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Dr John Tamblyn
Chairman
The Australian Energy Market Commission
PO Box A2449
Sydney South NSW 1235

Envestra

Dear Dr Tamblyn

**Re: Total Factor Productivity Review – Framework and Issues Paper**

Thank you for providing Envestra with the opportunity to provide this submission on whether total factor productivity (TFP) based approaches to network regulation would contribute towards the national gas and/or electricity objectives.

Envestra is particularly interested in considering alternate regulatory approaches where this would better achieve the national law objectives. Proponents of the TFP approach would argue that TFP would strengthen the incentives on business to improve efficiency and lower regulatory costs.

Envestra believes however that the case for TFP is not clear. The attached submission seeks to test, from a policy and regulatory perspective, some of the arguments put forward in support of a TFP approach. In doing so, the question of whether there are material deficiencies (say in efficiency incentives) with the building block approach needs to be addressed.

While Envestra remains open to TFP, this submission questions the merit of some of its claimed benefits. Envestra looks forward to participating further in the AMEC's consultative process on this matter. Please contact me at anytime (08 8418 1125) should you wish to discuss this further.

Yours sincerely

Andrew Staniford
Commercial Manager

**Attachment: Submission to AMEC Review into the Use of Total Factor Productivity for the Determination of Prices and Revenues: Framework and Issues Paper**

## 1. Introduction

This submission does not directly address the issues raised by the AEMC in its paper. Rather, this submission discusses some of the key issues identified by the AEMC that need to be resolved in making a decision on whether allowing for TFP approaches would promote the national gas and/or electricity objective.

This submission firstly comments on the process proposed to be adopted by the AEMC to conduct this review. This submission then identifies the key arguments put forward in support of TFP and tests those arguments from a broad policy perspective. The important insights taken from the overseas evidence are also discussed.

## 2. Process

Envestra supports the decision by the AEMC to initiate this more detail review of TFP. This is consistent with the intent of the Expert Panel on Access Pricing. It is also consistent with the fact that the case supporting the use of TFP is not sufficiently clear to warrant moving straight to consideration of a rule change proposal in the absence of robust debate on the relative merits of TFP.

Envestra agrees with the staged approach proposed by the AEMC to this review. It is important to firstly establish whether there is merit, from a policy and regulatory perspective, of pursuing TFP based approaches before progressing on to the more detailed technical matters, including the content of a rule change proposal, once/if this case is made.

Envestra expects that the first stage of the review will clearly establish what (if any) material deficiencies exist with the current building block approach. The AEMC would then be required to determine whether those deficiencies are best remedied through modifications to the building block approach or through alternate regulatory methods (which would include consideration of TFP).

Considering all available options, and not just TFP, might widen the scope of review but is essential prior to considering the introduction of any alternate regulatory method. This review will also instill confidence among stakeholders that any shift in the regulatory regime is appropriate (including from a cost perspective). Such a review would benefit from the close participation of all industry stakeholders.

Envestra agrees that the scope of inquiry should consider all potential circumstances where TFP could be used. For example, such an inquiry might find that TFP is not suitable to be solely relied upon for price setting but is useful to inform a regulatory process (as is the case in Victoria).

**Summary**

The AEMC needs to consider all the available regulatory methods in seeking to address any clearly established material deficiencies that might exist with the building block approach.

## 3. Potential Benefits of TFP

The national gas and electricity objectives require the regulatory regime to promote efficiency and to share the resultant benefits with consumers (through lower prices and/or improved service). Proponents of TFP based approaches argue that TFP is likely to strengthen the incentives on business to improve efficiency overtime relative to building blocks.

For example, the Victorian Department of Primary Industries (DPI, pg. 6) noted in its rule change application to the AEMC:

> *"...while the use of the TFP approach would not, on its own, increase the incentives for regulated businesses to minimise cost, by using a method for setting the trajectory of prices that makes greater use of 'known and measurable' information it should be possible to extend the period between price reviews, and so increase the incentives for efficiency."*

The premise behind this statement appears to be that the TFP approach would more readily allow the regulatory period to be extended, thereby strengthening the incentives on business to improve productive and dynamic efficiency. This is because the business can retain the gains for longer the further away the next regulatory period is (when prices will again be realigned with efficient costs).

Another key argument in support of the TFP approach is that it is likely to lower regulatory costs relative to the building block approach. The Victorian DPI (pg. 5) in its application to the AMEC stated:

> *"...the principal benefit that would flow from introducing the TFP approach is that it increases the efficiency of the regulatory process (and hence reduces regulatory costs) by making greater use of 'known and measurable' information when setting the trajectory of prices over the regulatory period (i.e. measured productivity growth rather than company-specific forecasts of expenditure and demand)."*

The claimed reduction in regulatory costs appears to relate to the process for setting the trajectory of prices. This is again said to occur because the TFP approach uses known information to measure TFP growth and therefore avoids having to forecast costs for each year of the regulatory period.

**Summary**

Proponents of TFP believe it will strengthen regulatory incentives to improve efficiency and lead to lower regulatory costs.

## 4. Consideration of the Potential Benefits

This section considers the available evidence in support of the claimed benefits of TFP approaches. Envestra believes that the AEMC will need to more fully explore the potential benefits of a TFP approach, relative to the building block approach and other available regulatory approaches, before progressing to the next stage of its review.

### 4.1 Improved Regulatory Incentives

The building block approach is typically supported by the inclusion of an efficiency carryover mechanism (ECM), which allows a regulated business to retain the benefit of an efficiency gain for a fixed period of time (usually for five years in order to match the duration of most regulatory periods).

The intention of the ECM is to strengthen the incentives to improve productive and dynamic efficiency by making the business indifferent as to when it improves efficiency over the regulatory period. This is because the gain is not passed on to consumers at the time of the next price reset, but is passed on after the business has held the benefit of that gain for five years.

The Essential Services Commission of Victoria (ESCV), who is a strong advocate of TFP approaches, noted that a five year period for retaining efficiency gains under the ECM provided sufficient incentives for the distributors to improve efficiency. In responding to a proposal to increase the period for retaining efficiencies from five years to six years, the Commission in its Draft Decision (pg. 522) noted:

> "...the *Commission considers that the magnitude of the efficiency savings achieved by the distributors in the second regulatory period indicates that existing arrangements provide* ***ample incentives*** for the distributors to make efficiency gains." [Emphasis added]

This clearly suggests that, at least in the view of the ESCV, the building block approach provides sufficient incentives for businesses to improve efficiency. Under such circumstances there appears little reason for suggesting that a shift to a TFP approach would better meet the efficiency objectives of the national gas and/or electricity law.

Moreover, the ECM provides a mechanism to easily strengthen the incentives of the current building block approach by increasing the period for retaining gains, should this be considered necessary, without requiring significant change to the form of regulation. This would appear to be, in the absence of any other reason, a more appropriate way to strengthen regulatory incentives.

There is also no evidence supporting the notion that TFP approaches, due to their reliance on known and measurable information, provide a greater potential to extend the regulatory period. Envestra is only aware of a maximum regulatory period of seven years where TFP has been applied elsewhere and in other cases the regulatory periods are much shorter.

That aside, Envestra would have thought the potential to extend a regulatory period would be less if average and historic industry information and not the specific circumstances of the business were relied upon. As mentioned above, the ECM appears to be a far more effective way to strengthen regulatory incentives should this be considered by the AEMC to be necessary.

Envestra is also concerned about the lack of any clear empirical evidence supporting an assertion that the TFP approach provides stronger efficiency incentives than the building block approach. This point was noted by Farrier Swier Consulting (FSC 2002, pg. 61) following its international survey of TFP and building block approaches:

> *"We are unaware of any clear empirical evidence in the electricity and gas industries that demonstrates that any one of these approaches [TFP or building blocks] is clearly more effective than another in encouraging dynamic and productive efficiency."*

More recently, the Expert Panel (2006, pg. 103) in commenting on the relative merits of the TFP and building block approaches found:

> *"There is no basis for concluding that one approach has intrinsically stronger or weaker efficiency incentives than the other – this depends on the detailed parameters adopted under any particular application of either model."*

The motivation for moving away from the building block approach on efficiency grounds based on available evidence is therefore not clear. This raises the question of whether there actually is a deficiency with building blocks that warrants any shift in the form of regulation. For example, London Economics (1999, pg. 80) noted in regard to the application of the building block approach applied in the United Kingdom that:

> *"The average improvement in total factor productivity for the England and Wales distributors has been around 3.5% each year since 1990-91.*

The evidence is similar for Australian distributors who are also subject to the building block approach. Meyrick and Associates, who were engaged by the Victorian distributors to examine their TFP performance, found evidence of strong TFP growth over the sample period:

> *"The first major finding of this study is that the Victorian gas distribution industry has exhibited strong TFP growth over the 9 years since privatisation. TFP has grown at an average annual rate of 2.7 per cent." (Meyrick and Associates, 2007a, pg. ii)*

Interestingly, Meyrick and Associates cautioned against using past efficiency growth rates as a guide to likely future efficiency growth rates. This was primarily due to a view that was formed over the ability of the distributors to continue to achieve significant gains in efficiency given the period of time that has passed since they were privatised.

The research undertaken by Meyrick and Associates also found that the efficiency performance of Victorian distributors compared favorably to distributors in the United States and New Zealand.[1] The evidence therefore does not support the case for shifting away from building blocks in order to address relatively poor efficiency outcomes achieved by Australian distributors.

In addition, there is also the possibility that allocative efficiency might be worse under a TFP approach. This is because the X factor used in the TFP approach is not based on forecasts of efficient costs but a generic calculation of average and historic productivity levels achieved by industry as a whole. The building block approach in contrast aligns prices with efficient costs over the regulatory period.

### 4.2 Regulatory Costs

The reduction in regulatory costs, claimed by the Victorian DPI (pg. 5) to represent 'the principal benefit that would flow from introducing the TFP approach', relates to the process for setting the trajectory of prices. This is said to occur because the TFP approach uses known and measurable information to calculate TFP growth and therefore avoids having to forecast costs for each year of the regulatory period.

However, the DPI's submission (2008, pg. 38) suggests that initial prices will still need to be set under the TFP approach:

> *"The proposed TFP approach will require the prices at the commencement of each regulatory period to be set with reference to the (firm-specific) cost incurred by the distributor to provide the regulated services, consistent with what implicitly is the case for the building block approach."*

FSC (2002, pp. 34-35) in its international survey found that a TFP approach based on building blocks is the primary approach used when implementing this regulatory method. This raises some concern over the extent that TFP approaches would lead to (materially) lower regulatory costs given the continued use of the building block approach to set initial prices.

The potential for cost reductions can therefore be considered by comparing how costs are likely to differ in applying the building block approach for only one year rather than for each year of the regulatory period. Added to this difference would need to be the additional regulatory costs incurred in implementing the TFP approach alongside the building block approach.

The first observation is that the reduction in costs must occur in years after the first year of the regulatory period given the requirement to set initial prices using the building block approach.

[1] For example, see Meyrick and Associates 2007b and 2007c.

The question therefore becomes one of comparing the incremental costs of undertaking the building block approach for the last four years of a regulatory period relative to the costs of a TFP approach.

Envestra believes there is considerable doubt over whether the difference between the cost of implementing TFP rather than forecasting expenditure and demand for the last four years of a regulatory period would yield any material cost savings. Indeed, the variability and quantum of, for example, capital expenditure supports such factors being specifically forecast in the first place.

The requirement under the TFP approach to align initial prices with efficient costs in the first year of the regulatory period therefore significantly limits the scope for cost savings. That aside, there is a concern that any cost savings that might arise could be eroded through debate on the TFP methodology to apply. FSC (2002, pp. 68-69) states in reference to developing a methodology to implement a TFP approach that:

> *"Significant work would be required on the part of industry (or companies wishing to be subject to such an approach) and regulators on the definition and design of offramps, ESMs and on the TFP index methodology."*

This debate was evident in the recent review of the Victorian gas Access Arrangements. There was significant disagreement between the ESCV and the distributors on the appropriate approach to calculating the partial factor productivity of operating expenditure. As a result, the Commission adopted a significantly different (higher) forecast than that recommended for use by the distributors.

Envestra estimates, based on the regulatory operating cost benchmarks, that the different estimate used by the Commission led to a reduction in operating expenditure of around $5 million for each distributor over the five year regulatory period. The matters subject to debate related to many of the issues alluded to by the AEMC in its paper, including model specification and data availability.

This outcome appears similar to that experienced in the Netherlands. Of particular concern is the following observation made by the Brattle Group (2008, pg. 42) in its case study into the implementation of TFP in the Netherlands:

> *"The [Netherlands] case also illustrates a particular problem with econometric-based TFP methods: the results can be sensitive to the precise specification of the model, which means that the results may not be robust, and can be difficult or impossible for other parties to reproduce, which makes it less likely that agreement can be reached on the results."*

The potential for reductions in regulatory costs would be greatly enhanced if a TFP approach provided the scope for regulatory periods to be lengthened.

This is because the largely fixed regulatory cost associated with setting initial prices would be incurred less often. However, as already noted there are few examples where this has occurred in practice.

FSC (2002, pg. 68) in commenting on regulatory costs of the building block approach noted that:

> *"Significant costs have already been incurred in the development and agreement of the regulatory approaches and mechanisms, and can be regarded as largely sunk costs.*
>
> *This [building block] approach is now relatively well understood."*

This suggests that significant costs that would otherwise not arise would be required to develop the methodology for estimating TFP. To this end, the Brattle Group (2008, pg. 36) also note that:

> *"The regulation of electricity distribution companies in the Netherlands has been characterised by very significant legal challenges from the regulated companies. Most of the regulator's decisions on X factors have been challenged and subsequently revised on appeal. It is possible that these challenges may have resulted in part from the regulator's failure to consult widely on its approach to setting X, and because of the formulaic way in which the results of the TFP analysis were used directly."*

By way of comparison, methods such as price monitoring do not require the regulator to set initial prices. It is this feature that is most likely to result in material savings in regulatory costs to consumers rather than substituting one form of direct price control for another (that is, the building block approach for a TFP approach). Envestra considers that these regulatory approaches therefore warrant further review.

**Summary**

Further evidence is required to demonstrate that the claimed benefits of a TFP approach exist and are material (and hence would promote the national gas and/or electricity objective).

## 5. Brattle Report

Envestra considers it to be vitally important to the AEMC review to consider in detail circumstances where TFP has been implemented elsewhere. Ideally, such a review would inform stakeholders on whether the potential benefits of TFP have actually been realised and how best to implement TFP based approaches (including both methodology and the level of prescription in the law considered appropriate).

Perhaps the first relevant finding from the review by the Brattle Group is that no jurisdiction in the case studies has implemented a pure TFP approach to replace a building block approach.

The Brattle review (2008, pg. 9) notes:

> *"In none of the case studies has a pure TFP approach been adopted instead of a traditional "building blocks" approach, although in the New Zealand case the TFP approach could be regarded as a filter for identifying which companies have prices that are high enough to justify the cost of carrying out a full building block price review."*

And:

> *"We are not aware of any jurisdiction in which a pure TFP methodology has been adopted to replace a building-blocks approach."*

While not a reason to discount its use in Australia, the fact that TFP based approaches have not been widely accepted/applied elsewhere raises some concern. It also appears that it has been applied in jurisdictions that, unlike Australia, have a large number of relatively small distributors (in might be that TFP is more appropriate in these circumstances).

The case study research did not provide any evidence suggesting that TFP approaches had achieved their stated objectives of lowering regulatory costs and/or strengthening the incentives for efficiency. The fact that TFP has not significantly lengthened the regulatory period where it has been applied casts doubt over the extent that such benefits exist and are material.

**Summary**

The overseas case study research undertaken by the Brattle Group provided little support for the introduction of TFP in Australia.

## 6. Broad Technical Matters

Envestra intends to consider detailed technical matters, including model specification and the level of prescription in the rules, if the policy and regulatory case is made in support of a TFP methodology. At this stage, Envestra's comments are limited to some of the broader issues regarding the application of TFP approaches that are most relevant to its application in Australia.

The AMEC's Issues Paper and supporting expert reports highlights that there are many detailed matters that need to be decided upon before TFP approaches can be implemented. This includes matters relating to:

- *Model specification* – how should outputs and inputs be defined?
- *Data availability* – what is an appropriate time series of information required to calculate TFP and where/how should this data be sourced?
- *Defining comparable firms* – how should the sample of firms be defined for application to a particular distributor?
- *Appropriate Adjustments* – should the model adjust for relative efficiency performance, scale, changes in capital requirements and quality?

There was significant disagreement regarding such matters in the recent review of gas Access Arrangements, including debate over the proper definition of outputs and inputs and the relevance of overseas information. The debate was largely between the respective experts to the ESCV and the distributors, with the ESCV relying almost solely on its expert advisor.

The issues subject to debate were often highly technical and unrelated to matters typically dealt with by distribution businesses. Envestra also notes the lack of public comment on this matter during the regulatory process. Envestra would have considerable concerns had the TFP study been used as the sole determinant of its future price path.

Those jurisdictions that have implemented TFP have, unlike Australia, had access to robust, consistent and relevant time series data on which to calculate TFP. This type of data does not exist and would come at a significant cost to industry. Envestra would be concerned if attempts were made to collect the relevant information on a retrospective basis given the different data collection processes of distributors.

There are also many complex issues relating to defining the sample of comparable firms to use in any TFP study. Related to this are the many possible adjustments to measured TFP required to take into account factors such as quality, scale and relative efficiency. Such adjustments add to the complexity and lessen the transparency of the TFP approach.

Off-ramps based on profitability can be used to support the application of TFP over a regulatory period (and deal with some of the issues mentioned above). However, it is questionable whether it is desirable for either business or consumers to allow the prices of essential facilities to remain at relatively high or low levels for a sustained period of time.

### Summary

The complexity and lack of transparency of issues relating to TFP might explain the low uptake of pure TFP approaches internationally.

## 7. Conclusions

Envestra believes that the case supporting TFP is not clear. The overseas evidence, which is an important consideration of this review, provides little support for the introduction of TFP in Australia. The relatively low uptake of TFP in itself provides some indication of stakeholder views on the desirability of TFP approaches.

Further evidence is therefore required to demonstrate that allowing for TFP would promote the objectives of the national gas and/or electricity law. This evidence should clearly demonstrate that any material deficiencies that might exist with the building block approach are best remedied through use of TFP (and not alternate methods).

## References

Envestra has considered the following references in preparing this submission:

Essential Services Commission of Victoria 2007, *Gas Access Arrangement Review 2008-2012: Draft Decision*, Melbourne.

Essential Services Commission of Victoria 2008, *Gas Access Arrangement Review 2008-2012: Final Decision - Envestra*, Melbourne.

Expert Panel on Energy Access Pricing 2006, *Report to the Ministerial Council on Energy*, Canberra.

Farrier Swier Consulting 2002, *Comparison of Building Blocks and Index-Based Approaches*, Utility Regulators Forum.

Meyrick and Associates 2007a, *The Total Factor Productivity Performance of Victoria's Gas Distribution Industry*, Prepared for Envestra, Multinet and SP Ausnet, Canberra.

Meyrick and Associates 2007b, *Cost Comparisons of Multinet and United States Gas Distribution Businesses Allowing for Operating Environment Differences*, 26 March 2007, Canberra.

Meyrick and Associates 2007c, *Efficiency Comparisons of Australian and New Zealand Gas Distribution Businesses Allowing for Operating Environment Differences*, 19 March 2007, Canberra.

Victorian Department of Primary Industries 2008, *Proposed Rule Change to the Australian Energy Market Commission to Permit the Use of the 'TFP Approach'*, Victoria.