows signs of decreased reliability: Armstrong, p. 103.

94 It is submitted that there is no reason for the AER to come to the conclusion that the NSW DNSPs operate their respective networks inefficiently. This is a further reason to

doubt that the benchmarking model applied by EI has in fact identified inefficiency. In light of the very significant reductions in allowable revenue that result, it is submitted that a prudent regulator would want clear evidence of inefficiencies before applying the model in a deterministic way.

Impacts of the AER's Revenue Reductions on Operation of the Networks

95 The reductions to allowable revenue in respect of both capex and opex contained in the AER's draft determinations would have profound reliability and safety impacts in relation to each of the three NSW DNSPs.

96 As is outlined in the evidence of the COOs of the NSW DNSPs, each entity based its opex requirements in its initial regulatory proposal on actual opex incurred for the most recent year, adjusting for future changes to requirements and building in some further gains in efficiency. See Armstrong, p. 114, Howard, p. 71, Humphreys, p. 85.

97 As outlined in the previous section, there is no reason to think that the NSW DNSPs are operating their respective networks inefficiently. That is, there is no reason to think that, if the reductions in allowable revenue in the draft AER determinations were put into effect, the NSW DNSPs would be able to perform the same quantity of work, simply utilising more efficient resources.

98 If that is the case, the proposed reductions in allowable revenue would inevitably lead to the NSW DNSPs having to cut capex and opex programs.

99 Cuts to the capex and opex programs of the order required by the proposed reductions in allowable revenue would have a profound impact upon the safety and reliability of the NSW DNSPs' networks.

Opex

100 An idea of the sheer scale of the reductions to opex that would be required can be gleaned from the COOs' evidence. Ausgrid, for example, carried out about 172,000 planned maintenance tasks in 2013/14. In addition, approximately 56,000 emergency maintenance tasks were performed: Armstrong, p. 140. A reduction of 40% in the planned maintenance tasks would imply that Ausgrid would perform only approximately 103,000 of those tasks – a reduction by nearly 70,000 tasks per annum: Armstrong, p. 154.

101 Some of the impacts that this could cause are summarised by Mr Armstrong, including (Armstrong, p. 155):

(a) increased line failure rates, increased substantial emergency works given reduced maintenance schedules, higher outage intervals, potential catastrophic events, e.g. bushfires triggered by line and cross arm collapse;

(b) customer outages across larger areas, potential damage to assets as well as increased risk to public and work safety; and

(c) heating and potential melting of pillar housing which in turn would either result in customer outages for residential customers as well as potentially directly expose the public to live electrical apparatus that would be within the prescribed minimum safety clearances.

102 In relation to Endeavour Energy, reductions to opex would lead to an increase in asset failures that will impact safety outcomes, lead to poorer reliability and a more inefficient outcome due to its reactive unplanned nature: Howard, p. 112. There would be an increase in staff, contractor and public safety risk, environmental risk, bushfire risk, reduced network reliability and capacity impacts: Howard, p. 113.

103 At Essential Energy, among the impacts of the reductions in opex would be:

(a) increased asset failures, such as pole failures. Regular pole inspection cycles enable pole replacement to be effected in a planned, orderly fashion. If pole

inspection cycles are increased, leading to increased pole failures, that will increase the amount of *unplanned* pole replacements which must be done on an urgent basis, potentially increasing overall costs: Humphreys, pp. 122-124. Similar impacts would be experienced with regard to, say, sub-transmission and zone substations: Humphreys, p. 125;

(b) an increase in network age and a deterioration in the health of the network, leading to increased spending and higher prices in future periods: Humphreys, p. 126;

(c) the likely cutting of the use of high resolution imagery and LIDAR technology to identify bushfire risks for the purposes of vegetation management: Humphreys, pp. 130-131. This technology can identify relevant risks which ordinary visual inspection cannot: Humphreys, pp. 93-94; and

(d) depot closures, leading to significantly increased response times, especially for customers in remote areas, leading to a decline in reliability and customer satisfaction: Humphreys, pp. 138-143.

104 Simply put, the DNSPs could not maintain safety and reliability of their respective networks on the allowable revenue proposed in respect of opex: Armstrong, p. 159; Howard, p. 109; Humphreys, p. 119.

105 The evidence of the COOs is supported by the expert evidence. For example, R2A has prepared reports on the potential safety implications of the proposed reductions in allowable revenue in respect of each of the NSW DNSPs. Just considering the potential impact on pole inspection, R2A's reports reveal that:

(a) in respect of Ausgrid, the proposed opex reductions would result in the pole inspection increasing from every 5 years to every 7.7 years. That would increase wood pole failures by a factor of 4.6;[17]

(b) in respect of Endeavour Energy, the proposed opex reductions would result in the pole inspection increasing from every 4.5 years to every 6 years. That would increase wood pole failures by a factor of 2.8;[18]

(c) in respect of Essential Energy, the proposed opex reductions would result in the pole inspection increasing from every 4 years to every 6.5 years. That would increase wood pole failures by a factor of 6.1.[19]

Capex

106 The potential impacts to capital programs of the reduction in allowable revenue proposed under the AER's draft determination are identified in the statement of Mr John Hardwick, Group Executive Network Strategy at Networks NSW.[20]

107 Mr Harwick explains that each DNSP has a portfolio investment plan (**PIP**). The PIP is a risk prioritised list of all network capital projects currently in progress or proposed to be undertaken: Hardwick, p. 11.

108 Based upon the most recent version of the PIP for each of Ausgrid, Endeavour Energy and Essential Energy, Mr Hardwick identifies that under the proposed allowable capex revenue in the AER draft determination:

(a) 237 Ausgrid projects and programs are unfunded: Hardwick, p. 21;

[17] Ausgrid RRP attachment 1.13, pp. 21-22.

[18] Endeavour Energy RRP attachment 1.09, pp. 22-23.

[19] Essential Energy RRP attachment 1.2, pp. 22-23.

[20] Ausgrid RRP attachment 5.17, Endeavour Energy RRP attachment 5.09, Essential Energy RRP attachment 6.15.

(b) 289 Endeavour Energy projects and programs are unfunded: Hardwick, p. 24; and

(c) 198 Essential Energy projects and programs are unfunded: Hardwick, p. 27.

109 Examples of programs which are unfunded and would, therefore not be undertaken under the capex allowable revenue in the AER's draft determination are included in Hardwick's statement, pp. 22 (Ausgrid), 25 (Endeavour Energy) and 28 (Essential Energy). These include:

(a) an oil containment program to address the environmental impacts of oil filled equipment at 64 different Ausgrid substations: Hardwick, p. 22i;

(b) rectification of approximately 540 "low mains" – conductors which hang low so as to breach Australian safety standards – within the Essential Energy network: Hardwick, p. 25ii; and

(c) the "Blackspot" program undertaken by Ausgrid, Endeavour Energy and Essential Energy to relocate poles in "blackspot" locations identified by the Roads and Maritime Service: Hardwick, pp. 22iii, 25iii, 28iii. This program has been identified as reducing fatalities across the Endeavour Energy network, for example, from nearly 15 per year over the ten years to 2009, to about 5 per year in the previous regulatory period: Hardwick, p. 25iii.

110 Although these programs all clearly have safety, environmental and/or reliability implications for the networks, expenditure on them would have to be deferred in favour of programs which are rated by the DNSPs as even more critical.

111 Again, simply put, adopting the revenue reductions in the AER draft determination would not permit the NSW DNSPs to incur capex sufficient to ensure the safe and reliable operation of their respective networks.

The Investment Cycle

112 As noted above, the levels of expenditure required on a particular network may be affected by the age and condition of network assets.

113 Depending upon how a network is regulated, expenditure in relation to that network may remain relatively steady, or there may be "boom-bust" cycles of expenditure. A "boom-bust" cycle may occur where a regulator sharply reduces expenditure, leading to a deterioration of network assets for a period of time, followed by a period of increased spending required to improve network safety, reliability and functionality. Thus a reduction in capex and opex now only leads to a need for additional spending in the future: Armstrong, p. 162.

114 Mr Armstrong and Mr Howard, both of whom have substantial experience in the energy distribution sector, give evidence of experiencing "boom-bust" spending in the late 1990s and early 2000s, following substantial reductions to the NSW DNSPs' allowable revenue by IPART. It is the opinion of both men that revenue reductions in the order proposed by the AER draft determination will lead to a repeat of that cycle of spending: Armstrong, pp. 10-15; Howard, pp. 9-20.

Conclusion

115 In light of the matters set out above, it is apparent that the benchmarking approach adopted by the AER in the draft decision does not provide a proper basis for substantially reducing the allowable efficient costs of the Networks NSW businesses in the manner proposed in the draft decision, or making any further reduction to allowable revenue in addition to that proposed in the Networks NSW businesses' revised proposals. It follows that the draft decision does not satisfy the operating expenditure criteria or the operating expenditure objectives for the purposes of clause 6.5.6 of the NER, and more generally is not in accordance with the NER.

116 The AER should accept the revised proposals of each entity in this regard.