Consumer
Challenge
Panel

Submission to the Australian Energy Regulator (AER)

Consumer Challenge Panel

Submission to the AER on Draft decision paper – Forecasting productivity growth for electricity distributors

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1. Introduction and Summary

The AER established the Consumer Challenge Panel (CCP) in July 2013 as part of its Better Regulation reforms. These reforms aimed to deliver an improved regulatory framework focused on the long-term interests of consumers.

The CCP assists the AER in making better regulatory determinations by providing input on issues of importance to consumers. The expert members of the CCP bring consumer perspectives to the attention of the AER to better balance the range of views considered as part of the AER's decisions.[1]

This submission provides the CCP's views on the AER's "Draft decision paper – Forecasting productivity growth for electricity distributors" (Draft Paper) released on 9th November 2018. This issue of opex has been a matter high on the agenda of the CCP for some years and so we welcome the AER's Draft Paper.

This submission begins by providing context on the importance of opex and how consumers look to the regulatory framework to replicate outcomes of a workably competitive market operating to achieve the National Electricity Objective (NEO) and the National Gas Objective (NGO). Then we discuss the varying responses from networks on opex as they seek to "put consumers at the centre". The AER's benchmark data measures relative, not absolute productivity. There are inherent limitations in using benchmark data from other networks all subject to the same regulation if there are fundamental issues around the regulatory framework that do not incentivise productivity improvement.

1.1 Executive Summary

Opex is a key component of the overall revenue requirements. Consumers expect that, like businesses facing competition, the regulated business should continually seek to improve their efficiency and that consumers should benefit from this. Consumers also expect the regulator to deliver this outcome. Indeed this is a necessary requirement for the regulatory framework and individual decisions if they are to meet the requirements of the NEO/NGO and be consistent with long term interest of consumers (LTIC).

It is important to highlight that this review only focusses on one aspect of opex productivity. It ignores what is perhaps an even bigger cost to consumers – the AER methodology for determining whether a network is "not materially inefficient". We encourage the AER to follow this review with one addressing that issue.

The objective in forecasting opex for the revenue resets is to establish the **best available unbiased estimate of the opex for a prudent and efficient operator**. The estimate for trend productivity must be consistent with this overall objective and the framework used for the determination of the efficient opex. To be consistent with the base-step-trend approach, the allowance for trend productivity should exclude the effect of past significant step changes and 'catch-up' efficiency gains as these are separately included in the estimation of the efficient opex.

[1] Detailed information on the CCP is available on the AER website at https://www.aer.gov.au/about-us/consumer-challenge-panel

In the CCP's view the current assumption of zero trend productivity improvement does not meet these requirements and **we consider that the data supports an assumption of a trend productivity improvement for the DNSPs of at least 1.5-2.0% pa**.

A holistic approach to the consideration of the various options and available information is supported. However, CCP considers that this needs to be undertaken in a structured and transparent basis so that it can be readily repeated and that the outcomes are predictable.

We propose that greatest weight be given to option 4 – estimation of opex MPFP post 2012. Based on the analysis and sensitivity testing this suggests a range of 1.5-3%, and a preferred estimate of 1.9%. The alternative estimates can be tested against this and the range and preferred estimate reviewed based on their assessment and consideration. The Productivity Commission's long term estimates for the 34 years to 2008-09 show an average growth in total factor productivity for the electricity sector as a whole of around 1.3%. However, the latter years were distorted by the larger step changes driven by reliability standards and other regulatory obligations. Furthermore, for much of the period the sector was predominantly government-owned and efficiency incentives were weak.

The labour productivity forecasts extended to all costs – which yields an estimate of 1.5% - should be given greater weight than the other options but less weight than the preferred measure under option 4. Subject to further consideration of the comparability of gas productivity trends, Option 3 should be considered solely as a floor for the estimate of trend productivity improvement in the electricity distribution sector. Option 2 (undergrounding productivity) may best be considered as an objective means of providing some differentiation in the trend productivity assumption between utilities.

Our responses to the specific questions asked in the Draft Paper are:

Question	Response
1. Are there other sources of information to be considered?	The AER should also consider Productivity Commission's long term estimates of sector productivity. While this includes generation it is still relevant to the consideration of productivity trends in distribution and transmission. AER should continue seeking to improve and expand its data sources over time. It could explore options to back out approved step changes from the MPFP estimates and expand the data set through more disaggregated process-based data and surveys of business planning assumptions and practice.
2. Should all information be given equal weight?	No. Greatest weight should be given to MPFP post-2012 as it is the best, most directly relevant data series. Its deficiency is its short period. To offset this, consideration should also be given to the long term Productivity Commission estimates and the labour productivity forecasts extended to all costs not just labour costs.

3. Applicability of time trend for gas distributors?	'Floor' for electricity NSPs; not best estimate
4. Should we account for changes in undergrounding?	Partial 'Floor' for electricity DNSPs, not best estimate
5. Should economies of scale be considered?	No strong empirical evidence. Overlap with output factors
6. Best way to use quality-adjusted labour productivity growth.	Current approach of using forecasts by Deloitte informed by ABS trends supported but total productivity needs to also include non-labour inputs.
7. Other forecasting approaches?	Yes. See (1)
8. Best option?	Option 4 – with further analysis and testing
9. Best estimate of productivity growth and basis?	1.5 – 2%, based on MPFP and labour productivity extended to all inputs
10. Should this be applied through the current reset cycle?	Zero productivity estimate cannot be sustained. Revised estimate essential for near-term decisions, to be followed by ongoing development/updating of data.

2. Context

This section provides background comments prior to our specific comments on the Draft Paper's recommendations.

2.1 Why is opex productivity important?

The CCP welcomes this review which we consider to be an important step forward in ensuring the AER's regulatory framework better meets the long-term interests of consumers (LTIC), consistent with the requirements of the NEO and NGO. Other CCP panels have previously expressed concerns about the common assumption of zero trend productivity change. For example, in its submission on the NSW DNSP's proposals for 2019-24 CCP10 argued[2]:

> "We consider that consumers should expect ongoing improvements in productivity and that this is consistent with the pressures on businesses in competitive markets to continuously search for productivity improvements. A zero productivity assumption does not meet the basic common sense test: could a CFO credibly present a budget to a company's Board that did not factor in ongoing productivity improvements? In our experience the answer is clearly: no. If the assumption fails this test, how can the AER credibly defend the legitimacy of the outcomes to consumers?"

Opex productivity is important because opex is important. Table 1, drawn from the AER DNSP data base[3], shows that, on average, opex accounts for around a third of total network charges paid by consumers over the last decade. It is a cost that is immediately paid by consumers and not, like capex, spread over current and future generations. Today's consumers' wallets feel the impact of inefficiency immediately.

[2] CCP10 "Response to AER Issues Paper and Revenue Proposals for NSW Electricity Distribution Businesses" 2019-24, pp 30-31. https://www.aer.gov.au/system/files/CCP10%20-%20Submission%20-%208%20August%202018_1.pdf

[3] AER "Distribution Performance Data 2006-17" https://www.aer.gov.au/networks-pipelines/network-performance/distribution-performance-data-2006-2017

Table 1 – Trends in Opex as a percentage of total revenue

Opex as % of total revenue **$2017**	**Av 2006-2017**	**Av 2013-17**
Evoenergy	32%	32%
Ausgrid	38%	32%
Endeavour Energy	31%	30%
Essential Energy	39%	34%
Energex	29%	25%
Ergon Energy	32%	26%
SA Power Networks	28%	29%
TasNetworks (D)	31%	27%
AusNet (D)	40%	38%
CitiPower	25%	26%
Jemena Electricity	33%	31%
Powercor Australia	36%	35%
United Energy	33%	33%
Power and Water	65%	59%
DNSP Total	**34%**	**30%**

Of the total DNSP revenue of $113.5b (in $2007) paid by customers from 2006-2017, $37.4b or ~34% has been for opex. As we argue below, we believe that the evidence supports the AER assuming a trend productivity improvement of at least 1.5-2.0%. such a change would have a significant impact on network charges. Over the last 5 years, opex accounts for around 30% of the allowed revenues for distribution utilities. If the AER were to assume a 1.5% p.a. productivity improvement from the base year this would reduce final year opex by 8.7% and final year revenues/prices by 2.6%. To put this into perspective, a 31 basis point reduction in the allowed ROR (equivalent to three-quarters of the reduction from the recent review of the ROR Guideline) would have an equivalent effect on revenues/prices in the final year.

The AER's recently released study on profitability of the regulated networks[4] also provides insights on the practical effect of the current approach to the allowance for trend productivity and the assessment of efficient costs. Under the EBSS and CESS the utilities retain 30% of the

[4] AER "Return on Assets - Summary data - September 2018" https://www.aer.gov.au/networks-pipelines/guidelines-schemes-models-reviews/profitability-measures-for-electricity-and-gas-network-businesses

outperformance by them against the assumptions on efficient opex and capex. Actual returns for the electricity DNSPs have exceeded allowed returns for 2013-17 by 113 basis points and incentive payments accounted for 27 basis points. While the outperformance on opex is only part of this it should also be noted the incentive payments return only part of the outperformance to the DNSP. Most importantly, it highlights that the evidence from multiple determinations across multiple reviews indicates that the current expenditure assumptions fail the NPV=0 test that the AER has rigorously applied to other aspects of its regulatory framework and which the CCP has supported in other submissions.

2.2 Consumers expect continual productivity improvement

The regulatory framework is designed to replicate outcomes of a workably competitive market – to assess the level of costs that would be incurred by an efficient and prudent operator. Residential consumers under bill stress look to networks to improve efficiency and lower their costs. These consumers are having to make their own choices in the face of rising prices and stagnant incomes.

Business customers whether large or small who operate in competitive markets, outside the protection of a regulated return, know that a failure to continually improve productivity and reduce costs is a recipe for business failure. Any cost increase is rigorously scrutinised, as there is no expectation that cost increases can be passed on to customers in price increases. A business manager not being able to continually show improved efficiencies is unlikely to have a long career in the current economic environment.

With all networks emphasising the importance of "consumer at the centre" of their activities, different networks have responded in different ways, sometimes depending on where they perceive their current level of productivity is relative to other networks. Some, unlike a workably competitive market, think there is no more room for productivity improvement.

Consumers look to the regulator to ensure that they pay no more than the efficient costs of providing network services. These costs should be subject to continual scrutiny to ensure efficiency improvements. As Rosemary Sinclair the CEO of the ECA has elegantly expressed it "not one dollar too much, not one dollar a day too early". In contrast to the AER's current assumption of zero productivity improvement, Ofgem has assumed a 1% annual productivity improvement in gas transmission and distribution and electricity distribution.[5]

2.3 The varying responses by networks

Despite calls by consumers across network engagement activities for networks to actually prove that "customers are at the centre" by proposing productivity improvements, until very recently, networks have been happy to simply take the AER's zero productivity assumption. However, it has been very encouraging in recent months to see proposals from TasNetworks, Essential Energy and Energy Queensland that show networks willingness to offer productivity improvements for their forthcoming regulatory periods. UK distribution networks also factored in trend productivity improvements of 0.8-1.1% in the forecasts provided to Ofgem for their latest revenue reset.[6]

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[5] Ofgem, RIIO-T1/GD1: Real price effects and ongoing efficiency appendix, p 15 – "A one per cent improvement in opex efficiency based on partial factor productivity measures (i.e. labour, and labour and intermediate inputs) for the industry averages (which range from 2.8 to 0.5 per cent p.a.). Our assumption of one per cent is also in line with network company assumptions." Also see Ofgem, Strategy decisions for the RIIO-ED1 electricity distribution price control Tools for cost assessment, p23-24.

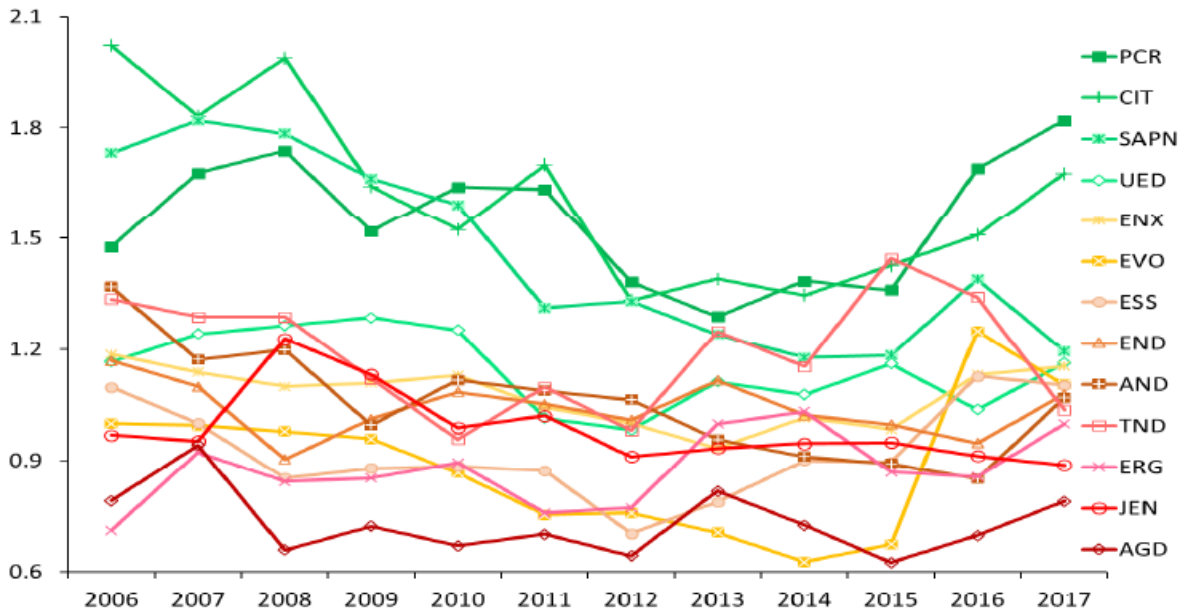
[6] Ofgem, RIIO-ED1 Final determinations for the slow-track electricity distribution companies: Overview, p30.

This contrasts with the approach taken by other DNSPs such as SAPN. In Chapter 2 of the SAPN Draft Plan[7] "Delivering Services Efficiently" for the 2020-25 reset period, SAPN seeks to argue that because it ranks highly in opex productivity comparisons, it has less ability than lower ranking networks to further improve its productivity. It commented (p.56):

> "In our engagement program earlier this year, customers and stakeholders sought to apply an additional productivity growth factor to reduce costs.
>
> We do not support this approach as further productivity growth must represent industry-wide efficiency gains. As a leader in efficiency, it will be more difficult for SA Power Networks to achieve additional, across-the-board productivity gains than less efficient distribution businesses, and we will be penalised if we cannot meet those gains. We have not applied any further productivity growth factor in our Draft Plan, but we will continue to strive to achieve further efficiencies to deliver on our operating obligations at a cost lower than our regulatory opex allowances and share those benefits with customers through the EBSS.."

The recently published 2018 AER benchmarking report[8] shows that there was a significant fall in SAPN opex productivity in 2017 that reversed the improvement in the previous year and brought productivity back to around the 2015 level – around the lowest over the period since 2006.

Figure 4.3 DNSP opex multilateral partial factor productivity indexes, 2006–17



Source: Economic Insights, AER analysis.

Even with this large fall in 2017, SAPN continued to rank third because of relative performance of other DNSPs. So, while SAPN might seek to have productivity linked to "industry wide efficiency gains" it seeks to maintain its relative position due to "industry wide efficiency reductions". Thus, it seeks to maintain the presumption that its costs are efficient even though the deterioration in its relative costs may suggest otherwise. For consumers this looks like SAPN may benefit from catch-up efficiencies that, under the AER's model, should rightly go to consumers.

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[7] SA Power Networks "2020-2025 Draft Plan – Delivering better outcomes at a lower price" https://www.talkingpower.com.au/38336/documents/84356

[8] AER "Annual Benchmarking Report - Electricity network distribution service providers" November 2018 https://www.aer.gov.au/system/files/AER%202018%20distribution%20network%20service%20provider%20benchmarking%20report%20_0.pdf

SAPN argues that[9]:

> "…delivery of operating costs below our regulatory allowances while we continue to meet service standards in the current period, and our benchmarked position as an efficiency leader, confirms that our base year opex for 2020–2025 is efficient."

SAPN is unprepared to bear the risk of not achieving opex productivity gains at the same time as making numerous statements in the Draft Plan about its focus on improving efficiency. At the same time SAPN wants consumers to bear all the risk on the other side e.g. pass through the cost of step changes which is not always possible in a workably competitive market.

Continual improvement against AER allowances may also be an indication of an overly generous allowance reflecting, at least in part, the zero productivity assumption. The EBSS was intended to equalise incentives over time and not create a bonus for DNSPs. "Soft" assumptions on productivity mean that the expected value is positive and inconsistent with LTIC. We believe that the *expected* value of the EBSS should be zero. Some networks seem to assume it will always be positive.

Ausgrid had a similar argument in its April 2018 proposal for the 2019-24 reset period. While it has made significant improvements in its opex performance in recent years, it seemed to argue[10] that:

- the improved productivity over recent years has been driven by transformational change in some networks (including Ausgrid) and further productivity is not possible when this has come to an end
- other networks that have not undergone this transformational change do not consistently show productivity improvements - many show declines and
- hence a negative factor could be applied.

However, as we set out below:

- productivity improvement is a continual dynamic process in response to competition and the search for increased profits. History does not support the proposition that it will 'dry-up'
- the improvement in productivity in the sector has not been dominated by catch-up productivity. The most efficient networks have continued to achieve significant productivity (e.g. the top 4 DNSP's increased opex MPFP by a 1.9% p.a. from 2012-17) and
- hence a positive productivity factor should be applied.

In its draft revenue proposal Ausgrid proposes a real increase in the level of opex - in total (by 7%) and per customer[11]. While the base level for the 2019-24 period is set as a result of the remittal negotiation, we do not accept the principle implied – that the AER view in 2014 of the efficient level of opex in 2017/18 is the best estimate of the level of efficient opex in 2019/20 that can be made in 2018. Efficiency is a dynamic, not a static concept.

At the heart of the reform process was the drive to expose the industry to competition where feasible and where not feasible create tough but fair regulation that would do its best to mimic the discipline of a workably competitive market. From the consumers' perspective outcomes have fallen well short of expectations. Prices have been rising not falling amid concerns about excess investment in recent periods. A key consumer complaint is that the regulatory framework has failed

[9] SAPN p. 55

[10] Ausgrid's Regulatory Proposal 1 July 2019-30 June 2024 p. 134 https://www.aer.gov.au/system/files/Ausgrid%20-%20Regulatory%20Proposal%20-%20April%202018%20-%20PUBLIC%20-%20reduced%20file%20size.pdf

[11] Ausgrid Proposal p. 116

to achieve the expected cost reductions. To consumers it seems perverse to reward this through a zero productivity assumption.

As we argue below there were significant regulatory step changes driving this outcome that may mean consumers concerns about growing inefficiency may be misplaced. But we would agree with consumers that a continued presumption of zero productivity growth is not appropriate. In a workably competitive market, a business struggling for its survival will need to make step changes in productivity to avoid exiting. If it successfully makes these changes then it will need to achieve continual productivity improvements to simply stay in business and attract the required capital to sustain its business. It cannot rely on its competitors to perform poorly to stay in business.

2.4 The Draft Paper only addresses one part of the opex productivity story

The Draft Paper (p.9) outlines the approach the AER takes to measuring opex based on the criteria in the Expenditure Forecast Assessment Guideline (the Expenditure Guideline)[12]. If the AER is satisfied that the DNSP's forecast opex reasonably reflects the criteria, it accepts the forecast. If not then the AER substitutes an alternative forecast.

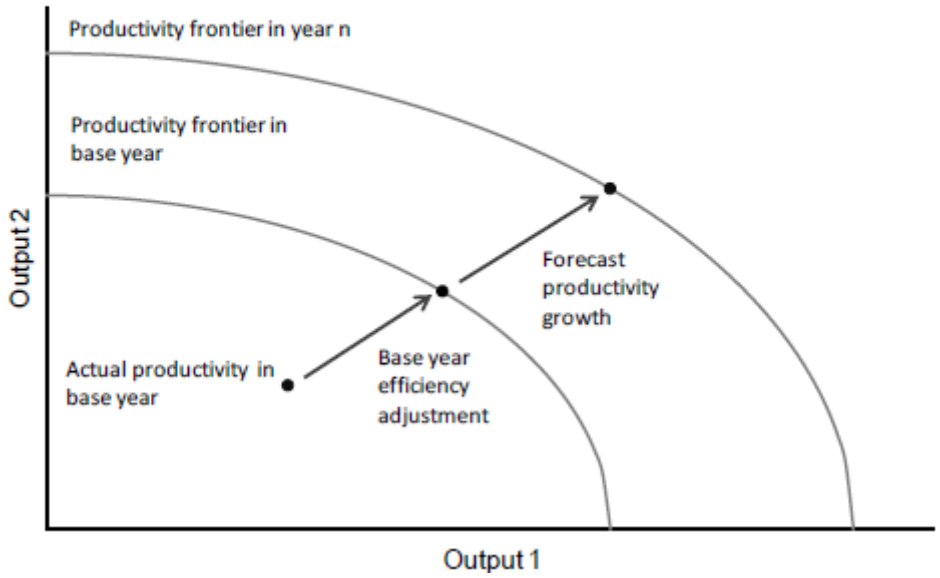
The AER's explanation of its approach is (p.8):

> "…forecast opex must reflect the efficient costs of a prudent firm. To do this it must reflect the productivity improvements a prudent and efficient distributor can reasonably be expected to achieve. For this reason, our forecast of productivity growth reflects our best estimate of the shift in the productivity frontier. Our productivity growth forecast should not include any productivity growth required for an inefficient firm to catch-up to the productivity frontier. If we consider that a distributor is materially inefficient, we make an efficiency adjustment to its revealed opex (also referred to as base opex). This sets opex equal to the level required by an efficient and prudent firm on the productivity frontier in the base year."

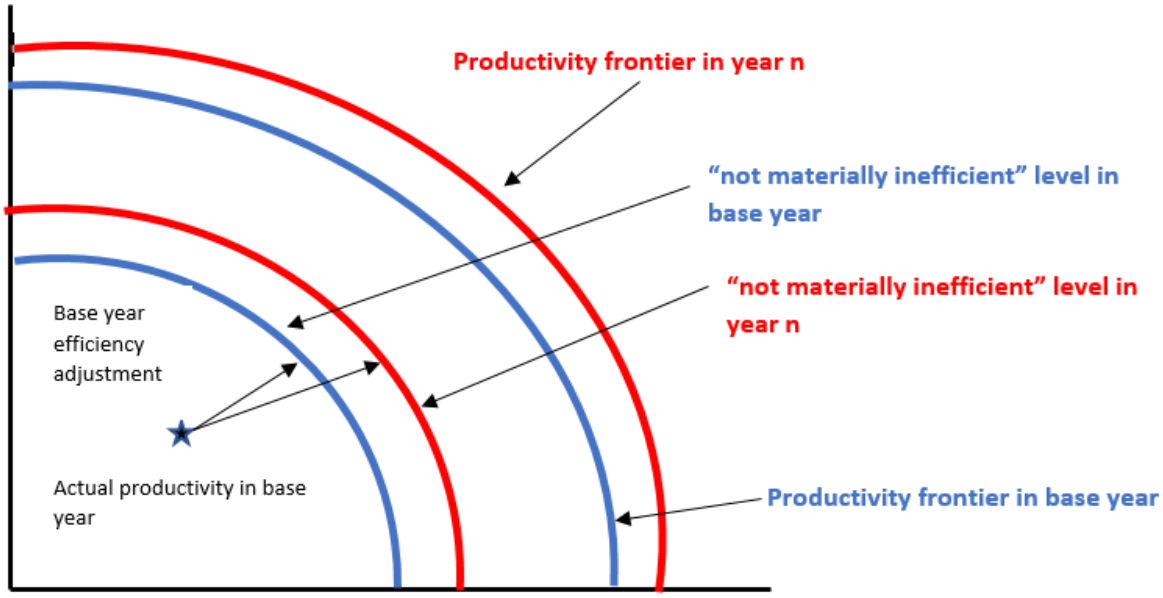
The AER uses the following figure to illustrate its approach (p.9).

[12] AER Better Regulation Expenditure Forecast Assessment Guideline for Electricity Distribution November 2013 p. 22 https://www.aer.gov.au/networks-pipelines/guidelines-schemes-models-reviews/expenditure-forecast-assessment-guideline-2013

Figure 1 Forecast productivity growth is the forecast shift in the productivity frontier



We consider the AER's figure to be misleading. To accurately reflect the current AER's approach it should have another two lines:



The base year efficiency adjustment is not to the base year productivity frontier, it is to the level the AER judges to be "not materially inefficient" in the base year. The definition of the term "not materially inefficient" has been the subject of much debate, particularly through the course of the various appeals on the AER's 2014-19 decision for NSW DNSPs. We think that the difference between the "not materially inefficient" level and frontier – currently around 20-25% is far too large and should be reduced – but this issue is not part of the current review.

The Expenditure Guideline sets out the AER's approach on the base year efficiency adjustment [13]:

> "… in light of submissions from service providers, we have reconsidered our approach to determining the most appropriate way to make an adjustment. As we explain in the Guideline, our preference is to rely on revealed expenditure as an appropriate basis for forecasting efficient, prudent and realistic opex when service providers are appropriately responding to the incentive framework. Therefore, rather than adjusting all service providers below the most efficient performer (the frontier) the Guideline approach is to adjust revealed opex when our analysis demonstrates it is materially inefficient."

The AER may use a range of assessment methods e.g. benchmarking, in a high-level assessment of the proposed opex to assess the "reasonableness"[14] of the forecast. The current AER approach was described in its final decision on Ausgrid in April 2015[15]. In using benchmarking data to apply the Guideline, the definition of an "efficient starting point" is not "is this cost level efficient", but "is this cost level materially inefficient"? So it is a measure of relative, not absolute, efficiency.

In coming to its view about how "materially inefficient" might be defined, the AER reviewed how regulators in other countries applied benchmarking results, particularly OFGEM, and decided that[16]:

> "… on balance, for this decision the appropriate benchmark comparison point is the lowest of the efficiency scores in the top quartile of possible scores rather than the average approach we used in our draft decision. This is equivalent to the efficiency score for the business at the bottom of the upper third (top 33 per cent) of companies in the benchmark sample (represented by AusNet Services).
>
> This reduces the benchmark comparison point from 0.86 to 0.77. In making this change to our approach, we have carefully considered the submissions we have received, the requirements in the NEL and NER, the Guideline approach and the advice of Economic Insights. The purpose of assessing base opex under the Guideline approach is to identify material inefficiency. We must ensure, therefore, that our comparison point appropriately reflects our satisfaction that a service provider's revealed opex is materially inefficient before we reduce it."

This change had the effect that the adjustment downwards to the network proposed base year opex was reduced significantly. The AER then notes[17]:

> "However, given this is our first application of economic benchmarking, our view is this application is appropriate for this determination. That is, we have allowed a wide margin between the frontier firm (0.95) and the benchmark comparison point (0.77). Service providers should be aware, however, that as we refine our approach and receive more data, we may reduce the size of that margin when making adjustments to base opex to develop alternative opex forecasts."

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[13]

[14] op cit p. 17

[15] AER Final Decision Ausgrid Determination Section 7 Operating Expenditure Section 7, A7 The benchmark comparison point and adjustment to base opex April 2015 pp 269 – 282 https://www.aer.gov.au/networks-pipelines/determinations-access-arrangements/ausgrid-determination-2014-19/final-decision

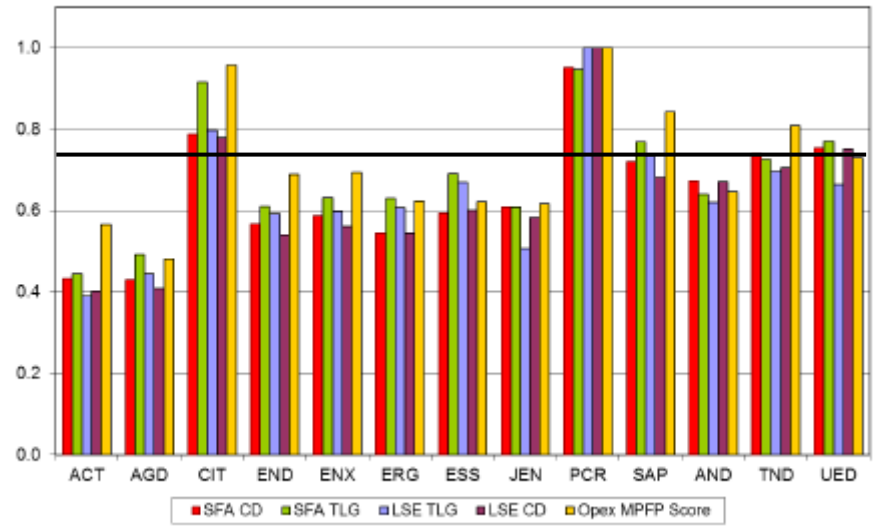
[16] AER Final Decision op cit p.7-270-1

[17] Ibid

This approach was strongly refuted by the networks in the debate over the AER's 2014-19 NSW distributors decisions and in the subsequent ACT and Federal Court appeals. The NSW networks argued that the AER should abandon its use of benchmarking[18].

This approach is now operationalised to compare a network's actual opex position with 0.75 to determine whether it is materially inefficient. The following figure from the recently released 2018 Benchmarking report[19] compares the range of productivity measures used by the AER and shows the 0.75 benchmark.

Figure 5.1 Econometric modelling and opex MPFP, (2012–17 average)



Source: Economic Insights.

It shows that applying the >0.75 decision rule would mean that networks that are 20-25% less efficient that the frontier performer – Powercor – would still be regarded as "not materially inefficient". Consumers do not accept this conclusion as meeting the NEO. While we understand the reticence of the AER in its 2015 decision, we think that it is reasonable, given the much greater data available and the refinements undertaken to the productivity measures, for the AER to review the "not materially inefficient" decision rule. The benefits to consumers of such a review could be significantly greater that the benefits from the current review.

A lot of this debate is around how productivity improvements should be shared between networks and consumers. The benefits of the proposed movement in the frontier in the current review will go 100% to consumers. The current AER approach means that once the network gets over the "not materially inefficient" hurdle, EBSS allows the network to retain 30% of all the efficiency improvements it makes beyond that point. We would argue that the more extensive benchmarking data now available provides an opportunity for the AER to review the 0.75 "not materially inefficient" decision rule. Any increase in this level would result in consumers getting 100% of these

[18] Ibid 7-270
[19] AER op cit p.31

additional productivity improvements. AER should do what it proposed to do in 2015 and review the "size of the margin".

2.5 The AER will need to continue to make judgements based on the available data

The Draft Paper and the presentations to the 30 November Public Forum (Public Forum) – including the CCP's presentation – highlighted that the data available to the AER in assessing trend productivity is incomplete and imperfect. For example, we do not have the consistent long-term data on past trend productivity change exclusive of step changes that we would wish to have. However, that does not mean that the AER can or should defer reviewing its current zero productivity assumption. Nor does it suggest that the AER should adopt a conservative approach and err on the low-side rather than make the best estimate it can with the available information. The case against a conservative bias was put by CCP 16 in its submission to the Rate of Return Guideline review.[20] When a conservative bias is introduced at the individual parameter level the impacts can be cumulative and uncertain, making it difficult to understand and assess the overall level of bias in the decision. The better approach is to seek to make the best unbiased decision at each parameter level. The risks and uncertainties can then be assessed at the 'whole of decision' level and any adjustment made. But we would strongly caution against the presumption that there should be an adjustment for uncertainty. The net effect of this is to pass the costs of uncertainty onto the consumers who are not as well-placed to manage these. The resulting higher prices are not costless – they have adverse effects on households and distort consumers' decisions.

The incentive based regulatory framework is replete with requirements on the AER to make judgements based on the available information. If the AER were to wait until it had the level of information some networks require for change then it would be like waiting for Godot and little chance to better meet the NEO would occur. This supports the importance of regular reviews of key assumptions, like zero productivity, to see if the data supports a different judgement to be made by the AER. But it is not clear that a specific productivity assumption should be locked-in for a fixed period. This review is not changing the framework or methodology for forecasting efficient opex. It is looking at whether the assumption that has been used for a number of reviews makes the best use of the available information, and what would be a better assumption based on the available information.

This can be distinguished from the AER's review of the WACC where the AER has locked in specific parameter values for a fixed period in its recent review of the ROR guideline. The NER have been considerably more prescriptive on how the WACC is to be determined and the recent rule and legislative changes require the AER to establish a binding instrument for the determination of the WACC at each review with minimal discretion.

We are aware that there has been some criticism of the process for this review on the basis that it has been less extensive and offered less scope for stakeholder involvement than some other reviews like the ROR. The process has been shorter than the process for other reviews, with less scope for participation by stakeholders. We would have welcomed greater opportunities to participate at an earlier stage. But we do not think that the standard set by the ROR Guideline review is the benchmark for this review for several reasons:

[20] CCP 16, Submission to the AER on its Rate of Return Guideline Issues Paper, December 2017, pp12-13, https://www.aer.gov.au/system/files/Consumer%20Challenge%20Panel%20%28Sub%20Panel%2016%29%20-%20submission%20on%20rate%20of%20return%20issues%20paper%20-%2018%20December%202017.pdf

- the ROR Guideline review examined the methodology as well as determining specific parameters for a fixed period
- the ROR Guideline process was mandated by the legislation put in place for the binding instrument and
- the methodology and parameter values under the ROR guideline will not be subject to review at each determination based on the information then available.

The AER could have reviewed the productivity assumption at each revenue reset using the methodology set out in the Guideline. Undertaking this review has increased the transparency and consistency of the AER's determination of the trend productivity assumption and has created additional opportunities for stakeholder involvement.

2.6 The role of the trend productivity assumption within the base-step-trend approach

The AER has adopted a rigorous, transparent 'Base-Step-Trend' approach to estimating opex across its reviews. A strength of this approach is that there is a close alignment between this approach to analysing opex and the practical approach a business may take to forecasting its costs. The challenge for this approach is the difficulty of extracting historical data on a comparable basis. This goes directly to the challenges faced by the AER in determining the relevant trend productivity assumption – as we discuss below.

1. **Base Expenditure.** Under the base-step-trend approach the AER needs to determine whether the base level of expenditure is inefficient. The AER's framework for determining this, together with our concerns, was set out above.
2. **Step Changes.** Under the AER's approach, step changes are changes in "costs due to changes in regulatory obligations and the external operating environment beyond the NSP's control."[21] Almost inevitably there is a bias in the nomination of step changes that are separately identified. The utilities have greater knowledge about likely step changes and have, and are quite naturally likely to, focus on those that increase costs. For its part, the AER has set a relatively high hurdle for the consideration of step changes that the CCP and consumer advocates have supported. Step changes are limited to large discrete changes driven by external obligations, with the 'normal' creep in regulatory requirements being captured in the trend productivity estimate. This makes the assessment task more manageable and helps offset the likely bias in identification of legitimate step changes.[22]
3. **Trend Costs.** Under the AER's approach, trend changes in costs are decomposed into trend changes in costs due to:
   a) expected changes in unit costs
   b) trend changes in productivity and
   c) the impact of expected output growth.

The key point is that the AER separately estimates trend productivity changes and step changes expected in future periods. To be internally consistent, the estimated trend productivity change should exclude past changes in costs that would be accepted as discrete step changes since these

[21] AER Explanatory Statement, Expenditure Forecasting Assessment Guideline, Nov 2013, p15.

[22] "Step changes should not double count costs included in other elements of the opex forecast: …Step changes should not double count the cost of increased regulatory burden over time, which forecast productivity growth may already account for. We will only approve step changes in costs if they demonstrably do not reflect the historic 'average' change in costs associated with regulatory obligations. We will consider what might constitute a compensable step change at resets, but our starting position is that only exceptional events are likely to require explicit compensation as step changes. Similarly, forecast productivity growth may also account for the cost increases associated with good industry practice." AER, Expenditure Forecast Assessment Guideline, 2013, p24.

are included separately. However, historic 'average' changes in regulatory obligations and other factors affecting productivity should be captured in the trend productivity assumption.

A review of the Economic Insight reports for the AER indicates that costs and outputs in the estimation of productivity measures are inclusive of past discrete (major) step changes as well as the historic 'average' changes in regulatory obligations and other factors affecting productivity. Hence, the Opex MPFP measures would be likely to underestimate the relevant trend in underlying opex productivity, especially in the 2006-12 period when there were substantial increases in opex due to step changes associated with new reliability standards (NSW and Queensland) and bushfire risk mitigation (Victoria).

2.7 Summary: Objective and requirements for trend productivity estimate

The objective in forecasting opex for the revenue resets is to establish the **best available unbiased estimate of the opex for a prudent and efficient operator**. The estimate for trend productivity must be consistent with this overall objective and the framework used for the determination of the efficient opex.

The test of **efficiency** is critical for consumers and compliance with the NGO/NEO. Consistent with the LTIC, customers should not pay more than efficient costs.[23] The AER has also concluded that there is no distinction between a prudent and efficient operator: a prudent operator would always seek to provide the services to the standard required and at the most efficient cost.

The requirement that it is an **unbiased** estimate is necessary for the approach to be consistent with the NPV=0 principle that underpins the AER's approach to regulation. This means that the trend productivity analysis should not err on the conservative side to provide stronger incentives for the utility to pursue efficiency gains. Firstly, the pay-off (i.e. incentives) for pursuing efficiency is not affected by the trend productivity assumption. Secondly a consciously biased estimate would be inconsistent with the NPV = 0 principle. The requirement for an unbiased estimate also implies that , as we noted above, the *expected* value for the EBSS should be zero. If the estimate is biased the *expected* value for the EBSS would not be zero and in principle the expected value should be included in the forecast cash flows.[24]

In its presentation to the November 30 Public Forum, Endeavour Energy agreed that[25]:

> "The forecast should not give rise to an assumed EBSS benefit, i.e. the EBSS should be expected to be negative as often (much) as it is positive (our understanding of what has been meant by NPV = 0 in this context)."

The requirement that it be the **best available** estimate reflects that:

---

[23] Subject to incentive mechanisms that can create incentives for the service provider to increase efficiency and reduce long term efficient costs for the benefit of consumers.

[24] CCP16 made this point in its submission on the ROR Guideline review but it was unfortunately misconstrued in the AER's Draft Decision which stated that CCP16 had suggested that expected value for the EBSS should be included in the WACC. CCP16 had clearly specified that a non-zero expected value for the EBSS would be a non-systematic risk and an accepted principle of finance theory is that non-systematic risks should be incorporated in cash flows on the basis of expected values – as CCP16 suggested – rather than being built into the WACC.

[25] Endeavour Energy Presentation, "Forecasting opex and productivity growth factors" 30 November 2018 Public Forum, p2, https://www.aer.gov.au/system/files/Productivity%20review%20-%20End%20presentation%20-%20final.pdf

1. in determining the trend productivity factor the AER should have regard to all relevant information. But this does not mean that all information should be given equal weight. The AER should assess the strengths and weaknesses of each source/piece of information and weight it (qualitatively or quantitatively) accordingly in considering the information.
2. The AER must work with the information available. It cannot defer the decision and nor should it make a conservative or biased decision while waiting for better information.

An important corollary is that the AER should continuously seek to improve the information available and reassess the available information.

Finally, to be consistent with the base-step-trend approach, the allowance for trend productivity should exclude:

1. the effect of past significant step changes that would be separately included in the estimation of the efficient opex through the step change allowance and
2. 'catch-up' efficiency gains that would be separately included in the estimation of the efficient opex through the base opex estimate.

3. Issues Raised in the Public Forum

This section addresses a number of issues raised in the Public Forum held by the AER on November 30 2018. We have not sought to address all the issues as a number of the issues raised, such as the strength of the gas comparators and the impact of undergrounding on productivity, are less relevant to the CCPs position set out in Section 4 below.

3.1 Do longer term productivity trends provide a better basis for productivity forecast?

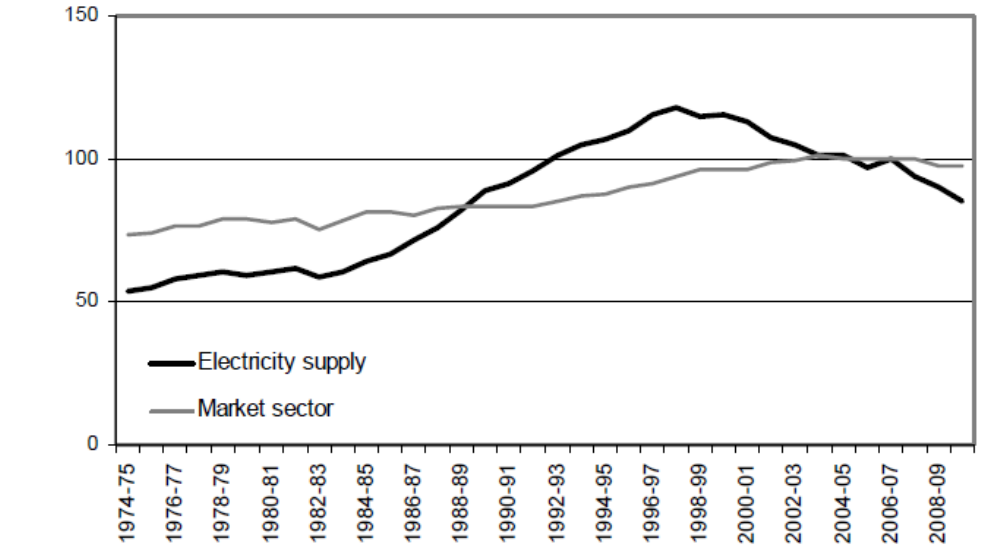
The presentations by NERA and Endeavour Energy argued that AER should use a longer term data series rather relying on data on opex MPFP from 2012. NERA argued that "too short a period introduces the risk of cyclicality" and noise or nonreplicable cost savings driving the results.[26]

We agree that other things being equal a longer data series is preferable to a shorter data series. But the length of the data series is not the only factor in assessing the quality and relevance of the data for estimating the trend productivity – see our discussion below of the exclusion of the 2016-12 data.

The Productivity Commission provided longer-term data on productivity trends for the electricity sector for the period from 1974-2009[27]. This series has the advantage that it covers 34 years which includes three distinct periods of modest growth, rapid growth, and then decline. Its disadvantage is that it covers the whole electricity supply chain (i.e. distribution, transmission, generation and retail supply), not just the distribution component. As Figure 3 below shows[28], during this period the average MFP (including capital and opex productivity growth) for the electricity sector was around 1.3% and considerably higher than the productivity growth for the market sector as a whole.

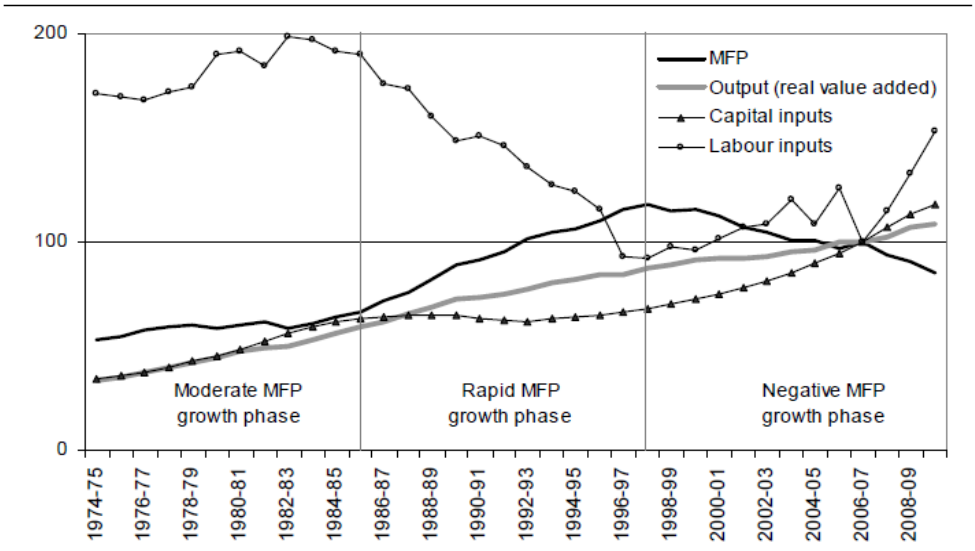
[26] NERA presentation, "Economic consideration for forecasting productivity" 3 November 2018 Public Forum https://www.aer.gov.au/system/files/181130%20NERA%20AER%20productivity%20workshop%20final.pdf,
[27] Topp, V. and Kulys, T 2012 "Productivity in Electricity, Gas and Water – Measurement and Interpretation" Staff Working Paper https://www.pc.gov.au/research/supporting/electricity-gas-water/electricity-gas-water.pdf
[28] ibid, p21

Figure 3: PC Estimates of MFP Growth for the Electricity Sector



While the PC did not separately estimate partial productivities for capex and opex, the data clearly shows that the growth in the implied opex PFP was considerably higher than that for capex. Over the period as a whole outputs increased by 3.4% pa and labour inputs reduced by 0.03 percent pa[29].

Figure 4: PC Estimates of the components of Productivity Trends



[a] Vertical lines represent the cut-off years for the three MFP growth *phases* identified for the utilities division as a whole in chapter 2. For ease of comparison, the same terminology is used to describe the phases throughout the paper (see section 2.3 and table 2.3).

Source: Topp, V. and Kulys, T. 2012, *Productivity in Electricity, Gas and Water: Measurement and Interpretation*, Productivity Commission Staff Working Paper, Canberra, p31.

[29] ibid, p31

3.2 Is the 2006-2012 AER data 'fit for purpose'?

A number of the presenters at the Public Forum argued that the AER data from 2006-2017 meets the "long-term data" requirement and did not support the AER's exclusion of the data on productivity trends for the period from 2006-12. CCP considers that the AER was correct in excluding the 2006-12 data.

The AER needs to estimate the trend productivity for the network sector that excludes the step changes that would be separately included in the estimate of efficient opex. While the AER has estimates of opex MPFP for the period from 2006, we agree with the AER that the pre-2012 data should be excluded. There is clear and strong evidence (see below) that the opex was substantially affected by step changes in the period to 2012. This means that the information contained in the data on trend productivity was severely distorted and unfit for the AER's purpose of estimating trend opex productivity improvement exclusive of step changes.

Economic Insights (EI) concluded that:

> "Opex partial productivity declined the most through to 2012 but has generally improved since as opex use has trended down from its 2012 peak. In 2012 opex partial productivity was 19 per cent below its 2006 level but by 2016 had recovered somewhat to be 9 per cent below its 2006 level….
>
> The most significant difference for the period up to 2012, however, relates to the contribution of opex to average annual TFP change. Opex increased rapidly from 2006 to 2012 and peaked in 2012. Its average annual growth rate over this period was a very high 5 per cent. This very high growth rate in opex likely reflects responses to meet new standards requirements, with many of those responses arguably being suboptimal, responses to changed conditions following the 2009 Victorian bushfires and lack of cost control from constraints imposed by government ownership. A detailed discussion of these issues can be found in AER (2015). This very high growth rate in the input with the highest share in total inputs made a very large negative contribution of –1.9 percentage points to average annual TFP change over this period."[30] (emphasis added)

In this section we document the acknowledged impact of the primary step changes – the increased reliability standards in NSW and Queensland and the bushfire risk management requirements in Victoria.

Past submissions and decisions

The key issue in NSW is the impact of the increased reliability standards that the NSW DNSPs were required to achieve on opex. While the higher standards had a larger impact on capex than opex, the impact on opex was still substantial (as we document below). Furthermore, these standards were substantially achieved well before the target date of 2014.

In the period up to 2009 the DNSPs had been able to apply to IPART for approval of the pass-through of the efficient capex and opex costs of meeting the reliability standards. In the case of Country Energy (now Essential Energy) the AER noted that IPART had approved an allowance of $45m

[30] Economic Insights, Economic Benchmarking Results for the Australian Energy Regulator's 2018 DNSP Benchmarking Report, p11-12

($2008-09) for the three years to 2009.[31] (For comparison, Country Energy's allowed opex in 2009-10 was $396m). This was embedded in the base expenditure for the 2009-14 regulatory period. In addition to this the AER included a further $135m ($2008-09) in opex that it accepted was additional opex (primarily vegetation management) required to comply with the reliability standards.[32]

The AER's determination for 2009-10 to 2013-14 documents the impact of the reliability standards on opex prior to, and in the early years of, the regulatory period.

In its draft decision the AER had largely rejected EnergyAustralia's (now Ausgrid) proposed step changes in addition to the amounts already passed-through by IPART. However, in its final report the AER accepted its consultant's recommendation to include $116m($2008-09) in opex step changes. These increases primarily related to the reliability standards and external regulatory obligations.[33] (For comparison, EnergyAustralia's allowed opex in 2009-10 was $507m (in $2008-09)).

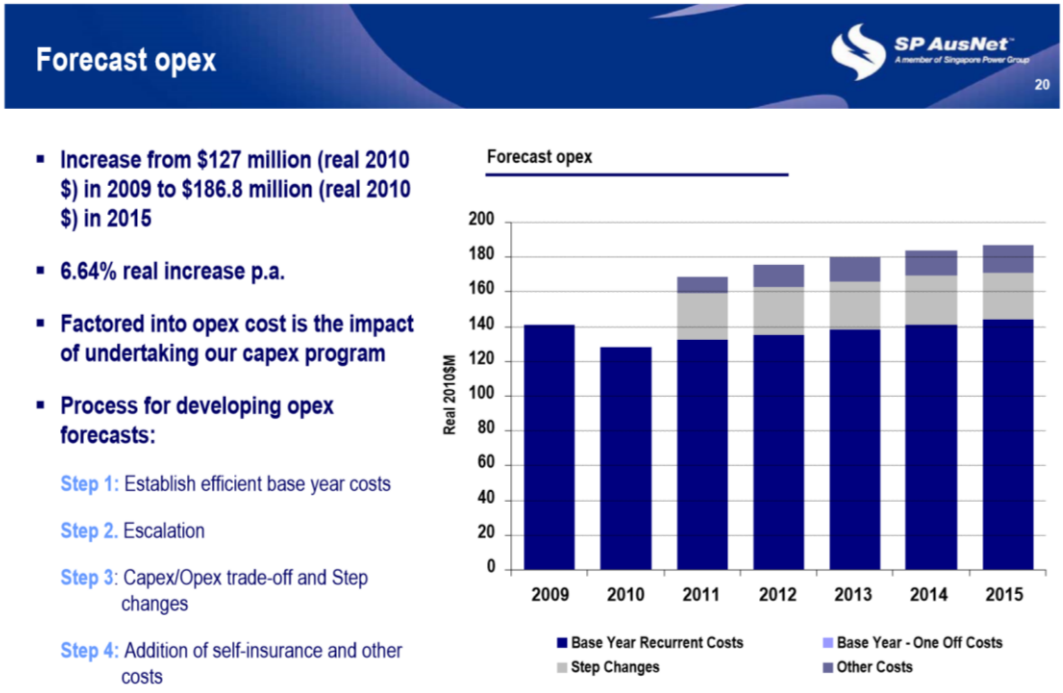
The impact of the reliability standards on the increase in opex was acknowledged by Ausgrid in its latest submission to the AER which stated:

> "Mandated licence conditions, which increased reliability standards and rising peak demand led to an increase in our operating costs base to support the required rapid increase in capex from 2007 to 2012."[34] (emphasis added)

Opex of the Victorian DNSPs has also been significantly affected by step changes in the period to 2012. For the regulatory period the Victorian DNSPs proposed step changes of $584m ($2010) over the period 2011-16, which accounted for almost 20% of the proposed expenditure of $3.131m ($2010). The expenditure on these step changes was front-end loaded so that the primary impact was forecast to be in 2010-2011. (p309). At the Public Forum on 17 December 2009 CiitiPower and Powercor proposed step changes of $24m and $94m respectively. SP Ausnet proposed an increase in opex (in real terms) from $127m in 2010 to $186.8m in 2016. As Figure 5 below shows most of the increase was attributed to step changes and most of the increase was projected to occur in 2011.

[31] AER, Final Decision, NSW Distribution Determination 2009-10 to 2013-14, p154. https://www.aer.gov.au/system/files/NSW%20DNSPs%20final%20decision.pdf
[32] Ibid, p155
[33] Ibid, p165.
[34] Ausgrid Submission, 2019-24 Revenue Reset, p118.

Figure 5: Forecast SP AusNet opex 2011-26



Subsequently, in its 2015 submission to the AER, United Energy stated that:

> "The analysis indicates that our Opex PFP declined slightly since 2006, however we had a much smaller decline than other frontier businesses. We note that this decline does not take into account exogenous operating environment factors that affected our operations, including Opex step changes that occurred during this period, including those arising out of new regulatory obligations;"[35]

This section has provided examples from the extensive evidence available in the submissions and revenue reset decisions to demonstrate the significant impact of the substantial step changes on DNSP costs in this period. It would seem difficult for other stakeholders to now argue that the impacts were not real and so significant as to call into question the relevance of data from the period to estimating a trend productivity exclusive of major step changes.

Timing of the impact of the step changes

Endeavour Energy noted that the deadline for the reliability standards for the NSW network was 2014. This may suggest that the impact was spread out over a longer period and raise questions as to why 2012 should be the starting point for the estimation of the trend productivity.

While the date for compliance was 2014, in practice the NSW DNSPs sought to comply earlier than this. In its review of reliability standards in August 2012 the AEMC found that[36]:

[35] United Energy, Operating Expenditure Overview, Submission to AER, 2015, p14,
[36] AEMC, Review of Distribution Reliability Outcomes and Standards 31 August 2012, p4. https://www.aemc.gov.au/markets-reviews-advice/review-of-distribution-reliability-outcomes-and-st

"Over the current regulatory control period of 2009/10 to 2013/14 the forecast capital expenditure of the NSW DNSPs has increased significantly relative to previous regulatory control periods due to a number of factors. Recent performance against the reliability standards indicates that the NSW DNSPs have been out-performing against the standards, which may suggest that compliance with the standards could have been achieved with a lower expenditure."

AEMC also provided a summary of the proportion of feeders that were non-compliant as at July 2011 which provides supporting evidence for early compliance with the reliability standards (see Table 2.4 below[37]).

Table 2.4 Non-compliant feeders as at 1 July 2011 - Individual feeder standards

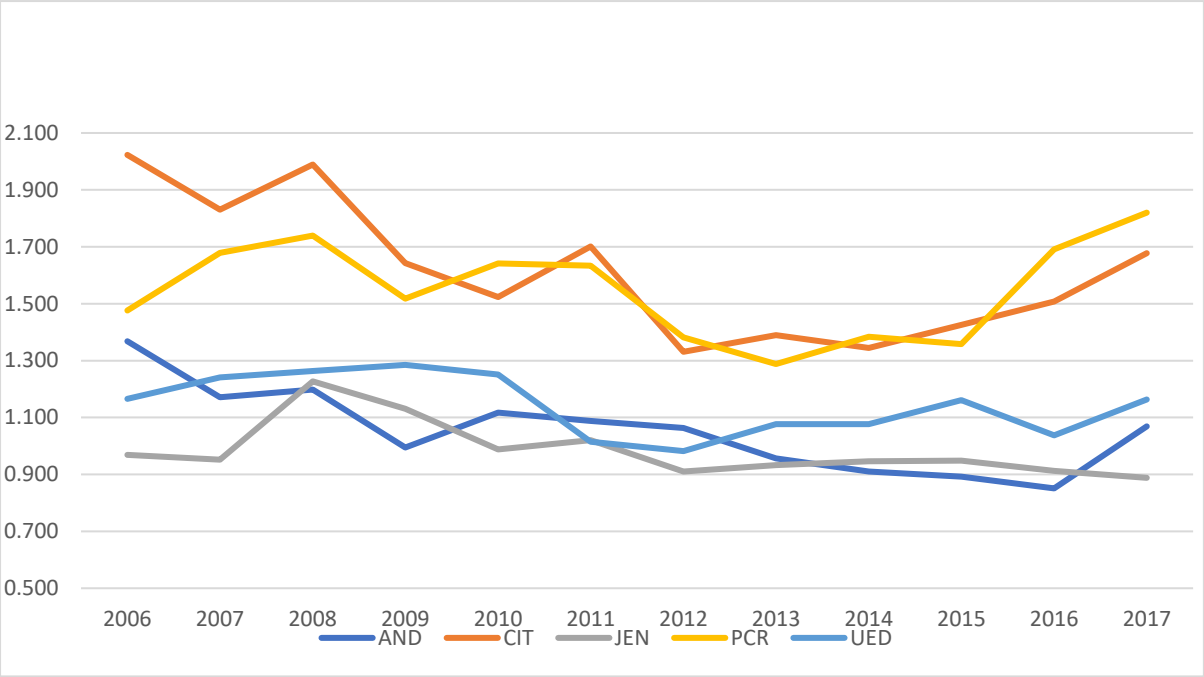
DNSP	Feeder type	per cent and number of non-compliant feeders- SAIDI and SAIFI
Essential Energy	Urban	2.4% (7)
	Short rural	8.0% (72)
	Long rural	14.6% (35)
Ausgrid	CBD	10.7% (6)
	Urban	5.1% (89)
	Short rural	4.2% (11)
	Long rural	0% (0)
Endeavour Energy	Urban	0.7% (7)
	Short rural	1.6% (4)
	Long rural	0% (0)

Source: Ausgrid, *Network Performance Report 2010/2011*, 2011, pg. 25; Endeavour Energy, *Electricity Network Performance Report 2010-2011*, November 2011 pg. 32; Essential Energy, *Electricity Network Performance Report 2010/2011*, 2011, pg. 30.

The position in Victoria is even clearer from the proposal submitted to the AER for the 2011-16 revenue reset. As indicated above the step changes proposed increased opex substantially at the start of the forecast period and the projected opex was relatively flat in the remaining years. This is also clearly reflected in the opex MPFP in Figure 6.

[37] ibid, p12

Figure 6: DNSP Multilateral Opex Partial Productivity Indexes 2006-2017 - Victorian DNSPs



Source: CCP using data from AER's 2018 benchmarking report.

3.3 Are the estimates sensitive to the averaging period?

NERA argued that "the AER's approach [to the use of MPFP] isn't stable and alternative methods could improve it." Specific improvements suggested are use of :

1. longer data series
2. weighted averages
3. regression trends and
4. all firms rather than dropping the materially inefficient.

Endeavour Energy similarly argued that the estimates were sensitive to the starting period and firms included.

We do not agree that the earlier data on opex MPFP should be included. As is clear from the discussion above, the large step changes were a major factor in the productivity trends. These step changes would be separately included in the estimation of efficient opex costs under the AER's approach and distort the measured productivity. As a result the earlier data does not provide a reliable guide to underlying trends in productivity that AER needs to estimate and can result in double counting of step changes. Given this decision, there is insufficient data to use regression trends.

However, we agree that:

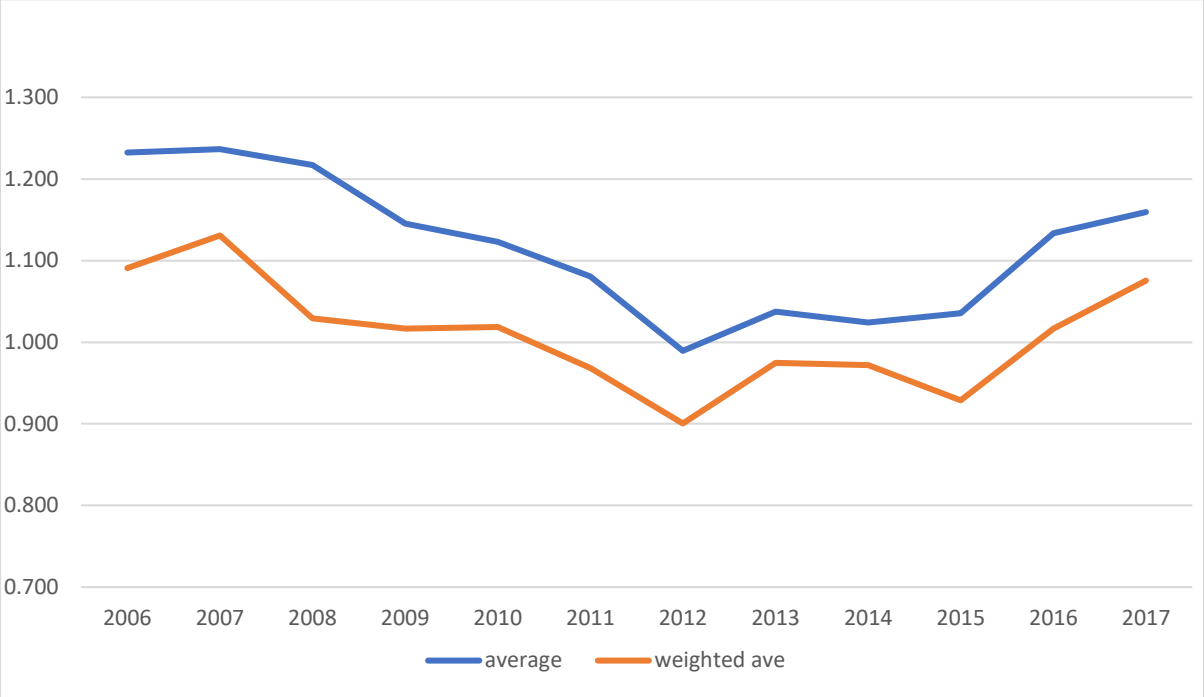
- a weighted average opex MPFP may be a better measure than an unweighted average
- the results can be sensitive to the peer group chosen and
- the results can be sensitive to the time period used.

To test this we have undertaken sensitivity testing for each of these factors. **This sensitivity testing has reinforced our conclusion that the trends in opex MPFP supports a trend productivity factor of at least 1.5-2.0%.**

Use of a weighted average

Based on the opex MPFP from the 2018 Benchmarking Report we have calculated a weighted and unweighted average for opex MPFP. The opex MPFP for each DNSP was weighted by the DNSP's share of the total RAB for the sector[38]. Over the period as a whole (2006-17) the decline in Opex MPFP was smaller for the weighted average than the unweighted average (-0.13% cf -0.55%) and the increase in opex MPFP in 2012-17 was larger (3.62% cf 3.22%).

Figure 7: DNSP Opex MPFP Indexes 2006-2017 - Comparison of Simple and Weighted Average



Average Annual Change			
	2006-17	***2006-12***	***2012-17***
Average	-0.55%	-3.59%	3.22%
Weighted Average	-0.13%	-3.14%	3.62%

Source: CCP using data from AER's 2018 benchmarking report

Sensitivity to Peer Group Chosen

One of the issues highlighted by the AER is that the estimation of the trend productivity should reflect the performance of the DNSPs that set the level the AER judges to be "not materially inefficient" in the base year so as to exclude the effect of catch-up efficiency changes. To do this the AER excluded the utilities that have been deemed to be materially inefficient. In its presentation to

[38] AER State of the Energy Market 2017, p97. Note RAB is at December 2015 (Victorian DNSPs) or June 2016. https://www.aer.gov.au/publications/state-of-the-energy-market-reports/state-of-the-energy-market-may-2017

the Public Forum, CCP questioned whether a more direct approach based on the efficiency gains of the top quartile of firms was more appropriate. Endeavour Energy adopted a similar approach. The disadvantage of this approach is that it reduces the data set further. Reflecting this, NERA emphasised the need to keep the largest possible data set and proposed that the average for all DNSPs should be used.

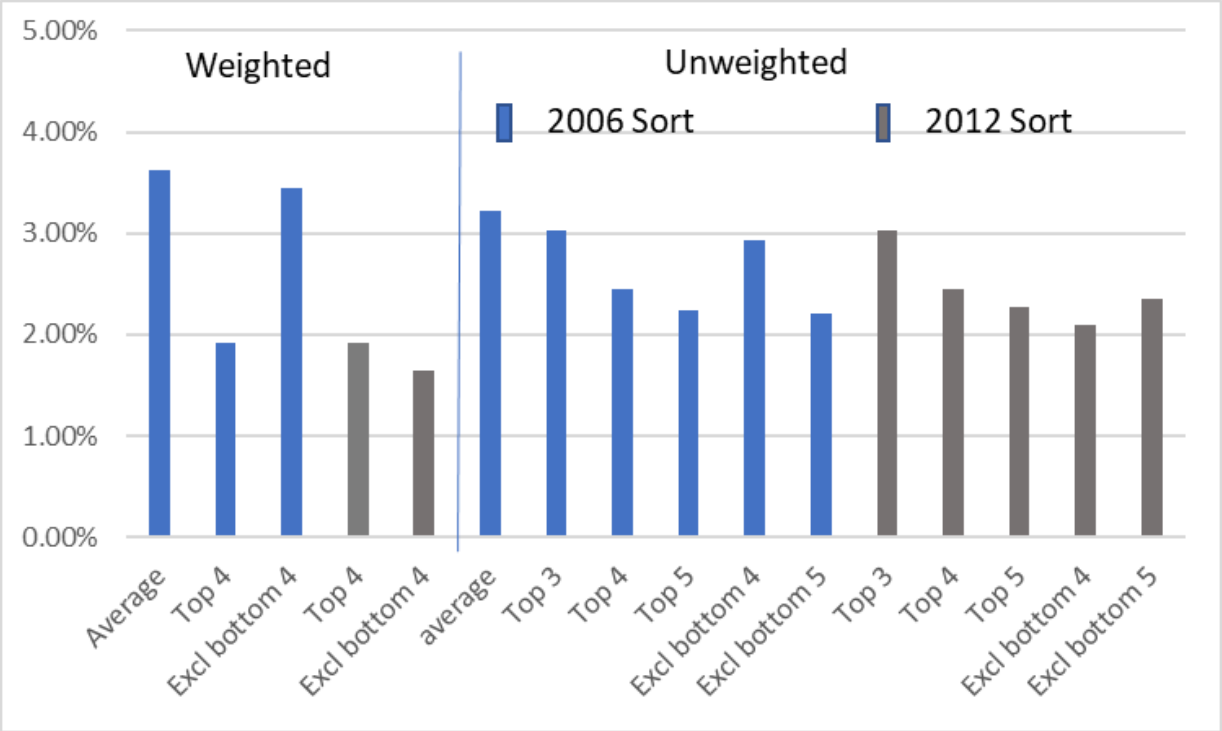
There is clearly no best approach. In these circumstances the AER needs to exercise judgement that can be informed by sensitivity testing.

In conducting the sensitivity testing we looked at the impact of:

1. whether the average for the all DNSPs, the best performing DNSPs is used, or all DNSPs excluding the worst performing DNSPs is used
2. changing the number of DNSPs in the best and worst performing groups and
3. determining the groupings based on 2016 or 2012 performance.

We undertook the analysis using weighted and unweighted averages. Table 3 below summarises the results but all the results can be seen in the spreadsheet at Attachment 2 to this submission.

Table 3: Sensitivity Testing of Benchmark Opex MPFP for 2012-17 (Average Annual Growth)



In all we examined sixteen separate cases (sensitivity tests). The results support and strengthen our initial conclusion that the trend productivity factor should be at least 1.5-2.0%. None of the sensitivity tests yielded a trend productivity growth rate less than 1.5%. The minimum estimate was 1.64% (the weighted average for all DNSPs excluding the bottom 4 utilities in 2012). The maximum estimate was 3.62% (the weighted average for all DNSPs). **The average across all sensitivity tests was 2.55%. Our preferred estimate is the weighted average for the top 4 DNSPs in 2012 which yields a trend productivity growth of 1.91%.**

Other implications of the sensitivity tests are:

1. weighting can have a significant effect on the results but the direction and size of the effect depends on whether the benchmark used is the average of the best performing DNSPS or all DNSPs excluding the poorest performing DNSPs. The weighted average productivity growth for the best performing DNSPs is around 50 basis points lower than the unweighted average. In contrast the weighted average for all DNSPs excluding the poorest performing DNSPs is around 50 basis points higher than the unweighted average.
2. Whether DNSPs groupings are based on 2006 or 2012 performance has little impact except for the average excluding the 4 worst performing DNSPs. In this case the weighted average based on 2012 groupings is 180 basis points lower than that based on the 2006 groupings.
3. There is a relatively narrow difference between the trend growth rates for the best DNSPs and all DNSPs excluding the worst performing DNSPs if the groupings are based on 2012 performance. The possible exception is if the average for the top 3 DNSPs is used, due to the strong productivity performance of this group. This suggests 'catch-up' efficiency among the middle-ranking DNSPs may have been a less significant factor than it was assumed it would be.

Sensitivity to starting year

Endeavour Energy raised the question of the sensitivity of the analysis to the starting year. We consider that the most sensible year to commence the analysis is 2012. Table 4 below summarises the results for the sensitivity analysis. We have included the option of starting the estimation of trend productivity from 2011 because Endeavour Energy included this option. However, we do not consider it be a viable option as it is inconsistent with the requirements for the estimation of the trend productivity set out above. Commencement from 2012 is supported by the detailed case-by-case analysis of the timing of the step changes – as set out above. By 2012 the impacts of the step changes were already largely embedded in the opex for the DNSPs. If the opex MPFP analysis were to commence earlier – say 2011 – the trend productivity estimates would still be distorted by the impact of the step changes.

Table 4 Summary of sensitivity Analysis

		Alternative Starting Dates - CAGR			
		2011-17	***2012-17***	***2013-17***	***2014-17***
Weighted, 2006 Sort	**Average all**	1.77%	3.62%	2.49%	3.43%
	Average-top 4	0.06%	1.91%	3.95%	5.69%
	Average - excl bottom 4	1.26%	3.44%	4.39%	4.99%
Weighted, 2012 Sort	**Average all**	1.77%	3.62%	2.49%	3.43%
	Average-top 4	0.06%	1.91%	3.95%	5.69%
	Average - excl bottom 4	0.39%	1.64%	2.51%	3.49%
Unweighted, 2006 Sort	**Average all**	1.18%	3.22%	2.82%	4.23%
	Average-top 4	-0.08%	2.24%	2.66%	4.43%
	Average - excl bottom 4	0.19%	2.21%	2.54%	4.09%
Unweighted, 2012 Sort	**Average all**	1.18%	3.22%	2.82%	4.23%
	Average-top 4	0.08%	2.45%	4.27%	6.15%
	Average - excl bottom 4	0.18%	2.10%	2.15%	3.38%

In summary, the results show that commencing the analysis from 2012 yields lower estimates of trend productivity than commencing the analysis from subsequent years. Commencement from 2012 is supported as it provides the longest series that is not excessively affected by step changes.

The trend opex MPFP from 2011 exceeds 1% if the average for all DNSPs is used. If the average for the top 4 or all except the bottom 4 are used the average ranges from -0.08 to 1.26% pa. However the use of 2011 as the starting point is not supported as it is still significantly affected by the impact of the step changes.

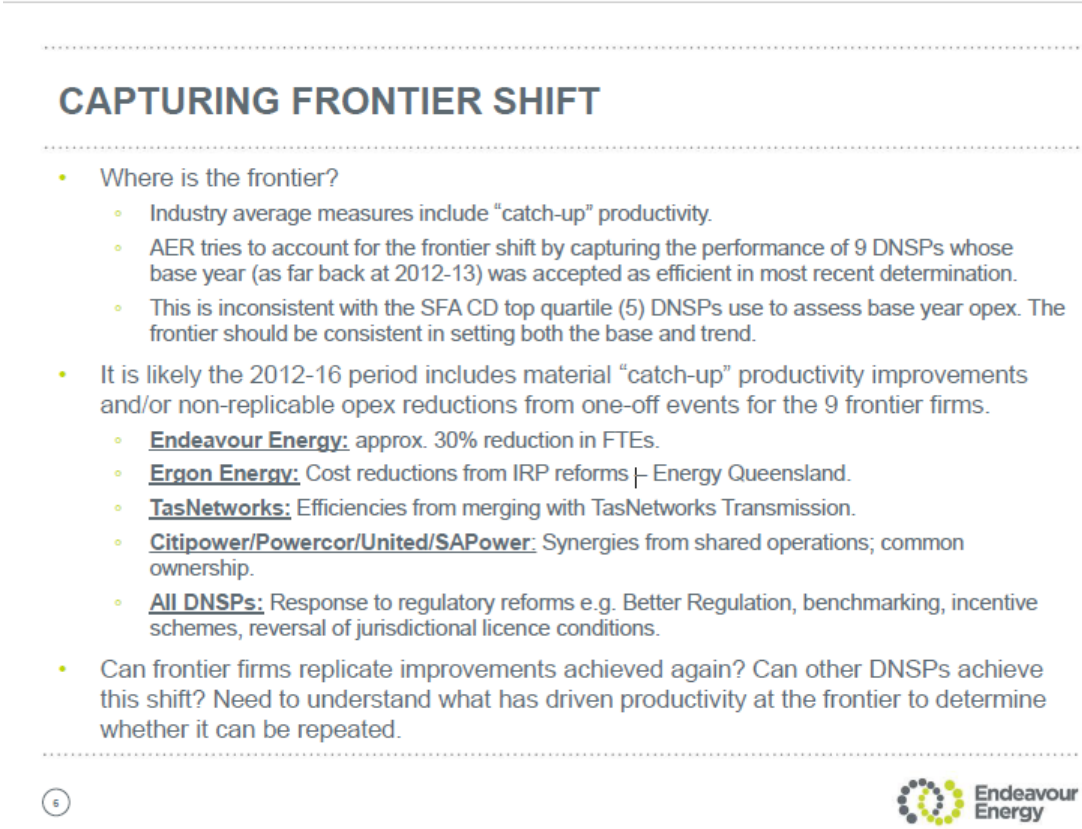
3.4 Are there offsetting 'other factors' that affect productivity?

Endeavour Energy also argued that some of the productivity improvements in the current period may not be replicable in future periods. The implication was that future productivity gains will be lower than in the past and/or the trend productivity assumption should be set lower to allow for these offsetting effects.

One question to be considered is whether the gains are one-off gains due to catch-up efficiency. Under the AER's framework, catch-up efficiencies are built into the base year opex and the productivity trend assumption focusses on the improvement in efficiency of those utilities setting the efficiency benchmark or deemed not materially inefficient. The AER has chosen a very broad definition of the 'frontier firms' – all DNSPs except four shown to be materially inefficient. This increases the risk that there may be an element of catch-up efficiency in the measured productivity gains. However, as we noted, comparison of relative performance of the narrow and broad definitions of frontier firms with each other and with the industry average does not support the presumption of a large catch up factor.

Endeavour Energy listed a set of 'special' factors that it considered non-replicable for the DNSPs in the AER's definition of 'frontier' firms[39].

[39] Endeavour Energy, op cit.



While we applaud the efforts of the businesses to reduce labour costs through changes in the number, composition, and use of staff, these should not be considered to be one-off changes (see below). Similarly, firms are continuously striving to 're-invent' themselves and find new ways of doing business, including through mergers and de-mergers and contracting in or contracting out. However, we would note that some of the claims for one-off efficiency improvements through contracting out and shared operations are contentious and unproven. The AER decision on the Victorian DNSP revenue reset for 2011-15 examines this at length. From that decision it is clear that a number of contracts for service provision were with related parties and that the prices in those contracts exceeded the actual costs of providing the services. This was justified on the basis that the AER was obliged to look at the costs of a standalone entity and could not pass through to consumers the economies of scale. Instead these gains were to be captured by the related party providing the services through the proposed margins in the charges to the DNSP. In the 10 years to 2011, as the level of contracting out increased, contract payments to related parties providing these services increased by more than the in-house costs declined.[40]

Endeavour Energy also suggest the unwinding of the reliability standards may have contributed to the reduction in costs. However, this has not been suggested – nor evidence provided for this – in the detailed submissions on opex provided by Endeavour Energy and the other DNSPs in their current revenue reset proposals. In its 2018 revenue proposal Ausgrid provided a list of factors that may affect the underlying opex from 2017-18 and did not include any impact on opex from the roll-

[40] AER, Victorian Distribution Determination 2011-15 Final, p226, https://www.aer.gov.au/system/files/Victorian%20distribution%20determination%20final%20decision%202011-2015%20%2829%20October%202010%29_1.pdf

back of the previous licence conditions.[41] This is not surprising. The assets that were driven by the reliability requirements and in turn led to increased opex (see comment by Ausgrid cited above) remain in service. Similarly, Endeavour Energy made no mention of any impact on opex from the roll-back of the previous licence conditions.

We agree with Endeavour Energy's comment that ideally the 'frontier should be consistent with the setting of the base and trend'. We understand that the AER's broader definition of frontier has the benefit of increasing the number of data points. But our preferred measure is a narrower definition focussed on the 3, 4, and 5 frontier firms. If the four frontier DNSPs are used the trend productivity growth for 2012-17 is 1.9%. If the top three or five DNSPs are used, the (unweighted) trend productivity growth is 3.0% and 2.3%, respectively.

Even for those efficiency gains that do not form part of the catch-up efficiency, it is a truism that once an efficiency improvement has been implemented it is reasonable to assume that it is "locked in" irrespective of whether the firm may in the future lose that productivity; eg if a network gets a specific productivity gain but then poor management means that the gain is not sustained that is the networks problem and consumers should not have to pay extra when the gain is lost at some time in the future. But that does not mean that continuing efficiency improvements at the same or better rate are not possible. Productivity improvement is not a process of mining a single vein of productivity improvement until exhaustion. Survival in competitive markets is a constant search for new ways to improve efficiency.

Often it is a process of continuous small improvements. This can involve extending past improvements within the business to new areas, importing efficiency improvements from similar processes/businesses, or adopting a myriad of small new innovations that become available. There is no reason that this continuous improvement process should slow down. Or it can involve larger non-incremental changes in technologies and process re-design. Often this is a process of constant review, renewal and re-invigoration. But again, to expect that such opportunities will 'dry-up' would be inconsistent with observation of the relentless search for efficiency improvement in workably competitive businesses.

The networks have also argued that there are other changes that may occur that will offset the trend productivity improvement. This includes an upward creep in regulatory obligations and standards and technical innovations and cost reductions that will see more renewables connecting to the distribution networks, potentially adding to costs. Under the AER's current approach, major step changes are included in the forecast efficient opex separately from the trend productivity assumption. But the trend productivity assumption should include the net impact of the trend for incremental changes in the regulatory requirements and the net effect (plus and minus) of technology change. If the estimate of trend productivity is based on past data exclusive of major step changes – as we propose - it will incorporate continuation of past trends for regulatory creep and technology change. Hence, it is not sufficient for the utilities to argue that there may be future regulatory creep or technological change that adds to costs. The utilities must show that the **rate** of 'regulatory creep' is increasing or that the rate of change in technology is increasing and that it is having a greater negative effect. As with step changes, the AER should establish a high burden of proof for such claims.

3.5 Will a change in the productivity trend assumed affect incentives?

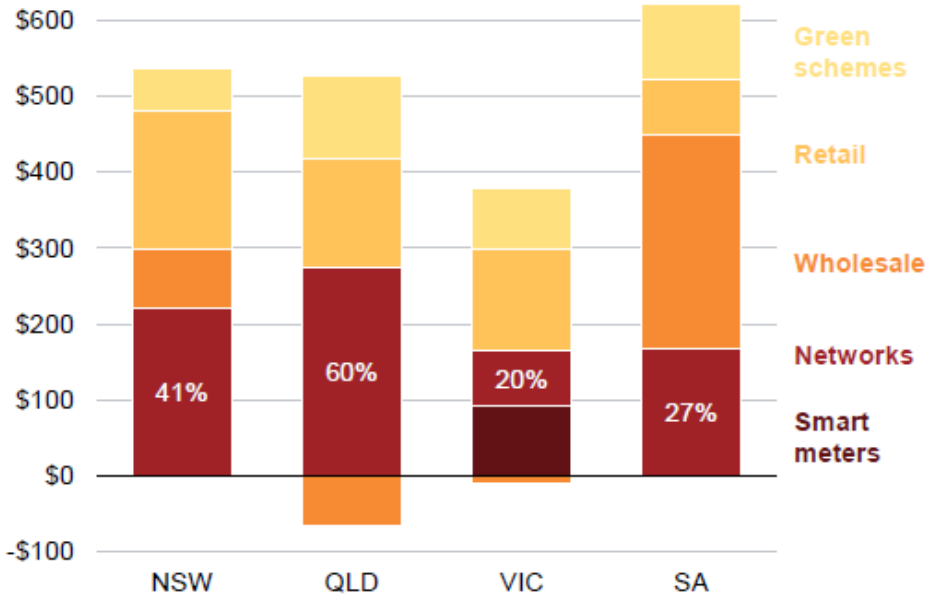
[41] Ausgrid, Attachment 6.01 - Ausgrid's Proposed Operating Expenditure, p5

In its presentation, Endeavour Energy noted that DNSPs have responded positively to the efficiency incentives under the current regulatory framework with a zero trend productivity assumption and questioned whether a "global productivity factor [will] get us 'there' faster (more dynamic efficiency)".[42]

Firstly, given the rising network costs for much of the last 15 years, others have a less sanguine view of the effectiveness of the current regulatory framework. As the Grattan Institute report "Down to the Wire" pointed out[43]:

> "Network costs are now starting to come down, but remained the largest component of the bill in all states in 2016-17 and are still higher than a decade ago. And consumers are still paying, through their bills, for the historic over-investment in the network."

Components of Increases in Residential Bills 2007-8 to 2016-18



Notes: Real values in 2015-16 dollars. In South Australia, wholesale costs grew more than network costs. In Victoria, retail and smart-meter costs grew more than network costs (although smart meters are paid for through the network tariff). Data is from the ACCC's preliminary report on retail electricity pricing and is subject to further review and verification (for example, SA Power Networks contests the size of the network component in South Australia and has raised the issue with the ACCC).

Source: Grattan analysis of ACCC (2017).

While the effectiveness of the current incentive mechanisms can be debated, what is clear is that changing the trend productivity assumption has no effect on the incentives to pursue efficiency improvements. A 'softer' assumption increases the allowed revenues for the utility and increases the probability that its actual returns will exceed the 'allowed' returns, but it does not strengthen incentives.

In simple terms, the regulatory objective is to:

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[42] Endeavour was more cautious in its presentation than it had been in its Revenue Proposal where it asserted that "A productivity factor would skew the sharing ratio of the EBSS and reduce a DNSPs incentive to reduce costs beyond the built-in productivity factor." Endeavour Energy, Regulatory Proposal: 2019-24, p174

[43] T Woods, D Blowers and K Griffiths "Down to the Wire: A sustainable electricity network for Australia., Grattan Institute", 2018, p11 https://grattan.edu.au/report/down-to-the-wire/

1. promote improvement in the efficiency of service delivery
2. ensure an efficient business can expect to earn a commercially sustainable return that will ensure the commercial viability of future investment and
3. ensure customers pay no more than efficient costs over the long-term.

Within the framework of incentive-based regulation, this is achieved by:

1. de-linking the revenue allowance from actual costs to provide an incentive for utilities to pursue efficiency gains
2. setting a benchmark for costs that is a reasonable, achievable, forward-looking estimate of efficient costs and
3. providing a mechanism passing through efficiency gains to customers through prices in future periods. This is essential if the mechanism is to be in the LTIC.

De-linking of revenues from actual costs means that, once the revenue is set:

1. allowed revenues do not change if costs change (with the possible exception of changes beyond the control or influence of the utility) and
2. as a consequence of (1), the benefit to the utility from efficiency gains (i.e. reductions in costs within its control) is independent of the allowed revenue (i.e. the cost benchmarks used to establish the allowed revenue).

To use a practical example, suppose a utility's expected annual opex is $400m but negotiation of a new enterprise agreement that allows reduced staffing levels could reduce opex to $350m. The annual gain to the utility from the new enterprise agreement is $50m and this is independent of whether the regulator's assumed opex in the revenue allowance is $425m or $375m. The regulator's assumed opex affects the starting level of profitability, not the change in profitability from the implementation of the enterprise agreement. To assume that the level of the benchmark cost incorporated in the revenue allowed will affect the decision whether to pursue the $50m efficiency gain, requires an assumption that management do not wish to maximise profits but wish to pursue an alternative objective.

An important component of this approach is that at each regulatory period the allowed costs are re-based to reflect revealed costs or revised estimates of efficient costs. It is this process that provides assurance to the consumers that they will share in the increased efficiency during the prior regulatory period.

We have provided spreadsheets that examine the impact of additional efforts to improve efficiency under different trend productivity assumptions. These examples look at the impact on profits where the utility makes additional efforts to reduce opex below its 'business as usual' forecast under a range of regulatory scenarios:

1. where the allowed opex equals the BAU forecast and where it is above
2. where a trend productivity factor is included and
3. where an EBSS is in place and where it isn't.

The results (summarised below in Figure 8) clearly demonstrate the productivity assumptions have no impact on incentives to pursue opportunities to improve efficiency. The benefit to the utility of efficiency improvements are higher if there is an EBSS than if there is not. But, given this, the benefits are the same whether or not the opex allowed is the same or higher than the DNSP's internal BAU expectation for opex and whether or not a trend productivity improvement is assumed.

Figure 8: Summary of Empirical Analysis of Incentives

Case	Allowed Opex =BAU Opex	Allowed opex>BAU opex	Allowed opex assumes productivity improvement	EBSS?
1	Yes	No	No	No
2	No	Yes	No	No
3	No	No	Yes	No
4	Yes	No	No	yes
5	No	Yes	No	yes
6	No	No	Yes	yes

Case	Increased profits from additional Opex productivity improvement									
	Period 1					Period 2				
	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7	Yr 8	Yr 9	Yr 10
1	0	2	4	6	8	4	4	4	4	4
2	0	2	4	6	8	4	4	4	4	4
3	0	2	4	6	8	4	4	4	4	4
4	0	2	4	6	8	12	12	10	8	6
5	0	2	4	6	8	12	12	10	8	6
6	0	2	4	6	8	12	12	10	8	6

4. Assessment of options

4.1 Option 1: Status Quo – assumption of zero trend productivity improvement

Continuation of the current assumption of zero productivity assumption is not supported. It is inconsistent with the expectations of consumers, the competitive market benchmark, and relevant available data.

Consumers have a reasonable expectation that the regulated businesses will work to continually improve efficiency. The Productivity Commission estimates of long-term TFP for the electricity sector as a whole and the more recent opex MPFP trends demonstrating a return to broad-based opex productivity growth across the sector, including those firms on the frontier, do not support the status quo.

A zero productivity assumption could only be supported by including the data on performance from 2006-2012, and giving little if any weight to the Productivity Commission estimates of long term productivity trends for the electricity sector as a whole. However, the 2006-12 data is distorted by the large changes in opex costs due to external factors that are unlikely to be repeated and, if they were, would be included separately as step changes.

4.2 Option 2: Productivity Growth from increased Undergrounding

Undergrounding is one source of productivity growth. As such it is desirable to analyse its potential contribution to productivity growth and consider further its application to the determination of trend productivity factors.

The estimate is derived from the econometric cost modelling by the AER's consultants, Economic Insights. It would be useful to examine the consistency of the relevant parameter estimates across the EI models and the robustness of parameter estimates. For example, if there were issues of multicollinearity between undergrounding and the other variables the parameter estimates may not

be stable. It would also be desirable to sense check the feasibility of the implied productivity growth of 0.5% pa. For example given the split between undergrounding and overhead wires and growth in undergrounding of 3.4%, what is the implied saving per km of undergrounding consistent with the 0.5% productivity improvement?

Given the estimates are confirmed, the average productivity benefit from undergrounding can provide a floor for the assumption on sector wide productivity trends. However,

1. it can only provide a floor for the trend productivity estimate as it is only one source of potential productivity improvement, and
2. the parameters could be used to vary the trend productivity between utilities based on undergrounding opportunities.

4.3 Option 3: Undergrounding productivity plus gas distribution time trend.

Under this option the econometric estimates of trend productivity for the gas sector is used in lieu of the estimate for the trend productivity (exclusive of undergrounding) for the electricity sector. The advantage of this approach is the gas sector has not been subject to the same step changes in the period from 2006-12. Hence, a longer data series is available to support the econometric estimates.

This approach assumes that:

1. there is not an opportunity to improve productivity in the gas sector that is comparable to undergrounding in electricity and
2. the opportunities to improve productivity in the gas sector are comparable to those in electricity distribution (exclusive of undergrounding).

Intuitively the first assumption appears plausible. CCP's initial observation is that the opportunities for productivity improvement in gas distribution may well be less than those in electricity distribution. This is based on:

1. the observation that opex is a smaller proportion of total spending in gas distribution than electricity distribution and that this may make it more difficult to achieve the same proportionate reductions in opex; and
2. the presumption that there is greater commonality between gas distribution and underground electricity distribution and that there may be fewer opportunities to achieve opex efficiency gains in each of these than in overhead electricity distribution.

This has led us to conclude that this option should be considered as a floor – or downwardly biased – estimate of the trend productivity growth. However, we note that AusNet has contested the assumption that gas distribution productivity trends can be a reasonable proxy for electricity distribution productivity trends.[44]

4.4 Option 4: Using Industry average opex MPFP growth

We consider that trend improvement in the opex MPFP for 2012-17 is the best, most relevant and simplest proxy for the underlying measure of trend productivity required. Hence we propose that it be given the most weight.

[44] See AusNet presentation to Public Forum, https://www.aer.gov.au/networks-pipelines/guidelines-schemes-models-reviews/review-of-our-approach-to-forecasting-opex-productivity-growth-for-electricity-distributors/initiation

The AER's objective is to obtain an unbiased estimate of the trend productivity growth in the electricity distribution sector:

1. exclusive of step changes that would be included as a separate component of the forecasts of efficient opex
2. reflective of the performance of these utilities that are not materially inefficient and/or set the efficiency benchmark and
3. inclusive of trends in factors such as standards creep and sector changes that affect productivity but that would not be separately identified and included in the efficient opex estimates.

Subject to the definition of the DNSPs included in the benchmark calculation, estimation of trend productivity from the opex MPFP growth post-2012 meets these requirements. We have tested various options for the specification and calculation of the opex MPFP estimate. The minimum estimate was 1.64% (the weighted average for all DNSPs excluding the bottom 4 utilities in 2012). The maximum estimate was 3.62% (the weighted average for all DNSPs). The average across all sensitivity tests was 2.55%. Our preferred estimate is the weighted average for the top 4 DNSPs in 2012 which yields a trend productivity growth of 1.91%.

The weakness of this measure is the comparatively short period for which it is available. Given that no measure is perfect we support the holistic approach, subject to our comments below on its implementation and the weight to be given to the various measures.

4.5 Option 5: Using forecast labour productivity growth

Under this option the AER bases the assumed opex productivity trend on forecasts of labour productivity growth for the utilities sector multiplied by the labour input weight (59.7%). As the AER notes, the advantage of this approach is that it is a forward-looking forecast. Inevitably past trends will inform the forecast but in principle the forecasts should exclude the impact of the step changes in costs from 2006-12.

The primary weakness of this measure is that it assumes labour productivity improvements are the only means of achieving opex cost efficiencies. In practice, businesses seek to achieve cost efficiencies in all areas, not just labour costs. For example, in a presentation to investors Spark indicated that TransGrid was seeking to achieve a 14% reduction in operating costs though more efficient maintenance practices and procurement savings in the areas of IT, communications, operations and insurance. [45]

It follows that the forecast improvement in labour productivity is only part of the opex productivity improvement that is possible. If the same rate of improvement is extended to non-labour costs the forecast in trend opex productivity growth would be 1.5%. There is no reason to believe the improvement in the efficient use of non-labour inputs would be less or more than that for labour inputs. Hence, this is the best available forecast of opex productivity using the labour productivity forecasts.

The second concern is with the reliability of the forecasts, particularly in the out years. The current forecasts show a decline in forecast productivity improvement during the period. The reasons for this may require further investigation to ensure it does not reflect a limitation in our capacity to

[45] SPARK, HY2018 Investor Presentation at https://sparkinfrastructure.com/investor-centre/reports-and-presentations

anticipate the dynamic nature of productivity improvement and the tendency for new opportunities to improve efficiency to develop over time.

4.6 Option 6: A Holistic Approach

A holistic approach to the consideration of the various options and available information is supported. However, CCP considers that this needs to be undertaken in a structured and transparent basis so that it can be readily repeated and that the outcomes are predictable.

The objectives and requirements set out above can provide the framework for assessing the quality and relevance of the various sources of information on productivity trends. This can be supported by specific criteria for the assessment of information and models similar to those developed for the 2013 Rate of Return Guideline.

On this basis we would propose that greatest weight be given to option 4 – estimation of opex MPFP post 2012. Based on the analysis and sensitivity testing this suggests a range of 1.5-3%, and a preferred estimate of 1.9%. The alternative estimates can be tested against this and the range and preferred estimate reviewed based on their assessment and consideration.

The labour productivity forecast extended to all costs – which yields an estimate of 1.5% - should be given greater weight than the other estimates but less weight than the preferred measure under option 4. Subject to further consideration of the comparability of gas productivity trends Option 3 should be considered solely as a floor for the estimate of trend productivity improvement in the electricity distribution sector. Option 2 (undergrounding productivity) may best be considered as an objective means of providing some differentiation in the trend productivity assumption between utilities.

CCP consider this approach would suggest a trend productivity assumption between 1.5-2.0%.

5. Implementation Issues

Not surprisingly we have identified issues and questions in regard to the data. But, as we have argued, this is not a reason for the AER not to make a decision or to make a decision that is other than the best estimate available.

However, the identified data issues suggest that:

- the assumption on trend productivity should be subject to regular, systematic review as new data/information becomes available.
- the AER should seek to improve and add to the available data.

At each determination of the revenue requirement for a DNSP the AER needs to come to a view on the trend rate of productivity change. A review such as this enhances the consistency and predictability of the decisions by creating precedents and expectations for the trend productivity growth that will be used. In principle, the review of the trend productivity could be undertaken on a similar cycle to the mandated review of the ROR Guideline. However, at each review the AER would still be required to consider whether the standard trend productivity assumption is still appropriate given any new, relevant information. Hence, there is scope to revisit the standard productivity assumption at any point in time if there new, significant, and persuasive information.

The primary weakness of the opex MPFP data since 2012 is the relative short data series available. This will be addressed over time as more years of consistent data become available. The data could also be enhanced over time through systematic adjustments for identified step changes. This would be a significant program of investigation and testing so it is not practical to defer the re-assessment of the current productivity assumption but it could provide a better information base for the next review.

The other challenge for the AER is the specific nature of the trend productivity assumption. It should exclude the impact of large discrete step changes and growth factors which are separately covered, but include the impact of gradual creep on service obligations and trend technology change which are not elsewhere included. The strength of this approach is it better matches the typical build-up of financial plans by firms. The downside is that it does not match the way economists typically measure productivity change. One option to provide information that can more directly inform the AER's assumption would be to commission surveys of business financial planning practices and assumptions. These would be similar to the surveys of businesses cost of capital assumptions that are often undertaken.