

# **INITIAL SUBMISSION TO THE EXPERT PANEL REVIEW OF REVENUE AND NETWORK PRICING**

## **ESSENTIAL SERVICES COMMISSION OF VICTORIA STAFF PAPER**

The staff of Victoria's Essential Services Commission (the Commission staff) present this "early" submission to the Expert Panel (the Panel) on the creation of a common approach towards energy regulation and pricing in Australia. The Panel's recommendations on these matters may have repercussions for Australia's energy networks and markets for decades to come. It is therefore important for the Panel's framework to be grounded in a thorough understanding of the experience of Australia's State-based regulators, including their research into alternative regulatory methods and application to the circumstances of specific regulated industries. This submission presents the Commission staff's preliminary views on the issues raised in Energy Market Reform Bulletin No.56. The opportunity to share our experience and related research in greater detail with the Panel would be welcomed. Our response to the particular matters raised by the Panel follows:

### **Industry Distinctions and Commonality in Regulatory Approaches**

There is value in promoting a common regulatory approach across energy sectors, but it is even more fundamental that regulation be designed to promote long-term benefits for consumers of regulated services. The goals of regulatory uniformity and consistency should not be elevated above this basic objective. Indeed, the Panel should be prepared to recommend different regulatory methods for different industries, and in different States, if doing so will promote efficiency and long-term customer benefit.

In this regard, the Commission staff believes it is important for the Panel to recognise that establishing a common regulatory framework in Australia should be viewed as a journey rather than a "flash cut" to a single desired model. The common regulatory framework should reflect and guide authorities towards good, long-term regulatory practice and sustainable regulatory models. But at the same time, the Panel

must be sensitive to jurisdictions' differing regulatory experiences and the extent to which they have achieved preliminary objectives, such as data collection and understanding the costs of the enterprises they are regulating. Differences in "initial conditions" across jurisdictions suggest it would be desirable to allow flexibility in how different jurisdictions move towards achieving the common end-state. Imposing a common transition path on all jurisdictions could increase regulatory uncertainty and lead to discontinuities in institutional knowledge, thereby exacerbating concerns with information asymmetries. In sum, the Commission staff believes it is not necessary to impose common means on all jurisdictions in order to achieve desired ends. The Panel's recommendations should embody this fundamental principle.

The Commission staff also believes there are important institutional and technological differences between energy transmission and distribution networks. These differences may warrant different regulatory approaches, at least initially. The Panel should bear at least three of these distinctions in mind as it considers the establishment of a nationwide regulatory framework.

First, a key objective for energy transmission infrastructure is to enhance the performance of energy markets. Most of the costs of delivered gas and electricity are associated with the energy commodity that is supplied and traded in competitive markets. Relatively small changes in these commodity prices can therefore have more impact on customer welfare than much larger changes in use of network charges (which account for a smaller share of overall energy costs). Gas and electricity transmission networks integrate diverse energy supply sources and hence play a critical role in facilitating effective energy market competition. In contrast, energy distribution networks primarily deliver services to end-users and have much less impact on the operation of upstream wholesale markets. The broader, integrating role of transmission infrastructure means that transmission investments may lead to higher cost (and, narrowly defined, less efficient) transmission services yet still produce customer benefits by promoting market-wide efficiencies through the more effective operation of wholesale markets. This is rarely the case with distribution services, where there is a more direct link between the efficiency of the services provided and the prices paid by end-users. Regulatory frameworks should therefore recognise the unique linkage between transmission

networks and energy markets and therefore concentrate on the structural solutions and regulatory methods that encourage “effective” provision of transmission services and therefore efficiency in upstream commodity markets.

Relatedly, the patterns of capital investment typically differ between the transmission and distribution sectors. Power and gas transmission investments provide for bulk energy transfers from supply sources to large energy users and distribution points. Such large investments tend to be “lumpier” than energy distribution infrastructure, which is more often added in smaller increments in response to customer and demand growth. Output and investment growth is therefore more stable over time in energy distribution than in energy transmission. As we discuss further below, these differences in investment patterns may have implications on the desirability, or at least the timing, of the possible introduction of productivity based regulation for transmission compared with distribution services.

It should also be recognised that there is more diversity in institutional arrangements for Australia’s energy transmission networks. Some gas transmission pipelines are not regulated at all, and some electricity interconnectors have also been built on an unregulated, “merchant” basis. Some states (like Victoria) separate power transmission ownership from transmission planning while others do not. In some jurisdictions, any major expansion of transmission facilities must be subject to competitive tenders, while in other States this is not mandatory. Given this diversity in institutional arrangements and differences in the scope of contestability, a one-size-fits-all regulatory approach may not be warranted for gas and electricity transmission.<sup>1</sup>

All of these factors suggest that the losses associated with the efficiency disincentives of more cost-based regulatory approaches are likely to be less for energy transmission than energy distribution. Additionally, more cost-based approaches can accommodate lumpier, more uncertain transmission investments more easily than alternative regulatory methodologies such as productivity-based regulation, which bases

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<sup>1</sup> Recent experience on electricity transmission in the US lends support to this view. In the last several years, the FERC and federal policymakers have struggled with alternative structural models for US transmission services, including several attempts (eventually abandoned entirely) at imposing a “standard market design.” The FERC has also been interested in performance-based regulation for electricity transmission, but regulatory reform proposals have been stymied by more fundamental structural uncertainties regarding transmission services.

allowed changes in prices on the changes in the regulated industry's total factor productivity (TFP) and input prices. All else equal, a period when large, lumpy investments are made will be one where input quantity growth expands rapidly and TFP growth (equal to the difference between output and input quantity growth) accordingly declines. By the same token, a period where investments are either not necessary or are not undertaken is more likely to register relatively rapid TFP growth. The lumpiness of investment is therefore likely to make TFP trends in the power and gas transmission industries less stable than for either power or gas distribution. Whilst the lumpiness of capital does not in itself preclude the application of productivity approaches there would be additional design challenges associated with the application of indexing in the transmission sector. This could limit the initial appeal of such an approach in these industries compared with regulatory alternatives that are more tied to the costs of the enterprises themselves.

One variant of cost-based regulation is the forward looking building block approach to CPI-X regulation that has traditionally been used in Australia. However other cost-based options may be appropriate and deserve some consideration. For example, prices could be adjusted only after investments have been put in place. This is equivalent to setting prices using observed, backward looking historical cost information rather than speculative, forward-looking projected costs as in the building block approach. Relying on observed costs would minimise the gaming incentives that are inherent in the forward-looking approach, which may lead to more stable prices and thus greater long-term benefit for customers.<sup>2</sup>

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<sup>2</sup> Some of the modelling work done for the Commission suggests that historical, cost-based regulatory approaches lead to better outcomes for consumers than regulation based on forward-looking costs. The results show that the distribution of benefits under the building block models is heavily skewed towards companies. Indeed, the model shows that companies receive 100% of the available benefits under Victoria's building block approach, and customer benefits are *lower* than they would be under "pure" cost of service regulation, notwithstanding the "gold plating" incentives under cost of service regulation. See the "incentive power" report (Kaufmann, L., *Incentive Power and Regulatory Options in Victoria*, May 2005) which can be found at the "Total Factor Productivity" link at [www.esc.vic.gov.au](http://www.esc.vic.gov.au).

## **Possible Alternatives to Current Regulatory Methodologies**

### *Services Subject to Alternative Regulatory Approaches*

The Commission’s experience with building blocks together with the research it has sponsored on alternative regulatory approaches provides strong support for the continued development of productivity-based regulation for energy distribution industries.<sup>3</sup> This experience also suggests there are no significant technological or institutional differences between gas and electricity distribution that affect the merits of productivity-based regulation. However, there are existing legal impediments to applying productivity-based regulation in the existing National Gas Code that need to be addressed.<sup>4</sup>

### ***The Feasibility and Appropriateness of Productivity-Based Alternatives to Building Block Regulation***

The purpose of this “early submission” is not to review all the arguments in favor of productivity-based regulation, since the advantages and disadvantages of this approach relative to building blocks have been discussed extensively in Australia.<sup>5</sup> The Panel should appreciate, however, just how much progress has been made on this issue in the last few years. For example, in 2002 the Utility Regulators Forum commissioned a report from Farrier-Swier Consulting on the merits of productivity-based regulation relative to building block approaches. The report concluded that, as a conceptual matter, “TFP

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<sup>3</sup> One important example of the Commission’s research on alternative regulatory approaches is the previously cited incentive power report.

<sup>4</sup> The Gas Code’s chapter 8 appears to require the adoption of cost based approaches i.e. the building blocks method to determine the stream of future revenue required to recover the efficient costs of delivering the reference services over the expected life of the assets employed. In approving reference tariffs, sections 8.44–8.46 of the Code also require the regulator to provide appropriate incentives for service providers to retain all, or a share of, efficiency gains achieved during a regulatory period, particularly those gains attributable to the efforts of the service provider. Section 8.46 also sets out objectives that such incentives should seek to achieve. Additionally, the Code appears to preclude the regulator from collecting non-financial information, which would be relevant to calculating TFP.

<sup>5</sup> These issues are discussed in the Commission’s Submission to the Productivity Commission Review of the Gas Access Regime (April 7 2004), the companion Submission by Dr. Lawrence Kaufmann of PEG, and the PEG reports that can be accessed at the “Total Factor Productivity” link at the Commission’s website ([www.esc.vic.gov.au](http://www.esc.vic.gov.au)).

based approaches appear to create superior economic efficiency incentives” and “are likely to be superior” to building blocks.<sup>6</sup> However, the authors also go on to say

(w)e consider that it is difficult to understand the effect of the design of different parameters of a TFP based price cap on profitability, pricing, and incentive outcomes without undertaking some form of simulation modeling. Therefore, we suggest that it may be beneficial to develop high level modeling tools to help better understand the potential incentive properties of different detailed designs (and to compare these with other regulatory approaches).<sup>7</sup>

In conjunction with Pacific Economics Group LLC (PEG), the Commission has undertaken a major research project to advance understanding of these issues identified by Farrier-Swier, which include the feasibility and mechanics of productivity-based approaches. There are three stages in PEG’s work for the Commission. The first was to estimate TFP trends for Victoria’s power distribution businesses. This work has been completed, and it demonstrates that robust industry TFP and input price trends can be estimated, and hence productivity-based regulation can be implemented, given the data that has been collected to date in Victoria.<sup>8</sup> Phase Two of PEG’s work was an “incentive power” report that responded directly to Farrier-Swier’s suggestions about the need for simulation modeling of different regulatory arrangements.<sup>9</sup> PEG’s incentive power report developed an economic simulation model that produced evidence on the impact of different regulatory regimes on prices, profits and incentives. This work concluded that productivity-based approaches produce stronger incentives and much greater customer benefits than building block approaches.<sup>10</sup> The third phase of PEG’s work is currently underway and will consider the practical design and implementation of productivity-based regulatory regimes, including transitional issues that may be encountered in moving from building block regulation. The Phase III Report will be completed in early

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<sup>6</sup> Farrier-Swier Consulting, *Comparison of Building Blocks and Index-Based Approaches*, Report to the Utility Regulators Forum, June 2002 p. 84.

<sup>7</sup> Farrier-Swier Consulting, *op cit*, p. 78.

<sup>8</sup> Kaufmann *et al.*, “TFP Research for Victoria’s Power Distribution Industry,” December 2004. It should be noted that there have been some disagreements regarding the details of TFP measurement in Victoria, but the Commission intends to resolve these shortly.

<sup>9</sup> Kaufmann, L., *Incentive Power and Regulatory Options in Victoria*, May 2005.

<sup>10</sup> The upcoming issue of *Network* includes an article by Dr. Kaufmann discussing the main results of PEG’s incentive power model (“Incentive Power and the Design of Regulatory Regimes”).

February 2006 and will deal with, *inter alia*, the role of five yearly reviews, the approach to the establishment of initial prices (Po's) and x factors, the incorporation of service incentives and the sharing of efficiency gains.

Overall, the Commission staff believes that this work on productivity-based regulation has been quite positive. The Farrier-Swier report concluded that the productivity-based alternative was conceptually superior to the building block model but believed further research was needed to investigate the feasibility and practicality of the approach. PEG's subsequent reports have demonstrated that productivity-based regulation is feasible, desirable, and practical. Moreover, the benefits from productivity-based regulation are likely to be enhanced if it is ultimately extended to distribution networks throughout the country rather than confined to those of a single jurisdiction. The Commission staff therefore strongly supports continued work to implement productivity-based regulatory approaches. As a first step to making this a reality, efforts should begin to assemble the necessary data and begin estimating TFP trends for gas and electricity distribution in States other than Victoria.

### ***Price vs. Revenue Caps***

The Panel requested comments on the merits of capping prices versus capping revenues and the circumstances in which each is most appropriately applied. The Commission staff believes that this could be another instance where differences between distribution and transmission may warrant a difference in regulatory treatment. In the Commission staff's opinion, price capping is more appropriate than revenue capping for power distribution. A comprehensive analysis of this issue was undertaken by Victoria's Office of the Regulator General as part of the 2000 Electricity Distribution Price Review. In general, price capping generally creates better incentives for pricing efficiency (*i.e.* allocative efficiency) than revenue capping, particularly if price caps are measured and monitored through a "tariff basket" approach that allows for pricing flexibility among regulated services. The Commission staff believes that a properly implemented tariff basket price control will create proper pricing incentives that reduce peak demand usage and encourage efficient demand management more generally. These incentives will be enhanced if tariff baskets are coupled with productivity-based regulation which, by

weakening the link between a firm's ongoing costs and prices, dramatically reduces distributors' incentives to inefficiently build its asset or "rate base", thereby increasing their incentives to price efficiently<sup>11</sup>.

In contrast, revenue caps have been far more common than price caps for power transmission. The Office of Electricity Regulation in Britain originally implemented price caps for National Grid's transmission services but switched to revenue caps at the first regulatory review. Revenue caps have retained for National Grid ever since. The rationale for revenue capping of transmission services is that these costs generally do not depend on energy consumption. The Commission staff have not investigated whether revenue caps are more appropriate than price caps for electric (and perhaps gas) transmission, but we believe this issue deserves further attention. It may be particularly valuable for the Panel to consider regulatory precedents from overseas related to this issue.<sup>12</sup>

### ***Economic Principles***

The Expert Panel requested comments on the economic principles that should guide its consideration of these matters, especially the relative weights that should apply to the objectives of allocative, dynamic and productive efficiency, respectively, and the risks and costs associated with market failure versus regulatory failure. On the first issue, the Commission staff believes that increasing weight should be applied to the goals of dynamic and allocative efficiency and less to the aim of productive efficiency. In the jurisdictions that have privatised their energy sectors, most available gains in productive efficiency have probably already been realised (*i.e.* most of the accumulated inefficiencies prior to privatisation have been eliminated).<sup>13</sup> However, distributors have devoted far less attention to either pricing their services efficiently or towards more innovative investment behavior. Examples of the latter include investments related to

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<sup>11</sup> When used in conjunction with cost based regulation, tariff baskets provide greater incentives to firms to maximise profits by maximising tariff revenue rather than signaling future capital and operating costs.

<sup>12</sup> In this regard it would appear that far greater effort has gone into examining the benefits of integrating transmission pricing within the wholesale markets rather than developing more sophisticated TUoS tariffs.

<sup>13</sup> The extent to which these static productive efficiencies have been passed through to prices depends on regulators' price determinations and the balances that have been struck between business and consumer interests.

demand management, distributed generation, and other energy sector research and development.

The Commission staff believes that distributors can play a greater role in these and related areas, thereby enhancing the dynamism of the broader energy sector and providing greater benefits to energy service consumers. Productivity-based regulation is potentially more light handed than building blocks and encourages efficient diversification by mitigating concerns with cost allocation that inevitably arise under cost-based regulatory approaches.<sup>14</sup> For these reasons, the Commission staff believes that the objectives of dynamic and allocative efficiency will be promoted more effectively by productivity based regulation than the building block approach. This is because companies will be able to retain the benefits for a longer period (thereby promoting R&D investment) and allow natural monopolies to “efficiently” integrate with other competitive energy services and markets. Indeed, one of the attractive features of a move towards productivity-based regulation is that this approach is more compatible with the broader regulatory and market development objectives that the Parer review identified.

Economic principles also need to inform the legislative objectives that direct regulators to extract remaining “static” efficiency gains and distribute them to customers as against the need to establish a sustainable relationship between utility costs and prices.

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<sup>14</sup> Under a building block approach, there is a direct link between a company’s allocated costs and its prices. Companies therefore have a very strong incentive to allocate more costs to its regulated operations. A TFP-based approach breaks this direct link, so a company can at most affect its own prices indirectly *i.e.* cost allocations will affect the company’s own prices only to the extent that these higher costs raise the *industry* TFP trend. Even allowing for the possibility of collusive behaviour there is a feature of TFP that mitigates the incentive to manipulate cost allocations. Building blocks link cost levels to price levels, whereas under a TFP-based approach after initial prices are set, price updates are based on industry TFP *trends*. This reduces a company’s ability to manipulate prices. Under a TFP-based approach, companies can only affect the trend by *ongoing* changes in cost allocations – a single change in cost allocations gets washed out in the trend unless it is repeated continually. Continual changes and increases in cost reallocations during the regulatory period are hard to maintain and are easier for regulators to detect than the one-time mass cost reallocations that may need to be required to unravel in a Building Block review.

Based on its experience with building block reviews, the Commission staff believes that the building block model proved useful immediately after privatisation when regulatory staff had no idea about the underlying costs of the regulated businesses. Building blocks have also proven effective in encouraging utilities to behave efficiently and reveal efficient costs (initially) thereby enabling an efficient *level* of average prices to be determined for the benefit of customers. However, the Commission staff believes the building block model will become less effective in future applications. Indeed, there is an increasing probability that companies will be able to exploit the deficiencies of the model as they engage in complex cost-shifting arrangements via restructuring and outsourcing. In this environment, attempting to set prices to recover *only* each firm's efficient costs will be futile. A key transition (and empirical) question will be at what point, regulators and policy makers can or will be satisfied that existing prices are sufficient to use as a starting point for higher-powered, productivity-based regimes, even if they contain a degree of economic rent for distributors. The ability of any regulator to make this judgment will differ by jurisdiction, depending on the number and detail of regulatory reviews that have been undertaken and the complexity of firm costs that have been examined. This is another reason that the Panel should allow flexibility in how different jurisdictions progress towards a common regulatory approach.

### **Regulatory Discretion**

Regulation involves a number of delicate balances. Regulators attempt to satisfy statutory objectives that include encouraging economic efficiency (including efficient investment), ensuring that customers benefit from efficiency gains, providing certainty, and minimising regulatory costs. Some of these goals are likely to be in conflict. A given regulatory approach will be preferred to the extent that it satisfies all these objectives but, in practice, consideration will have to be paid to the tradeoffs associated with achieving different regulatory aims.

Because regulators inevitably must balance a number of competing goals, the Commission staff believes that a measure of discretion must be allowed in any regulatory system. This discretion could apply, *inter alia*, to the identification and definition of the costs that are subject to regulation, the methods used to set initial prices at the outset of a

regime, the refinement of service quality measures and service quality incentive schemes, and instruments used to mitigate risk.

Notwithstanding this need for discretion, however, it should be noted that productivity-based regulation is often considered a more “rule based” approach that involves less discretion than building block CPI-X regulation<sup>15</sup> This has very significant implications for the review of regulatory decisions, which has been the subject of a submission to the MCE by a consultant to the Commission.<sup>16</sup> The Commission believes that this feature of productivity based regulation generally enhances its incentive properties and long run customer benefits, even though the need for discretion is not completely obviated in this (or any) regulatory method.<sup>17</sup>

The Commission believes the Panel’s recommendations should reflect this need for regulatory discretion. Discretion is needed to accommodate the differences in current regulatory arrangements and experience across Australia and to implement different regulatory approaches for energy transmission and distribution. At the same time, the Panel should propose high level principles (*i.e.* a positive preference that productivity-based regulatory approaches be developed, requiring the necessary data be collected) that guide and discipline the way regulators use their discretion.

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<sup>15</sup> In the longer term TFP approaches will hold out greater opportunity for competing objectives to be optimised.

<sup>16</sup> L. Kaufmann, Pacific Economics Group, *Consultation on MCE Review of Decision-Making in the Gas and Electricity Regulatory Frameworks*, Submission to the MCE Review of Decision Making in the Gas and Electricity Regulatory Frameworks.

<sup>17</sup> A more “rule based” approach is more suited to circumstances where a sustainable relationship has been achieved between initial prices and costs or put another way “rule based” approaches are more useful in determining the *trend* in prices rather than the *level* of prices – which will be more dependent on unique operating conditions etc.

## **Conclusion**

The Commission staff recommends that the Panel supports the ongoing development of productivity-based regulation as the ultimate goal for gas and electricity distribution in Australia. The research to date suggests that productivity-based regulation is feasible, more light handed and offers greater long-run benefits to customers than building block regulation, notwithstanding the fact that building blocks have to date been valuable in promoting efficiency and customer benefit and helping regulators understand the costs of regulated businesses. Because of the diversity of regulatory experience throughout Australia, the Commission staff believes flexibility should be allowed in the transition paths that move any regulatory authority towards the common regulatory approach. To facilitate the movement to productivity-based regulation, the Panel should nevertheless recommend to the MCE that all States and territories begin collecting the data that are necessary for gas and electricity TFP trends to be estimated and that legislative impediments be removed to allow for the implementation of indexing approaches in those jurisdictions where either the AEMC or AER believe it is appropriate to do so.

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