

# Response to the AER's Draft Annual Benchmarking Report

3 September 2014

## Introduction

On 5 August 2014, the Australian Energy Regulator (AER) circulated a draft version of its first annual benchmarking report (the draft report) and associated analysis to distribution businesses. Although not undertaking a public consultation on this report, the AER invited businesses to provide any submissions or comments on material of a factual nature by 22 August 2014. ActewAGL Distribution welcomes this opportunity to comment on the AER's draft report.

Before commenting on the material contained in the AER's draft report, ActewAGL Distribution would like to re-state its position on the AER's approach to benchmarking, as previously stated during consultation on the expenditure forecast assessment guideline (the guideline). ActewAGL Distribution does not support the use of benchmarking techniques to mechanically set expenditure allowances. Rather, it agrees with the view of industry, international experts and the Productivity Commission that benchmarking is a useful 'tool' or 'filter' to be used to identify significant variations between businesses, or particular anomalies in expenditure proposals that require greater scrutiny. In other words, benchmarking should be used to support, rather than drive regulatory decisions.

During the consultation process on the development of the AER's guidelines, the AER identified the many difficulties associated with economic benchmarking - there are only a small number of heterogeneous DNSPs, each captures data differently in their accounting systems, and all are subject to exogenous circumstances that are unique to their own situation. In its explanatory statement to the guidelines the AER stated:

*"When there is uncertainty about the quality of the data and the appropriate model specification, and where different specifications provide different results, it may be necessary to use the results cautiously."<sup>1</sup>*

ActewAGL Distribution considers that the results contained in the AER's draft report are a product of the many limitations of economic benchmarking, and highlight the need for the AER to exercise caution when using them. ActewAGL Distribution's key concerns with the AER's draft report are set out in the remainder of this submission.

## Multilateral Total Factor Productivity results can be misleading

ActewAGL Distribution is concerned by the AER's suggestion that their benchmarking analysis indicates that productivity across the whole sector is declining.<sup>2</sup> Under the Multilateral Total Factor Productivity (MTFP) approach, productivity is measured as the

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<sup>1</sup> AER, 2013, Expenditure forecast assessment guidelines – explanatory statement, November, p. 188

<sup>2</sup> AER, 2014, p. 8

growth in the ratio of outputs to inputs over a period of time (in this case 2006 – 2013). Where inputs grow faster than outputs, this implies an efficiency loss.

ActewAGL Distribution would urge the AER not to make any conclusions about DNSP efficiency on the basis of the results contained in the draft benchmarking report, for the reasons set out in this response. Indeed the AER has already indicated the potential for benchmarking techniques to ‘get it wrong.’ In the explanatory statement to the expenditure forecast assessment guidelines, the AER stated:

*“We consider that any forecasting approach may be subject to error. That is, the ‘residual’ generated by some economic benchmarking techniques may not merely be a measure of ‘inefficiency’ associated with an NSP. Rather, the results may be affected by the reliability of data and the potential error of the expenditure assessment techniques, including the model specification used.”<sup>3</sup>*

Of greater concern to ActewAGL Distribution is the AER’s conclusion in the draft report that the MTFP results indicate ActewAGL Distribution appears to be one of the least productive DNSPs<sup>4</sup>. This is not the case. Rather, ActewAGL Distribution’s ranking relative to other DNSPs is primarily attributed to the MTFP model input specifications for capital (measured as MVA-kms) which significantly disadvantages a network like ActewAGL Distribution because it has high proportion 132kV assets. In addition, the model does not take into account the proportion of ActewAGL Distribution’s asset base that is to be regulated as transmission assets in the 2014-19 regulatory period. The MTFP model also fails to take into account the increase in opex due to additional regulatory obligations, vegetation management, safety and taxes that have no direct impact on output growth, as defined by the AER’s MTFP model. These issues are discussed in more detail below.

### ***Reaching the efficient frontier – an impossible task***

ActewAGL Distribution is very concerned by the AER’s attempts to benchmark all DNSPs against a single, efficient frontier.<sup>5</sup> This assumes a linear relationship between inputs and outputs and a homogenous set of DNSPs that are all subject to the same set of operating conditions. This does not reflect reality.

The significant limitations of the MTFP technique are clearly demonstrated by the following examples of ways in which ActewAGL Distribution might be expected to move to the efficient frontier (as determined by the AER’s model). Specifically, Huegin Consulting has estimated that in order to reach the efficient frontier, ActewAGL Distribution would need to (holding all inputs constant) either:

<sup>3</sup> AER, 2013, Expenditure forecast assessment guidelines – Explanatory Statement, p.188

<sup>4</sup> AER, 2014, Electricity distribution network service providers Draft Annual benchmarking report, August, p. 38.

<sup>5</sup> Assumed to be the most efficient (top ranked) firm, Citipower

- 1) Increase energy distributed from 2,904GWh to 514,866 GWh (the total electricity distributed among the 13 NSPs benchmarked was 143,489 GWh in 2013);
- 2) Increase its number of customers to 791,071 (the population of the ACT as of December 2013 was 384,000);
- 3) Increase its circuit length from 5,088 to 94,961 (whilst holding its MVA-kms constant); or

Alternatively, holding all outputs constant:

- 4) Decrease its operational expenditure to \$2.4 million p.a (total operating expenditure in 2012-13 was \$76.8 million)

In light of this analysis, ActewAGL Distribution questions the robustness of the AER's model and its results. This is discussed in more detail later in this response.

### ***No adjustments made for individual circumstances***

A weakness of the MTFP benchmarking technique is that it is unable to isolate productivity from other characteristics such as network design, scale, climate, topography, asset age, voltage differences, density and different policy and regulation requirements. This means that when undertaking productivity analysis, care should be taken to ensure that where there are differences between distributors that affect the ability to convert inputs into outputs, these differences are incorporated into the benchmarking analysis either by normalizing the data prior to analysis to ensure like for like comparisons or through a second stage regression technique.

ActewAGL Distribution argued in its response<sup>6</sup> to the AER's expenditure forecast assessment issues paper that assessment of efficient costs and reasonableness of forecasts undertaken by the AER must take into account the individual circumstances of NSPs, and referenced the Productivity Commission's view that there may be benefits from aggregate benchmarking, provided that the results "*control to the greatest extent possible, for any significant differences in operating environments of the businesses.*"<sup>7</sup>

While the AEMC in the Final Rule Change Determination removed the specific requirement in the rules to take into account the individual circumstances of DNSPs, its intention was to clarify the nature and design of the AER approach to benchmarking. In doing so, the Commission stressed that the "removal of the individual circumstances clause does not

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<sup>6</sup> Letter to the AER "Response to Expenditure forecast assessment guidelines issues paper", 15 March 2013, p 2

<sup>7</sup> Productivity Commission, 2012, p.278

enable the AER to disregard the circumstances of a NSP in making a decision on capex and opex allowances.”<sup>8</sup> The Commission further stated that:

*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.*<sup>9</sup>

The AER’s technical report by its regulatory development branch too recognised the shortcoming of ignoring such circumstances in MTFP to benchmark NSPs in a paper prepared for a workshop on 6 June 2013:

*“...in practice, where more diverse NSPs might be included for economic benchmarking it would be necessary to explicitly model the impact of key operating environment factors that may effect NSP performance”<sup>10</sup>*

Following consultation on the draft expenditure forecast assessment guidelines, the approach adopted by the AER was to use MTFP to produce a set of “raw results”<sup>11</sup> that would then be adjusted to take into account different business conditions. With this in mind, the AER collected data for 19 different environmental variables within the Benchmarking Regulatory Information Notice (RIN) that was required from the 13 businesses used in the benchmarking analysis. Despite this intention to take account of different business conditions, no adjustment has been made for exogenous circumstances in the AER’s benchmarking analysis. This is clearly contrary to the AER’s previous intentions and the advice on benchmarking from the Productivity Commission and the AEMC.

Given that adjustments for exogenous variables or circumstances unique to each DNSP have not been undertaken, it is ActewAGL Distribution’s view that one of the major shortcomings of using MTFP (that it doesn’t account for different business conditions) has not been

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<sup>8</sup> AEMC, Rule Change Determination, National Electricity Amendment (Economic Regulation of Network Service Providers) Rule 2012, November 2012, p.107.

<sup>9</sup> Ibid

<sup>10</sup> AER, Economic Benchmarking Model: Technical Report by Regulatory Development Branch, for a workshop on 6 June 2013, p 5

<sup>11</sup> AER, Economic Benchmarking Model: Technical Report by Regulatory Development Branch, for a workshop on 6 June 2013, p 20

overcome, and consequently the benchmarking results used in the AER’s draft report are misleading and cannot be reliably used by the AER to make any assessment about relative levels of efficiency between the DNSPs.

***MTFP model specifications disadvantage ActewAGL Distribution***

The AER has adopted the following specification for its MTFP model, as recommended by its consultant, Economic Insights.

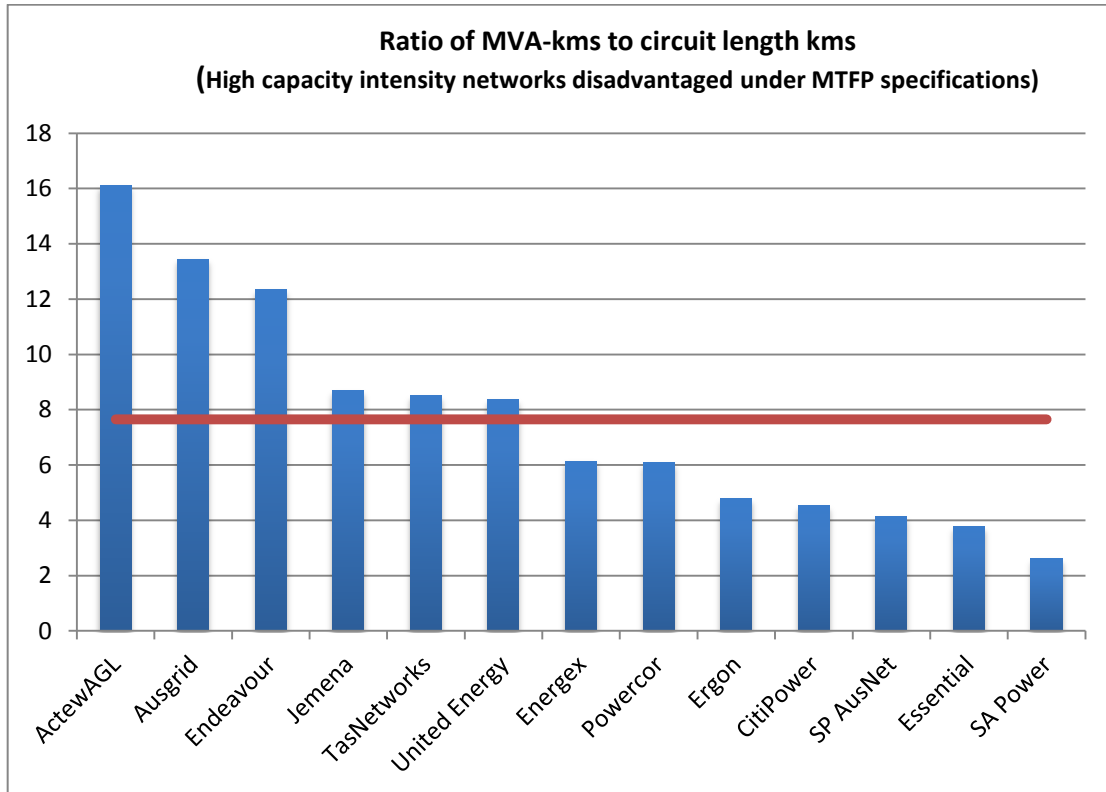
<b>Outputs</b>	<b>Inputs</b>
Energy delivered	Operating expenditure
Ratcheted Maximum Demand	Overhead lines MVA-kms
Customer Numbers	Underground cables MVA-kms
Circuit line length	Transformers & Other MVA (excluding first stage of two stage higher transformation)
Reliability	

ActewAGL Distribution notes that this specification is different to the AER’s preferred model specification as set out in the guidelines. ActewAGL Distribution does not believe that this departure from the guidelines is substantiated in the AER’s draft report and as an example points to the decision by the AER to halve the VCR applied in the model (as a measure of reliability) because it is ‘more in line with international practice.’<sup>12</sup>

Given the heterogeneity of DNSPs and the different operating environments in which they operate, no single model will fit the entire industry, and bias will always exist toward a certain type of business. In this case, the MTFP model specifications disadvantage ActewAGL Distribution because of network characteristics that have been inherited and cannot be changed in the short term. A good example of how network characteristics bias the results against ActewAGL Distribution is the capacity intensity of the network. Under the AER’s model specification, businesses that are less capacity intensive are favoured at the expense of businesses like ActewAGL Distribution because output is measured in circuit length kms whilst inputs are measured in MVA-kms. This is illustrated in the chart below which shows that ActewAGL Distribution, Ausgrid and Endeavour are all well above the industry average in terms of MVA-kms/Circuit length and consequently benchmark poorly (the three lowest) in the AER’s draft report.<sup>13</sup>

<sup>12</sup> Economic Insight, Memorandum to the AER Opex Team, DNSP MTFP Results, 25 July 2014, p 5

<sup>13</sup> AER, Electricity distribution network service providers, Draft Annual benchmarking report, August 2014, Figure 20



Despite being included in the specification preferred by the AER in the guidelines, MVA-kms has not been included as an output in the AER’s modelling for the draft report because the multiplicative nature of this particular system capacity variable (measured as MVA multiplied by line length) is said to bias the results in favour of some DNSPs at the expense of others.<sup>14</sup>

However, MVA-kms has been included as a measure of two inputs - overhead lines and underground cables. This has the effect of disadvantaging DNSPs that have a higher proportion of their network at high voltages compared to DNSPs with lower voltage networks (Victoria and South Australia), thereby implying they are less efficient. Tables 1 and 2 below illustrate the difference in network design between ActewAGL Distribution and the frontier firm in the AER’s draft report, CitiPower. Despite being only 8% of the ACT’s network in terms of line length, 132kV overhead lines account for 90% of ActewAGL Distribution’s overhead MVA-kms whilst CitiPower does not have any lines at this voltage level.

<sup>14</sup> Economic Insights 2014, Memorandum: DNSP MTFP Results, p.2

Figure 1 Line length measured in kms

	CitiPower		ActewAGL Distribution	
	km	% of overhead network	km	% of overhead network
Low voltage	1,623	73	1,184	49
11kV	450	20	980	41
22kV	22	1	34	1
33kV	-	-	-	-
66kV	138	6	7	0.3
132kV	-	-	189	8
<b>Total</b>	<b>2,233</b>	<b>100</b>	<b>2,394</b>	<b>100</b>

Figure 2 Line length measured in MVA-kms

	CitiPower		ActewAGL Distribution	
	MVA-km	% of overhead network	MVA-km	% of overhead network
Low voltage	325	3	320	0.5
11kV	1,800	19	5,978	8
22kV	281	3	462	0.7
33kV	-	-	-	-
66kV	6,900	74	412	0.6
132kV	-	-	63,315	90
<b>Total</b>	<b>9,306</b>	<b>100</b>	<b>70,487</b>	<b>100</b>

The tables above show the significance of using MVA-kms as an input measure. Whilst ActewAGL Distribution and CitiPower have similar line lengths in terms of total circuit length they are very different when measured in MVA-kms with ActewAGL Distribution having over 7.5 times the MVA-kms than CitiPower despite having only an extra 161 km line length. There is a similar discrepancy in comparisons for the underground network – where just 3km of 132kv underground cable that exists in ActewAGL Distribution’s network (0.1% of total underground circuit length) accounts for 8% of its MVA-kms of underground cable.

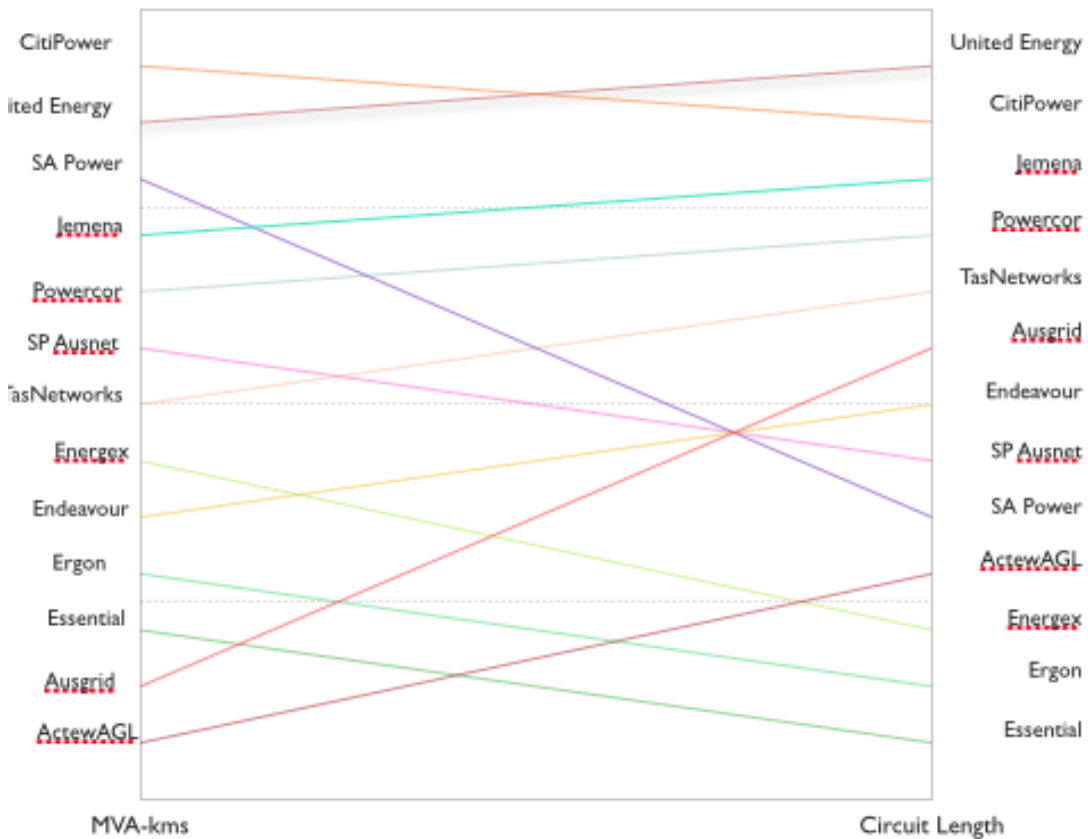
ActewAGL Distribution considers that the results contained in the AER’s draft report are distorted and significantly affected by these differences in network design rather than differences in productivity and efficiency. In excluding the first stage of two-stage higher transformation when measuring transformer inputs, the AER’s consultant, Economic Insights has recognised that network differences need to be accounted for if like-for-like comparisons are to be made. Similarly, the AER should recognise the bias introduced in its



model when using MVA-km to measure overhead line and underground cables as a proxy for capital expenditure.

The graph below illustrates the change in rankings when overhead lines and underground cables are measured in kms instead of MVA-kms. Not surprisingly, businesses with a higher than average MVA-kms/circuit length ratio (ActewAGL Distribution, Ausgrid, Endeavour, TasNetworks and Jemena) improve their ranking whilst businesses with a low ratio of MVA-kms/circuit length, rank lower. ActewAGL Distribution’s ranking improves from 13<sup>th</sup> to 10<sup>th</sup>.

Changing how line length is measured changes the results



To further demonstrate how the model’s input specifications disadvantage ActewAGL Distribution compared to DNSPs with lower voltage networks, Huegin Consulting has run the MTFP model excluding 132 kV assets for all DNSPs. This one change has the effect of improving ActewAGL Distribution’s ranking from 14<sup>th</sup> to 9<sup>th</sup>.

### ***ActewAGL Distribution's Dual Function Assets***

ActewAGL Distribution believes there is a particularly strong case for excluding ActewAGL Distribution's 132kV assets from the AER's DNSP benchmarking exercise given the AER's decision in its Framework and Approach paper (stage 1)<sup>15</sup> to classify ActewAGL Distribution's 132kV network as 'dual function assets' for the 2014-19 regulatory period. Dual function assets are 132kV assets forming part of a distribution network. The AER determined under clause 6.25(b) of the National Electricity Rules (NER) that Part J of chapter 6A (transmission pricing) of the rules will apply to relevant standard control services provided by ActewAGL Distribution's dual function assets in the subsequent regulatory period. In accordance with this decision, ActewAGL Distribution submitted a separate revenue proposal and pricing methodology in respect of its dual function assets performing transmission services.

Excluding 132kV assets and associated transmission opex from the MTFP model for ActewAGL Distribution only, on the basis that they are transmission assets and should not be included in a DNSP benchmarking analysis, this improves ActewAGL Distribution's ranking even further to 6<sup>th</sup>.

### ***Comparability of data***

One of the limitations of economic benchmarking that was raised during the guideline consultation process was that of data comparability. It is highly unlikely that all DNSPs capture network data and categorise costs in the same way and therefore also unlikely that the AER's benchmarking exercise is based on a like for like comparison of DNSPs. As such, the results in the draft report should not be relied upon by the AER to set DNSP expenditure allowances.

An additional concern when comparing data across DNSPs is the issue of unique costs that are often beyond the control of DNSPs, and may have no impact on MTFP model outputs. This is discussed in more detail in the following section.

### ***Falling output/input ratio does not imply inefficiency***

Increasing regulatory and safety obligations, vegetation management, and jurisdictional taxes over the benchmarking period (2006 to 2013) have all contributed to increases in ActewAGL Distribution's operating expenditure within the period, meaning ActewAGL's opex has been increasing at a greater rate than its inputs. This superficially inflates the suggested decline in productivity over the period.

Whilst other DNSPs may have incurred changes in regulatory obligations and vegetation management costs since 2006, ActewAGL Distribution's small scale exacerbates the impact

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<sup>15</sup> AER, 2013, Framework and Approach Stage 1, March, p. 9

of these costs in the benchmarking results because they make up a larger proportion of total opex costs.

It is important to note that this increase in operating expenditure over the period has not contributed to an increase in outputs as defined by the MTFP model, nor would it be expected to do so. Whilst opex has increased between 2005/06 and 2012/13, outputs (as defined by the AER's model) have not. Specifically, there has been declining energy throughput in recent years, ActewAGL Distribution's reliability levels have been consistently high between 2006 and 2013 (ie. no growth in reliability), and customer connections have been increasing in line with modest population growth in the ACT (approximately 1-2% p.a.)

Similarly, the AER should also take into account capital inputs beyond ActewAGL Distribution's control. A good example of this is capital expenditure undertaken by ActewAGL Distribution and completed in 2012/13 to construct a second point of supply to the ACT. This was a legislated requirement to increase security of supply to the national Capital brought about by the ACT Government's *Electricity Transmission Regulation 2006*, and involved the construction of a 15.3km double circuit single structure 132kV line from Williamsdale to Theodore. This expenditure was clearly beyond ActewAGL Distribution's control but represents an increase in inputs between 2006 and 2013 which did not contribute to any corresponding increase in outputs as defined by the MTFP approach.

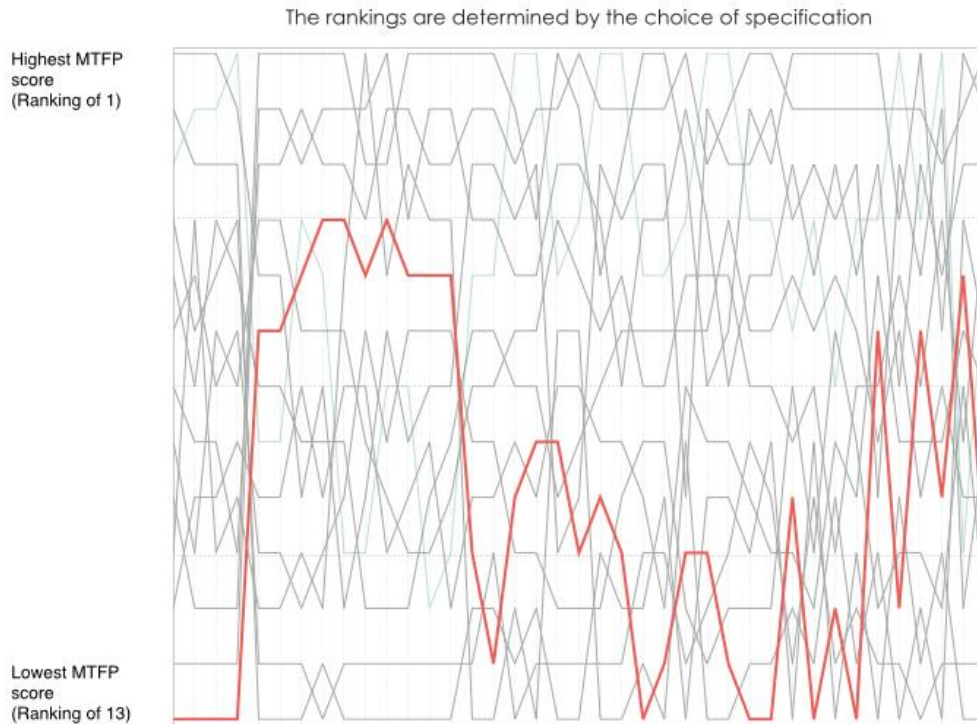
ActewAGL Distribution urges the AER to consider these unique operating and capital costs that are often beyond the control of DNSPs, and take them into account as it intended to do, given the impact they can have on perceived productivity under the MTFP technique. In using this technique, it is essential that the AER normalise data for such expenditure to ensure that expenditure categories are consistent across DNSP so that they are properly benchmarked on a like for like basis.

### ***There is a lack of robustness to the methodology and the results***

Because the choice of model specifications (outputs and inputs) for an electricity network can significantly alter the ranking of DNSPs, it is important to consider the sensitivity of benchmarking results to different model specifications.

The graph below, prepared for ActewAGL Distribution by Huegin Consulting highlights the wide range of rankings for ActewAGL Distribution (in red) that are possible using combinations of the various model specifications (inputs and outputs) that were considered by the AER's consultants, Economic Insights.

ActewAGL Distribution's ranking under different MTFP specifications ranges from 4<sup>th</sup> to 13<sup>th</sup>. This wide range of rankings highlights the 'instability' of the MTFP technique, and demonstrates why the results contained in the AER's draft report cannot be relied upon as a measure, or even an indicator of DNSPs relative productivity.



ActewAGL Distribution is also concerned that despite stating that it would use an alternate benchmarking technique – Data Envelopment Analysis (DEA) - as a cross check of its MTFP results<sup>16</sup>, the AER has not used this technique to validate the results of its MTFP analysis. ActewAGL Distribution requests that the AER, in accordance with the methodology outlined in its guidelines, make the results of Data Envelopment Analysis available to demonstrate that the AER’s benchmarking analysis is robust to not only the choice of model specification but also the technique used.

It is clear to ActewAGL Distribution that the AER’s MTFP model is unstable and the results contained in the draft benchmarking report are not robust. A lack of comparable data, the existence of input and output specifications that disadvantage high voltage networks, a failure to normalise for individual circumstances, exogenous environmental factors and unique costs, and the lack of DEA analysis to cross-check the MTFP results significantly undermine the legitimacy of the results contained in the AER’s draft report. It is ActewAGL Distribution’s view that the MTFP benchmarking results contained in the AER’s draft report are misleading and cannot be reliably used by the AER to make any assessment about the relative efficiency of DNSPs.

<sup>16</sup> AER, Economic Benchmarking Model: Technical Report by Regulatory Development Branch, for a workshop on 6 June 2013, p 2

A good indicator of this lack of ‘robustness’ is provided by the examples (listed earlier in this submission) of ways that ActewAGL Distribution might be expected to move to the AER’s efficient frontier. The required movements in inputs and/or outputs are clearly unachievable and seriously undermine the veracity of the MTFP results. ActewAGL Distribution therefore strongly advises the AER against using the results contained in the AER’s draft report to adjust DNSPs expenditure proposals as a means of moving them closer to the efficient frontier.