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Dr John Tamblyn
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By email: submissions@aemc.gov.au

Dear Dr Tamblyn

Review into the use of Total Factor Productivity for the determination of prices and revenues

I am pleased to attach Jemena's comments on the three consultants' reports published by the Commission in connection with its review into the use of Total Factor Productivity for the determination of prices and revenues.

Should your wish to discuss this submission, please contact Warwick Tudehope on 02 9270 4551.

Yours sincerely

Sandra Gamble
Group Manager Regulatory

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Comments on Consultants' Reports published by AEMC in connection with its review into the use of Total Factor Productivity for the determination of prices and revenues

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1 Introduction

Jemena has considered the three reports prepared for the Commission by The Brattle Group and Economic Insights (two reports). Each report addresses an important aspect of Total Factor Productivity (TFP) and its application, and makes a useful contribution to the Commission's consultation process. We commend the Commission for commissioning the reports.

Between them, the three reports identify issues that suggest that it may be premature to introduce TFP as an option for price regulation in Australia, at least in the form proposed by the Victorian Department of Primary Industries in its rule change proposal (the DPI proposal).[1] Our comments on the reports follow.

2 The Brattle Group – Incentives under Total Factor Productivity Based and Building-Blocks Type Price Controls[2]

The Brattle Group report compares the TFP implementation as proposed in the DPI proposal with current building block practice for electricity and concludes that the incentive properties of the DPI proposal are unlikely to be markedly different from those of building blocks. We generally concur with this conclusion and the supporting reasons advanced the Brattle Group.

The Brattle Group's conclusion also reinforces our view that the benefits that can be obtained from offering TFP as an alternative to building blocks, and the extent to which businesses will opt for such an alternative, will depend at least as much on the framework in which TFP is applied, such as the form and frequency of price re-sets to cost, as on the technical aspects of quantifying TFP.

The Brattle Group observes that companies are likely to opt for TFP only if they consider they will earn higher profits and will therefore be better off. While we

1 VDPI, 2008.

2 The Brattle Group, 2009.

agree that is likely to be the case, we note that one of the benefits of TFP as advanced by ESC is that consumers will also be better off. If that is in fact the case, then higher prices and profits for distribution businesses should be supportable.

The converse of the Brattle Group's observation is that a business that foresees a reduction in profits in moving to TFP will stay with building blocks. There may be good reasons for such a decision. For example, if the business is highly efficient and/or in a low growth area, the industry average TFP may be so large as to be unattainable and unsustainable for that business. Alternatively, TFP may not provide sufficient revenue to fund a necessary and prudent capital expansion programme. It would be inappropriate to move to TFP in either case.

As in previous submissions, Jemena's position is that, if TFP is to be established as part of the regulatory framework, it must be as an optional alternative to building blocks, and it must be for the business alone to exercise that option.

We note that the ESC has made a supplementary submission in which it comments on the three reports prepared for the Commission.[3] In commenting on the Brattle Group report, the ESC places great reliance on work reported in Pacific Economic Group's (PEG's) 2005 Incentive Power report (the PEG report).[4] The ESC makes the following statement:

> The ESC believes that any objective evaluation of the incentive effects of TFP based and building block regulation must reference and build on this incentive power work. The ESC-sponsored project represents the most comprehensive, rigorous assessment of the incentive effects of alternative regulatory regimes that has been presented in Australia.[5]

There has been no substantive public discussion of the PEG report, and the model upon which it is based remains a "black box"—the model has not been made public and its formulation and input assumptions have not been tested independently. The PEG report raises a number of obvious questions. For example, ESC draws on the results in the PEG report to make the point that:

> building block regulation sometimes leads to higher prices than cost of service regulation, due to companies' ability and incentives to "game" their operating and capital cost forecasts, which are in turn used to set their forward-looking prices.[6]

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3 ESC, 2009.

4 PEG, 2005.

5 ESC 2009, p 5.

6 ESC 2009, p 5.

This result is implausible given the well documented Averch-Johnson effect—the potential for "gold-plating"—and the general lack of constraints on costs under cost of service regulation on the one hand, and the extensive powers and discretions that regulators have at their disposal, and exercise, when applying building block regulation on the other. The very premise of incentive regulation is that it will result in more efficient outcomes than cost of service regulation.

We note the statement in the PEG report (at page 7) that "We have also written two technical appendices that present key mathematical details underlying the model specification and solution. Those appendices are available to interested readers upon request to the ESC."

Those appendices and the model itself should be made publicly available to enable an informed assessment of the model, the assumptions that have been made, and the results it produces. Unless that occurs, the Commission should exercise caution in accepting any of the ESC's assertions based on PEG's incentive power model and the PEG report. Transparency is essential in such a significant debate.

3 Economic Insights report – Energy Network Total Factor Productivity Sensitivity Analysis [7]

This report by Economic Insights highlights how sensitive TFP estimates are to model specification—the definition of inputs and outputs and their weighting—and confirms the significance of this issue which has been at the forefront of the debate in Victoria. The ESC refers to the principal points of difference that exist between its adviser (PEG) and Dr Lawrence in its most recent submission. [8] These different positions appear very difficult to reconcile. The ESC's latest submission adds nothing new to its previously stated position which, as it relates to outputs, is summarised in the DPI proposal as:

> *Definition and weighting of distribution outputs* – this has been one of the areas of debate between the experts in the ESC TFP work program. The ESC's expert [i.e. PEG] responded to this issue by demonstrating that, where an estimate of total factor productivity is used to set a price control, then the definition and weighting of outputs should reflect how charges are structured and revenue is received.[9]

One of the points of difference is whether outputs should include a measure of peak demand, or of physical size and capacity of the network (in addition to throughput and customer numbers in each case) and, as a related matter, whether

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7 Economic Insights, 2009a.

8 See ESC 2009, p 10 and p 13.

9 VDPI 2008, p22

outputs should be revenue-weighted or cost-weighted. The ESC refers to these differences in its comments on both the Brattle Group report and the Economic Insights work. [10]

Jemena is not equipped to engage in this aspect of the debate at a theoretical level. However, from a practical standpoint, it is clear to us that a network business's principal functions are to provide connections and ensure that there is sufficient capacity to meet network users'[11] requirements (whatever they are) in all but extreme "1 in X" circumstances. Capacity is installed in increments where the size of the increment is determined by forecast maximum peak demand at some time in the future. At any time, installed capacity will almost always exceed actual peak demand which can vary significantly and is outside the distributor's control.[12] The distributor is compensated for the prudently incurred cost of providing that capacity notwithstanding the fact that actual peak demand may reach the capacity limit only rarely. Actual throughput and actual peak demand are not significant cost drivers in the short term: the provision of capacity to accommodate forecast maximum peak demand is a much more significant driver of input requirements and costs.

Despite the fact that capacity is one of a distribution business's principal outputs, it is accepted practice to set network tariffs for some classes of end use at least, on the basis of end user throughput and consumption. A significant proportion of costs may be recovered in that way, but that does not alter the fact that network users are actually buying (and being supplied with) guaranteed capacity.

The ESC, supported by PEG, puts great weight on defining and weighting inputs and outputs in a way that is consistent with the economic and indexing theories that surround TFP estimation. The ESC/PEG position (as summarised in the passage from the DPI proposal cited above) appears to require that reality be moulded to fit the theory. From Jemena's perspective, the proposition that a distribution business's inputs and outputs must be defined in a way that is consistent with the structure of the tariffs it charges is not rational given the process and considerations that go to establishing tariff structures. It is even more tenuous to suggest that the definition of a business's outputs should be a function of the form of regulation—TFP in this case. If consistency between the form of regulation, charging structure and outputs requires that inputs and outputs be

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[10] ESC 2009, p 9 and p 11.

[11] Note that distribution businesses provide services to network users who are most often retailers, and not directly to end users/consumers. It is the retailer rather than the distribution business that supplies the commodity (electricity or gas) to the end user.

[12] Actual peak demand and throughput will vary within the installed capacity. This is likely to contribute to the relative volatility of TFP estimates that include peak demand as an output measure (see Economic Insights 2009a, pp 20-21).

something other than what they really are, then the problem is with the form of regulation and charging structure, not the inputs and outputs.

As an example of the disparity that can exist between network output and the basis of charging, the following table describes the sources of network revenue and related network throughput and peak demand values for the Jemena Gas Network in NSW.

Market Segment	Percent of annual throughput	Percent of peak day throughput	Percent of annual revenue	Charging basis contribution to revenue
Demand users (>10TJ per annum)	66%	51%	10%	≈100% on contracted capacity reservation (remainder is meter charges)
Volume users (<10TJ per annum)	34%	49%	90%	≈20% fixed charges ≈80% throughput charges

The Economic Insights report also investigates factors and assumptions that are unrelated to model specification. It compares the TFP growth rates obtained by different averaging methods, that is the endpoint-based method favoured by PEG and the regression-based method favoured by Dr Lawrence. Once again there are significant differences in TFP estimates depending on the method chosen. It is also clear that the length of the averaging period can be a significant variable.

In our response dated 27 February 2009 to the Commission's Framework and Issues Paper, EMO006, we analysed PEG's estimates of TFP growth for the Victorian electricity distribution businesses between 2005 and 2006.[13] The average TFP growth for the five businesses was estimated at 5.8%. This result reinforces the significance of a number of the points of difference between Dr Lawrence and PEG.

As proposed, "X" under a TFP regime would be set directly by reference to the historically observed industry TFP trend. The implicit assumption is that the observed trend for the past will continue into the future. Simple extrapolation is an unsophisticated and unreliable basis for forecasting at the best of times. The uncertainties surrounding the estimation of historical TFP trends, as evidenced by Economic Insights' work, increase the uncertainty and risk of forecasting TFP by extrapolation.

[13] PEG, 2008.

4 Economic Insights report – Assessment of Data Currently Available to Support TFP–based Network Regulation [14]

Economic Insights' report is a thorough review of available data in Australia and its suitability for estimating TFP as the primary determinant in setting regulated prices. The conclusion that currently available financial data (let alone physical data) is not suitable for that purpose is consistent with PEG's finding in 2006. In that work PEG estimated TFP growth for electricity distributors in four jurisdictions. Consistent data was not available for all four jurisdictions so PEG had to adopt what it describes as a second best approach for three of them. [15]

Given that the proposed implementation of the TFP methodology relies on historical data, it is likely to be some time before a consistent and reliable data set could be established, especially for businesses outside Victoria. It is doubtful whether existing historical data for those businesses could be "re-cast" and/or filled out with sufficient accuracy to permit the immediate inclusion of those businesses in the "industry" for a TFP calculation. Even in the case of Victoria where there is a well established financial reporting regime, Economic Insights identify issues that go to data quality.

Economic Insights also note the general lack of reported physical data. This would be problematic if the correct model specification required that data.

14 Economic Insights, 2009b.

15 ESC/PEG, 2006, pp vii-viii.

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