AUSTRALIAN ENERGY MARKET COMMISSION REVIEW INTO THE USE OF TOTAL FACTOR PRODUCTIVIY FOR THE DETERMINATION OF PRICES AND REVENUES

SUBMISSION BY THE VICTORIAN DEPARTMENT OF PRIMARY INDUSTRIES

5 March 2009

1. Introduction

In May 2008, the Victorian Department of Primary Industries (DPI) made a submission to the Australian Energy Market Commission (AEMC) proposing a series of Rule changes to Chapter 6 of the National Electricity Rules (NER) to permit a total factor productivity (TFP) approach to be used to set the price controls for 'standard control' regulated business services. The Rule changes proposed also set out appropriate direction and guidance to the Australian Energy Regulator (AER) when applying the TFP approach.

The AEMC responded to stakeholder calls for a wider consideration of the issues in initiating this review, prior to making any decision to allow the TFP approach to be incorporated into the NER. Unfortunately, this will mean that such an approach will not be available in time for the Victorian 2011-15 Electricity Distribution Price Review. However, DPI remains convinced that the use of the externally derived productivity indicator, TFP, to govern price movements over a regulatory period can deliver significant benefits to stakeholders and welcomes the opportunity to comment on the AEMC's Framework and Issues Paper.

2. DPI Position

As outlined in DPI's rule change submission, the TFP approach is a method for setting the level of the price control for 'standard control' regulated business services. The current prevailing approach for setting the level of the price control is the 'building block approach'. The key difference between the TFP and building block approaches is how the regulator determines the trajectory for prices over the forthcoming regulatory period. In particular, while both approaches (in effect) result in a price control that is aligned with reference to a firm's actual cost at the time of the price review with prices set to change by CPI-X over the regulatory period:

- under the building block approach, expenditure (and derivatives, namely the depreciation allowance and regulatory asset base) and demand are forecast over the regulatory period and the trajectory for prices is set so that forecast revenue equates to forecast cost (in present value terms); whereas
- under the TFP approach, X is set with reference to the estimated growth in TFP over an appropriate historical period.

DPI considers that there are a number of benefits of the TFP approach such as its ability to reduce significant regulatory costs, overcome asymmetric information problems, reduce incentives to misrepresent information and improve efficiencies.

2.1. Improving efficiencies

The TFP approach can encourage regulated businesses to effectively pursue actions – such as energy efficiency and demand management – that improve their bottom line and promote broader energy market objectives, whilst providing stakeholders with the confidence that there is a necessary constraint on monopolistic behaviour.

This approach is explicitly designed to mimic the operation and outcome of competitive markets, where the change in prices charged by a competitive industry is equal to the trend in that *industry's* unit cost, rather than the unit cost of any particular

firm. The benefits of *industry* productivity growth are then passed to customers over time in the form of slower price growth.

Compared with a building block approach, the TFP approach can simultaneously enhance performance incentives, facilitate flexibility, and reduce regulatory costs. Using industry-wide data that is external to the firm in the CPI-X formula allows a utility's own costs to be directly linked to industry performance. A TFP framework delivers a number of additional powerful market signals including allowing businesses to retain the gains of outperforming industry for longer. Correspondingly, it also penalises businesses that perform below the industry average.[1]

In terms of gains to the community, these are expected to include greater efficiency incentives; such as lower costs, automatic pass through of industry productivity gains and consumers contribute only to costs actually incurred by the industry.

2.2. Reduce regulatory burden

Under the TFP approach, regulated businesses have greater certainty in recovering costs assuming effective investment practices. They also have a more certain basis for the sharing of gains with consumers and greater flexibility to integrate and pursue demand management initiatives.

The TFP approach has the potential to obviate the need for the regulator and service provider to go through the process of determining detailed, firm-specific forecasts of costs and revenues, in order to reset a fixed term price control. Currently, a significant proportion of a typical process for determining price controls in the Australian energy sector is focussed on determining fair and reasonable estimates of cost and demand forecasts.

Additionally, the adoption of a regulatory approach that does not rely on forward looking, firm-specific cost and demand forecasts has the potential to reduce the range of intrinsically difficult and adversarial issues that regulators must address. Accordingly, the adoption of a TFP-based price control setting method has the potential to bring about a significant reduction in the costs of regulation.[2]

This is expected to result in significantly lower costs to both regulators and regulated businesses during price determinations as well as increasing transparency.

2.3. Improved information

The TFP approach entails a shift from use of firm-specific forecast information to determine the regulated price path to *known and measurable* historical industry data. This reduces the uncertainty associated with this data and the potential for errors in one firm's forecasts to cause large price deviations from an efficient level.

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1 It is important to note businesses will have to meet a number of requirements to be considered for the TFP approach. This will ensure that a business experiencing exogenous cost factors will not be eligible for the TFP approach and, hence, cannot be unfairly penalised if it performs below the industry average.

2 Expert Panel Review of Energy Access Pricing Public Submission on Expert Panel Draft Report, March 2006, p.103.

The reliance on data collected from many industry participants, robustly verified and standardised, and averaged across the industry, reduces the asymmetry of information that arises when an individual distribution business proposes price outcomes to the regulator.

Finally, the incentive for businesses to overstate their current level of internal costs is reduced as this will lead to inefficient performance against an industry benchmark.

One criticism is that the information required to adopt the TFP approach is not available. In 2004, the Essential Services Commission of Victoria initiated a major ongoing project reviewing the use of the TFP approach to regulate electricity distribution services. There is now an appropriate time series of data that can be used. In December 2006, the Essential Services Commission of Victoria – assisted by the Pacific Economics Group – completed a report which indicated that a "sufficient time series" of data would exist within three years of the report's publication.[3] Please see our response to Issue 6 for further information on the Department's position on this issue.

3. Conclusion

DPI is confident that the TFP approach can drive productivity growth and incentivise distributors to act as profit-maximising competitive businesses. This will deliver optimal benefits to energy consumers.

Following the maturing of the energy distribution industry, particularly in some jurisdictions, implementing the TFP approach is the next step in the evolution of the industry as it continues to move towards more competition-reflective practices.

DPI considers that the AEMC should conduct a thorough examination of the potential benefits of TFP, but adopt an evolutionary and flexible approach to its implementation. This should be based around the ability of the TFP approach to encourage productivity improvements of regulated businesses, reduce regulatory burden and deliver value-for-money to energy consumers within the existing energy regulation frameworks.

In particular, the detail of how a TFP approach specified in the NER should be applied to an individual business should be considered and developed by the AER to allow for the evolution and adaption of the approach. As such, you will note that DPI suggests that a number of the issues raised by the AEMC in its Framework and Issues Paper be referred to the AER for development via guidelines or other regulatory instruments.

It is requested that the AEMC refer to the DPI rule change submission if an issue raised by the AEMC in its Framework and Issues Paper is not explicitly addressed in this submission. The contact person for the purposes of this submission, and the contact details to which any correspondence or other documents should be sent, are as follows:

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[3] Essential Services Commission of Victoria and Pacific Economics Group, *Total Factor Productivity and the Australian Electricity Industry – Estimating a National Trend*, December 2006, p. XI.

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4. Appendix A

Please see, in turn, DPI's responses to the list of issues raised in the AEMC Framework and Issues Paper.

Issue	DPI Position
Scope of the Review 1) Is the Commissions' proposed scope of the Review appropriate?	No DPI comment
Assessment framework 2) Are the Commission's proposed assessment criteria appropriate? Are there other desirable criteria?	No DPI comment
Designing TFP based approaches 3) If TFP were to be available for revenue and pricing decisions, what would be the correct industry definitions for each of the respective sectors? Also, in determining an industry definition for a TFP based approach, would adjustments for operating environment conditions be necessary and, if so, under what conditions?	DPI considers this matter within the AER's remit. However, DPI encourages an approach to this issue that allows flexibility, and the important consideration is that the individual business is subject to TFP based on a representative industry data set. DPI notes that an industry definition is not currently prescribed in the NER. It is possible that any prescriptive definition may lead to a situation where industries currently divergent may become convergent (or vice versa).

4) What is the appropriate method for determining TFP growth estimates? (a) How should the outputs and inputs for the different energy sectors be classified? (b) What should be the approach for determining the weightings for inputs and outputs?	DPI's proposed TFP rule in section 6.6A.6 gives guidance on the appropriate method for determining TFP growth estimates. Additional overarching principles on the appropriate method for determining TFP growth estimates should be articulated in the AER's Framework and Approach.
5) What are the variables that would be needed to compute a TFP growth estimate for the gas and electricity transmission and distribution sectors?	DPI considers this matter should fall within the AER's remit to determine, based on best practice TFP methodologies elsewhere.
6) What is the current availability of TFP-relevant data and its quality and consistency?	DPI considers that there is a critical mass of robust and consistent data currently available in at least one jurisdiction, as collected by the Essential Services Commission of Victoria in association with Pacific Economic Group. Additional data from other jurisdictions will be available following the implementation of the TFP approach which should be appropriately incorporated into the dataset.
7) What would be the appropriate balance between precision and availability of data for the calculation of TFP?	DPI considers this matter within the AER's remit. However, it is the opinion of DPI that the fundamental issue is whether the data is appropriately robust and independently verified.
8) If a TFP based approach is adopted, what sample period would be appropriate for the data and what adjustments, if any, would be needed	DPI considers this a methodology issue within the AER's remit, based on data availability and an assessment of whether any step-changes in productivity have happened in the recent past.

for it to be extrapolated for future circumstances?	
9) If a TFP based approach is used, should any Australian data be supplemented with overseas data? Under what conditions would this be appropriate?	There is no limitation upon the AER currently to restrict its use of comparison and benchmark data to Australian sources in the building blocks approach. Therefore, it appears inconsistent to apply such a restriction to a TFP approach. DPI considers that the issue of whether overseas data can be used, and in what circumstances this would be appropriate, is within the remit of the AER.
Designing TFP based approaches 10) What characteristics of the dataset would need to be met for a TFP calculation to be robust and credible? Should the regulator be permitted to 'clean up' data?	DPI notes that these issues have been considered by the Essential Services Commission of Victoria and the Pacific Economics Group in its work on the TFP approach. DPI recommends no change to the existing requirements upon the AER for the treatment of regulatory inputs to pricing determinations.
11) What should be the pre-conditions relating to industry characteristics required for the implementation of a TFP based approach?	DPI's proposed TFP rule in section 6.6A.6 (f) (2) gives guidance on the necessary pre-conditions industry characteristics. These pre-conditions are: (i) that the regulated business (if privatised) was privatised at least 5 years prior to the carrying out of the calculation; (ii) that the AER considers that the regulated businesses' productivity is not materially affected by specific regulatory requirements applicable to that business; and (iii) that the regulated business is not otherwise subject to climate, topographical, technological, population density or other factors that may affect the likelihood that over a *regulatory control period* the productivity growth of the regulated business will, or is likely to reflect industry-wide productivity growth. These considerations act to limit the potential for businesses to adopt a TFP approach where they may experience a step-change in productivity, or material divergence from industry productivity trends.

	Additionally, DPI notes the Expert Panel's consideration of the criteria that should be measured in developing guidance on whether to adopt a TFP-based control setting method or to maintain an existing, building block approach. According to the Expert Panel, these criteria should be included: • the availability of robust, consistent and relevant data over a sufficient period to allow the derivation of TFP estimates; • whether the industry in which it is proposed to adopt a TFP-based control setting method is in a relatively 'steady state', such that very substantial changes in costs are unlikely over the foreseeable future; or • alternatively, to the extent an industry is not in a relatively 'steady state', whether adequate flexibility can be built into the design of the P_0 and X reset mechanisms to accommodate such uncertainty; and • the extent to which there may be a need to reflect factors that may cause variations in the rate of change in TFP within an industry, such as climate, topography, density or technology.
12) If implementing a TFP based approach, should adjustments to an industry wide X be allowed to account for specific business characteristics?	In the early stages of a TFP approach, it may be more advisable to limit its application to businesses that reasonably *can* be expected to follow industry productivity trends rather than trying to adapt the P_0 and X setting mechanisms to reflect exogenous circumstances. Such business-specific accommodations should be considered as a next step once the approach has been successfully implemented in a more limited form. Periodic price determinations and appropriate pass-through systems ensure an industry-wide X could be used providing application of the approach is suitably limited. It also considered important that in the initial stages of TFP usage the integrity of the X factor is preserved.
13) If a TFP based methodology was to be introduced, should fixed or rolling X factors be used? Alternatively, should the regulator have the option to choose	If a TFP based methodology was introduced, DPI proposes that the relevant business be permitted to choose whether the TFP approach should be applied with a fixed X factor or a rolling X factor. DPI proposes that the AER consider how confident it is that prices will track unit cost over the regulatory period in choosing the method for setting the X factor. It would be expected that the AER

between these in applying the TFP based methodology?	would be more willing to accept a regulatory period that is longer than the current standard of 5 years if the method for determining the X factor that creates the greatest confidence that price would track unit cost over the regulatory period is adopted.
14) If a full application of a TFP based approach were to be introduced:	
(a) Should periodic assessments of efficient costs and the resetting of the X factor be undertaken?	To assist in an evolutionary transition to a TFP approach, consistent fixed price determinations could be incorporated to ensure that the NEL pricing criteria are satisfied. In the longer term, it would be desirable to provide for indefinite regulatory periods.
(b) Would it be appropriate for the building block approach be applied to an assessment of single year of costs?	As above, an evolutionary approach would adopt the current form of revenue reset which attempts to 'true up' prices with efficient costs. However, this mutes incentives for businesses to pursue efficiency gains which develop over multiple regulatory periods. In the longer term, less intensive forms of revenue reset could be implemented which adjust for specific material changes in the operating or regulatory environment.
(c) Does the building block approach need amending to allow it to work within a TFP framework (particularly in relation to the asset base, depreciation, new capital expenditure and the rate of return)?	There appears no robust reason for the building block approach to be amended due to the implementation of the TFP approach. DPI considers that the building blocks approach should be allowed to evolve as it has done in the past.
15) Under a full application TFP approach, what should be the length of the	DPI recommends that this matter should be negotiated between the AER and regulated businesses.

regulatory period?	
16) If a TFP based methodology was introduced, could earnings based re-openers or cost pass through mechanisms be used? What features of these mechanisms would be desirable (or not desirable)?	Clause 6.6.1 of the NER outlines the adjustments after making of building block determinations that can be made regarding cost pass throughs. DPI considers that the TFP based methodology could be directly linked to this clause. As outlined above, the features of this mechanism should be consistent with the current building blocks cost pass through provisions in the short term in conjunction with fixed length regulatory periods.
17) If a TFP based methodology was introduced, what would be the appropriate index for measuring input prices?	The TFP methodology proposed in DPI's rule change application utilises the Tornquist index. The use of a Tornqvist index appears to be supported by the different experts who have contributed to the Essential Services Commission of Victoria's consultation on the TFP approach. This index is a weighted geometric average of the quantity relatives with weights given by the simple average of the value shares in two successive periods. It has been used successfully in the United States and has several advantages to regulators and businesses.
Application of TFP to national energy markets 18) Is a TFP based methodology consistent with a revenue cap form of control?	DPI welcomes consideration of the potential for TFP's application to a revenue cap form of regulation, that is, the regulated transmission businesses. However, in the short term, it appears that there is greater potential for economic benefits to be had from TFP in the electricity (and potentially gas) distribution industries, due in part to the less volatile levels of expenditure needed to sustain these businesses.
19) If a TFP based methodology was introduced, should it be a requirement	There is no inherent reason why a business must consent to TFP if it is the most appropriate regulatory approach for their circumstances. However, in the initial stages of the TFP approach,

for service providers to consent to an application of TFP to determine allowed revenue/prices?	development and refinement of the TFP approach would be helped by the assistance of willing businesses. For this reason, DPI supports an initial voluntary stage in the application of TFP. In the longer term, the AEMC may need to ensure that businesses operate on a level playing field by shifting this decision to one of regulatory discretion. It is also necessary for some safeguards to be in place to prevent methodology 'shopping' at the time of subsequent pricing reviews. In particular, the potential for businesses to move expenditure into a building blocks-based regulatory period, and then benefit from cost reductions in a subsequent TFP-based period, is a real one and allowing this would compromise the integrity of the incentive-based regime. DPI's proposed TFP approach therefore places the AER in the position of overseeing any potential exit from TFP, and establishes clear criteria for doing so (see clause 6.2.4A (d) of DPI's proposed Rules). The criteria established under proposed clause 6.2.4A (b) give a right for a distributor to leave the TFP based regulatory approach so long as it can demonstrate a case to do so. This appropriately safe-guards both the integrity of the regulatory regime and distributors' rights.
20) Would a TFP based approach be suitable for determining the price path for transmission service providers?	Please refer to comments against issue 18.
21) If a TFP based methodology was to be introduced, should it be applied in electricity distribution determinations? Are there such significant differences in the DNSPs across the jurisdictions that classifying the sector as a single industry would be difficult or inappropriate?	If adopted, the TFP based methodology should be applied in electricity distribution determinations. Following examination of the issue, the AER may classify different industries as a sector. This is primarily a database management function for the AER. The pre-conditions relating to industry characteristics required for the implementation of a TFP based approach may lead to a situation where an industry is partitioned. That is, an industry could be differentiated into two sections – those that have steady-state pre-conditions and those that do

	not meet those conditions. Those with steady-state characteristics will be eligible to use the TFP based approach.
22) Would a TFP based approach be suitable for determining the price path for gas transmission pipeline service providers?	DPI welcomes the AEMC's consideration of this issue, but notes that an industry definition may be more difficult to develop in gas transmission due to the limited number of, and varied circumstances of, covered pipelines. Gas transmission pipelines are also subject to more volatile expenditure requirements than their distribution counterparts.
23) Can a TFP based methodology be applied to the gas distribution sector? Are there such significant differences in the gas distribution systems across the jurisdictions to make classifying the sector as a single industry inappropriate?	DPI considers that there are no structural reasons why the TFP based methodology cannot be applied to the gas distribution sector. DPI welcomes the AEMC's consideration of this issue, which was outside the scope of DPI's rule change application. Please also refer to comments against issue 21.
Whether to introduce a TFP based approach 24) What would be the ability of a TFP based methodology to address any perceived problems with the current applications of the building block approach?	The main body of this submission outlines the key benefits of the TFP approach compared to the building blocks approach. These benefits include the reliance on 'known and measurable' data, reduced disputes, reduced regulatory costs, overcoming asymmetric information issues and efficiency gains.
25) Under a TFP based approach, what would be the impact on the incentives to make efficiency improvements and make efficient investments?	DPI considers that the incentives to make efficiency improvements and make efficient investments would be materially improved under the TFP approach, particularly through benchmarking prices against an objective indicator, and providing enhanced incentives to pursue longer term efficiency improvements. For more information on DPI's position, please see the main body of this submission

	and DPI's rule change submission.
26) If a TFP based methodology was to be introduced, would the existing incentives schemes be needed? And if so, do they require any amendment?	There will remain an ongoing need for incentive schemes focussing on customer service and service quality. For example, there will remain a need for the service incentive scheme to incentivise improvements in average service and the "Guaranteed Service Level" to incentivise improvements for the worst served customers. Where periodic pricing reviews remain, there may also be a need to retain the efficiency benefit sharing scheme.
27) If a TFP based methodology was to be introduced, how should service quality be regulated?	DPI recommends that the "Guaranteed Service Level" payments and the service incentive scheme remain. It is considered important that service quality issues are incorporated into a TFP methodology at an early stage to allow comprehensive analysis to occur.
28) What would be the benefits and costs from having two forms of control in the regulatory framework?	Two forms of control in the regulatory framework will naturally increase regulatory costs to some extent. However; the efficiency gains from the TFP approach could be substantial. As eliminating the building blocks approach cannot be contemplated, DPI considers that two forms of control would be necessary for a transitional period to pursue these efficiency gains.
29) Would giving service providers the option between either a TFP based methodology and a building block methodology be appropriate? Would the option create any perverse incentives?	It is considered appropriate offering service providers the option between either a TFP based methodology and a building block methodology, subject to appropriate safeguards regarding exit from a TFP approach as discussed in comments against issue 19 to facilitate the phase in of the TFP approach. When the criteria in issue 11 are met in all jurisdictions, the building blocks approach may be phased out.
30) What would be the likely participation by service providers under a TFP	DPI has no comment to make on this issue.

based methodology?	
Implementation and transition 31) If a TFP based methodology was to be introduced, what should be the procedures for collecting the TFP dataset? Should confidential data which have previously been provided to the regulator for regulatory determinations now be allowed to be used for calculating TFP growth estimates?	DPI considers that mechanical issues such as collection of TFP datasets should be within AER's remit, and an appropriate use of its powers under the existing NER and NGR to collect regulatory information. If confidential data is aggregated, DPI supports its inclusion in the dataset.
32) What are the costs of implementation a TFP based methodology?	The major cost of a TFP approach surrounds the undertaking of a price determination. As mentioned, these costs are expected to be significantly less than the costs of a price determination under the building blocks approach. The need for robust, accurate and verifiable accounting statements is the same under both approaches.
33) What is the required level of specification on a TFP based methodology that needs to be included in the Rules?	Please refer to answers 7 to 23 and DPI's rule change submission. In general, DPI supports regulatory discretion to allow evolution and improvement of the TFP approach in its early stages.
34) What are the criteria for assessing whether a TFP based methodology	Please refer to answer 11.

should be applied?	
35) If a TFP based methodology was to be introduced, what would be the appropriate timing for its introduction? Should implementation process include a trial period?	DPI considers that the TFP approach should be introduced as soon as practicable. A trial period is not considered necessary, as the approach can be fine tuned and modified during the process of its development.
36) How could the balances under the existing incentive schemes be carried over from a building block methodology to a TFP based methodology?	DPI's rule change application dealt with this issue as follows: • First, the initial set of prices required for the TFP approach would be calculated for the first year of the regulatory period, rather than for a test year, using the same method that would have been used under the building block approach. This method would ensure that the scope exists for the AER to give effect to any prior commitments as to how past expenditure levels will feed into future expenditure forecasts (and hence prices). • Secondly, the initial set of prices described above would be required to be adjusted to provide the distributor with an increase or decrease in projected revenue over the regulatory period that has a present value equal to what would have been applied by applying any past commitments (e.g. the efficiency benefit sharing scheme) under the building block approach.